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Industrial Labor Market and Workers' Economic Life in the National Capital Region of Delhi: Comparative Study on the Automobile and Light Industries

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Abstract This study aims to clarify the labor market structure for workers and their economic life in the automobile industries as well as the light industries using field data collected by the authors from one village in the Industrial Model Township (IMT) of Manesar, one of the largest industrial estates within the National Capital Region (NCR) of Delhi. Non-regular workers in the automobile industries and workers in the light industries were basically involved in the same labor market—the second labor market—because they shared commonalities in several aspects. Most workers originate from the "contract workers' belt," which spans from Uttar Pradesh to Bihar. Their actual monthly income was estimated at INR. 8,000–9,500, which was less than half that of regular workers in the automobile in the first labor market. Some differences can be seen in the second labor market. Automobile companies may have a labor policy to keep their workforce young, fresh, and cheap, which generates higher turnover of non-regular employees in the automobile industries compared with the light industries. The workers in the second labor market spend only small amounts of their earnings on their daily needs. They share one small room with other workers to minimize housing costs and also cut down on food expenses. Then, they periodically remit their remaining salaries to their families. On average, 40% of their actual income is used for remittances. This money is spent not only on their families' daily expenses but also on education, purchasing durable goods, and other purposes, which might mitigate their socio-economic disadvantage. Focusing on the series of workers' employment and economic behavior, we can recognize that they are striving to take advantage of India's industrialization under the given conditions.

Key words labor market, automobile industries, light industries, economic life, National Capital Region of Delhi

I. Introduction

In India, where the population's average age is low, a huge number of workers are added to the labor market each year. The question of whether their employment opportunities are adequate has become a national issue. While the growth of the information and communication technology (ICT) industry and consequent expansion of employment are attracting attention in India, the core of this expansion has occurred among university graduates; those holding only high school diplomas or who have less education have not been able to share in the new employment opportunities. Economic growth is expected to create a wide range of jobs such as in factory work and engineering. Under the 11th and 12th Five-year Plans (the 11th ran from April 2007 to March 2012 and the 12th from April 2012 to March 2017), in which "inclusive growth" was the central idea, employment in the manufacturing industry has played an important role in allowing the benefits of economic growth to ripple through society. The "Make in India" policy proposed by the present Modi administration also aims to realize high economic growth rates and expand employment opportunities by transforming India into a hub for global manufacturing. Thus, expanding employment in the manufacturing industry has also been emphasized within India's policies.

Nevertheless, up until around 2010, Indian industries faced a bleak outlook, with the situation being ridiculed as "jobless growth." Considerable research (e.g., Himanshu, 2011) has called for ways to deal with the main cause: "informalization." There are two aspects to informalization. First, industries in India are formally divided into a formal sector and an informal (or unorganized) sector.[1] The bulk of the expansion of employment in India's industrial labor market is due to small-scale factories positioned in the informal sector. Second, non-regular employment has expanded in the formal sector (Chaubey, 2008) because non-regular and contract workers are

becoming more common in modern industries, such as automobile manufacturing.

The informalization trend continues in the 2010s. Employment in the manufacturing industry increases on a quantitative basis, but largely because of the expansion of non-regular employment. If non-regularization progresses nationwide in a uniform fashion and no spatial bias emerges in the supply and demand of workers in the labor market, the process may not need to become an issue for economic geography research. However, Tomozawa (2017), who discussed non-regularization in the automobile industry's labor force in the industrializing National Capital Region (NCR) of Delhi, clarified that the labor supply comes from specific states and that non-regularization is closely related to India's regional economic structure. Thus, the non-regularization of industrial employment in India has aspects that can be understood as spatial phenomena, which may be important issues for economic geography.

However, Tomozawa (2017) focuses on non-regular workers in the automobile industry, who are living in apartments constructed in a village near the Manesar IMT (Industrial Model Township), a representative industrial park in Gurgaon District, Haryana, within the NCR of Delhi. It is worthwhile examining whether the situation there can be applied to India's entire industrial labor market. Although the automobile industry is the largest sector in the area, it also has a textile industry, which should be examined as well. This study investigates three research questions. (1) Will the bipolarization of the labor market as a result of the regular/non-regular employment patterns in the automobile industry also apply to other industries, such as textiles? In India, degrees of non-regularization differ depending on the industry, and the meaning of the regular/non-regular division may also differ depending on the industry. (2) To what extent are the attributes (e.g., age, educational background, origin, route of entry into the labor market) of workers in the automobile industry similar to those of workers in other industries, and what overall characteristics are attributable to the workers who make up the industrial labor market of the NCR of Delhi?

(3) We intend to describe the core of the identity of those on the supply side who are entering the industrial labor market. In Tomozawa (2017), non-regular workers in the automobile industry were born in the "contract workers' belt" and faced low wages and insecure manual labor jobs, being unable to enjoy industrialization's benefits. Might these people not see a positive meaning in entering the labor market? We intend to elucidate this point by examining how money is spent through consumption activities and remittances, which are at the discretion of the workers. The purpose of this study is to investigate the three issues above and thereby deepen our understanding of the industrial labor market of the NCR of Delhi, a core of Indian industrialization.

The rest of the paper is organized as follows. In Section **II**, concerning the employment side in the NCR of Delhi, we place the textile industry alongside the automobile industry and describe village B of the investigation site. This village is located within IMT Manesar and borders a sector with many light industry factories, including textiles. It is thought easier to find light industrial workers in village B than in village K, where Tomozawa (2017) carried out a previous study on workers for the automobile industry. A questionnaire survey was conducted at that site by four authors and three graduate students of Geography Department, Jamia Millia Islamia from December 28, 2015 to January 5, 2016. The primary data obtained represent the main source of information used in this study. Based on them, the workers' attributes are analyzed in Section **III**, and their economic lives are analyzed in Section **IV**. Finally, in Section V, based on those analyses, we address the three research issues raised above. Meanwhile, India's currency is the rupee, and the exchange rate at the time of the survey, January 2016, was around 1.8 yen per rupee.

II. Industrial Employment in Haryana and Overview of the Survey Area

1. Industrial employment in Haryana

The NCR consists of Delhi, as well as 22 districts located in the states of Haryana, Uttar Pradesh (UP), and Rajasthan that surround it.[2] The NCR serves as a receptacle for people and investments oriented towards the capital, and is intended to prevent chaotic development and promote a more balanced and harmonious development. Various initiatives have originated from the NCR Planning Board, alongside the regional plan of each state. All kinds of manufacturing plants are being built for several industries, of which the automobile industry is representative.

Table 1 summarizes the industrial employment (number of workers) in Haryana in 2013, based on *Annual Survey of Industries*. The workers number 460 thousand. Workers in the motor vehicles, trailers, and semi-trailers (93 thousand) account for 20.2% of the total, followed by workers in the apparel, other transport equipment, and textiles. These four industries comprise more than

Tabel 1. Industrial employment in Haryana State (2013)

Industrial Sectors	a. No. of workers		b. No. of contract workers		Percentage of contract workers (b/a)
	(people)	(%)	(people)	(%)	(%)
Motor vehicles, trailers and semi-trailers	93,104	20.2	60,779	27.8	65.3
Apparel	77,720	16.9	22,714	10.4	29.2
Other transport equipment	46,232	10.0	32,292	14.7	69.8
Textiles	32,831	7.1	5,871	2.7	17.9
Basic metals	29,659	6.4	15,447	7.1	52.1
Food products	24,548	5.3	11,770	5.4	47.9
Rubber and plastics products	22,940	5.0	15,886	7.3	69.3
Machinery and equipment n.e.c.	21,931	4.8	7,718	3.5	35.2
Leather and related products	18,077	3.9	5,991	2.7	33.1
Electrical equipment	17,925	3.9	9,209	4.2	51.4
Others	75,292	16.4	31,299	14.3	41.6
Total	460,259	100.0	218,976	100.0	47.6

Source: authors' calculation based on *Annual Survey of Industries 2013–2014*

half of the total, and are considered as the major players in Haryana's industrial labor market. Furthermore, since motorcycles are the core of the state's "other transportation equipment", the top four industries can be consolidated into two groups: the automobile group and the textile group. The main difference in employment status between the automobile and textile groups is in their percentage of contract workers: the automotive group's share is 66.8%, which is very high relative to that of the textile group, only 25.9%. This trend fits the nationwide trends in both industries. Clarifying these labor force structures should help us describe the economic geography of employment during India's industrialization.

2. Overview of the survey area

The research site of this study is village B, located in IMT Manesar, the largest industrial estate in Haryana (Figure 1). There are qualitatively different spaces called "villages" within the industrial estate. In India's large-scale urban and industrial development, agricultural land within the planned area is usually bought for development by the relevant authorities, but villages themselves are not typically the target of development, to protect their political power and vested interests. The village is left untouched in the development area. This heterogeneity occurs because immigrants who are unable to afford to move into expensive housing supplied by authorities or companies tend to secure cheap property instead and live alongside traditional farmers.

In the development of IMT Manesar, agricultural land was acquired by Haryana State Industrial and Infrastructure Development Corporation (HSIIDC), but the development was not extended to the existing villages, so the three villages, including B, were left in the industrial park without being relocated. The farmers lost their means of production by handing over their farmland in exchange for compensation, but began new businesses such as real estate management with the funds they had received. Apartments were constructed in areas such as the village's former livestock huts, storage areas for raw materials, and garden areas and were leased to workers. The rents obtained from tenants have become main sources of revenue that have replaced agriculture. Village B has a distinctive dense and mixed landscape that contains both elegant houses, where villagers with increased cash income live, and small shops and simple apartments for workers (Figure 2).

In the 2011 census, the population of village B was 3,215, with 752 households. This is double the 1,679 people in 286 households of 2001. The average household size had decreased (5.87 to 4.27 people per household), and the sex ratio (1.09 to 1.42) had increased. This confirms that the inflow of primarily single male workers occurred from outside the village on a large scale. However, according to the village *sarpanch* (chief), the actual population of village B far surpasses the population reported by 2011 census, and the continued construction of new apartments shows that the population is indeed continuing to increase rapidly.

IMT Manesar is an industrial estate measuring 7 km east–west and 3 km north–south. The south is the location of the Maruti Suzuki India Limited and Honda Motorcycle & Scooter India, Private Limited, representing India's automobile industry. Also, Japanese-owned auto components suppliers are located in the plots between the two companies. The automobile industry is dominant in the southern part of the industrial estate, while the industrial sites in the northern part, where village B is located,

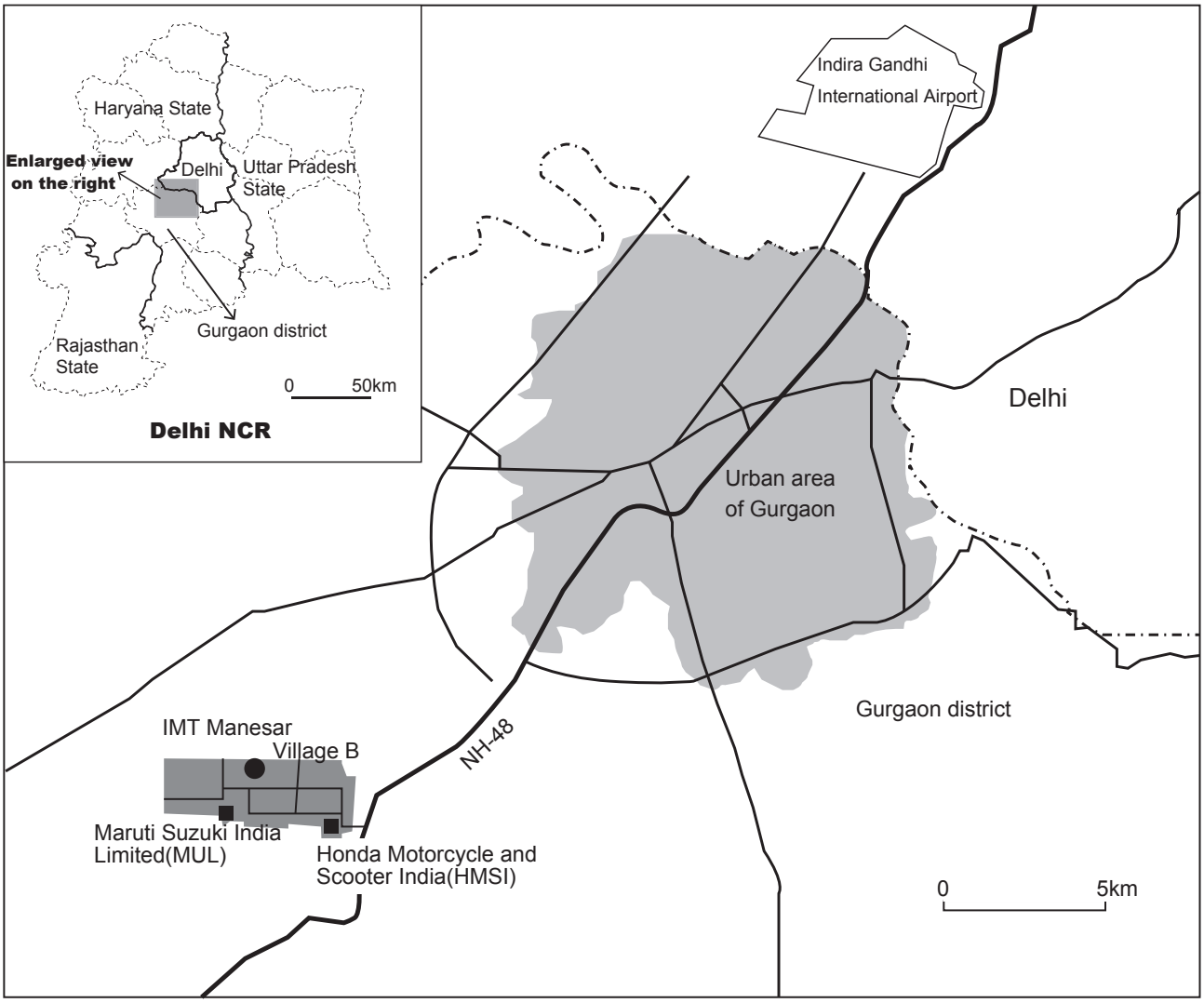
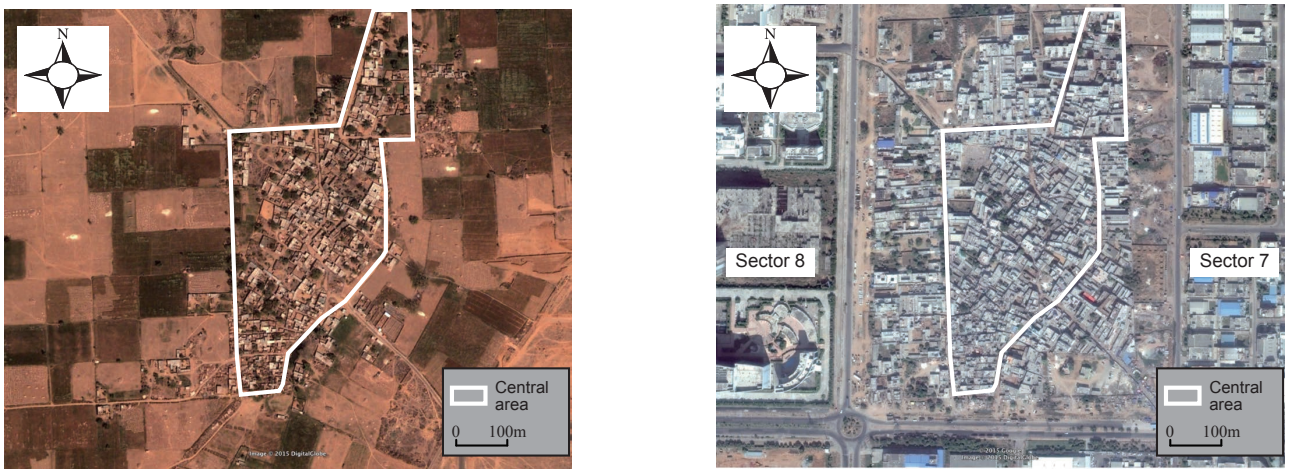


Figure 1. Location of study area
Source: made by authors



a. 2002 b. 2015

Figure 2. Land use changes in Village B
Source: made by authors based on Google Earth data

Table 2. Attributes of respondents

Industries	Staff	Directly employed workers		Contract workers	Others	Total
		Regular workers	Temporary workers			
(a) Automobile industry group	3	18	63	121	5	210
(b) Light industry group		29	44	19		92
(c) Other manufacturing industries	4	5	13	25		47
(d) Industries other than manufacturing industry						19
Total	7	52	120	165	5	368

Note: the analysis mainly targets on those wokers enclosed by thick line
Source: authors' questionnaire survey 2015–2016

are generally small. The lots are smallest in Sector 7, which is just to the right of village B, and many small-scale industries are located in the area. This sector includes many light industries such as textiles, apparel, leather, and woodworking. One of the reason village B was chosen as a research site is that workers from such diverse industries were expected to reside there.

III. Characteristics of the Industrial Labor Market

1. Target industries

In this study, responses were obtained from 368 people via a questionnaire survey. A summary of the respondents is shown in Table 2. By industry, (a) the automobile (automobile and auto components) group comprises 210 people, the largest number, followed by (b) the light industry group (apparel, textiles, leather, furniture, and other handicrafts) with 92 people. Forty-seven people work in (c) other manufacturing industries (excluding the automobile and light industries), and 19 work in (d) industries other than the manufacturing industry (construction, food services, retail, cleaning, and security). Looking at the manufacturing industry ((a) to (c)) by job, there are seven staff, 337 workers, and five others,[3] with workers making up the vast majority of the respondents. Workers are classified into three types based on their form of employment: regular workers (full-time employees); temporary workers, who are directly employed by the company for a fixed period; and contract workers dispatched from contractors. Comparing the automobile and light industry groups, the share of contract workers in the former is as high as 59.9%, far exceeding the 20.7% of the latter. This is consistent with the characteristics of industrial employment in Haryana, as mentioned in the previous Section. We will analyze the 294 workers in the automobile (202) and light (92) industries according to the purpose of this study as outlined in Section **I**.

Table 3. Social attributes of target workers

		Automobile industry group (people)	(%)	Light industry group (people)	(%)
Religion	Hindus	188	93.1	70	76.1
	Muslims	13	6.4	22	23.9
	Sikh	1	0.5		
Castle	General	75	37.1	38	41.3
	OBC	103	51.0	38	41.3
	SC	24	11.9	14	15.2
	Unknown			2	2.2
Sex	Male	202	100.0	88	95.7
	Female	0		4	4.3

Source: same as Table 2

2. Basic attributes of workers

i) Social attributes First, the social attributes of the workers (Table 3) shows that Hindus make up 93% of the automobile group, while the percentage decreases to 76% in the light industry group, where the share of Muslims increases to 24%.[4] India's overall religious ratio is about 80% Hindu and about 14% Muslim. Thus, the ratio of Hindus is relatively high in the automobile group, while the percentage of Muslims is relatively high in the light industry group. In addition, although India's society is composed roughly of 30% Forward Classes, 40% Other Backward Classes (OBC), 20% Scheduled Castes (SC), and 10% Scheduled Tribes (ST),[5] the survey indicates a relatively high proportion of OBC (51.0%) in the automobile group and that of general castes (41.3%) in the light industry group. We lack the resources to explain this finding.

Despite the view that industrial employment in India is dealing with feminization as it deals with non-regularization, only four of the respondents in the light industries were women. Notwithstanding Jena (2013), who examined the progress of feminization in the industrial sector, our result is consistent with the idea that males are still dominant in the transportation equipment labor market. Female overnight labor is illegal in India, which makes it difficult to employ women in the three-shift system com-

mon in the automobile industry. On the other hand, textiles and apparel are regarded as feminizing departments in Jena (2013); in this survey, however, the proportion of women in light industries is very low, and the labor force composition is male-centered.[6]

ii) Age and marital status The age-related indicators in the automobile group (average age of 24.3 years old, median age of 22 years old) and the light industry group (average age of 25.5 years old, median age of 23.5 years old) are similar, and a major portion of the labor force is composed of young people between 18 and their early 20s. The difference between them is the proportion of workers 26 years old or more, which has remained 25.7% in the automobile group and 37.0% in the light industry group.[7] In the automobile group, the share of workers in their late 20s rapidly decreases, whereas this trend is not as strong in the light industry group. Companies and contractor agencies in the automobile industry prefer not to renew employment contracts for those in their late 20s and older, while this is less true in light industries.

Regarding marital status, 81 of the people in the automobile group are married and 121 are unmarried; in the light industry group, 51 are married and 41 are unmarried.[8] Looking at marital status by average age, the average age of unmarried people in the automobile group is 21.3, and that of married people is 28.8. There are no real differences between the two industry groups, as the average age of unmarried people in the light industry group is 21.1 and that of married people is 29.0. Therefore, it is unlikely that differences between these two industry groups affect the age of marriage, as the percentage of married people increases as age increases. In other words, the fact that the proportion of married people is high in the light industries is directly correlated to the fact that the proportion of the sector's workers who are over the age of 26 is higher than in the automobile industry.

iii) Educational background In the automobile group, 48 people have lower secondary education (10th grade), 38 have upper secondary education (12th grade), and 32 have university education (including withdrawals and enrolled students).[9] Overall, people from all academic backgrounds—from those lacking education to college graduates and those who have finished graduate school—are entering the industry, and the same tendency as that pointed out by Tomozawa (2017) is perceived. However, the share of well-educated people is even higher: 45 people (22.3%) have a university education or higher, which is more than one out of five people. However, their high academic levels do not lead to regular employment, with contract labor being dominant there as well. The relationship between regular employment and educational background is also unclear. In addition, only 32 people (15.5%) hold Industrial Training Institute (ITI) qualification. Such people were once considered to be leading the industrial labor force, yet, in this labor market, these skills are not as highly regarded.

In the light industry group, 18 people have upper primary education (8th grade), 16 have lower secondary education, 14 have upper secondary education, and 10 have no educational background. Approximately 60% have less than upper secondary education, and only 10 people have educational backgrounds that include university and above. These workers' average educational levels are lower than those of workers in the automobile group.[10] In addition, 37.1% of Hindus and 13.6% of Muslims have upper secondary education or higher, with the educational backgrounds of Muslims entering the light industry group being relatively low.[11]

3. Entry routes

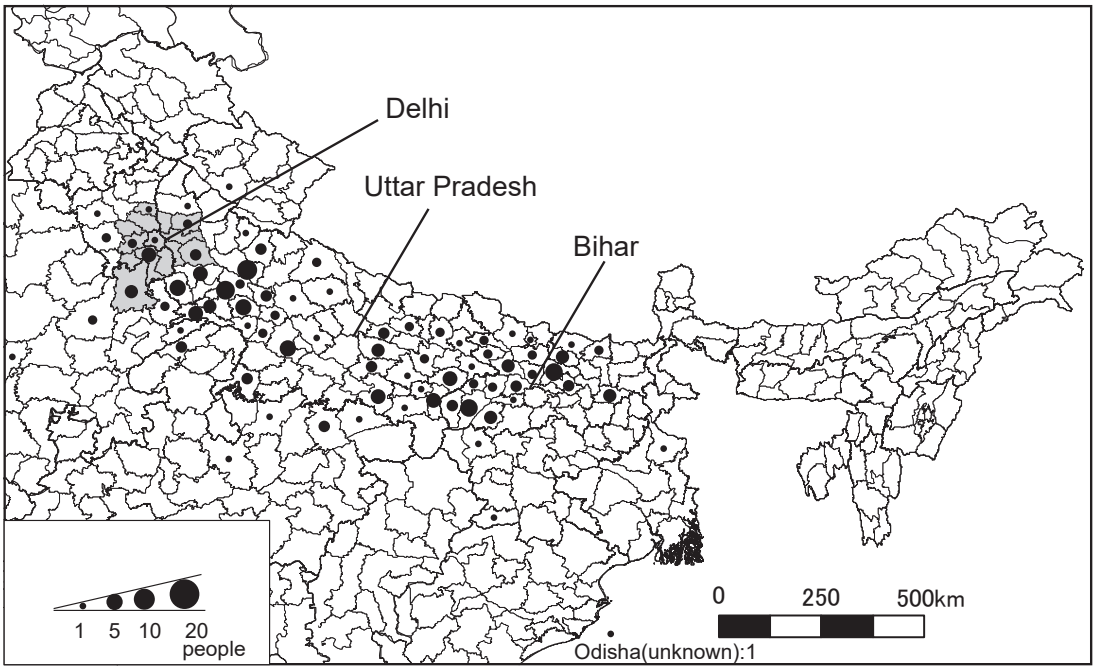
i) Origin of respondents Most of the workers in both the automobile and light industry groups come from the Hindi Belt in northern India (Table 4). Over 80% of the workers in both industry groups come from either Uttar Pradesh (UP) or Bihar. Since the population of UP is about twice that of Bihar, it can be said that the automobile group depends on both states to equal degrees, while the dependence of the light industry group on Bihar is relatively high. Most of the fathers of workers from both states engage in agriculture, so households based on agriculture are the main source of supply. Meanwhile, only about 5% of the workers in both industries come from Haryana, so the local area does not play much of a role as a source of labor.

Table 4. Respondents' origin

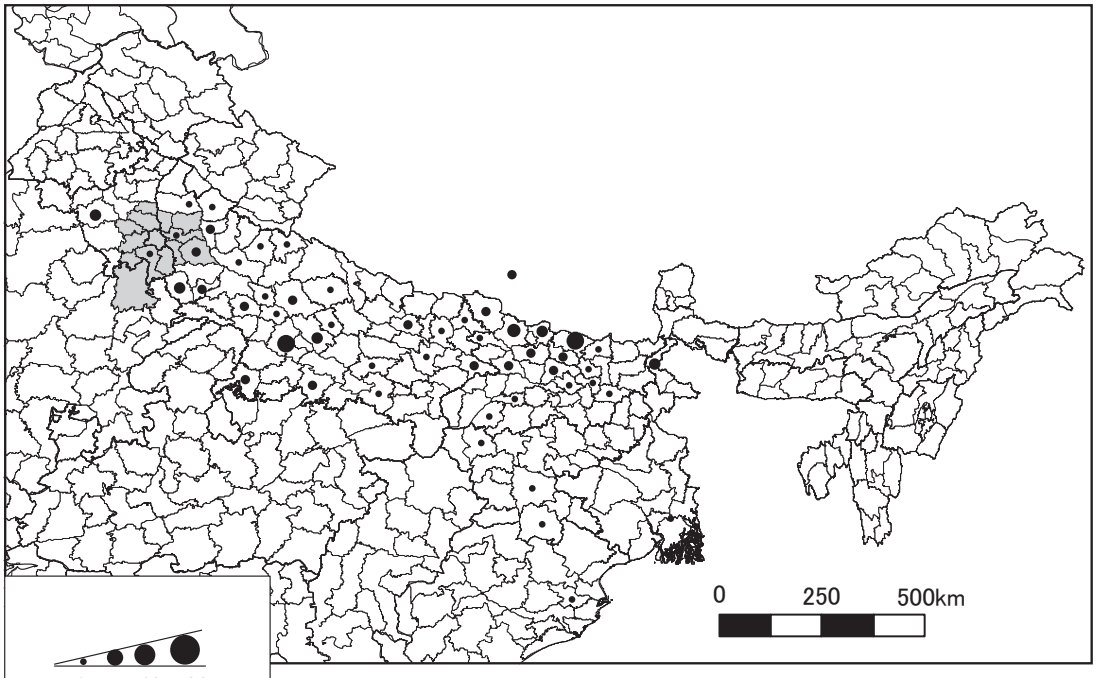
State (country)	Automobile industry group (people)	(%)	Light industry group (people)	(%)
Uttar Pradesh	112	54.1	46	50.0
Bihar	54	26.1	32	34.8
Haryana	11	5.3	4	4.3
Rajasthan	10	4.8		
Madhya Pradesh	9	4.3		
Jharkhand	2	1.0	3	3.3
Delhi	1	0.5		
Odisha	1	0.5	1	1.1
Uttarakhand	1	0.5		
WestBengal	1	0.5	4	4.3
Nepal			2	2.2
Total	202	100.0	92	100.0

Source: same as Table 2

Detailed analysis of origins was conducted based on districts (Figure 3). It is obvious that their range centers on the area from southwestern and eastern UP to Bihar. This pattern is regulated by the origins of contract workers, around 60% of the respondents. This is similar to the "contract workers' belt" pointed out in Tomozawa (2017). Since the number of regular workers is small, it is difficult to find a clear pattern for them. Among the automobile companies of IMT Manesar, some are recruiting regular workers from all over the country,[12] but our survey has not found this to be a trend. Four people come from Gurgaon District, a relatively large number, because some B villagers found employment as regular workers at Japanese auto components companies that entered IMT Manesar early



a. Automobile industry group



b. Light industry group

Figure 3. The distribution of workers' origins by districts
Note: Hatches in the figure show NCR of Delhi
Source: same as Table 2

in its development.

Even the origins of light industry workers are distributed in a belt from UP to Bihar. On the other hand, only four people are from the NCR of Delhi. Thus, the automobile and light industry groups obtain their labor from roughly the same area. However, the labor supply from Bihar's northern districts is relatively large and differs from that of the automobile group.

ii) Reasons for migration The main reason these workers came to village B was for "job-seeking," accounting for about 90% of respondents in both industry groups (Table 5). However, cases where companies and contractors are involved in moving workers themselves are extremely rare; in most cases, prospective employees had not yet found work when they had moved into the area. This result is the same as that in Tomozawa (2017), which shows that many workers first move and then begin searching for work.

In a move, obtaining information about the destination is necessary to reduce risk and make decisions. For both industry groups, an overwhelming majority of respondents (80%) obtained information from family members, relatives, friends (in their hometowns), or other villagers who had already moved from their hometowns (Table 6). These people have already started work at the location and have some experience; thus, they function as a vector for information about workers' movement. Trailblazers connected by "strong ties" such as kinship and regional bonds play a role in labor migration,[13] which makes this movement a kind of chain migration.

iii) Year of commencement of work Regarding the year of commencement of work at the current workplace, 126 people (62.3%) in the automobile group and 41 people (44.5%) in the light industry group started work in 2015 (the light industry group included one person who started in 2016). Thus, in both industries, the vast majority of workers have been on the job for less than a year (Figure

Table 5. The main reasons of workers moved to Village B

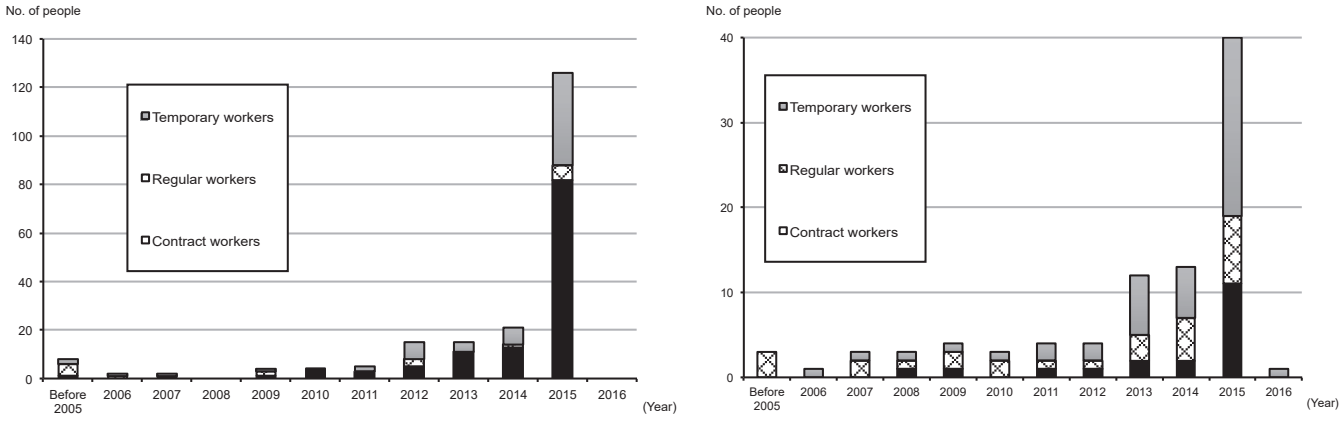
	Automobile industry group	Light industry group
Job seeking	190	81
Due to villagers or acquaintances	2	3
Reassignment	2	
Due to families or relatives	1	5
Invited by companies		1
Born in Village B	4	
Others	2	1
Unknown	1	1
Total	202	92

Source: same as Table 2

Table 6. Ways of workers obtaining information

	Automobile industry group	Light industry group
Family members, relatives	81	26
Friends in their hometowns	81	40
Villagers	11	11
Acquaintances	8	4
By themselves	4	1
Born in Village B	4	
Companies (due to reassignment)	3	
Contrator	2	2
Previous coworkers	2	4
Current workplace	2	
Internet	1	
Father's friends	1	
Newspaper		1
By chance	1	
Others or unknown	1	3
Total	202	92

Source: same as Table 2



a. Automobile industry group

b. Light industry group

Figure 4. Year of commencement of work at the current workplace
Note 1: there is no workers in automobile industry group started their work in 2016
Note 2: there is one regular workers in light industry group whose year of started work is unknown
Source: same as Table 2

4). However, there is a significant difference ($p<0.01$) between the composition of those who started work in 2015 and earlier in both industry groups, though this trend is stronger in the automobile group.

If we take 2015, when most employees started work, and look at the monthly trend, we find that many workers started in November and December, with the latter half of the year making up the bulk of job commencements overall[14] (Table 7). This is directly linked to the fact that non-regular employees, including contract workers, are the core of the labor force in both industrial sectors. In Haryana, institutionally, six months is the maximum limit for non-regular employment. If a worker starts in the first half of 2015, the contract term would have to end later that year. Therefore, the number of people who started work in the second half of the year will be higher. There is thus a high turnover of workers over a short period of time in both industrial sectors, and this tendency is even more marked in the automobile industry because its dependence on non-regular employment is so high.

Although contract workers are dissatisfied with their wages and other issues, few have the intention to quit their jobs. Consequently, the massive turnover over a short period of time is created by the demand side (company/contractor) against the backdrop of a system related to contract work. A buyer's market has thus been established, which reflects the circumstances in which job seekers are supplied one after another from UP and Bihar.

A few people have also been found working in non-regular employment at the same workplace for more than six months. This is due to "loopholes" that allow employees to remain working at the same company using methods such as registering with another contractor (Tomozawa, 2017). "Long-term" work through such methods seems to be adopted when the company wants to secure the continuity of the labor force while still relying on non-regular employment.[15]

iv) Previous employment In the automobile group, there are 104 employees with former jobs and 98 employees without former jobs; thus, for nearly half of them, their current workplace is their first job (Table 8). The share of those without previous jobs is higher than in the light industry group, because in the automobile group newer workers tend to be preferred.[16] Looking at the most recent work locations of those holding previous positions, IMT Manesar is the location for most of them (34), followed by other locations in Haryana (16) and Delhi and UP (12 people each). Those who worked another job in Manesar make up the largest group, but the percentage is only around 30%, and the NCR of Delhi is the main location of previous employment. Seventy-eight people were previously employed in the manufacturing industry, and 24 were employed in the non-manufacturing industry (two have unclear work histories). In the manufacturing industry, 30 people provided no response or responded "unknown" concerning classification.[17] Out of the 48 people for whom we do have answers, 29 previously worked in the automobile industry. Among them, 21 previously worked in IMT Manesar, so a certain amount of workplace movement within the same industry and the same

Table 7. Detail months of workers started their current jobs from 2015

	Automobile industry group	Light industry group	Total
January	1	1	2
February	3	2	5
March	13	4	17
April	8	3	11
May	6	0	6
June	13	2	15
July	4	3	7
August	9	3	12
September	13	1	14
October	9	4	13
November	25	5	30
December	20	12	32
Unknown	2	0	2
Total	126	40	166

Source: same as Table 2

Table 8. Location of respondents' previous workplace

Former workplace		Automobile industry group	Light industry group
Haryana	IMT Manesar	34	26
	Others	16	4
Delhi		12	11
Uttar Pradesh		12	10
Gujarat		5	1
Madhya Pradesh		5	
Uttarkhand		5	1
Rajasthan		4	
Maharashtra		2	2
Punjab		2	1
Karnataka		2	
Andra Pradesh		1	
Chhattisgarh		1	
Goa		1	
Kerala		1	
West Bengal			2
Tamil Nadu			1
Chandigarh			1
Overseas			1
Unknown		1	
Total		104	61

Source: same as Table 2

industrial estate is allowed. Regarding the reasons for leaving their jobs, many were related to working conditions such as low wages and intense manual labor, as well as the ending of their contract period, the closure of their factories, and their dismissal during a trip back home.

In the light industry group, 61 people had former jobs, and 31 people did not, making only about a third of those who comprise the current workforce first-time workers. IMT Manesar is the most common location of previous employment (26 people had worked there before). As with the automobile group, this shows a gradually decreasing distribution centering on that township. Among those with previous work experience, 50 people had worked in manufacturing, far exceeding the nine people who had worked in the non-manufacturing industry (with two unknowns). Among manufacturing industry workers (excluding those who gave no response or had unknown jobs), 33 people are in the light industry group, and the share of those moving within the same industry is higher than in the automobile group. Moreover, 20 out of those 33 people changed jobs within IMT Manesar. Their reasons for leaving their jobs are almost the same as those cited by automobile group workers, including low wages.

Compared with the light industry group, the automobile group tends to accept workers regardless of work experience or lack of previous employment. This is also pointed out in Tomozawa (2017). However, this situation has occurred because manufacturing companies designed their production processes to be subdivided, standardized, and simple, so that anyone could do the job for a short period of training. Therefore, skill is not valued, and academic background, skills, and experience are not required. The companies do not expect workers to have a particular skill or technical level, and being a young healthy man is considered the only requirement for entering this labor market. Meanwhile, some light industries require manual tasks such as embroidery and woodworking, and certain skills are sometimes required of workers. For these manufacturing processes, experienced people tend to be hired, and this point makes the labor markets of the automobile and the light industry groups slightly different.

IV. Economic Life of Workers

1. Income

As shown in Tomozawa (2017), a worker's income is calculated by taking the base salary plus overtime pay, and deducting expenses such as employee contribution to Employee State Insurance (ESI), Employment Provident Fund (EPF),[18] and meal expenses. In India, excess progressive taxation has been adopted; those with annual incomes of less than 250 thousand rupees are exempt from income tax. Next, we look at the base salary of the workers (Table 9).

Table 9. Monthly base salary of workers

a. Automobile industry group

	Regular workers	Temporary workers	Contract workers
Number of respondents	18	62	120
Average (rupees)	12,070	8,556	7,974
Median (rupees)	10,700	7,600	7,600

b. Light industry group

	Regular workers	Temporary workers	Contract workers
Number of respondents	29	44	19
Average (rupees)	9,132	9,180	8,561
Median (rupees)	8,300	8,550	8,000

Source: same as Table 2

In the automobile group, contract and temporary workers have the Haryana State minimum wage as their base salary (the monthly amount of unskilled labor at the time of survey is 7,600 rupees). The contract workers' average base salary is 7,974 rupees (median 7,600 rupees), while the temporary workers' base salary is 8,556 rupees (median 7,600 rupees). There is a clear disparity between these wages and the 12,070 rupees (median 10,700 rupees) that regular workers get. There are also significant differences ($p<0.01$, according to our analysis of variance) in average wages between regular and temporary workers and between regular and contract workers. Labor unions have been formed in many of the factories of automobile industry firms, and regular employees who can join them have the right to collective bargaining and receive benefits in terms of treatment, starting with better wages. In addition, regular workers and temporary/contract workers are not necessarily in a coordinated relationship; for example, in a company whose total personnel expenses are pre-set, even regular workers are often opposed to wage increases for temporary and contract workers.

The overtime work allowance is 20 to 40 rupees per hour, which can add 1,500 to 3,000 rupees per month to one's salary. Therefore, the monthly income of workers who are paid the state minimum wage can rise to between 9,000 and 10,500 rupees. Employees at this income level are not subject to income tax, and the total amount of pay deducted from their income per month comes to around 1,000 rupees, so take-home pay is calculated to be between 8,000 and 9,500 rupees.

The same situation exists in the light industry group, where the standard base salary is the state minimum

wage. However, the difference in pay between regular (average 9,132 rupees), temporary (9,180 rupees), and contract (8,561 rupees) workers is small. In fact, the average wages of regular workers are slightly lower than those of temporary workers.[19] In the light industry group, wages are sometimes paid by commission or by yield. In such a case, this study regards the average monthly wage as the base wage, which may have caused this reversal phenomenon. Many light industrial establishments are classified as tiny or small-scale industries. In many cases, there is no labor union, and the difference between regular and non-regular work is not as significant a factor in the wage difference between these groups as it is in the automobile group. However, in the case of commission pay, workers who want to maximize revenue may have to work for one month without taking a break and, in some cases, are forced to work overtime. Thus, commission pay could be understood as a wage payment type that leads to long hours and holiday work.

2. Type of accommodation

The residences of workers in village B can be broadly divided into ownership and rental types (Table 10). However, ownership is centered on B villagers, and is limited to five people in the automobile group and one person in the light industry group, so renting is dominant. Therefore, we will consider rental type below.

The properties for rent consist of apartments constructed by farmers in village B. Apartment buildings are two to four stories, and a room is 10 square feet (about 3 sq m) and narrow. Water facilities such as toilets and faucets are shared. These floorplans and facilities are common among rental properties for workers in India. In village B, these types of apartments are leased at 2,000 to 3,000 rupees per month. In village K, the subject of Tomozawa (2017), we could only confirm this size of property, but village B also offers larger rooms, though few.[20]

If workers rent an entire room, they have to pay 2,000 to 3,000 rupees per month, which weighs heavily on the workers' take-home income. Therefore, the practice whereby multiple people share rooms and divide the rent is spreading. Two hundred and sixteen people, 75.3% of the renters, responded that they are sharing a room. Furthermore, 71 respondents said that they are the only person paying for their room, but this includes a considerable number of cases where they live with their families. Thus, the number of workers actually living alone is limited. Housing expenses per month for those living in shared residences are comparable between the two industries—934 rupees (median 800 rupees) for those in the automobile group and 921 rupees (median 800 rupees) in the light industry group—and make up about 10% of monthly salaries.[21] This amount is modest, and the living environment cannot be considered satisfactory for reproducing labor power, because on average, one room is shared by three people. The amount of space per person is so small that only simple household goods can be bought, and rooms can serve only as a "sleeping-place." Moreover, since electricity fees are included in the rent, this is a burden on landlords, and some even stop supplying electricity during the day to cut down on costs. Overall, the living environment of residents is unfavorable.

Table 10. Types of acommodation of workers

a. Automobile industry group

		Regular workers	Temporary workers	Contract workers	Total
Ownership		4	1		5
Rental type	Entire room	6	10	33	49
	Share room	8	51	88	147
Others			1		1
Total		18	63	121	202

b. Light industry group

		Regular workers	Temporary workers	Contract workers	Total
Ownership				1	1
Rental type	Entire room	12	7	3	22
	Share room	17	37	15	69
Others					
Total		29	44	19	92

Source: same as Table 2

3. Expenditures

It has become apparent that workers are for the most part kept at low wages, but how do they use the wages they earn? How to use their meager income is at their discretion, and it seems that this use varies among individuals. The main expenditure is housing costs, which are covered in the previous section. In addition to those, three other items are covered here. To reproduce labor power, it is necessary to spend money on food; other common items include mobile phones (smartphones), which have spread rapidly in India, and alcoholic beverages, which are luxury goods (Table 11). Since expenditures are expected to differ greatly depending on the presence or absence of families living together, we analyze 147 people from the automobile group and 66 people (excluding three people whose residences are provided by contractors) from the light industry group living in shared apartments.

Expenditures on foodstuffs[22] are said to be at around the same level, with an average of 2,188 rupees (median

Table 11. Expneditures of workers living in shared apartments

		Automobile industry group	Light industry group
Foodstuff	Number of people	144	67
	Average(rupees)	2,188	2,539
	Median(rupees)	2,000	2,000
Mobile phone	Number of people	133	60
	Average(rupees)	412	463
	Median(rupees)	300	500
Alcohol	Number of people	4	3

Source: same as Table 2

2,000 rupees) for the automobile group and 2,399 rupees (median 2,000 rupees) for light industry group. These account for 20 to 25% of take-home income but have remained at only 70 to 80 rupees per day, which is a reasonably moderate amount of money.[23] Some factories provide meals (in which case, workers pay the fee without it being included in food expenses), and this is correlated with the low portions of income that go towards food expenditures. Basically, meals other than factory meals are cooked at home. Food expenses that are regarded as being restrained are still more than twice their housing costs, but this shows the extent to which housing costs are suppressed.

There are 12 respondents in the automobile group and five in the light industry group who do not possess mobile phones. It can be said that mobile phones are becoming essential for daily life, even among people in income brackets that are not subject to income tax. Among those with cell phones, monthly phone bills in the automobile group averaged 412 rupees (median 300 rupees), while those in the light industry group were somewhat higher, at an average of 463 rupees (median 500 rupees). The reason for this is unknown. Both averages made up around 5% of take-home income and was about half the average housing costs. Mobile phone plans in India are prepaid. Calling fees are cheap, at about one rupee for up to three minutes, and workers are in frequent contact with their families and friends back home.

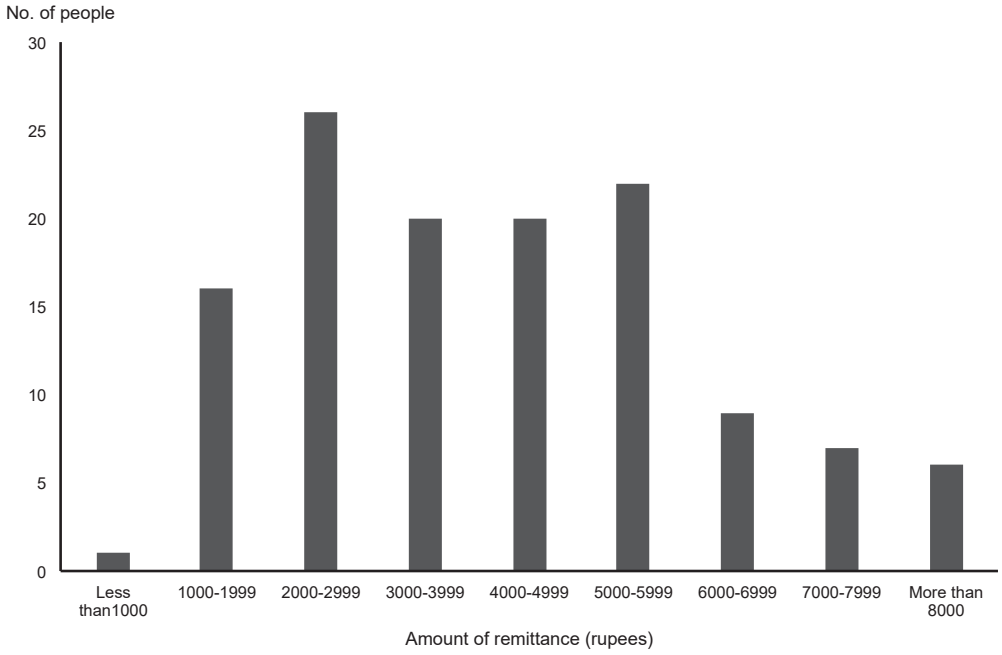
Only four automobile workers and three light industry workers spend anything on alcoholic beverages. Of those who said how much they spend money on alcohol each month (four people), all spend less than 100 rupees, except for one people who spends 1,500 rupees. In addition, three people said that they sometimes drink, although they did not provide numbers. In addition, out of the four people from village B who are regular workers in the automobile industry, three spend an average of 3,000 rupees a month on alcohol. According to Jegadeesan and Fujita (2014), in a textile labor force survey of Tiruppur, Tamil Nadu, drinking was found to be limited among migrant workers from north India but was spreading among higher-income workers within the state. This study has come to the same conclusion regarding drinking in India: it is still sometimes regarded as a religious and cultural taboo, and the consumption of alcohol among factory workers from rural UP and Bihar is rare.

4. Remittances

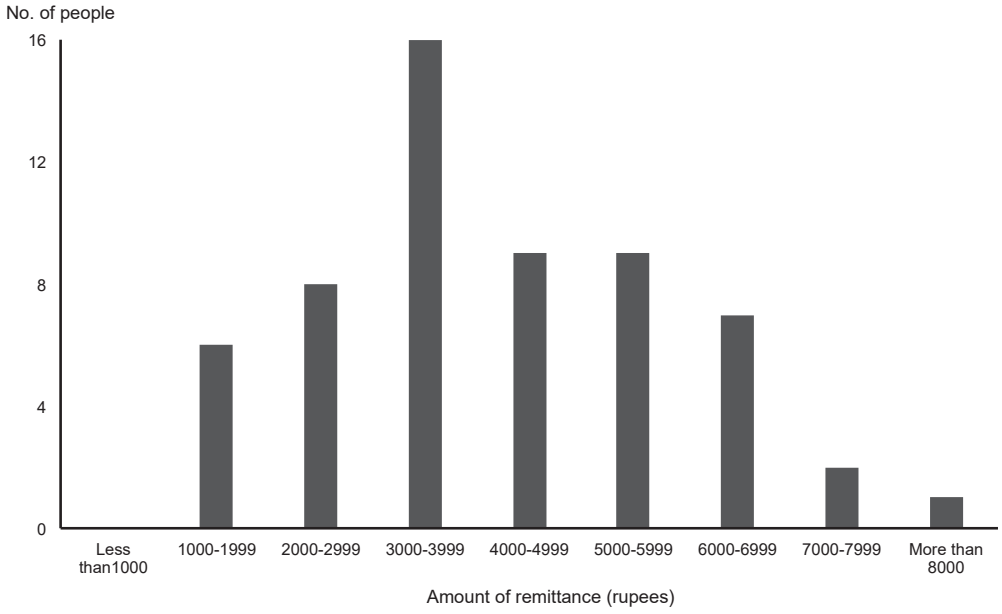
As mentioned, workers' consumption is restrained, and expenses related to reproductive labor power such as residential expenses and food expenses are limited to around 30% of take-home pay. What is done with the surplus money? First, it is put away into bank accounts. Of those workers in the automobile group who share rent (147 people), 34 people deposit money into a bank account. In the light industry group (out of 69 people), 15 people do. (Each group had one respondent who did not give a clear answer.) Thus, those with bank accounts make up a small minority of less than one-fourth of all respondents. It can be said that, for the working class (contract and temporary workers), bank accounts are not yet widespread.[24]

Surplus money also goes towards remittances to families (parents, wives, and children). Workers who share a room in an apartment are single and leave their families in their hometowns. They are considered as single migrant workers, and work where they do for no other reason than to support their families. In the automobile group, 127 people remit money and 20 people do not. In the light industry group, 62 people remit money and seven people do not. In both industry groups, a large percentage of workers remit money. The average remittance amount per month is 3,874 rupees (median 4,000 rupees) for those in the automobile group and 3,879 rupees (median 3,625 rupees) for those in the light industry group (Figure 5). In both cases, it is understood that about 40% of the average take-home pay is remitted to the family. In recent years, an increasing number of merchants have been remitting money to domestic bank accounts for a small fee, and several of these stores are located in village B.[25] Originally, money was sent back home by delivery in person or by entrusting it to a fellow villager who was returning home. However, the use of remittance agents began recently.

What are the remittances used for? Table 12 shows the situation of the 120 automobile workers and 62 light industry workers who share rent, provide remittances, and responded to this question.[26] It appears that 96.7% of them budget their daily living expenses, and the living expenses of family members back home are based on their remit-



a. Automobile industry group



b. Light industry group

Figure 5. Monthly remittance
Source: same as Table 2

Table 12. Utilization of remittance by family members at hometowns

	Automobile industry group (n=120)	Light industy group (n=62)	Total (n=182)	Composition ratio (%)
1. daily living expenses	116	60	176	96.7
2. education	54	27	81	44.5
3. durable consumer goods	31	18	49	26.9
4. house construction and repair	14	4	18	9.9
5. debt repayment	12	6	18	9.9
6. marriage	6	3	9	4.9
7. land purchase	9	0	9	4.9
8. livestock	4	1	5	2.7
9. redeeming mortgaged houses	0	2	2	1.1
10. other uses	42	18	60	33.0

Source: same as Table 2

tances. Along with being used to educate their children and younger siblings (44.5%), the money is also used to purchase durable consumer goods (26.9%). In addition, about 10% is used for the construction and repair of houses and debt repayment. Other uses (33.0%) include various investments for agriculture, medical expenses, and the purchase of medical supplies. Therefore, remittances are mainly used for living expenses and a wide range of applications. It is clear that they are important for maintaining and improving family livelihoods and workers' social and economic moorings.

V. Discussion and Concluding Remarks

This study aimed to present the economic geographic meaning of Indian industrialization by examining the characteristics of the labor market formed in the large industrial estate of the Delhi NCR and the economic life of the workers. In the analysis, we divided questionnaire survey respondents into two groups, automobile and light industry groups, and compared them. We will address the three issues raised in Section **I** based on the results.

The first question concerns whether the area's industrial labor market can be categorized according to the different forms of employment (Question (1)). There are regular and non-regular workers in both the automobile and light industries, but the regular workers in the automobile industry are protected by various legal systems targeting industrial workers, and they have better wages and job stability than non-regular workers. Even among regular workers, conditions that are advantageous to workers do not apply in light industries, which are mainly small-scale industries, unlike in the automobile industry. As a result, in the light industry group, the state minimum wage becomes the standard payment regardless of whether one is a regular or non-regular worker. As stated in the analysis on the textile group in Section **II**, the percentage of contract workers is low. If we assume that regular workers in the automobile group are in the primary labor market, we can indicate that non-regular automobile workers and light industry workers are in the secondary labor market, and we can observe a discontinuity between the two, involving not only working conditions but also the near impossibility of moving from the latter group to the former.

The commonality and differences in attributes between the blue-collar workers in the automobile group and those in the light industry group (Question (2)) will be described by comparing the non-regular workers in the automobile group to the workers in the light industry group as part of the secondary labor market. In terms of differences, the proportion of workers aged 26 or older and of workers with former employment were higher in the light industry group. While workers in the automobile group had higher average academic backgrounds. The differences in attributes occur because the companies and contractors in the automobile industry are seeking younger workers. On the other hand, many commonalities were found in terms of hometowns, wages, economic life, and remittance amounts based on those wages. Those who enter the secondary labor market originate from eastern UP and Bihar, which are quite far from the NCR of Delhi, move to the area in the form of chain migration, and transfer a large portion of earnings to their families in their hometowns. Therefore, it seems that these migrant workers share similar regional conditions.

Why does labor migration to the NCR of Delhi from the states of UP and Bihar occur? The fundamental factor is its economic disparities—specifically, the difference between state minimum wages. In India, the wages of non-regular workers are the de facto standard for the state minimum wage. The minimum wage for unskilled workers in UP at the time of this study was 5,750 rupees per month, while in Bihar it was 194 rupees per day (which comes to 4,850 rupees for 25 days per month of work). The minimum wage in Haryana is 7,600 rupees per month; thus, for the same amount of work, wages are 1.3 to 1.5 times higher in Haryana. This disparity between state minimum wages is a major factor for the migration of blue-collar workers. In addition, disparities between employment opportunities also play a role. As detailed in Tomozawa (2017), the population of both states is excessive in both absolute and relative terms, and the supply of labor in these states greatly exceeds demand. Therefore, people are forced to move out of these states in order to get jobs. On the other hand, the secondary labor market in Manesar has no particular barriers to entry, so people can readily find jobs there. Especially in the automobile industry, one's educational background, skills, and experience are not critical, and healthy young men do not find it difficult to obtain non-regular jobs. Thus, in terms of both wages and employment opportunities, it is reasonable to leave the rural areas of UP and Bihar and move to Manesar for jobs.

Question (3) concerns the positive meaning of entry into this labor market. Tomozawa (2017) expressed negative views stemming from the low wages and lack of job stability. He also argued that there is a center–periphery relationship between the NCR of Delhi and the contract workers' belt. Although fundamental perceptions remain

the same, we found that the workers are proactive about their economic life. Workers keep their own expenses for the reproduction of labor power to a minimum and remit the balance to their families in their hometowns. Remittances total about 40% of average take-home pay, and workers appear to have a strong bond with their families back home. Remittances are devoted to daily living expenses but are also used to pay their children's and younger siblings' educational expenses and for durable consumer goods. These are regarded as expenditures that contribute to the economic and social development of their families. Entering into this labor market can be seen as a way to secure decent living conditions and maximize their limited income. By entering into the industrial labor market, they are trying to derive benefits from Indian industrialization.

Several issues are still unclear. What life course do secondary labor market entrants follow? Being that one of the characteristics of this labor market is swift change, what kind of route lies ahead for those who quit (or are made to leave)? Answering these questions will require a grasp of the spatial components that mediate that path. To do so, we will consider how to investigate those who have experience working in the NCR of Delhi's labor market in the supply center for workers.

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Notes

1. The "organized sector" refers to companies employing more than 10 people in the manufacturing industry when using power and more than 20 people when not using power. Other companies and independently owned businesses are regarded as comprising the unorganized sector, which is in India more or less synonymous with the informal sector. In that sense, the organized sector can be regarded as the formal sector.
2. Initially, it consisted of 15 districts of the three states that surround Delhi and its surroundings, but its area has expanded over time to reach its present extent.
3. Here, we put trainees, apprentices, and other trainees from polytechnics into the "others" category.
4. Within India's handicrafts industry, the manufacture of embroidery and leather goods is carried out mostly by Muslims. For example, according to Ishtiyaq (2011), in South Delhi, which is relatively close to the survey site, there are 242 small-scale handicraft factories, 138 of which are managed by Muslims. This exceeds the 99 that are managed by Hindus.
5. The National Sample Survey Organisation periodically investigates and publishes the population composition of Indian social classes. In FY 2004, there were 30.8% in Forward Class, 40.9% in OBC, 19.6% in SC, and 8.6% in ST.
6. This result does not necessarily mean that there are few female workers in the light industries. This questionnaire survey was conducted mainly on the streets of village B. With such a method, it is difficult to gain the cooperation of women in India. Even if we make a house visit, it is difficult to obtain answers from women if the men living with them do not approve.
7. Even with the chi-square test, there is a significant difference ($p<0.05$) between the composition of the 26 years or older group and the under 26 group for both industrial groups.
8. According to the chi-square test, the marital status of both industrial groups showed a significant difference ($p<0.05$).
9. India's formal education basically consists of primary education (five years), upper primary education (three years), lower secondary education (two years), and upper secondary education (two years). However, because there are slight differences between states, the number of years that a student was educated is usually noted. Upper secondary school graduates have 12 years of educational background and are equivalent to high school graduates in Japan. After that, people are divided into those who go on to university or junior college, those who aim to acquire diplomas at vocational schools.
10. According to the chi-square test, in both industrial groups, there is a significant difference ($p<0.01$) between those with and without upper secondary school or above.
11. According to the chi-square test, in the light industry group, there is a significant difference ($p<0.01$) between the Hindus and Muslims in the composition ratio of those who have at least completed upper secondary education.
12. For example, Japanese auto parts Company D located in the south of IMT Manesar has been using regular workers from all the states of India since its inception (September 2016 interview).
13. Granovetter's (1974) "weak tie hypothesis" that deals with labor migration represented by a change of occupation is well-known. It posits that, when workers change jobs, they obtain more useful information from people with whom they have weak ties (people they only seldom meet) than from people with whom they have strong ties (people they often meet). On the other hand, the workers examined in this study depend on strong linkages of kinship and regional bonds. This is thought to be related to the narrowness and homogeneity of their social networks, but that issue is beyond the scope of this study.
14. According to the chi-square test, there are significant differences between the numbers of those workers starting in the first half (January to June) and the second half (July to December) of 2015 in the automobile group ($p<0.01$) and in the light industry group ($p<0.05$).
15. These types of responses were typical among several of the companies in IMT Manesar the authors have studied thus far.
16. According to the chi-square test, there is a significant difference ($p<0.01$) in the composition of both industrial groups of people with or without previous work experience.

17. This classification scheme for the manufacturing industry is common since it was in place from the third day of the survey.
18. In addition, although it is confirmed that signing up for ESI and EPF is common among non-regular workers in the automobile industry. It is unconfirmed how common this practice is within the light industries.
19. Even according to an analysis of variance, average wages do not significantly differ between regular, temporary, and contract workers in the light industries.
20. While few in number, some workers are living in rental properties with monthly rents ranging from 4,000 to 5,000 rupees.
21. Although 147 people share apartments in the automobile industry, two people have unknown rents. In the light industries, 69 people share apartments, but two people have unknown rents, and three people have apartments provided by contractors. All workers excluding the unknown ones are averaged.
22. The subjects for the calculation were 144 people in the automobile group and 63 people in light industry group, excluding those for whom food expenses are unknown or who did not answer.
23. In the McDonald's at Gurgaon at the time of the survey, a vegetable burger was 69 rupees and a chicken burger was 85 rupees.
24. The Modi administration has been implementing a campaign to open bank accounts (*Pradhan Mantri Jan Dhan Yojana*= Prime Minister's People Money Scheme) since 2014 to provide modern financial services to farmers and the poor. As a result, in recent years, bank account penetration has risen sharply in India. Prior to this time, factory workers with non-regular employment had a difficult time getting bank accounts. While the barriers are being removed, according to the World Bank, "43% of adults with accounts have never deposited or withdrawn any money within the past year" (http://www.worldbank.org/ja/news/press-release/2015/04/15/massive-drop-in-number-of-unbanked-says-new-report, accessed June 13, 2017). There are cases where the establishment of a bank account is not necessarily associated with savings and settlements.
25. For example, one remittance agent in village B charges a 100-rupee fee for every 5,000- to 10,000-rupee payment sent.
26. We asked multiple-choice questions, with the choices corresponding to options 1 to 10, as seen in Table 12.

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