

The Emergence of the New Economic Space in India

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Abstract This paper examines methodological issues in research on India's spatial structure and seeks to offer a perspective on the new economic space emerging in India, focusing on the mega-region concept. First, the author studied the research methodology behind important studies investigating the spatial structure and regional developments in China and India, then examined Yada's regional structure theory, based on which a conceptual framework is constructed for understanding modern India's spatial structure, which must be approached using both the regional composition model and the core-periphery model. In particular, from a mega-regional perspective, it is necessary to focus on the role that clusters in the latter model play in the economy of modern India.

Key words new economic space, spatial structure, regional disparity, core periphery model, mega-region, India

I. The New Economic Space Emerging in India

Recent economic growth in India has brought rapid spatial changes, such as advancing urbanization, metropolis development, and industrial area formation.¹ These changes are dramatic from the circumstances of India prior to the economic liberalization of 1991. In particular, metropolises that have driven economic growth and have rapidly expanded have become a symbol of development in contemporary India. However, a closer look reveals landscapes that symbolize poverty, such as slums, indicating the seriousness of the disunion and disparity in Indian society. In addition, progress in developing infrastructure such as electricity, information and communication, roads, water supply, and sewage systems, closer relationships between rural and urban areas, changes in the urban system, enhancement of the urban network, and growing regional disparities in the economy are also considered important spatial changes, although they are less obvious in the landscape.

In this paper, we view these various spatial changes as a series of events occurring in the national space of India because of economic development and the integration and restructuring of the national economic space. Therefore, in order to explain the structural changes and issues associated with the growth mechanism and the growth of the modern Indian economy, such a spatial approach is necessary.

Since economic liberalization, capital movements have become active, and international and domestic labor force movement has increased in India because of globalization

and the expansion of the domestic market. In addition, the flows of people, goods, and information have been steadily increasing as a result of the development of transportation and communication infrastructure. Such increases in production factor mobility suggest that the spatial structure of India is changing tremendously. In a broader sense, it is a transition from that of a developing country with a dual rural-urban structure to that of a developed country with a centripetal core-periphery structure. This emerging spatial structure is the new economic space referred to above. As the traditional structure of rural and urban divides gradually disappears, the dissolved line between rural and urban areas can also be regarded as a phenomenon occurring under the change in spatial structure.

There are other reasons why we should focus on space. First, regional diversity in India is significant because the socioeconomic situation, including culture, varies greatly by region. Associated with this is the distinctive regionalism under the federation system based on states and union territories. The role of states and union territories is predisposed to increase with economic development under decentralization.² Second, as in China, further increases in regional disparity with economic development may increase dissatisfaction in regions that are left underdeveloped, escalating it to a critical political issue. Third, foreign capital firms, such as multinational companies, who boost economic activities as economic globalization occurs, are beginning to take a stronger interest in local areas (e.g. states) as their business base. Fourth, the relationship between space and society under modern capitalism is significant. As seen in urban and industrial estate development, industrial development and market

creation depend on the creation of built environments, such as infrastructure. This tendency strengthens when spatial change is industrialized and becomes a means of accumulating capital, driving changes in the economy. Furthermore, when changes in space and the economy are combined, various social issues arise, such as urban problems, environmental problems, and poverty.

Therefore, we focus on the rise of new economic space in India. As studies in this area are insufficient, we believe that an examination from a new perspective will help us rethink the development of modern India in a novel manner. This type of national spatial structure and its changes are particularly important issues to consider when conducting an area study of India, which is a large country with great regional diversity as well as a federation with strong regionalist characteristics.

The purpose of this paper, therefore, is to investigate the methodological issues in research on India's spatial structure to provide a perspective on the new economic space emerging in India, focusing on the concept of the mega-region.

II. Understanding Spatial Structure

1. What is spatial structure?

The term "spatial structure" used here does not merely refer to regional differences and diversity, but also to various spatial characteristics and their mutual relationships, as well as the factors and mechanisms that drive the formation of regional differences. In the field of geography, there is a strong interest in spatial structure, primarily among those who study economic geography. Kawabata (2008) lists the following three items as primary research agendas in economic geography: (1) understanding the spatial structure (i.e., the pattern model) found in spaces and areas, (2) understanding the mechanism by which spaces and areas become structured, and (3) studying spatial policies to eliminate regional and spatial disparities caused by industrial location. These three items represent the main research areas considered in our spatial structure study. Regional structure theory,³ which was developed mainly by Toshifumi Yada, significantly overlaps our spatial structure study in the sense that it presents an analytical framework of capital siting activities → regional and spatial structures → regional problems (Yada, 1990). Therefore, the term "spatial structure" used here also refers to the regional structure discussed in regional structure theory.

To date, the most common method for interpreting spatial structure has been to view space dichotomously as

comprising two types of settlements (or local communities), rural and urban areas. Rural areas, which emerged when the establishment of agriculture enabled people to permanently locate, are considered different spaces from urban areas. Urban areas, which were the centers of rule and trade, mainly exploited rural areas. However, in modern times, urban areas have achieved autonomous development through industrialization and attained dramatic growth, but even after this recent expansion of urban areas, clear differences remain between the two area types in all aspects of life (e.g., occupations, environment, society, and culture). Therefore, the rural–urban dichotomy (which views both rural and urban areas as typical local communities) and the rural–urban continuum theory (which is a modified version of the rural–urban dichotomy) have become influential. Viewpoints that focus on rural–urban conflict and uneven development have also emerged.

However, since the development of urban areas and the subsumption of rural areas by urbanization, rural areas have undergone substantial changes while losing autonomy. Urban areas have also diversified, becoming more hierarchized and networked. Urban areas exist in various stages of development, ranging from large metropolises to small cities, and the connection between rural and urban areas has become complex. Therefore, in Japan, "as general urbanization progresses, while the seriousness of diverse and complex regional disparities increases, it has become difficult to fully understand the structure of and changes in local communities with the dichotomous ideal types of rural–urban relationships" (Japan Association of Regional and Community Studies, 2000).

However, unlike developed countries, the rural–urban framework remains useful today in understanding some aspects of spatial structure in developing countries because the aspects of the rural–urban dichotomy that are most notable in a non-monetary economy centered on agriculture with strong self-sufficiency remain prominent in developing countries. Current rural problems are defined not only by internal factors of rural areas but also by external factors, such as the political economy and globalization at the national level. Therefore, a new approach to spatial structure that goes beyond the rural–urban framework is required. To do so, we examine relevant case studies in developing countries, including India.

2. Studies of the spatial structures of developing countries

Empirical research on the spatial structures of economies in developing countries has recently been increas-

ing. These studies are often influenced by Paul Krugman's new economic geography⁴ and tend to focus on geographic concentration and economic activity clusters. Here, we focus on Kato (2003), who studied China, and Chakravorty and Lall (2007), who studied India.

Kato (2003) listed the following four factors as drivers of regional development: The first factor is the initial requirements, such as the geographical conditions. This study presents examples of contrasting areas—a coastal area that is easily accessible vs. an inland area that is not as accessible, one with fertile land suitable for agricultural development vs. a mountainous area with less arable lands, and an area with rich mineral resources vs. one with poor mineral resources—and estimates development in the former examples vs. lack of development in the latter ones. The second factor is the mechanism of concentration and agglomeration. After listing centripetal forces (Marshall's external economies, especially market size, depth of the labor market, and ease of information exchange) and centrifugal forces (e.g., land and natural resources) acting on geographic concentration, Kato focuses on Krugman's localization model, which theorizes a mechanism of regional development based on these forces. Kato explains the mechanism by which production becomes concentrated in a specific region through the interaction of three features, including increasing returns, transportation costs, and demand. The third factor is regional policy. Regional development policies by the central government externally affect development mechanisms by accelerating or suppressing them. The realization of balanced regional development has often become the objective of regional policy. The local government's development strategies play an important role in addition to those of the central government. The fourth factor is globalization. In particular, there is a huge difference in regional development between areas with high foreign direct investment (FDI) and those with low FDI. Based on this, this study focuses on the international division of the labor system in East Asia and concludes that it has important implications for regional development in China.

Chakravorty and Lall (2007) studied India to explain industrialization as a result of two factors: the market and the state. They approach the market primarily from Krugman's new economic geography and determine the drivers for industrial investment concentration from the perspectives of market access, transportation costs, and the agglomeration economy (i.e., economies of regional centralization and urbanization). The study then uses a political economy approach and discusses government interventions in the market, typified by regional develop-

ment. To determine industrial location, it also focuses on capital, labor, infrastructure, regulations (e.g., incentives and restrictions), and geographical requirements (e.g., coastal cities and metropolises). Based on these, the authors note that while there is a strong tendency in modern India for industries to concentrate in existing large-scale industrial areas, they also tend to spread within these areas.

3. Regional structure theory framework

There are many commonalities between these two studies in their emphasis on the market and the state, that is, the concentration and agglomeration mechanism and the role of government. From a slightly different viewpoint, regional structure theory systematically constructs a framework for spatial structure studies from the standpoint of economic geography. This theory, which has contributed to understanding the spatial structure of Japan after the period of high economic growth, seems useful for current developing countries, such as India. Yada (1990) assumed that the regional structure of the national economy arises from the industrial structure and explained regional structure from four perspectives (i.e., industrial arrangement, regional economy, national land use, and regional policy) on the basis of "international division of labor = industrial arrangement." Here, the regional structure of the national economy refers to a system for the regional division of labor of a national economy developed over a long history using the land of one country as the foundation and the organic subsumption for the regional division of labor in the global economy. Because the regional division of labor is a regional reflection of the social division of labor, the regional structure is determined by the social division of labor system or, in this case, the industrial structure.

The framework of regional structure theory, which is based on the regional division of labor system, has great explanatory power over a wide range; furthermore, it can be applied to empirical studies on overseas regions. However, additional considerations are necessary when applying it to the developing country of India. We consider this point next.

III. Methods for Understanding the Spatial Structure of Modern India

1. Studies of the spatial structure of India as area studies

Sato (1994) produced valuable results on the spatial structure of the Indian economy as an area study. Here,

we briefly focus on the research method of this study and clarify its takeaways.

This study approached economic phenomena from the perspective of area studies. It is characterized by the fact that, in contrast to economic analysis, which examines the economy of one country solely as the aggregate of various relationships between sectors, it tries to illustrate the relationship between various sectors using spatial or geographical relations.

While it is important to study the space of the Indian subcontinent because of its vast national land and large population, Sato (1994) argues that we should not lose sight of commonalities and relationships by focusing exclusively on its diversity. The notion that India's economy is integrated and that regionality and regional disparity of the economy arise over the course of developing such integrity is important in relation to the development of the regional division of labor. Therefore, Sato stresses that India's economy should always be considered at two basic regional scales—India as a whole and by region (i.e., states and union territories).

Specifically, the study examines initial conditions from perspectives such as nature, history, culture, the development of regional policy, and regional disparity between states and union territories, and then analyzes how regions are linked in the Indian economy based on four sectors: industry, agriculture, labor force movement, and public finance (i.e., state and union territory finance). What Sato (1994) calls “the regional structure of economy” is the aggregation of regional relationships and the mutual relationships between sectors created in this manner. Thus, there are many commonalities with the aforementioned regional structure theory in terms of focus on integrity at the national economy level and emphasizing industrial development and regional policy. However, unlike regional structure theory, Sato's version does not focus on the universal issue of the regional structure of capitalism; therefore, there is no strong inclination to systematically pursue the formation mechanism of India's economic space; rather, it conducts an area study that considers India's situation by paying attention to agriculture, urbanization, and the labor force movement.

Based on these analyses, the study sums up the regional structure of the Indian economy from three spatially contrasting angles (inland India vs. coastal India, eastern India vs. western India, and southern India vs. northern India) and focuses on the overall picture of modern India's spatial structure. Omitting the details, which are covered in Okahashi (2015), we direct our attention to a hypothetical regional comparison covering South Asia.

Considering regional models based on economic and social structure perspectives (i.e., the Punjab, Bihar–Bangladesh, and Kerala–Sri Lanka models) as described by Timberg (1980–1981), the study deems that the urbanization method in each model varies: The Punjab model is a model with independent suburban cities, whereas the Bihar–Bangladesh model has an overconcentration. The hypothesis, which takes into account the relationship between socioeconomic and spatial structures, makes an important point that is applicable to the regional reproduction system discussed in this paper.

Sato (1994) also discusses the development of post-economic liberalization, predicting that as a consequence of the open economy, FDI or technical collaboration with foreign companies seeks economies of concentration and converge on existing central cities. Thus, this study was the first to focus on the rise of the economic role of metropolitan cities, particularly in Delhi. This can be considered a foresight also applicable to the mega-region theory described later.

2. Framework for understanding the spatial structure of modern India

Based on our review of research to date, we can state that the concentration and agglomeration emphasized in the new economic geography and the industrial arrangement (industrial location and regional circulation) as well as the regional economy (industrial and economic areas) emphasized under regional structure theory have important implications for understanding India's spatial structure at the national level. In addition, a consideration of regional policy as a political process, a matter to which both the new economic geography and regional structure theory pay attention, cannot be ignored. Studies such as Sato (1994) suggest the importance of political processes in regional policy on the following three points: (1) clusters of politically protected small industries, (2) regional reproduction systems that have been historically centered around the agricultural sector under each regional condition and are still functioning; and (3) economies outside the metropolis clusters that are becoming increasingly important as social capital develops. Special consideration is necessary in studying India's spatial structure, particularly in terms of (1), given that regional structure theory emphasizes large-scale industries among the key industries.

Figure 1 illustrates our framework for considering these issues and understanding the spatial structure of modern India. Here, the spatial structure is understood from the following two aspects: the regional reproduction

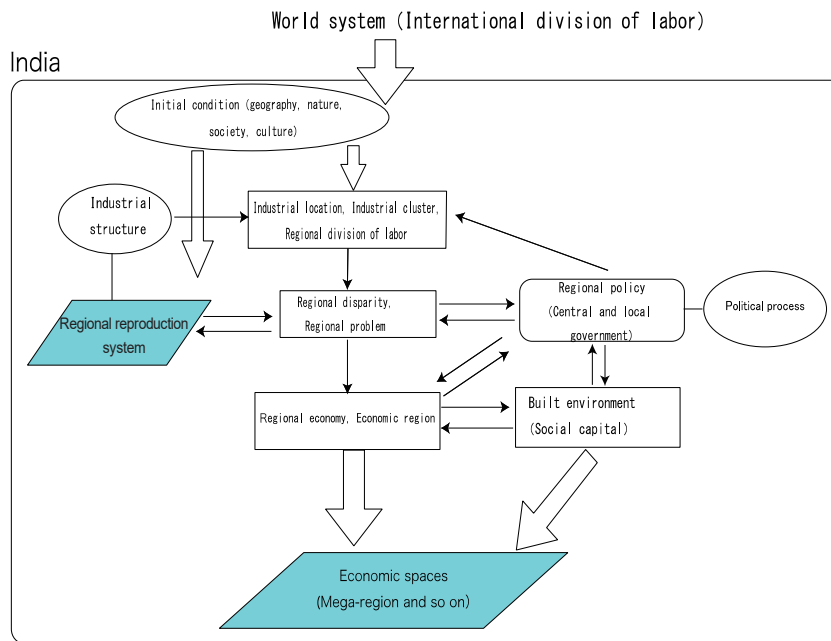


Figure 1. Conceptual framework of India's spatial structure
Source: Okahashi (2012).

system (regional composition), which has been historically formed with initial conditions as a foundation, such as geography, nature, society, and culture. The details are described later, but the regional reproduction system is characteristic in that it has clearly retained local identities in relation to regional conditions. Another aspect is the economic spatial structure (new economic space), which has rapidly become influential as the economy has developed. This is a national-scale spatial organization in which individual regions are ordered under economic principles, such as the core-periphery structure. On the one hand, this economic spatial structure can be understood as the outcome of a series of regional economic developments—from industrial arrangements to the formation of the regional economy—on the basis of industrial structure similar to regional structure theory. Concurrently, the impact of government interventions through political processes, such as regional policies that guide (regulate) industrial location, aim to resolve regional disparities and issues, and significantly affect the formation of built environments, such as infrastructure, are also critical. The concentration and agglomeration mechanism for economic activities emphasized in the new economic geography then operates under the combination of these two processes and forms spaces such as metropolises and mega-regions that drive economic development. In reality, we can regard these two regional reproduction systems and economic spatial structures as overlapping and conflicting with each other in each region.

IV. The Spatial Structure of Modern India: An Explanatory Model

The next task is to define the mechanism by which the spatial structure of modern India is formed. Although we have already discussed this point in part, we would like to apply two explanatory models and consider a hypothetical mechanism for basic changes in spatial structure. The explanatory models discussed here are the regional composition and core-periphery models.

1. Regional composition model

The regional composition model, which views regional differences as developed vs. developing regionality by presuming types of reproduction structures based on agriculture, has evolved independently, especially in agricultural economics in Japan. Its origin lies in Yamada (1934), who investigated the reproductive structure of Japanese capitalism. While Yamada lists four models, the key is the comparison of the Tohoku model and the Kinki model. It can be regarded as “a competition between the semi-serfdom farming Tohoku model that has serfdom-like stable workers and the usury-like parasitic landowner system Kinki model that depends on the semi-serfdom rent paid by tenant farmers” (Yamada, 1934, p. 197). Yamada also states that, “whereas there is a tendency in Tohoku for reproductions to be carried out within rural areas, the semi-serf system reemerges and is strengthened, where the lands all go to large semi-serfdom landlords, (...) there is a tendency in Kinki for reproductions to be

carried out in connection with agriculture with urban areas, agriculture is ruined in that process, the lands are subdivided, and farmers became slaves to the usury-like parasitic landowner system” (Yamanda, 1934, p. 197). Critical here is the argument that the fact that the reproduction structure differs by region affects productivity and production relationships in agriculture.

This argument is probably effective in a situation where domestic markets are not integrated nationally, and the double structure of rural and urban areas is prominent. It is easy to imagine that the regional reproduction structure varies between the “Hindi belt” and Punjab or between northern India and southern India. When this point is stressed, the regional composition model approach is effective. It can consider arguments such as a spatial comparison using three factors by Sato (1994) and the development model by Timberg (1980–1981) based on the socioeconomic structure mentioned earlier.

Here, we would introduce the case of Punjab,⁵ which has achieved relative economic success. The foundation for development in Punjab is the vitality of agriculture, finally realized when a series of factors were combined with geographical location and environmental factors. The Indus–Ganges Basin, which is located in this region, is relatively dry and has historically had a relatively small population. Agricultural development was advanced by British engineers who noticed these issues and systematically colonized the area after using rivers flowing out of the Himalayas and establishing irrigation using large water facilities. The government continued to develop dams to help both hydropower generation and irrigation, even after independence, expanding the irrigated area. Because many farmers were middle-class and relatively well-off, purchases of agricultural machinery and consumer durables increased as agricultural production grew through the Green Revolution. Such purchasing power has become a major driver for developing industries with high technical standards and has resulted in the growth of regional cities through industrialization. This industrialization, which was unrelated to government investment, underwent autonomous development led by small and medium-sized companies. Secondary drivers included distance to the capital and consumer markets in Delhi, as well as abundant electricity from hydropower generation in the Himalayan foothills. As a result, urban areas also benefited from agricultural modernization. Commercial cities with artisanal work traditions flourished along the Grand Trunk Road (GT Road), a key road since ancient times that run east to west in northern India. On this foundation, durable goods ranging from agricultural

machinery and bicycles to sewing machines and televisions began to be produced. In the Punjab model, the connection between rural and urban areas in reproduction and regional economy circulation between agriculture and industry are clearly observed. Punjab has this type of regional reproduction system as the foundation of its economic development; however, we see that it has been subsumed into the mega-region, which is a wide area of economic space centered on metropolises that are undergoing new development alongside structural changes.

In Japan, Isobe (1985) summed up the regional composition model as follows: “if we think we have successfully democratized family relationships and liberalized labor mobility by discarding the pre-war landowner system that supported regional composition as a model defined by stages and further discarding patriarchy as an internal contradiction to the logic of subsistence farming under that system, the logic that these so-called ‘non-economic barriers’ prevent capitalist economic law from being realized and create regional differences there (or developmental stage differences) will no longer hold true.” Therefore, the significance of the regional composition model as an explanatory model for spatial structure has greatly receded in Japan. In modern India, it is first necessary to fully consider the aforementioned non-economic barriers. As an example, there is a developmental difference between northern India and southern India noted by Todd (1999), who discussed the development of society based on family types. He argues that two family systems that predominate in India—the exogamous community family in the north and the asymmetrical community family in the south—affect the status level of women (high in the south and low in the north) and have created a difference in marriage age and the literacy rate among women as well as population growth. As seen in this example, it is necessary to consider the regional reproduction system for India in the sense that it is different from the Punjab model.

2. Core-periphery model: the significance of mega-region development

In contrast, the core-periphery model assumes the national integration of domestic markets owing to economic development. It views the traditional rural–urban double structure as transitioning to a centripetal structure of the core-periphery surrounding urban areas. While Japan seems to have already transitioned to such a structure, modern India is still undergoing this transition process. There, flows of production factors such as labor and capital are activated as globalization and domestic market expansion as well as integration occur. While the

flow of labor increases from underdeveloped to developed areas regardless of whether it is domestic or foreign, the development of transportation and communication infrastructure weakens spatial barriers and increases the flow of goods and information. Meanwhile, FDI has started to have a large effect on regional development as it becomes integrated into the international division of the labor system. Moreover, through uneven distribution to areas such as metropolises, investments will further strengthen the core-periphery model.

The question of whether the formation process of the core-periphery structure is a stage that leads to interregional balance or imbalance has been widely discussed. For example, Friedman's core-periphery model argues that although regional disparity increases during the early stages of industrialization and regional imbalance becomes prominent as the line between the core and the periphery becomes clear, interregional balance is gradually achieved as industrialization progresses and urban areas develop (Friedman, 1966). We seek to determine whether India's current situation and future can be explained using such a model. Because clusters around metropolises attract other clusters, Myrdal (1957)'s cumulative causation seems to have better validity. If this is the case, it is probably necessary to examine the mechanism of clustering that occurs around metropolises.

In modern India, we can observe spatial changes, such as the rapid development of metropolises, development of industrial clusters, and strengthened rural-urban links. Suburban spaces are also expanding rapidly because of the development of industrial clusters and an increase in the middle-class population. Based on this situation, it seems more appropriate to regard a wider area that combines urban clusters and industrial clusters around metropolises, rather than solely the metropolises, as the "core" units that drive economic growth. These spaces are the mega-regions that we focus on here.

Florida (2008), an early observer of mega-regions, proposed them as new economic units that drive global economic growth. Florida perceives the current state of the world as follows: Because globalization degrades the meaning of national borders, capital spreads worldwide seeking a maximum return, while the creative and productive labor force is globally relocated. This implies that spatial units that extend beyond existing administrative and national borders will become increasingly important. A mega-region is a multi-core large cluster created by integrated urban areas and surrounding suburban areas. Labor force and capital are reallocated at a very low cost. The region is formed not only by having a large popula-

tion but also when critical bases, such as those for innovation, production, and consumer markets, cluster together.

Florida's study conducted spatial detection of mega-regions. Focusing on the areas where nighttime light is concentrated, he pointed out the existence and importance of mega-regions that extend beyond the existing administrative and national boundaries. There are two criteria required to qualify as a mega-region: (1) the area contains at least one metropolis or metropolitan area with concentrated light and (2) it has more than \$100 billion worth of light-based regional products (LRPs). Estimating the economic scale based on nighttime light, 40 mega-regions were identified globally. Among them is Delhi-Lahore, which spreads from India to Pakistan. With a population of 121.6 million, this is the largest mega-region in the world by population; however, its LRP is ranked 33rd at \$110 billion. Regions in India that are en route to becoming a mega-region include Mumbai-Pune (population 62 million and LRP of \$60 billion) and Bangalore-Madras (Chennai; population 72 million and LRP of \$50 billion). Despite crossing a national border and the lack of a strong connection between the countries, Delhi-Lahore shows an integrated distribution. This is likely due to the strong ties of the region before India's independence. In comparison, Mumbai-Pune and Bangalore-Madras have lower levels of agglomeration and show somewhat dispersed characteristics.

We provide an overview of these three mega-regions,⁶ defining Punjab-Delhi (hereafter Zone 1) as the three states of Punjab, Haryana, and Delhi, and the union territory of Chandigarh, Mumbai-Pune (hereafter, Zone 2) as the two states of Gujarat and Maharashtra, and Bangalore-Chennai (hereafter Zone 3) as the three states of Tamil Nadu, Kerala, and Karnataka.

Table 1 shows that in terms of size, Zone 2 is the largest at approximately 500,000 square kilometers, followed by Zone 3 with approximately 360,000 square kilometers, while Zone 1 is small at approximately 96,000 square kilometers. On the other hand, in terms of population density, Zone 1 is the highest at 737 people per square kilometer, which is nearly twice India's national average of 382. In contrast, the figures for Zones 2 and 3 are 343 and 462 people per square kilometer, respectively, which are close to India's national average. Zone 1 also had the highest urban population rate of 52%, while those of Zones 2 and 3 were approximately 44%. That said, as the urban population rate for all of India is 31%, the levels of urbanization in these zones are generally high.

This indicates that Zone 1, which is the smallest in size, seems to have the substance to be a mega-region, as it has

Table 1. Mega-regions in India

	Area (km ²)	Population (2011)	Population density (2011)	Rate of urban population (2011)	Population increase rate (2001–2011)	Literacy rate (2011)	NSDP (2009) Rs. in Lakh	Per capita income (2009) Rs.	Per capita Foreign direct investment (January, 2000~September, 2005) Rs. in Crore
Punjab	50,362	27,704,236	550.1	37.5	13.7	68.5	12,411,603	44,800	1,215.14
Chandigarh	114	1,054,686	9,251.6	97.2	17.1	76.8	1,241,796	117,741	184.14
Haryana	44,212	25,353,081	573.4	34.8	19.9	66.7	19,576,208	77,214	995.04
Delhi	1,483	16,753,235	11,296.9	97.5	21.0	76.2	15,781,734	94,201	8,873.34
Zone 1 total	96,171	70,865,238	736.9	51.6	17.6	69.8	49,011,341	69,161	11,267.66
Gujarat	196,024	60,383,628	308.0	42.6	19.2	69.5	28,393,010	47,021	4,461.70
Maharashtra	307,577	112,372,972	365.3	45.2	16.0	73.4	81,789,117	72,784	13,738.67
Zone 2 total	503,601	172,756,600	343.0	44.3	17.1	72.0	110,182,127	63,779	18,200.37
Tamil Nadu	130,058	72,138,958	554.7	48.4	15.6	72.7	31,294,809	43,381	7,608.83
Karnataka	191,791	61,130,704	318.7	38.6	15.7	67.1	21,935,763	35,883	5,916.75
Kerala	38,863	33,387,677	859.1	47.7	4.9	84.6	20,248,657	60,647	1,006.45
Zone 3 total	360,712	166,657,339	462.0	44.7	13.3	73.0	73,479,229	44,090	14,532.03

Source: Census of India, India Stat.

the highest population density and the highest level of urbanization. In addition, because the cluster area of Zone 1 extends to parts of Uttar Pradesh State and Rajasthan State, the mega-region of Zone 1 becomes even larger if these states are included. On the other hand, Zones 2 and 3 include a wide range of looser clusters because of the state-based unit; thus, there is a problem in viewing these units as real mega-regions.

The population growth rate in Zone 3 in southern India is low (13.3%), while those in Zones 1 and 2 are closer to the overall population growth rate for India. Meanwhile, Zone 1 had the highest per-capita income, followed by Zone 2 and Zone 3. In terms of the amount of approved FDI (2000 to 2005), the regional concentration of investment in these three zones is significant; together, they accounted for 66% of the total FDI for India. Thus, FDI has a significant impact on the development of regional economies. Although the absolute amount of FDI is highest in Zone 2, followed by Zones 3 and 1, the per-capita FDI is substantially higher in Zone 1, at 1.8 times and 1.5 times the figures in Zones 3 and 2, respectively. Thus, Zone 1 has a high level of clustering in this sense as well.

The Delhi–Mumbai Industrial Corridor (DMIC) project is currently underway as a joint regional development project between India and Japan. It plans to lay a freight railway between Delhi and Mumbai and develop infrastructure such as industrial estates, logistics bases, power stations, residences, and commercial facilities around the railway, mainly through private investment. This project will connect the mega-regions of Zones 1 and 2 and, as a result, not only strengthen the flow between these mega-regions but also develop the areas along the railway

between the zones. Thus, a massive clustered area will be created in Western India that is expected to further widen the disparity with Eastern India.

According to Sassen (2010), a mega-region may have the following unique structure and functions: It includes an economy of urbanization resulting from different industries clustering together as well as that of regional concentration (localization) resulting from industrial clusters of single industries. In addition to agglomeration economies, there are benefits to geographical dispersion. In addition to establishing advanced departments dependent on agglomeration economies, companies establish production bases within mega-regions and build efficient divisions of labor by cutting costs for land acquisition and labor. The private sector, which plays a central role in industrialization after economic liberalization, is increasingly inclined to locate themselves in this type of mega-region. Therefore, mega-regions will continue to grow in the future, and regional disparities in the country are expected to worsen.

Mega-regions also affect underdeveloped areas. We introduce the case of Uttarakhand State in northern India, part of which has been subsumed into a mega-region.⁷ As it mostly consists of mountainous areas, this state was an underdeveloped region centered on subsistence agriculture. The region was characterized by a “money-order economy,” in which people took up migrant worker-style employment outside the region because employment opportunities were scarce, from which they sent money home.

After the independence of Uttaranchal State in 2000 (the state was renamed Uttarakhand in 2007), industrial-

ization progressed rapidly under economic liberalization in the region because of the establishment of production bases aiming to benefit from geographical dispersion. As detailed in Tomozawa (2014), the central government provided preferential treatment to Uttarakhand as a special category state and implemented an industrial policy for the Himalayan mountain region (Special Package of Industrial Incentive for the States of Himachal Pradesh and Uttarakhand, 2003), which had a significant impact. As a result, large-scale industrial development occurred in plateau areas with favorable locational factors. The intrastate gross production grew by 160%, and the percentage of secondary industries substantially and rapidly increased from 22.3% to 31.8% between fiscal years 2000 and 2006.

As this case shows, industrialization also extends to underdeveloped areas. However, it is only partial, being restricted to the plateau areas within the state, while there has been no significant change in the mountainous regions. Thus, disparity is growing in underdeveloped areas in India. Many Hindi Belt states share the same situation in mountainous regions without industrialization; therefore, balanced development of national land is likely to become a national priority.

V. Conclusion

The rapid economic growth after economic liberalization in 1991 caused a large-scale reorganization of spatial structure on a nationwide scale in India. This paper examines methodological issues in research on India's spatial structure and provides a perspective on regional development, focusing on the mega-region concept introduced by R. Florida.

First, I examined the research methodology behind previous studies in which the spatial structure and regional developments were investigated in China, India, and Japan. We can state that the factors of concentration and agglomeration emphasized in the new economic geography and industrial arrangement, as well as that of regional economy emphasized under regional structure theory, have important implications for understanding India's spatial structure at the national level. Considering these key points, I propose my own research framework for India's spatial structure, pointing out that the spatial structure of modern India needs to be approached using both the regional composition model and the core-periphery model.

In particular, as represented by mega-regions, it is necessary to focus on clusters in the core-periphery model, as

they play a major role in the economy of modern India. Because economic regional disparities are wide and the development of transportation infrastructure has lagged, the significance of the contributions of the built environment to economic development is extremely large. It is driven by metropolises as urban agglomerations, and such urban areas create new consumer markets centered on the middle class and generate innovations that become the foundation for development. Therefore, clusters attract more clusters. Such cumulative accumulation not only expands the existing metropolises but also prompts the emergence of a regional network of industrial clusters formed around multiple metropolises (urban agglomeration) and increases its significance because of regional division of labor and circulation in the regional economy. In this manner, mega-regions will become a substantial new economic space. Meanwhile, regions located away from mega-regions face stagnation, increasing regional disparity, and immobilization.

Acknowledgments

This study was partly supported by a Grant-in-Aid for Scientific Research(A) (Research Representative: Hidenori Okahashi, Hiroshima University) conducted in 2014–2016. Some of the parts were presented at the 2015 Spring Conference of the Association of Japanese Geographers. This paper is a revised version of Okahashi (2015).

Note

1. For an outcome that empirically examines this point through fieldwork, see Okahashi (2008).
2. Kennedy (2013) empirically examines this point based on the concept of state spatial rescaling.
3. Regional structure theory, originally proposed by Toshifumi Yada in the early 1970s, had a large impact on economic geography in Japan.
4. See Krugman (1991) and Krugman (1995) regarding this new economic geography.
5. The description of the Punjab model here is mainly based on Durand-Dastès (1995).
6. See Okahashi (2012). Although the range of mega-regions should be determined in the district, we used a method that sums the range by state and union territory for simplification. For Delhi–Lahore, we looked at Punjab–Delhi, which is on the Indian side and where the majority of the cluster is located. See Kuwatsuka (2018), who provides a detailed analysis of spatial structure using district-wise data from India.
7. See Okahashi (2014) for further details.

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