

Metadata of the chapter that will be visualized in SpringerLink

Book Title	Smart Technologies and Innovations in Design for Control of Technological Processes and Objects: Economy and Production	
Series Title		
Chapter Title	Spatial Development Concept of the Far East of Russia	
Copyright Year	2020	
Copyright HolderName	Springer Nature Switzerland AG	
Corresponding Author	Family Name	Andreev
	Particle	
	Given Name	V. A.
	Prefix	
	Suffix	
	Role	
	Division	
	Organization	Vladivostok State University of Economics and Service
	Address	Vladivostok, Russia
	Email	andreev_va@inbox.ru
Author	Family Name	Arnaut
	Particle	
	Given Name	M. N.
	Prefix	
	Suffix	
	Role	
	Division	
	Organization	Vladivostok State University of Economics and Service
	Address	Vladivostok, Russia
	Email	
Author	Family Name	Sultanova
	Particle	
	Given Name	E. V.
	Prefix	
	Suffix	
	Role	
	Division	
	Organization	Vladivostok State University of Economics and Service
	Address	Vladivostok, Russia
	Email	
Abstract	Studied processes influencing a spatial development of the macro region the Russian Far East in a mid-term period. Analyzed problems of the current allocation structure of the economy and its accompanying systems of the settling. Considered parameters of a spatial framework, which contains the main elements - points of accelerated growth, a system of networking links facilitating their integration, and linear vectors (directions) of development. Made a conclusion regarding economic macro units - the areas of advanced	

development that set economic basis of a spatial framework along with largest investment projects that, through networking, contribute to formation of the over whole economic space in the Russian Far East. Made an assumption about emergence of territorial industrial complexes with a new industrial specialization connected to implementation of large-scale investment projects within the boundaries of the territories of advanced development and in the territories referred to the free port of Vladivostok. Development of the territorial industrial complexes contributes to setting of polycentric agglomeration structures in the zones adjacent to the transportation corridors. This, in a long-term view, allows eliminate the disproportion of the spatial distribution of the economy activities and its associated residential structures.

Keywords
(separated by '-')

Spatial economy - The Russian Far East - Economic macro unit - Agglomeration effect



Spatial Development Concept of the Far East of Russia

V. A. Andreev^(✉), M. N. Arnaut, and E. V. Sultanova

Vladivostok State University of Economics and Service, Vladivostok, Russia
andreev_va@inbox.ru

Abstract. Studied processes influencing a spatial development of the macro region the Russian Far East in a mid-term period. Analyzed problems of the current allocation structure of the economy and its accompanying systems of the settling. Considered parameters of a spatial framework, which contains the main elements - points of accelerated growth, a system of networking links facilitating their integration, and linear vectors (directions) of development. Made a conclusion regarding economic macro units - the areas of advanced development that set economic basis of a spatial framework along with largest investment projects that, through networking, contribute to formation of the over whole economic space in the Russian Far East. Made an assumption about emergence of territorial industrial complexes with a new industrial specialization connected to implementation of large-scale investment projects within the boundaries of the territories of advanced development and in the territories referred to the free port of Vladivostok. Development of the territorial industrial complexes contributes to setting of polycentric agglomeration structures in the zones adjacent to the transportation corridors. This, in a long-term view, allows eliminate the disproportion of the spatial distribution of the economy activities and its associated residential structures.

AQ1

Keywords: Spatial economy · The Russian Far East · Economic macro unit · Agglomeration effect

1 Introduction

Strategic goal of spatial development in the Russian Far East is identification and support of the economy growth spots, which to facilitate the agglomeration effect, influence emergence process of the population settling, and determine the residential areas location and limits within the region. Key processes that influence the emergence of a spatial conceptual model of the macro region until 2025 are the next:

- (1) implementation of large-scale investment projects within the territories of advanced development and the territories classified as the free port of Vladivostok,
- (2) realization of the cross-border intermodal projects and largest development projects such are the Russian Island and the Bolshoy Ussuriysky Island, and cities, e.g. Komsomolsk-on-Amur, Svobodny, Tsiolkovskiy.

These projects set a pre-condition for expansion of the settlement system accompanying the economic activity zones and contribute to development of transport and engineering infrastructure. In order to form a balanced model of spatial development, the Federal government contributes assistance in establishing links between the points of economic growth in the Russian Far East regions, which set a precondition for emergence of a unified economic model.

2 Problem Statement

Analysis of the economy system and existing spatial framework along with a system of settlement in the Russian's Far East regions indicates the following main problems:

- (a) regional imbalance of the existing economy allocation caused by uneven distribution of population and labor resources in the provinces of the Russian Far East, which occur the problem of professional unemployment in depressed territories, and, on the other hand, make a shortage of qualified specialists in the points of economic growth;
- (b) poor transportation and energy infrastructure make low attractiveness of the region for investments and economic activities. This cause unbalanced nature of the spatial development, when growth points and the associated them settlement system are concentrated mainly in a fewer economic and geographical zones of the south of Primorye and the Amur region, and the economic development belt of cities Khabarovsk and Komsomolsk-on-Amur.
- (c) disparity of population concentration (also mean a labor force) and the rate of economic development between the bordering areas of the Russian Far East and the provinces of the North-East of China. Taking into view increasing competition within the North-East Asia, the imbalance poses a threat to the innovation and technological lagging, and consequently, the disintegration of Russian Far East off the economic space of North-East Asia is likely.

To study parameters of a spatial development model of the Russian Far East, it is necessary to identify a functional role and characteristics of its key elements and justify the composition, territorial allocation and sectoral specialization of prospective territories (macro units) that make a meaningful contribution to economic growth and improvement of life quality of the population.

An optimal model of spatial development of the Russian Far East should resolve the next issues:

- (a) elimination of imbalances of the existing spatial system due to economically sound allocation of the industry and setting conditions for their innovative and infrastructural development;
- (b) activation of inter-regional and cross-border ties taking into account the advantageous economic and geographical position of the macro region, concentration of labor resources, the commodities and transport flows;
- (c) diversification of economic activities in the mono-functional (sole specialization) municipalities to prevent degrading the social tensions;

- (d) set a comfortable condition for settlements and consolidation of a qualified labor source through allocation of residential structures, associated to zones of economy and investments activity, and the development of transport, energy and engineering infrastructure.

Concept of spatial development of the Russian Far East reviewed in context of the phenomenon of agglomeration effects (agglomeration economy). Used the method of structural and functional analysis of basic elements of the spatial structure of the macro region. Analyzed the next spheres:

- (1) the economy system as a part of the spatial framework (points of the accelerated growth which generate the economic agglomeration effect);
- (2) the settlement areas related to the economic activities;
- (3) linear infrastructure objects, especially transportation ways, which set vectors of spatial development;
- (4) a system of networking interaction of economic entities, which integrates elements of the spatial framework into a single one.

3 Analysis of Studies and Publications on the Subject

The process of spatial development is not spontaneous. It generates the agglomeration effect, which occurs in settlement zones due to expansion of economic relations. Emergency of a residential subsystem of spatial framework considered as a positive external effect of concentration of companies operating in the same industry or engaged in the same activities. The various industries and activities, interacting and expanding, affect a concentration of population in the points where a skilled labor force is required [1, 2]. Thus, a scale of economic growth and the geographical vectors of its development affect parameters of a settlement system and determine its location and borders within a region. Worth to note that the scale effect occurs at the level of economic entities. Centripetal forces forcing industry to concentrate in one region result a three-way interaction of economy's scale, transport costs and a factor of mobility [3]. Accordingly, firms tend to focus production due to economy's scale nearby markets and suppliers due to transport costs, while access to markets and suppliers is better where other firms are concentrated due to the effects of a market volume [4].

The optimum model of spatial development of a region assumes localization of enterprises in certain geographical points and boundaries. It is a justified variant of location taking into account a high level of costs for delivery of products of the specialized industries in the territory of enterprises specialization in some region [5]. Consequently, due to the rational location and concentration of companies, prerequisites for the emergence of integration links are justified. It contributes to optimum of transportation and transaction costs at point of view of the "market potential" theory, which refers to an optimum model of the economic system of a spatial framework under other equal condition, when a company seeks to place its production in geographical areas with good access to market. Worth to note that the well-developed industrial regions have a high market potential, because industrial zones concentrate a

Author Proof

significant population and production, and, therefore, the regions included in this belt, initially have better access to the market [6]. Results of studies represent a fact that concentration of production causes the function of reproduction. Firms set production in regions with good market access, but market access improved consequently in regions where production is concentrated [7, 8].

Model of spatial development of a region considered at point of view of the concept “poles of economic growth”. There is an assumption regarding a dominative economic micro unit that define a nature and content of the competition. Points of economic and investment development considered as “poles” of economic growth. They cause effect of agglomeration when the economy, investments and industries combined into a single complex. The poles of growth, which represented by an entity, or industry, or a complex of industries, have significant agglomeration effect. Further, the growth point transformed into territories and development vectors in a region or country set a macroeconomic framework [9]. Therefore, an important aim of the state policy in sphere of spatial development of regions is stimulation of emergency of “growth poles” and rational management of the directions (development vectors) for their effective expansion.

Setting of growth points allows establishing economic relations with other economic entities in the specialized and related industries, which creates conditions for emergence of innovative or industrial clusters. Stressing a link between the occurrence of cluster structures and competitiveness, Michael Porter notes that the factors of competitive advantages of geographical regions more significant, when companies operating in specific industries concentrated within a single space [10, 11]. Consequently, the theory of competitiveness point to the form of spatial organization of economic activity in a region, which creates the possibility of ensuring competitiveness at the macroeconomic level, or at the level of the global economy. Macro units – “poles of growth” growing and transferring into territorial clusters vary within geographical boundaries within a national territory, and adjacently to the territories of neighboring countries, set preconditions for emergence of international and cross-border clusters. The presence of many interacting zones of economic activity creates opportunities for internal competition between companies and optimizes transaction costs by using a unified transport, logistics, engineering and technological infrastructure [12, 13].

At point of a concept of Michael Enright’s regional clusters, the economic system of spatial framework of a region represented in form of agglomeration of companies specializing in a particular economy or sphere of economic activity. Set of macro units includes a chain of interacting companies of a region, united by a similar production method (technologies), and integrated with large national or international companies. Considering the links between competitiveness of a national economy and the geographic scale of competitive advantages within individual regions, competitive advantages not formed at the level of the global or a national economy, but at the level of regions [14].

System of spatial development of a region observed at point of view of Paul Krugman’s concept of the total causation. The conception assumes the companies are more active in a concentrated economic space. The economic space has also a tendency for agglomeration at points where concentration of enterprises occurs. At position of economic geography, two types of forces influence to a prospective spatial frame.

Centripetal activities move towards agglomeration and centrifugal activities aimed at destroying or limiting the size of agglomerations [15, 16]. In context of this conception, there are prerequisites for three possible models of spatial development of a region:

- (a) a polycentric model, or model of the balanced spatial development, based on appearance of many spots of economic growth, and related to them a wide network of settlement;
- (b) a monocentric model, which based on a single “pole of growth”, for example, agglomeration structure of a large city and the peripheral areas of moderate development;
- (c) a mixed model engaging a number of significant growth points in terms of their scales and characteristics and associated agglomeration structures.

Characteristics of spatial development of a region determined by the geographic concentration of growth points and the strength of their interaction. We can note a number of forms of networking interaction at position of innovative system:

- (1) geographic interaction, where the main factors are location and costs to overcome a distance between enterprises. A rational location provides benefits for the knowledge sharing and efficient process of mutual learning of organizations;
- (2) cognitive interaction as a part of the unified knowledge base and intentions of the main companies to create innovative products and services. Anchor companies are considered as the supporting base for forming a micro unit, and the others depend on them, because they may not perceive and use external sources of knowledge;
- (3) organizational interaction, in which companies move from informal to formal relationships within a hierarchically organized construction of a region;
- (4) institutional interaction when economic actors are subject to same rules and regulations. The rules are described formally subject to the provisions of the law, and informal, taking into account cultural norms and values. They form the mechanisms that provide stable conditions for effective interaction within a spatial mechanism [17, 18]. Consequently, co-building of the network interaction mechanism gives a greater synergetic effect. It appears in strengthening of inter industrial ties, and increase the economic efficiency of territorial location of companies.

4 Concept of Spatial Development

The main objectives of the spatial development of the Russian Far East in mid-term period are the next: elimination of imbalances in allocation of industries and the associated them settlement areas, integrated development of emerging centers of the economy, expansion of the urban environment, primarily adjacent to the state border of the Russian Federation.

The factors contributing to formation of a prospective model of spatial development of the macro region considered as the next:

- (a) formation of a hierarchical network of macro-units – different-scale, rationally located economic agglomerations, which create opportunities for improving producing process in the value added chains;
- (b) inclusion into the economic agglomerations the servicing and innovative enterprises, allowing them gradually improve the production process through transferring of the knowledge;
- (c) formation of stable channels (vectors) of spatial development considering flows of raw materials, commodities and including elements of engineering, energy and transport infrastructure;
- (d) inclusion of companies of a macro region into the added value chains at the national or global level as their innovative competence grows, that creates pre-conditions for emergency of regional and cross-border clusters;
- (e) allocation of the growth points in areas with cost-effective market access that starts transferring the processing industries to the coastal zone, adjacent to ports or places, which provide proximity to markets of consumption, for example, to the border area.

Economic system of the spatial framework of the Russian Far East represents a number of “growth” points within the limits of economic and geographical zones. The results of study indicate a potential for establishing of the next following economic agglomerations:

- (1) in limits of Vladivostok agglomeration which connected cities Vladivostok - Trudovoy - Artem points for economic growth are: industrial complex “Nadezhdinsky”, logistics complex “Yankovsky”, located nearby to the international airport “Knevichi” (Vladivostok), the integrated entertainment complex “Primorye” and the technology park on the Russkiy island. This concentration of anchor companies, along the projects in boundaries of the free port of Vladivostok, perform basis for economic growth in the southern economic and geographical zone of the macro region.
- (2) in the belt of economic development Khabarovsk - Komsomolsk-on-Amur, the growth points are the territories of advanced development “Khabarovsk” and “Komsomolsk” with specialization in the aircraft and shipbuilding, as well as complex projects of development of the territories such are city Komsomolsk-on-Amur and Bolshoy Ussuriysky island. Taking into account the construction of a railway bridge over Amur river at Nizhneleninskoye (Russia) - Tongjiang (China) will prospectively be provided a direct access from the north of Heilongjiang province to the Trans-Siberian railway near the Khabarovsk junction. It rises role of seaport Vanino as a transit port for Chinese goods. In long term, taking into account sustainable transport links, assumed development of a cross – border cluster nearby Khabarovsk (Russia)-Fuyuan (China) with a specialization in transport and logistics services. This belt of economic development, along with the Southern economic and geographical zone, appears as an “entrance gate” in the South of Russian Far East facilitating inflow of foreign investments, innovative technologies and high-quality market services.

- (3) within the Nakhodka territorial development system, based on agglomeration Nakhodka - Wrangel – Livadia the points of growth are projects of extension the port zones and terminals of ports Vostochny, Kozmino, Nakhodka, as well as the project of an oil refinery and petrochemical complex within the boundaries of territory of advanced development “Petrochemical”. Implementation of these projects provides active development of residential structures and engineering infrastructure within the boundaries of Nakhodka city district and Partizansky municipal district.
- (4) in the southern economic and geographical zone of the Amur region, the growth points are the territories of advanced development “Svobodny”, “Belogorsk” and “Priamurskaya”, along the projects of construction the space launching complex near the city of Tsiolkovsky and construction of the natural gas processing and gas chemical industries within the Amur gas chemical cluster. Construction of a road bridge across Amur river nearby Blagoveshchensk (Russia) - Heihe (China) enhances the value of the economic zone Blagoveshchensk - Belogorsk as a major transport and logistics center adjacent the border of China. Prospectively, it is possible to assume development of cross-border cluster within these limits with specialization in the chemical industry, production of the composite materials and agriculture.
- (5) within the boundaries of agglomeration Ussuriysk - Mikhailovka, the growth points are anchor projects in the territory of Mikhailovsky agricultural advanced development complex. It specializes in the agriculture, transport and logistics, warehousing and processing of goods coming from provinces of China. In the area adjacent to this economic agglomeration can be attributed the peripheral areas located close to the border crossings in the settlements Pogranichny and Poltavka.
- (6) in the southern Yakutia economic-geographical zone (Neryungri, Aldan and Olyokma regions) a growth point is priority development area “Southern Yakutia” where under way is the construction of mining and processing complexes “Inaglinsky” and “Denisovskoye” for extraction and processing of coking coal. It represents a large industrial area on basis of hydropower facilities and a complex of industrial plants, which associated with deep processing of natural gas, apatites, coal, iron, uranium ore, and timber processing. This establish conditions for development of the settlement belt in the southern Yakutia engaging cities of Aldan, Neryungri and Tommot. In the central economic and geographical zone of the Republic of Sakha (Yakutia), a growth point is territory of advanced development “Kangalassy Industrial Park” (specialization in chemical production, mechanical engineering, agriculture).
- (7) within boundaries of a territory of advanced development “Bolshoy Kamen” growth point is a project of construction the shipyard “Zvezda”. It is going to be a modern shipbuilding cluster based on the sectoral cooperation between enterprises of the industrial complex, such as “Komsomolsk” and “Khabarovsk”. The shipyard construction project contributes to a large-scale development of housing construction to accommodate qualified specialists, which, in the future, establish conditions for emergency of a large settlement system of city of Bolshoy Kamen. This project is example of development of an inter-regional sectoral structure that

provides interaction of residents of the territories of advanced development of the Far Eastern regions, and set preconditions for a unified economic space in the Far East of Russia.

- (8) the Russian port of Zarubino in Trinity Bay considered as an important point of economic growth in the South of Primorsky Krai and a prospective cross-border transportation and logistics complex at the junction of borders of the Russian Federation, China and North Korea. The project aimed at expansion of the port facilities and berthing capacity of the Zarubino port. In long-term period it represents opportunities for construction of a multifunctional commercial port in the South of Primorsky Krai. It will able establish an entire network of ports within the framework of the free port of Vladivostok, which can actively cooperate to ensure competition in global markets as interconnected and mutually reinforcing links.

Territories of advanced development in remote (isolated) geographical locations, e.g. “Beringovskiy” (Chukotka) and “Nikolaevskiy” (Khabarovsk Krai), are considered as starting points of spatial development, because it has an impact on the emergence of economical agglomeration and lead to creation of sustainable settlement systems within its geographical boundaries. The parameters and boundaries of these growth spots are determined by concentration of economic activity, mainly at coastal zone and the areas adjacent to a fewer transportation routes. These points of growth due to the remote allocation (isolation) represent a closed system; their development is constrained by mono specialization of territories and a lack of sustained integration that may affect low investment and innovation activity of economic entities. To resolve the problem, the government should assist establishing links between the “island” points of growth and the economic agglomerations of the Far Eastern regions, which, in the future, will help to eliminate the imbalance in the spatial distribution of economic activities and the associated residential structures.

The results of the analysis indicate to following vectors (directions) of the spatial development of the Russian Far East:

The direction along the transportation corridor “Primorye-1” as a part of the international route from Harbin and Suifenhe (China) through Grodekovo station (Russia) to the ports of southern Primorye with access to ports in Southeast Asia. This vector connects a unified transport-logistics system, which include ports in the Russian Far East and the railroad route from the station Nakhodka-East, via border station Grodekovo to Suifenhe and Harbin (China) with access to the Trans-Siberian railway. This corridor allows exporting industrial and agricultural goods from the provinces of Heilongjiang and Jilin of China through the ports of Primorye to the ports of southern China, Japan, and the Republic of Korea. The basic elements of the economic framework here are transport and logistics centers at the stations Grodekovo, Artyom-Primorsky 1, Nakhodka, and Ussuriysk.

The direction adjacent to the transport corridor “Primorye-2” in the framework of international transport corridor “Tumen” which relies on the axis through the international route connecting cities Changchun, Jilin, Hunchun (China) via station Kraskino (Makhalino) to port of Zarubino (Russia) with access to the ports of the Asia-Pacific region. Development of international transportation along this route will

contribute to emergency of a large transport and logistics cluster in the North-East Asia region, including port infrastructure facilities, transport and logistics centers and economic zones in the territories of the Russian Federation, China, the Republic of Korea, North Korea, Japan and Mongolia. This represents opportunities for formation of a unified economic space in the Far East of Russia and in the region of North-East Asia. It allows companies of the macro region to be included into the international integration chains.

Direction adjacent to the Trans-Siberian transport corridor integrated into the Eurasian transport corridors links ports of Primorsky and Khabarovsk territories and the Baltic coast of the Russian Federation. Structural elements of a spatial network along the route of Trans-Siberian transport corridor are logistics centers planned for construction by the Russian Railways federal company at the stations Artem-Primorskiy 1, Nakhodka, Ussuriysk, Komsomolsk-sorting, Komsomolsk-Cargo, as well as port areas and terminals of seaports Vanino, Vladivostok, Nakhodka, Vostochny.

Taking into account the plans for construction of the Berkakit - Tommot - Yakutsk railway line with the automobile and railway bridge across the Lena river, development of the Central Yakutia is ensured, and taking into account the construction of cargo railway lines (Ulak-Elga, Khani-Olekminsk) and southern Yakutia will be undertaking. In order to ensure a year-round communication with the North-Eastern part of Yakutia and the Magadan region, and to provide exit of these areas to the all-Russian railway network, work will be carried out on the construction of a railway line in the direction of Yakutsk (Nizhny Bestyakh) - Moma - Magadan. In the first phase the route Nizhny Bestyakh, Megino - Aldan to be completed. That provides access to the North-Eastern part of Yakutia and the Kolyma mining areas as areas of prospective economic development. Thus, a new vector of spatial development is under way, integrating prospective projects in the Magadan and Amur regions and the Republic of Sakha (Yakutia) into a unified economic space.

The Far East of Russia is home for a number of large companies of the related industries, such as transport and logistics, aircraft building, shipbuilding, agriculture. This can stimulate exchange of ideas and knowledge both within industry and between companies. Intensive cooperation of enterprises makes it possible to set a network open to innovative development of the spatial framework on a basis of active interaction between economic structures at the national and global levels. Structurally, the network model of the spatial framework represents a set of territories or companies within the economic and geographical zones of the Far East actively cooperating to create competitive advantages at the macro level as interrelated and mutually reinforcing links of technological chains. In economy of the region should be noted the prospective network structure (cluster) on basis of cooperation of residents of free port of Vladivostok and industrial territories of advanced development “Komsomolsk”, “Khabarovsk”, “Bolshoy Kamen”. They could be integrated into a single chain of technological and cooperative ties within the framework of industrial specialization. Accordingly, the economic policy of the government aims on establishing links between the “poles” of economic growth in the regions of the Far East, as well as stimulating the promotion of competitive goods and services in the domestic and foreign markets.

5 Findings of the Study

The concept of the spatial emergency follows to a mixed model assuming presence of a number relatively equal in scale and characteristics points of economic growth and the associated settlement systems. Structure of the spatial framework of the Russian Far East represents a set of points of the accelerated growth (micro units). They mainly allocated in the southern zone of Primorsky region, zone of economic development Khabarovsk-Komsomolsk-on-Amur, the southern economic and geographical zones of the Republic of Sakha (Yakutia) and the Amur region. Concentration of investment and economic activities within boundaries of these territories assumed formation of large agglomeration zones (zones of population high density) – Vladivostok (Vladivostok, Artem and peripheral settlements), Khabarovsk (cities Khabarovsk, Amursk, Komsomolsk-on-Amur), and Amursky (Blagoveshchensk, Belogorsk and peripheral settlements). Localization of growth points will occur in the zones adjacent to international transport routes and nearby port territories of the seaports Zarubino, Vostochny, Nakhodka, Vanino and Vladivostok, nearby the territories of advanced development, within the limits of the regional investment projects and close to the state border areas. Thus, there are opportunities for emergence of large territorial and industrial complexes a new technological specialization: shipbuilding, automotive assembly, production of automotive engines, gas processing and gas chemistry, oil refining and petro chemistry.

Prospective extension of the territorial economy complexes sets a preposition for emergency of agglomeration structures in the zones adjacent to transportation and infrastructure corridors, which, in a long term, eliminate the current imbalance in spatial distribution of industrial zones and population density. At the same time, the existing spatial structure caused by uneven distribution of the population and labor resource, will have impact on the spatial development of the Far East in a long term period. The scenario of “isolated spots” in the northern and northeastern economic-geographical zones of the macro region seems likely. Economic activities here associated mainly with extraction and processing of mineral resources, recreation and environmental tourism. Another constraining factor for emergence of a balanced spatial model is mono specialty of a number of municipalities, specialized in resource-extracting sectors, which cause a competitive disadvantage for the Russian Far East at the national and global level.

References

1. Jacobs, J.: *The Economy of Cities*, p. 268. Random House, New York (1969)
2. Mohan, R.: *Understanding the Developing Metropolis*, p. 352. Oxford University Press, Oxford (1994)
3. Glaeser, E.: *Effects in the Economics of Agglomeration*, pp. 1–14. University of Chicago Press, Chicago (2010)
4. Ellison, G., Glaeser, E.: *Geographic concentration in US manufacturing industries: a dartboard approach*. *J. Polit. Econ.* **105**, 889–927 (1997)

5. Duranton, G.: Urban evolutions: the still, the fact and the slow. *Am. Econ. Rev.* **97**, 197–221 (2007)
6. Marshall, A.: *The Principles of Economics*, 8th edn., p. 731. Palgrave Macmillan, London (2013)
7. Henderson, J.: The urbanization process and economic growth: the so-what question. *J. Econ. Growth* **8**, 47–71 (2003)
8. Henderson, J.: Urbanization and growth. In: Aghion, P., Durlauf, S. (eds.) *Handbook of Economic Growth*, vol. 1, pp. 1543–1591. North Holland (2005)
9. Perroux, F.: Les investissements multinationaux et l'analyse des poles de developpement et des poles d'integration. *Rev. Tiers-Monde* **9**, 239–265 (1968)
10. Porter, M.: On Competition. *Izd-iy dom Vil'ayms* (2005)
11. Porter, M.: Clusters and the new economics of competition. *Harv. Bus. Rev.* **76**, 77–90 (1988)
12. Fujita, J., Krugman, P., Venables, A.J.: *The Spatial Economy: Cities, Regions, and International Trade*, p. 367. MIT Press, Cambridge (1999)
13. Fujita, J., Henderson, M., Kanemoto, Mori, T.: Spatial distribution of economic activities in China and Japan. In: Henderson, J.V., Thisse, J.-F. (eds.) *Handbook of Regional and Urban Economics*, vol. 4, p. 1087 (2004)
14. Enright, M.: The geographical scope of competitive advantage. In: Dirven, E., Grocnewegen, J., van Hoof, S. (eds.) *Stuck in the Region? Changing Scales for Regional Identity*, Utrecht (1993)
15. Krugman, P.: A Dynamic Spatial Model. NBER Working Paper No. 4219 (1992)
16. Krugman, P.: Increasing returns and economic geography. *J. Polit. Econ.* **99**, 483–499 (1991)
17. Boschma, R., Frenken, K.: The Spatial Evolution of Innovation Networks: A Proximity Perspective. In: *Handbook on Evolutionary Economic Geography*. Edward Elgar, Cheltenham (2010)
18. Combes, P., Duranton, G., Gobillon, L., Puga, D., Roux, S.: Estimating Agglomeration Economies with History, Geology and Worker, pp. 15–66. The University of Chicago Press, Chicago (2010)

Author Query Form

Book ID : **458429_1_En**

Chapter No : **33**

Please ensure you fill out your response to the queries raised below and return this form along with your corrections.

Dear Author,

During the process of typesetting your chapter, the following queries have arisen. Please check your typeset proof carefully against the queries listed below and mark the necessary changes either directly on the proof/online grid or in the 'Author's response' area provided below

Query Refs.	Details Required	Author's Response
AQ1	This is to inform you that corresponding author has been identified as per the information available in the Copyright form.	
AQ2	Please check and confirm the inserted volume number are correct for Refs. [5 and 11].	

MARKED PROOF

Please correct and return this set

Please use the proof correction marks shown below for all alterations and corrections. If you wish to return your proof by fax you should ensure that all amendments are written clearly in dark ink and are made well within the page margins.

<i>Instruction to printer</i>	<i>Textual mark</i>	<i>Marginal mark</i>
Leave unchanged	... under matter to remain	Ⓟ
Insert in text the matter indicated in the margin	⋈	New matter followed by ⋈ or ⋈ [Ⓢ]
Delete	/ through single character, rule or underline or ┌───┐ through all characters to be deleted	Ⓞ or Ⓞ [Ⓢ]
Substitute character or substitute part of one or more word(s)	/ through letter or ┌───┐ through characters	new character / or new characters /
Change to italics	— under matter to be changed	↙
Change to capitals	≡ under matter to be changed	≡
Change to small capitals	≡ under matter to be changed	≡
Change to bold type	~ under matter to be changed	~
Change to bold italic	⌘ under matter to be changed	⌘
Change to lower case	Encircle matter to be changed	⊖
Change italic to upright type	(As above)	⊕
Change bold to non-bold type	(As above)	⊖
Insert 'superior' character	/ through character or ⋈ where required	Y or Y under character e.g. Y or Y
Insert 'inferior' character	(As above)	⋈ over character e.g. ⋈
Insert full stop	(As above)	⊙
Insert comma	(As above)	,
Insert single quotation marks	(As above)	Y or Y and/or Y or Y
Insert double quotation marks	(As above)	Y or Y and/or Y or Y
Insert hyphen	(As above)	⊥
Start new paragraph	┌	┌
No new paragraph	┐	┐
Transpose	┌┐	┌┐
Close up	linking ○ characters	Ⓞ
Insert or substitute space between characters or words	/ through character or ⋈ where required	Y
Reduce space between characters or words		↑