

The Global Urban Competitiveness Report 2017–2018 (Short version)

House Prices, Changing the City World

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Prologue 1

Today's world is undergoing fundamental changes. On one hand, globalization is reaching a new level despite some ups and downs, emerging economies represented by China are growing rapidly and the global landscape has experienced and will continue to see more changes to come. On the other, technology innovation is striving to come up with breakthroughs; it has changed and will continue to reshape the forms and landscape of global economy. In the 21st century, cities have become the mainstream carrier and platform for human activities. Globalization, technology innovation and changes into the global economic landscape will determine the future of global cities and urban system. Therefore, studying the development environment, living environment, competitiveness and sustainable development of global cities and urban system, and accordingly proposing innovative theories and countermeasures, will mean a lot for improving the business environment and living environment in cities, promoting urban prosperity, reducing urban poverty, and increasing the benefits of urban residents on a global scale.

Residential property has multiple attributes. It is an indispensable condition for human survival and development, immobile and valuable. It is also an important investment and economic sector. Its influence is felt by households at the micro level and the economy and society at the macro level at the same time. For this reason, the housing issue is one of the most important and challenging issues in the universe of cities. Worldwide, nearly one billion urban residents are crowded in slums, and billions more are overwhelmed by the sky-high housing price. A great concern shared by urban residents across the world, the housing price exerts impact on the global urban landscape and its changes. Governments, international organizations and numerous scholars and experts have long been dedicated to the studies of the housing issue. Despite some progress, deeper theoretical research, comprehensive policy evaluation, extensive experience summarization and constant innovation and exploration are still needed to obtain a fundamental solution. International collaborative theoretical, policy and experience research among scholars in related fields is a particularly important part of the efforts.

Chinese Academy of Social Sciences (CASS) is China's top research institute dedicated to philosophy and social sciences and one of the world's most influential think tanks. Our mission is to promote the studies of philosophy and social sciences in China, offer policy consultation on matters of national interests, and help advance international academic development in philosophy and social sciences and address global issues. We are proud to have a highly capable research team for urban and housing issues, who have produced significant research findings through partnership with other prestigious research teams and international organizations over the years.

The UN-Habitat is the world's most important international organization in the field

of human settlement and urban development. It has been long committed to academic studies and the delivery of assistance in urban development and the improvement of the living environment, and produced remarkable achievements.

For this research project, the CASS National Academy of Economic Strategy and the UN-Habitat recruited noted scholars and experts in related fields from worldwide to form the research team. After long-term research, they have come to many original conclusions and findings regarding global urban competitiveness and cities' business environment, living environment, and sustainable development. These findings will serve as valuable reference for us to develop a new understanding of the changing urban world, formulating new policies in favor of urban development, and promoting global urban prosperity. In particular, in the 2017-2018 project year, the research team focused on the housing price, examined the pattern and causes of changes in global housing prices and their influence on the urban world, drew many valuable conclusions, summarized experience in how the urban housing price has reshaped the urban world. Their efforts will be helpful for easing and solving the housing issue amid the process of urban development.

We will continue to support this collaborative research project as always, and hope that it will continue to build up its international influence and contribute to making cities better.

Wang Weiguang
CASS President
October 4, 2018

Prologue 2

I am pleased to present to you this publication entitled Global Urban Competitiveness Report 2017–2018 with Special Topic on Real Estate and Competitiveness. This is the second publication jointly produced by the Chinese Academy of Social Sciences and UN–Habitat on global urban competitiveness. In early 2017, these two institutions jointly published the Global Urban Competitiveness Report 2016–2017.

In October 2016, world leaders adopted the New Urban Agenda, the outcome document of Habitat III. This New Urban Agenda clearly recognizes that urbanization is a strategic issue for both local and national governments and that it can be a source of development and employment. The implementation of this Agenda will contribute to the implementation and localization of the 2030 Agenda for Sustainable Development, and to the achievement of the Sustainable Development Goals, including Goal 11: making cities and human settlements inclusive, safe, resilient, and sustainable.

Urban competitiveness and economic and social development are closely related. Cities with better infrastructure generate higher urban productivity. Higher urban productivity in turn brings about higher incomes for all segments of society: individual citizens, government and the private sector. More competitive cities also attract skills and capital, thus creating a virtuous cycle of prosperity for all. In this regard, the real estate and land markets have a strong influence on city competitiveness; they determine residential and commercial prices, affect the mobility of people and goods, and draw in high–level, skilled labourers.

In general, demographics, interest rates, government policies such as subsidies, and the overall economy influence the real estate market. Overall economic health implies urban economic competitiveness or lack of it. Highly competitive economies are reflected in higher real estate prices, and vice versa.

This report examines the urban space and land situation in some selected cities in the world. It also examines the relationship between real estate prices and the transformational upgrading of selected world’ s cities. More than 11 cities have been covered and competitiveness indexes compiled for 1038 cities worldwide.

The Global Urban Competitiveness Report 2017–2018 captures these complex issues, and it is an authoritative study that presents the main topics developed by senior Chinese researchers with UN–Habitat experts. I welcome this joint effort, as the world’ s cities continue their work in implementing the New Urban Agenda.

Maimunah Mohd Sharif,
Under-Secretary-General, United Nations
Executive Director, UN-Habitat

October 4, 2018

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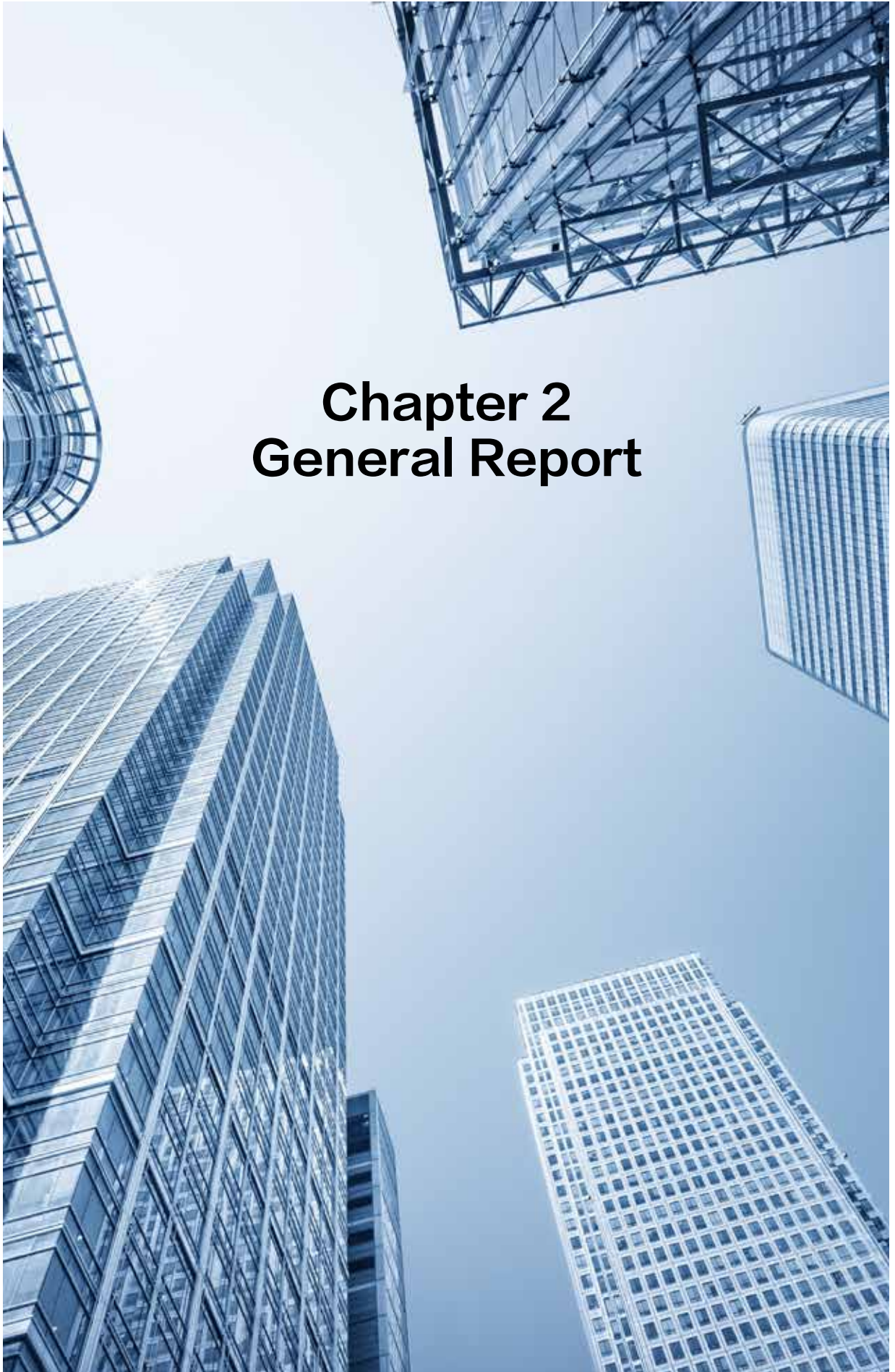
Chapter 1 Annual ranking of general global urban competitiveness in 2017



Table 1 Annual ranking of general global urban competitiveness in 2017

Metropolitan area	Metropolitan area level	Country/Area	Economic Competitiveness Index	Rank	Sustainable Competitiveness Index	Rank
New York	A+	United States	1.0000	1	1.0000	1
Los Angeles	A	United States	0.9992	2	0.6519	16
Singapore	A	Singapore	0.9708	3	0.7082	5
London	A+	United Kingdom	0.9578	4	0.8756	2
San Francisco	A	United States	0.9408	5	0.6554	14
Shenzhen	B	China	0.9337	6	0.5761	35
Tokyo	A-	Japan	0.9205	7	0.7371	3
San Jose	A	United States	0.9158	8	0.6342	22
Munich	B+	Germany	0.9053	9	0.6402	18
Dallas	A-	United States	0.9026	10	0.5805	32
Houston	A-	United States	0.9000	11	0.6792	8
Hong Kong	A	China	0.8873	12	0.6581	13
Seoul	A-	Korea, South	0.8478	13	0.7023	7
Shanghai	A-	China	0.8367	14	0.6110	27
Guangzhou	B+	China	0.8346	15	0.5746	36
Miami	B+	United States	0.8162	16	0.5305	53
Chicago	A-	United States	0.8151	17	0.6711	10
Boston	A-	United States	0.8121	18	0.7166	4
Dublin	A-	Ireland	0.8109	19	0.5796	33
Beijing	A-	China	0.8102	20	0.6708	11
Paris	A-	France	0.8060	21	0.6771	9
Frankfurt	A-	Germany	0.7993	22	0.6305	23
Tianjin	B-	China	0.7866	23	0.4735	93
Stockholm	B+	Sweden	0.7862	24	0.6373	21
Philadelphia	B+	United States	0.7837	25	0.6232	24
Seattle	B+	United States	0.7808	26	0.6530	15
Kinki	B-	Japan	0.7699	27	0.5826	31
Suzhou	C+	China	0.7648	28	0.4227	160
Stamford	B	United States	0.7644	29	0.4751	90
Tel Aviv-Yafo	B-	Israel	0.7642	30	0.4018	189

Chapter 2 General Report



2.1 The power of reshaping the world of cities

2.1.1 Basic driving force of urban development

Technology, finance, ecology, culture and housing prices are influencing and changing today's urban world. Scientific and technological progress is an important source of urban development.

Figure 2-1 The relationship between technology innovation and average per capita income of the city



Data source: Global urban competitiveness database of CASS.

Information technology changes direct connection between global cities to indirect connection, the connection of several cities to a full-scale connection, loose connection to close connection, slow connection to instantaneous connection, and high-cost connection to low-cost connection.

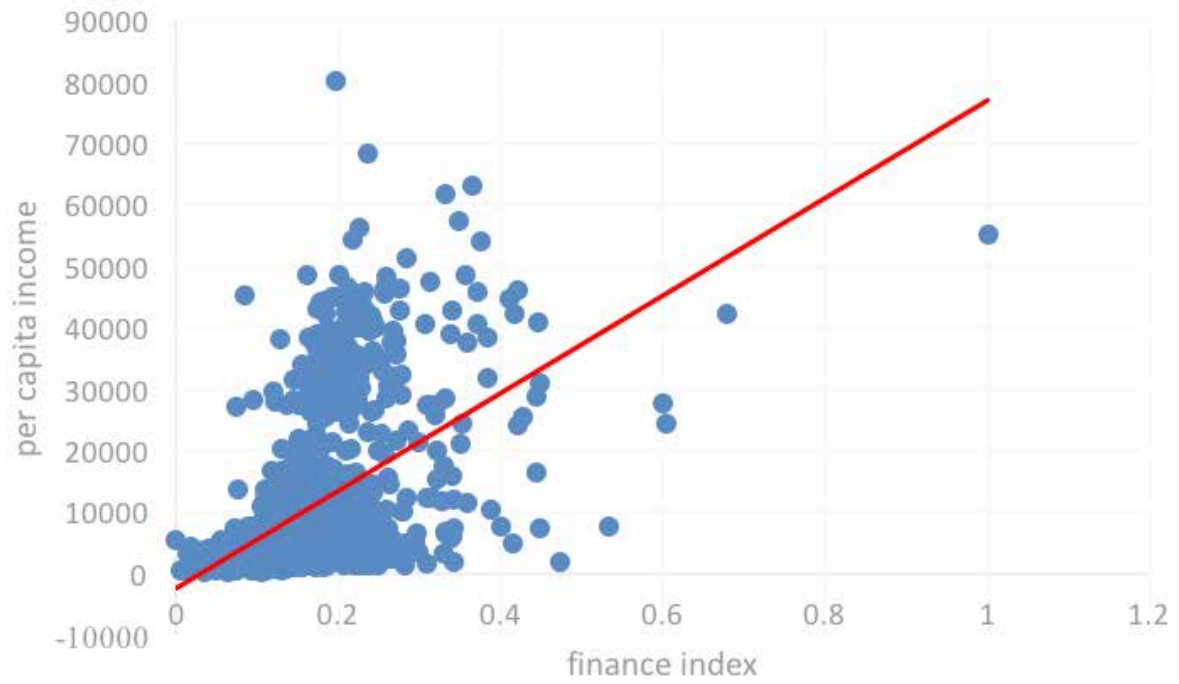
Figure 2-2 Global social networking of Facebook



Data source: Drawn by Facebook Engineer Paul Butler

Financial capital is the key power in the development of modern city .

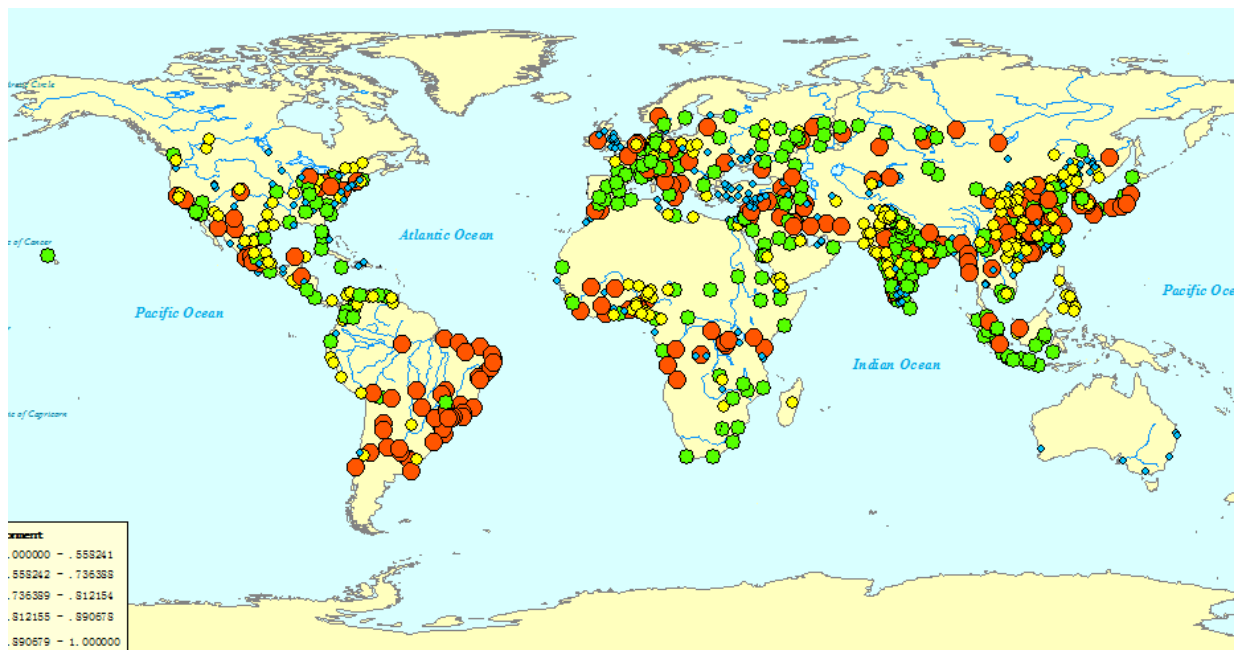
Figure 2-3 The relationship between finance and urban per capita income



Data source: Global urban competitiveness database of CASS.

Good climate and ecological environment is the precondition for urban development.

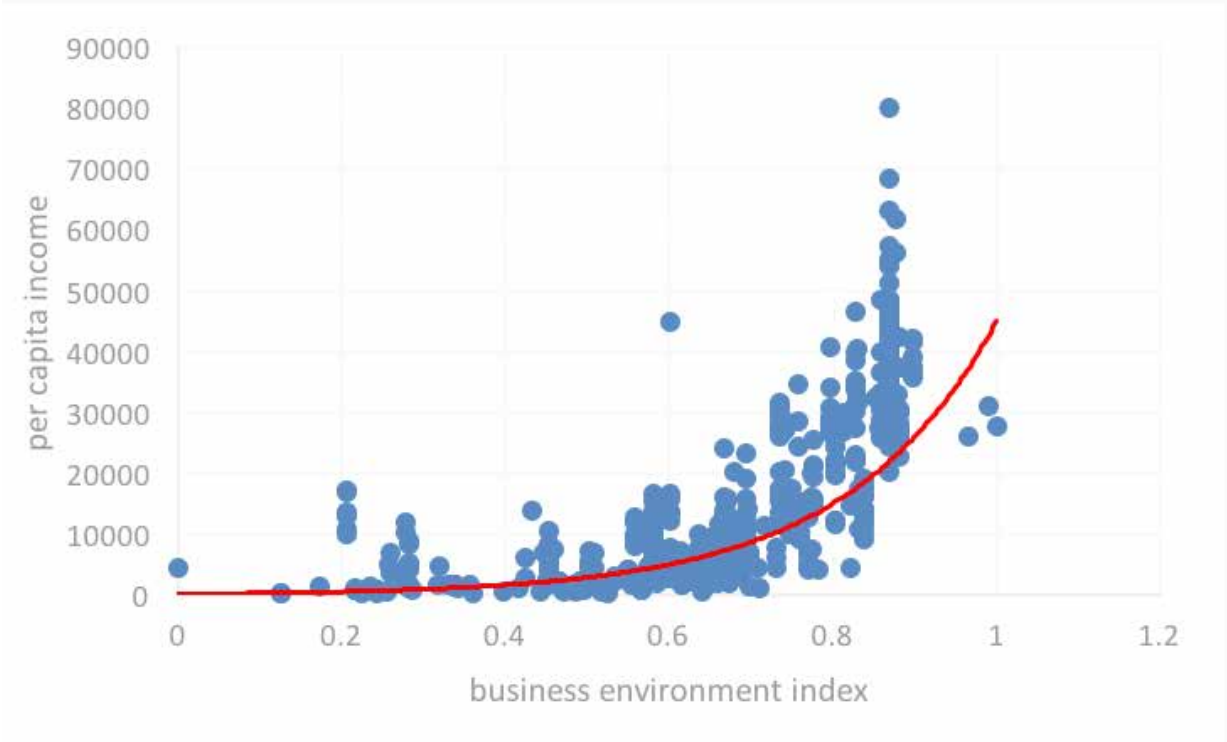
Figure 2-4 Environmental quality



Data source: Global urban competitiveness database of CASS.

The culture and institution are the fundamental driving force of urban prosperity.

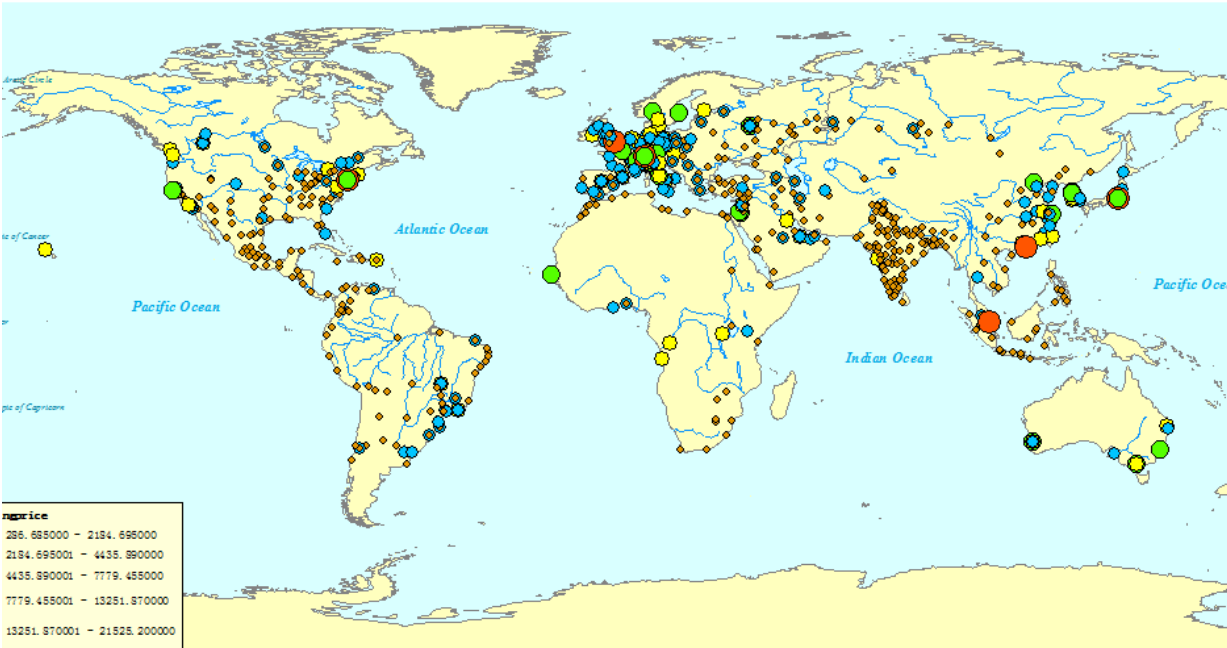
Figure 2-5 The relationship between the business environment index and per capita income



Data source: Global urban competitiveness database of CASS

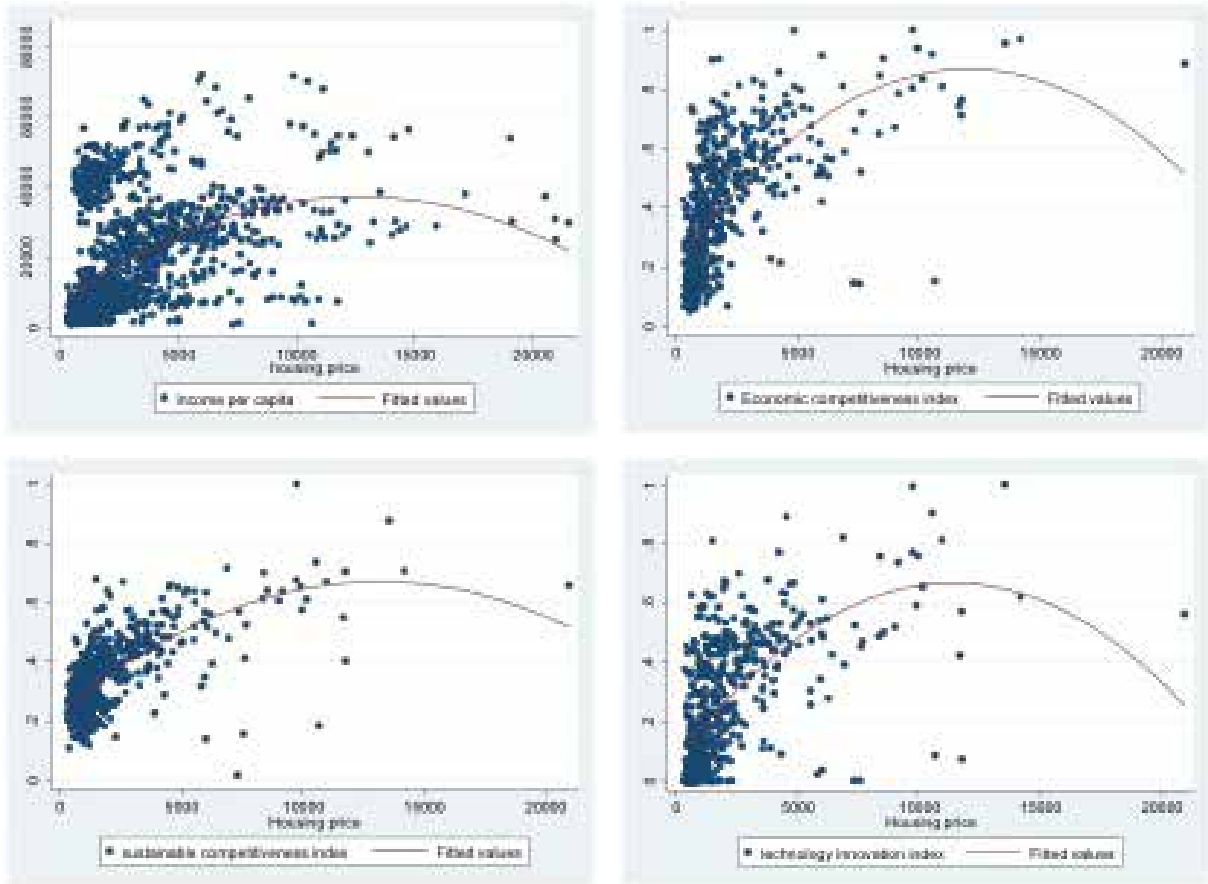
Housing price is an important force affecting the urban development and changing the urban layout.

Figure 2-6 The housing price distribution



Data source: Global urban competitiveness database of CASS

Figure 2-7 The relationship between housing price and per capita income, economic competitiveness, sustainable competitiveness and technological innovation



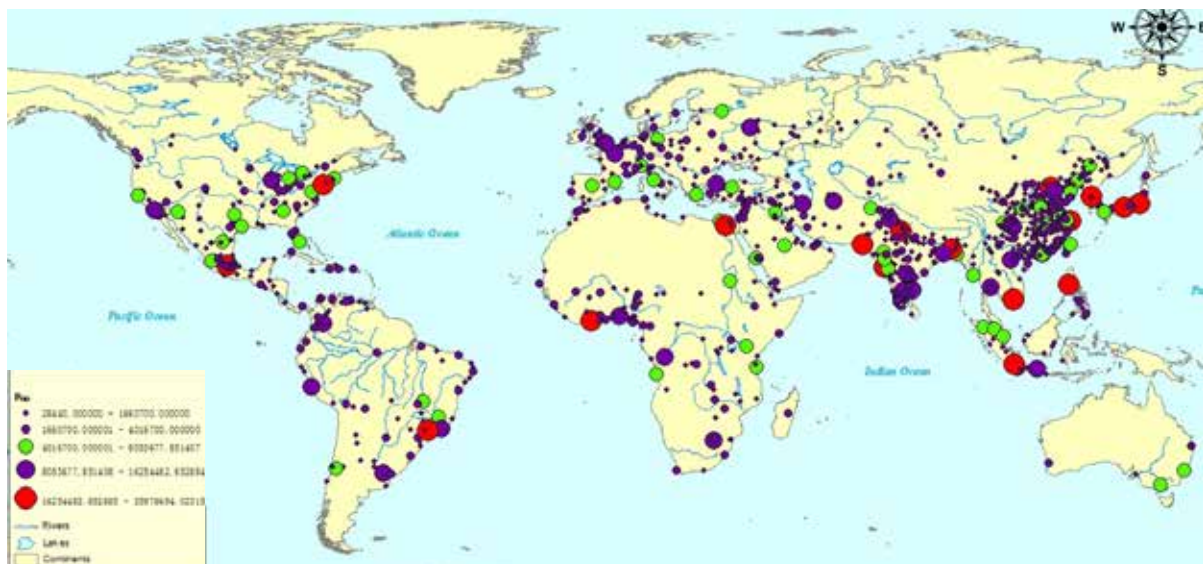
Data source: Global urban competitiveness database of CASS

2.2 Global Urban Agglomeration

Urban agglomeration is the first feature of a city, and the global urban agglomeration comprehensively reflects the spatial differences and changes of the global economy.

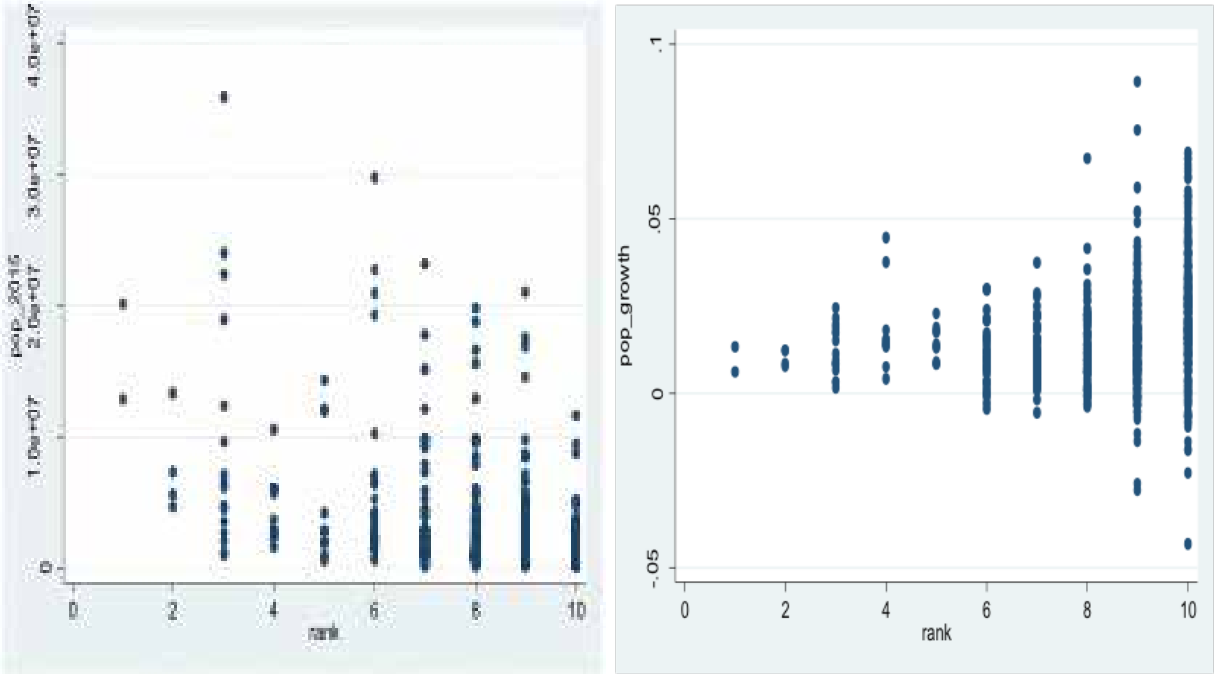
2.2.1 Most urban population growth is faster, coastal accumulation is stronger

Figure 2-8 Distribution of global urban population



First, Population aggregation of global tiered cities: high-tier cities continue to grow, and low-tier cities polarize.

Figure 2-9 Scatter diagram for global urban tiers and population size and growth



Second, New urban population aggregation is Europe small, America slow, China big and India faster. Third, sustained siphon effect of city clusters.

2.2.2 Agglomeration of global economy: double-crescent distribution and three-longitude distribution

Figure-2-10 City GDP density distribution across the world

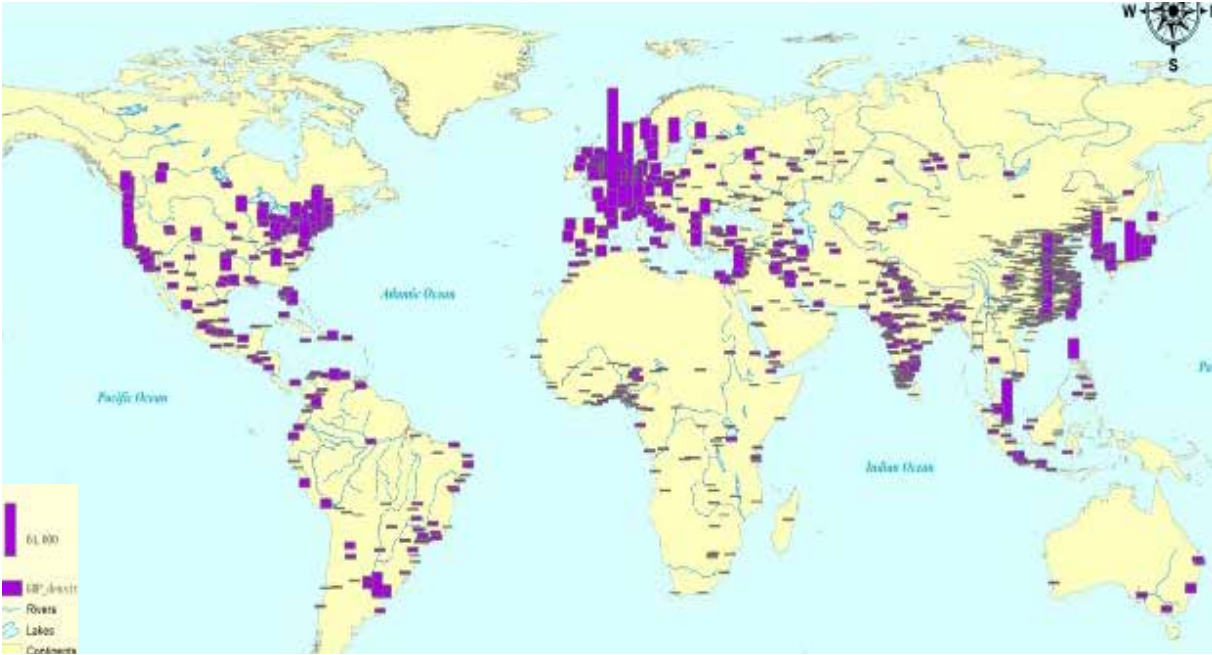
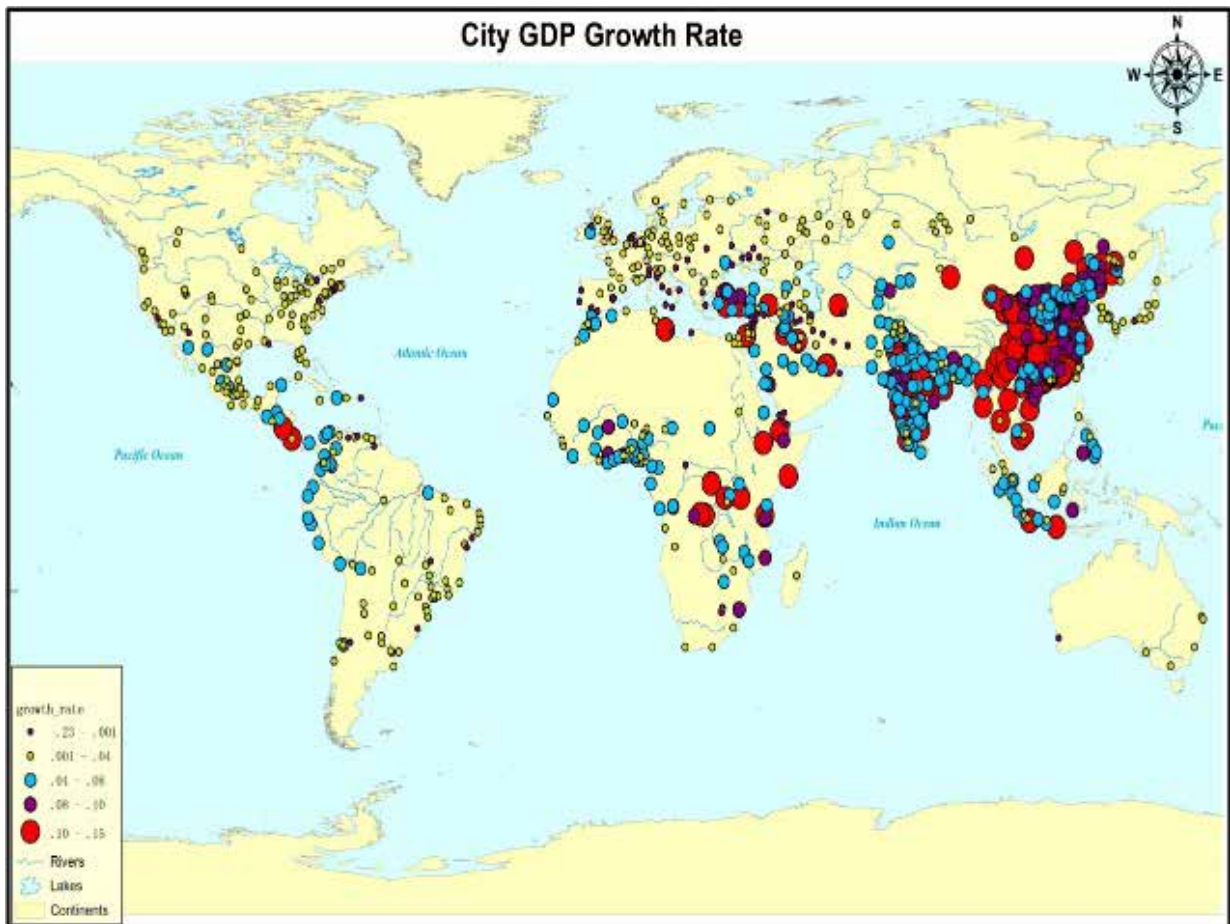
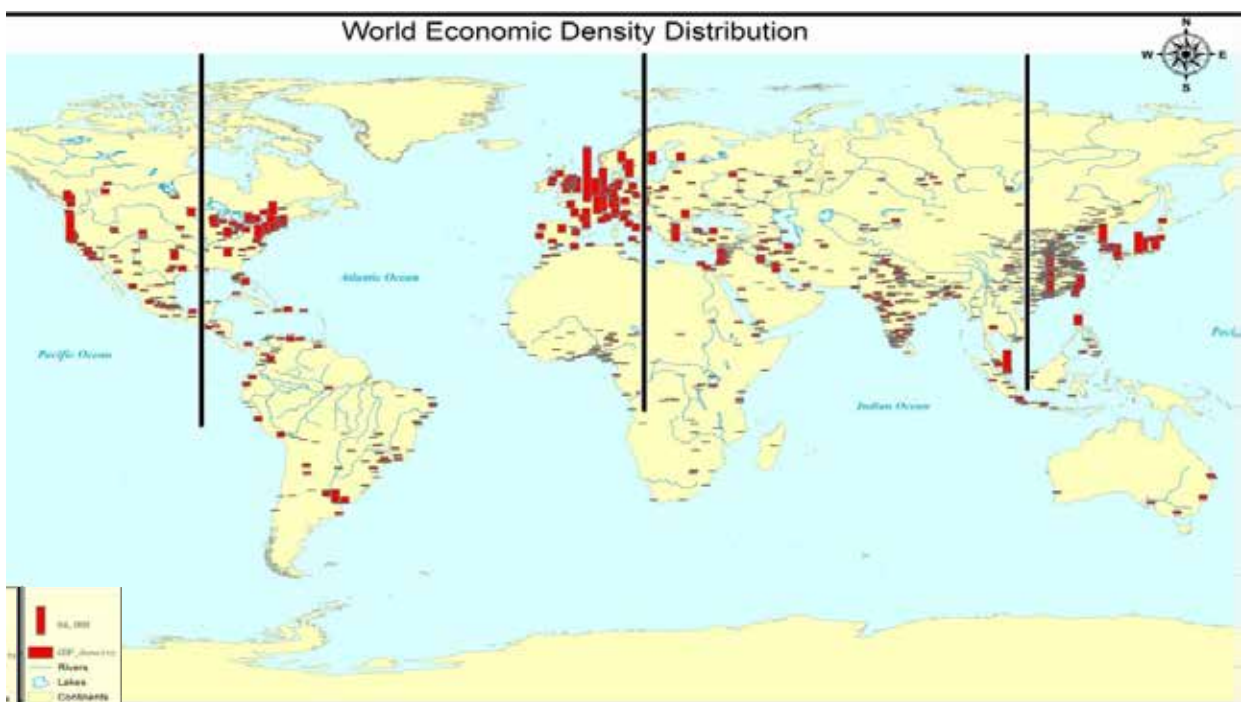


Figure-2-11 Distribution of Global urban GDP Growth



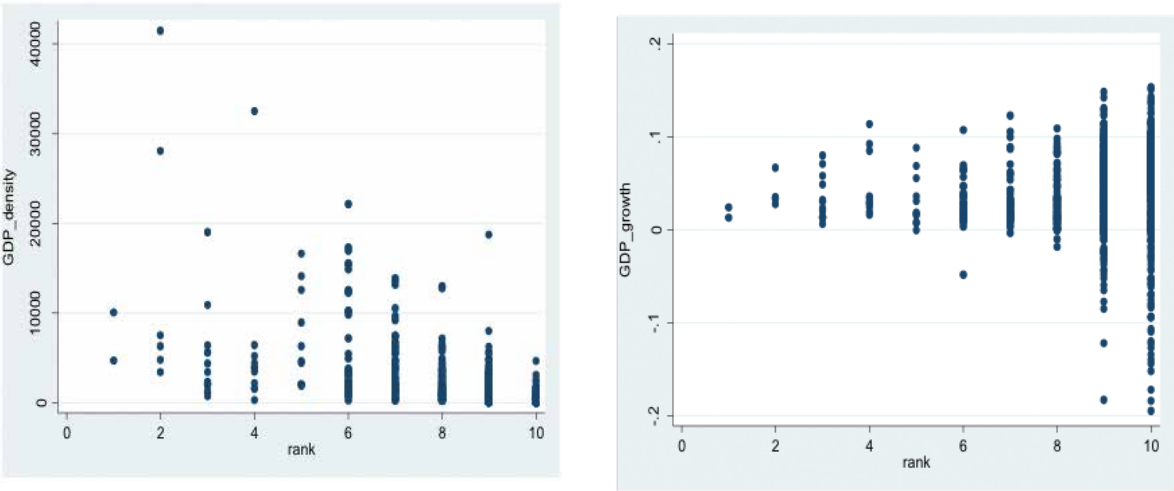
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Figure2-12 Distribution of Three- longitude



2.2.3 economy of high and low-ranked cities growing in relay

Figure2-13 Scatter diagram of economic density and growth of global cities

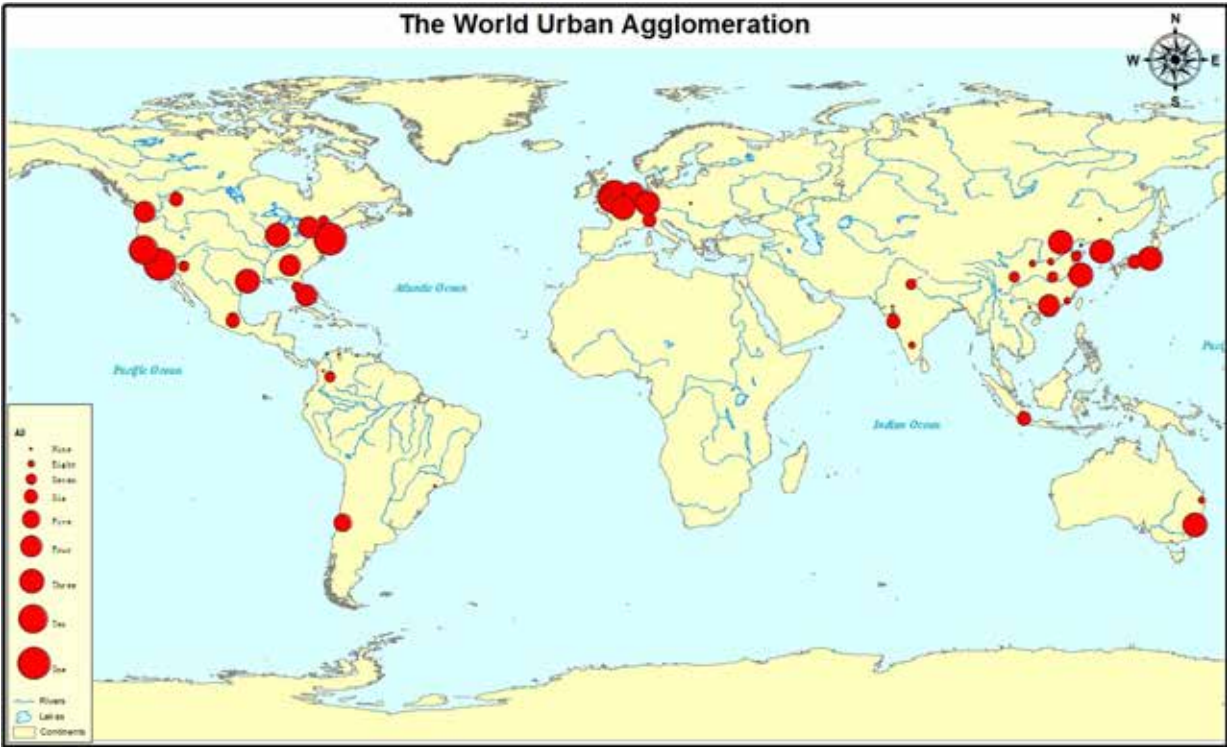


2.2.4 City agglomeration in major countries globally

Western European cities advancing together to lead the entire Europe, America cities as technological and financial centers showing high economic density and high growth, Chinese economic center expanding from the east to the middle, Indian cities is economic growth expanding from western coastal area to the inland and the east.

2.2.5 high in the west and low in the east in density, large in the west and small in the east in size, Growth of global urban agglomerations: diffusion and polarization co-existing

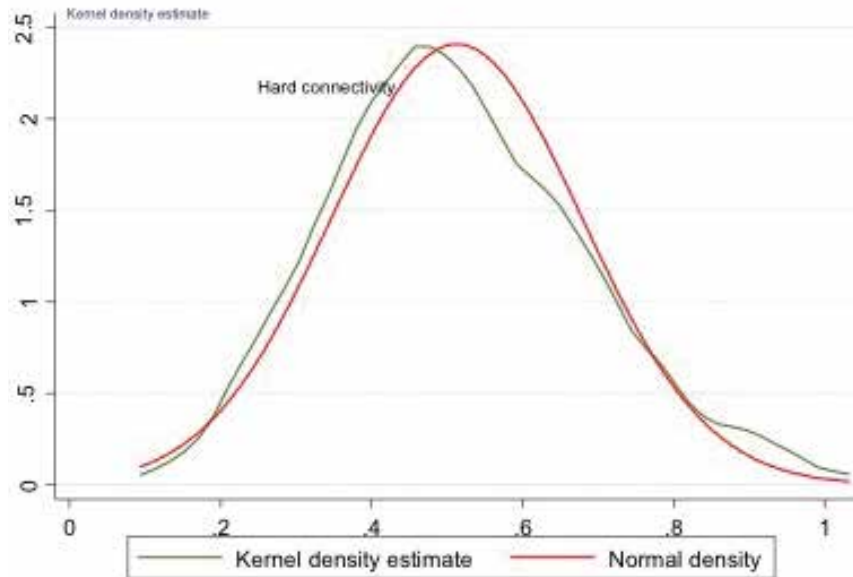
Figure2-14 The world urban agglomeration



2.3 New connectivity of global cities :soft connectivity are gradually changing and dominating the global urban system

2.3.1 Hard connectivity:Distribution balance, with a small gap between cities

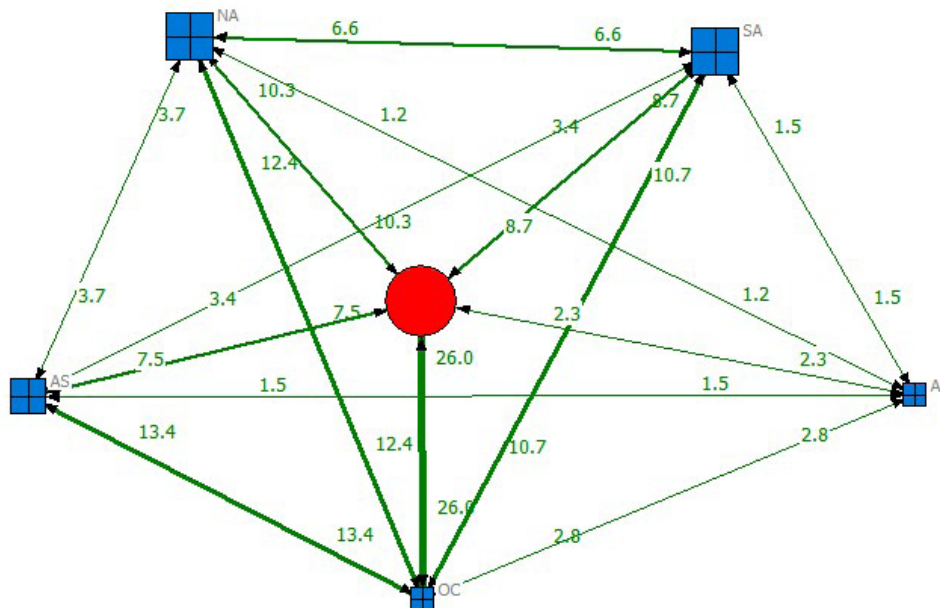
Figure 2–15 kernel density distribution of Global hard connectivity



2.3.2 Soft connectivity of global cities :IT-driven cities, supercities dominate internal and external urban connectivity

Europe is the hub of soft connectivity, Africa is at the bottom and far below the global average level(see Figure 2–11)

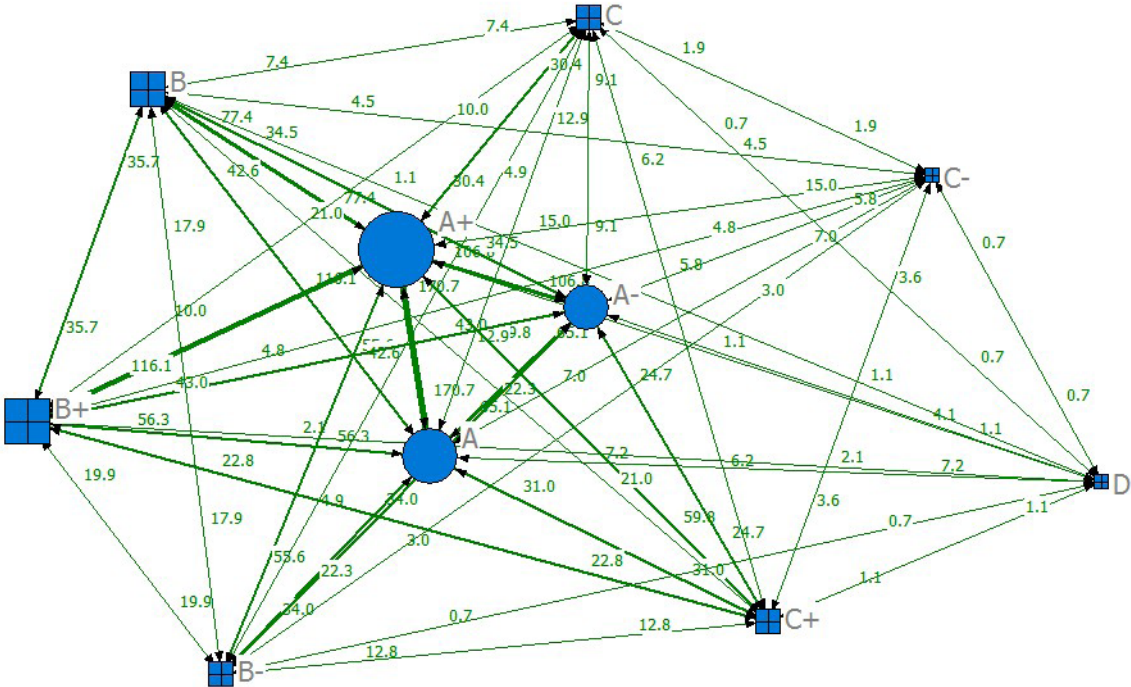
Figure 2–16 Global regional connectivity



Source: collected, sorted and calculated by the author based on big data

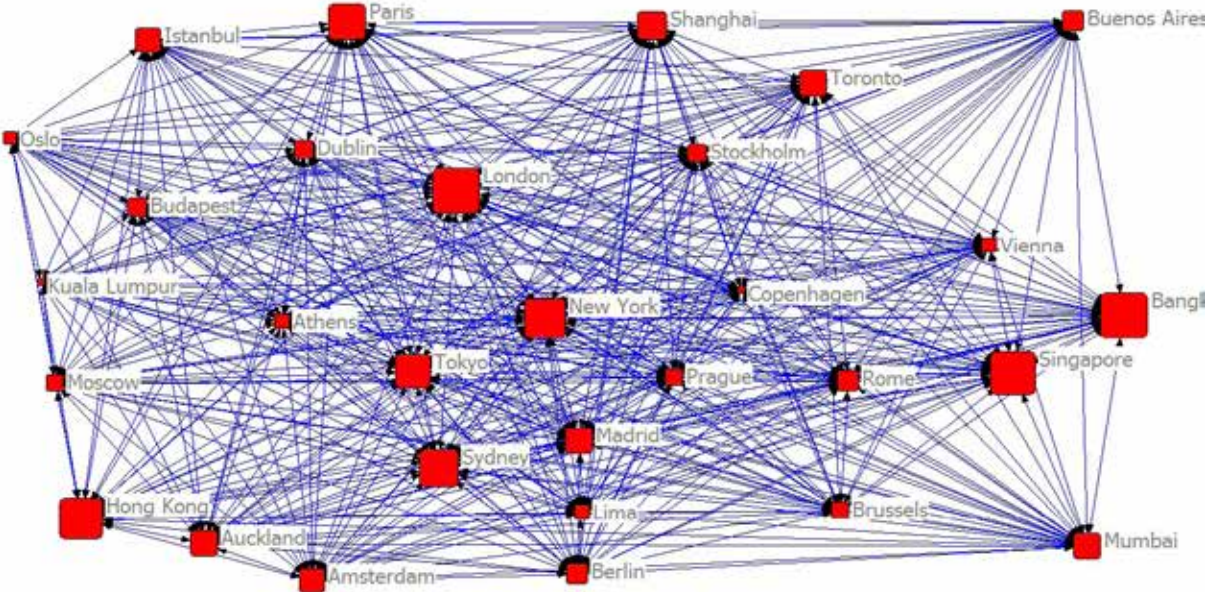
IT-driven cities and mega-cities (A + / A / A-) dominate global urban connectivity, with the same level and the same function Cities are more closely and broadly linked (see Figure 2-17 – Figure2-18).

Figure2-17 Global inter-city connectivity



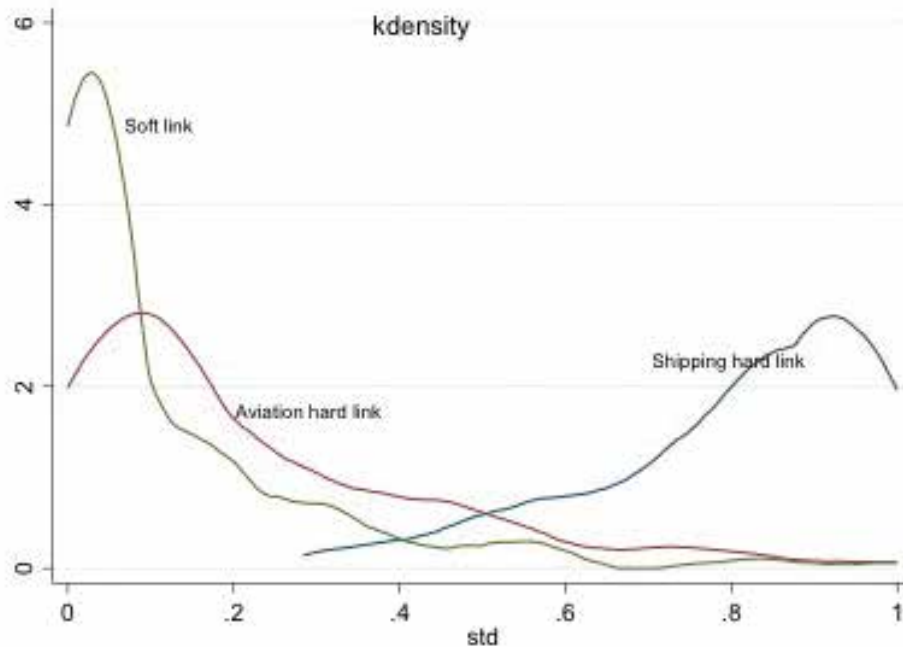
A multi-center landscape is taking shape(see Figure 2-18) .

Figure 2-18 The connectivity network structure of the world's top 30 primate



2.3.3 Soft links relative to the hard link more extensive, more uneven, more obvious differentiation (see Figure 2–19)

Figure 2–19 kernel density distribution of Global hard connectivity and soft connectivity



2.4 New Global City

2.4.1 The global city system is a function system

Due to the existence of national boundaries, labor forces are unable to move freely as industries and capital do; therefore, the true sense of global city system is not the size system but the function system.

2.4.2 The global city function system is a chain–network system

Due to the heterogeneity of global factors distribution, the vertical industrial specialization and horizontal industrial specialization are interwoven within the global production network. Therefore, global city function system is a chain–network system and a combination of hierarchical system and network system.



2.4.3 New global cities are taking shape

The new global cities are new mainly in the sense of organic superposition of the technological center function and the financial center function. The combination of technology and finance will further improve the global city function system, and enable it to play a better role in global economy.

Technology and finance are dominating global economy and occupying the main part of global value chain.

Table 2-1 World's top 10 companies for market value in 2007 and 2017

Ranking	Top 10 in 2007	Ranking	Top 10 in 2017
1	ExxonMobil	1	Apple
2	General Electric	2	Alfaet
3	Microsoft	3	Microsoft
4	Citigroup	4	Amazon.com
5	Gazprom	5	Berkshire Hathaway
6	PetroChina	6	Facebook
7	ICBC	7	ExxonMobil
8	Bank of America	8	Johnson & Johnson
9	AT&T	9	JPMorgan Chase
10	BP	10	Tencent

Source: <http://www.forbes.com>

Information technology is showing more and more influence in the global economy.

Table 2-2 World's top 10 most valuable brands in 2007 and 2017

Ranking	Top 10 in 2007	Brand value (\$1M)	Ranking	Top 10 in 2017	Brand value (\$1M)
1	Coca-Cola	43146	1	Google	109470
2	Microsoft	37074	2	Apple	107141
3	Citi	35148	3	Amazon.com	106396
4	Walmart	34898	4	AT&T	87016
5	IBM	34074	5	Microsoft	76265
6	HSBC	33495	6	Samsung Group	66219
7	GE	31850	7	Verizon	65875
8	Bank of America	31426	8	Walmart	62211
9	HP	29445	9	Facebook	61998
10	Marlboro	26990	10	ICBC	47832

Source: Brand Finance

Technological center cities are occupying an increasingly higher status in the global city system, and also improving their financial center function.

Figure 2-20 Relationship between technological innovation index and sustainable competitiveness index



Source: Global city competitiveness database of CASS

Figure 2-21 Relationship between technological innovation index and economic competitiveness index



Source: Global city competitiveness database of CASS

Identifying new global cities based on the distribution of the most valuable brands.

Table 2-3 Rankings of new global cities

rank	city	rank	city
1	New York	11	Washington
2	Beijing	12	St. Louis
3	Paris	13	Zurich
4	Tokyo	14	Cincinnati
5	London	15	Shanghai
6	San Jose	16	Toronto
7	Seoul	17	Chicago
8	Shenzhen	18	Seattle
9	San Francisco	19	Atlanta
10	Dallas	20	Mumbai

Source: Global city competitiveness database of CASS



Chapter 3 House Price and Competitiveness: Questions and Literature Review(slightly)

Chapter 4 House Price and Competitiveness: Theoretical Model(slightly)



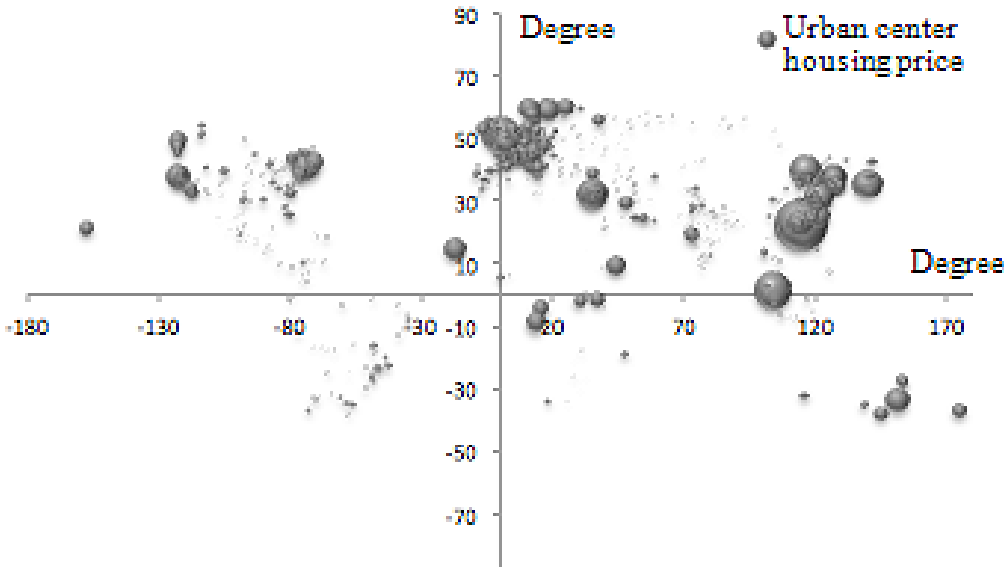
Chapter 5 Global Urban Real Estate Market Status ¹

Guo Hongyu, Ph. D., associate professor, Deputy Dean of international finance department, School of international economics, China Foreign Affairs University, E-mail: guohongyu@cfau.edu.cn.

5.1 The Global High Housing Price Area: Circum-Ocean "Three Centers and Four Zones"

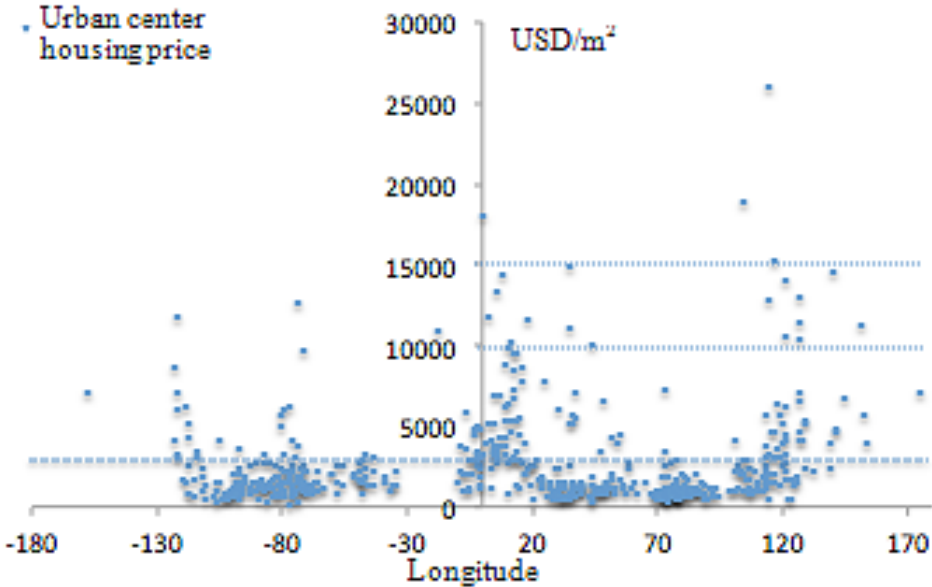
Cities with high housing prices are gathered in the circum-ocean urban belt. (Figure 5-1)
Cities with high housing prices are gathered in North America, West Europe, as well as East Asia and Southeast Asia. (Figure 5-1)
Cities with high housing prices are mainly distributed at 120° west longitude, 80° west longitude, 20° east longitude, and 110° east longitude. (Figure 5-2)

Figure 5-1 The latitudinal and longitudinal distribution of global urban housing prices in 2017



Note: There are a total of 563 sample cities, the housing price is measured by urban center housing price, and the circular area that represents each city is proportional to the housing price. As to the longitude, positive number represents east longitude and negative number represents west longitude. As to the latitude, positive number represents north latitude and negative number represents south latitude. Source: Numbeo website.

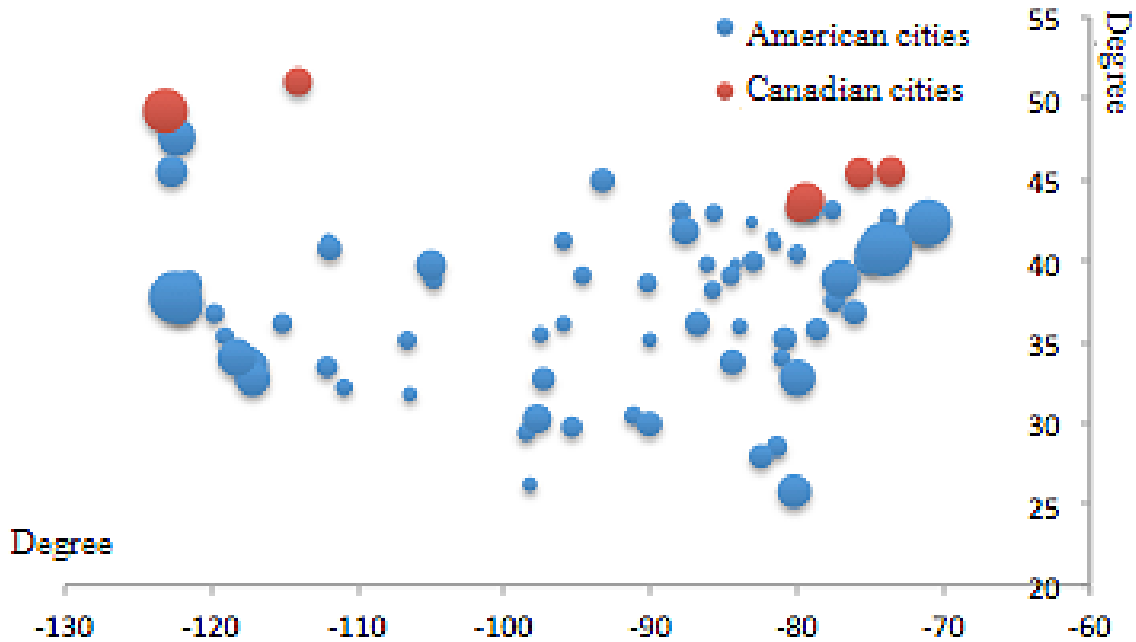
Figure 5-2 2017 urban housing price – urban longitudinal position scatter diagram



Note: There are a total of 563 sample cities, and the housing price is measured by the urban center housing price. As to the longitude, positive number represents east longitude while negative number represents west longitude. Source: Numbeo website

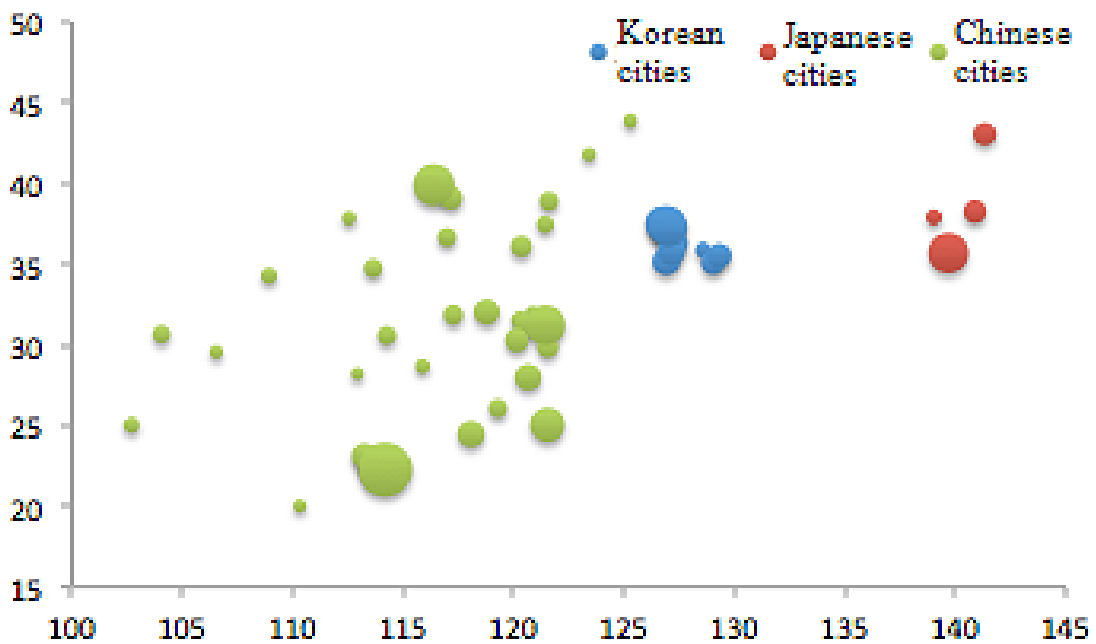
5.2 Urban agglomerations along borders have integrated into transnational large urban agglomerations. (Figure 5–3, Figure 6–4, Figure 5–5)

Figure 5–3 America – Canada urban agglomeration distribution



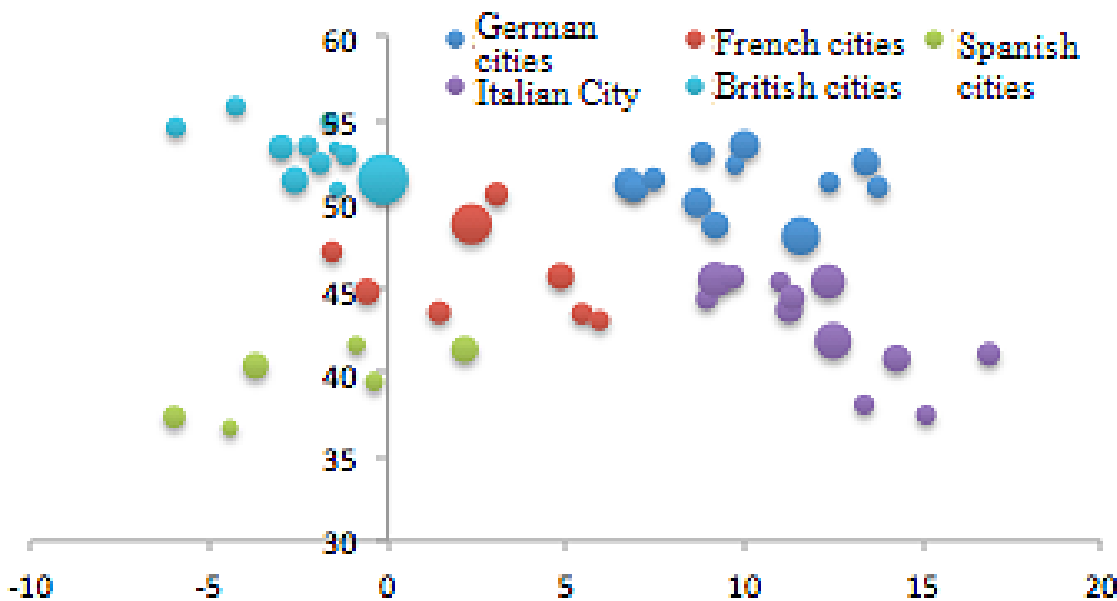
Note: There are a total of 79 sample cities, and the housing price is measured by house prices in urban centers. As to the longitude, positive number represents east longitude and negative number represents west longitude. As to the latitude, positive number represents north latitude and negative number represents south latitude. Source: Numbeo website.

Figure 5–4 Distribution of China–ROK–Japan urban agglomeration



Note: There are a total of 52 sample cities, and the housing price is measured by house prices in urban centers. As to the longitude, positive number represents east longitude and negative number represents west longitude. As to the latitude, positive number represents north latitude and negative number represents south latitude. Source: Numbeo website.

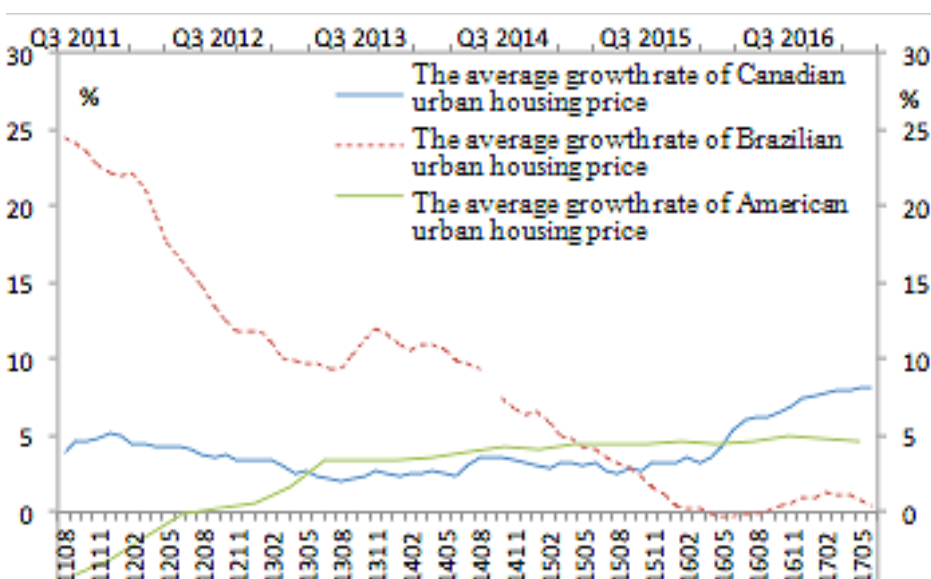
Figure 5-5 Distribution of urban agglomerations in West Europe



Note: Broadly, the scope of West Europe covers some countries in Central Europe and South Europe. There are a total of 49 sample cities, the housing price is measured by urban center housing price, and the circular area that represents each city is proportional to the housing price. As to the longitude, positive number represents east longitude and negative number represents west longitude. As to the latitude, positive number represents north latitude and negative number represents south latitude. Source: Numbeo website

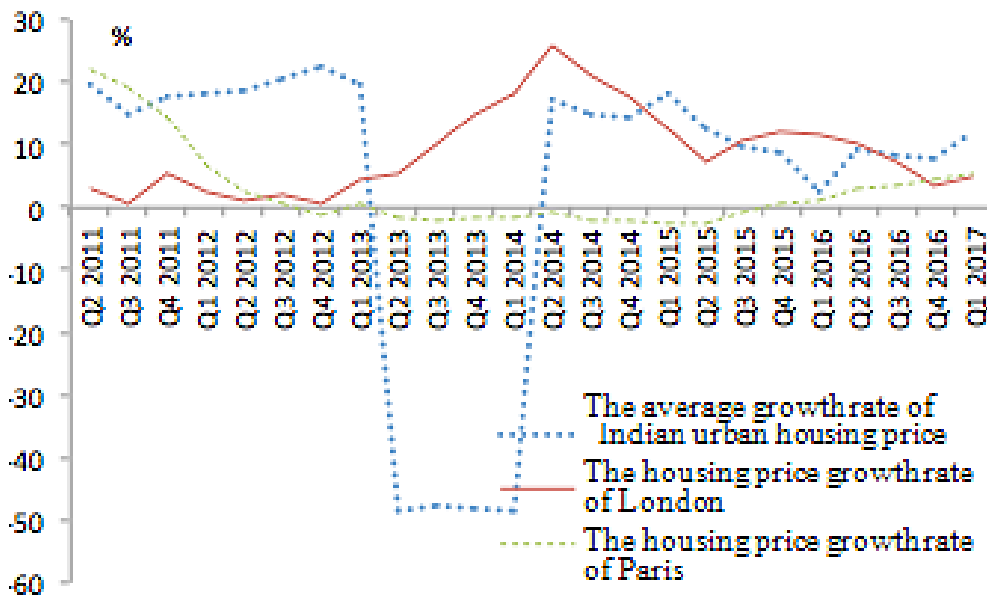
5.3 When a city is far from the three major real estate centers, the regional migration effect will become significant. (Figure 5-6, Figure 5-7)

Figure 5-6 Comparison between the average growth rate of Canadian, American and Brazilian urban housing prices



Note: The average growth rate of Canada's urban housing prices adopts the arithmetic mean value of the annual year-on-year growth rate of housing indexes of 11 cities in Canada. The average growth rate of American urban housing prices adopts the arithmetic mean value of the annual year-on-year growth rate of housing indexes of 401 cities in America. The average growth rate of Brazil's urban housing prices adopts the arithmetic mean value of the year-on-year growth rate of the FipeZap real estate index of 7 cities in Brazil. Source: Teranet - National Bank, FHFA, Fipe.

Figure 5–7 Comparison between the average growth rate of house prices in London, Paris, and India



Note 1: The urban housing price of London adopts the annual year-on-year growth rate of its housing indexes. The urban housing price of Paris adopts the annual year-on-year growth rate of its apartment price indexes. The average growth rate of Indian urban housing prices adopts the arithmetic mean value of the annual year-on-year growth rate of housing indexes of 10 cities in India.

Source: Nationwide of the UK, National Institute of Statistics and Economic Studies of France, and Reserve Bank of India (RBI).

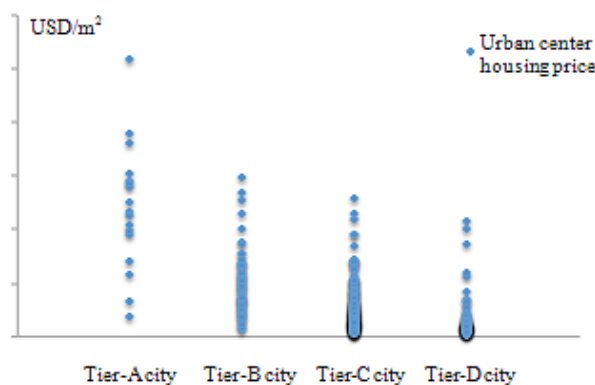
5.4 The higher the level of development, the greater the price differentiation. (Table5–1, Figure 5–8)

Table 5–1: The 2017 statistical indicators of housing prices of cities at different tiers

	Tier-A cities	Tier-B cities	Tier-C cities	Tier-D cities
Average value of housing price (USD/ m ²)	12037	5126	2318	1286
Standard deviation of housing price(USD/ m ²)	5913	3252	1858	1458

Note: There are a total of 524 sample cities, including 17 tier-A cities, 51 tier-B cities, 303 tier-C cities, and 153 tier-D cities. Source: Numbeo website.

Figure 5–8 Distribution of housing prices of cities at different tiers



Source: Numbeo website.

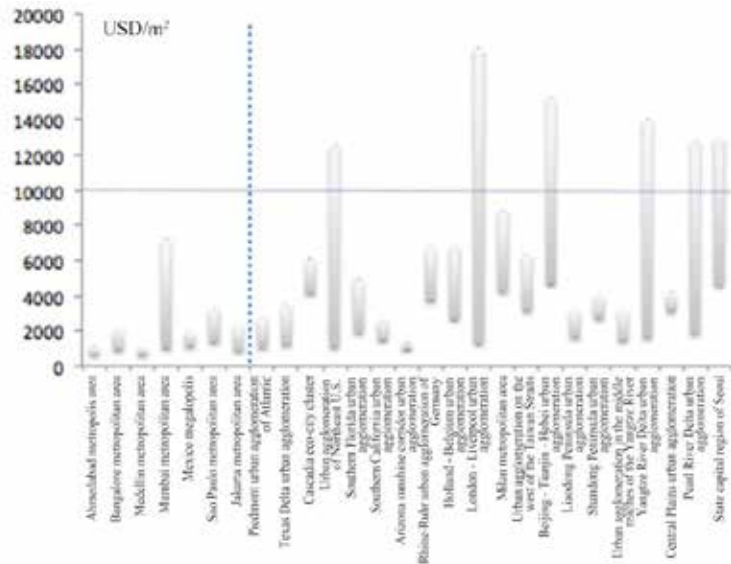
5.5 The urban agglomeration which is close to the national boundary and part of a large transnational urban agglomeration usually has higher housing price. (Table5–2)

Table 5–2: Housing prices of major urban agglomerations in the United States, Canada and mainland China in 2017

(USD/ m ²)	Urban Agglomeration	Mean Value of Urban Center House Price	
USA	Arizona sunshine corridor urban agglomeration	1405	
	Urban agglomeration of Midwest U.S.	1480	It constitutes the transnational urban agglomeration together with Toronto metropolitan area and Ottawa metropolitan area of Canada.
	Piedmont urban agglomeration of Atlantic	2076	
	Texas Delta urban agglomeration	2077	
	Colorado metropolitan area	2802	
	Southern Florida urban agglomeration	3115	
	Southern California urban agglomeration	3832	
	Urban agglomeration of Northeast U.S.	4236	It constitutes the transnational urban agglomeration together with Toronto metropolitan area and Ottawa metropolitan area of Canada.
China Mainland	Cascadia eco-city agglomeration	5097	It constitutes the transnational urban agglomeration together with Calgary metropolitan area of Canada.
	Northern California urban agglomeration	7266	It faces the East Asian urban agglomeration across the ocean.
	Beibu Gulf urban agglomeration	1502	
	Harbin–Changchun urban agglomeration	1877	
	Urban agglomeration in the middle reaches of the Yangtze River	2207	
	Chengdu–Chongqing urban agglomeration	2228	
	Xi'an urban agglomeration	2253	
	Liaodong Peninsula urban agglomeration	2428	It constitutes the transnational urban agglomeration together with Tokyo metropolitan area, Osaka metropolitan area, Nagoya metropolitan area of Japan, and Seoul metropolitan area of the Republic of Korea.
	Central Plains urban agglomeration	3154	
	Shandong Peninsula urban agglomeration	3288	It constitutes the transnational urban agglomeration together with Tokyo metropolitan area, Osaka metropolitan area, Nagoya metropolitan area of Japan, and Seoul metropolitan area of the Republic of Korea.
	Pearl River Delta urban agglomeration	4828	It constitutes a large urban agglomeration with Hong Kong, Taiwan of China.
	Yangtze River Delta urban agglomeration	5154	It faces North American urban agglomeration across the sea.
Urban agglomeration on the west of the Taiwan Straits	5207	It constitutes a large urban agglomeration with Hong Kong, Taiwan of China.	
Beijing – Tianjin – Hebei urban agglomeration	9957	It constitutes the transnational urban agglomeration together with Tokyo metropolitan area, Osaka metropolitan area, Nagoya metropolitan area of Japan, and Seoul	

5.6 In general, most cities at the center of the urban agglomeration show siphon effect, which leads to a large house price gap between it and other cities in the urban agglomeration.(Figure 5–9)

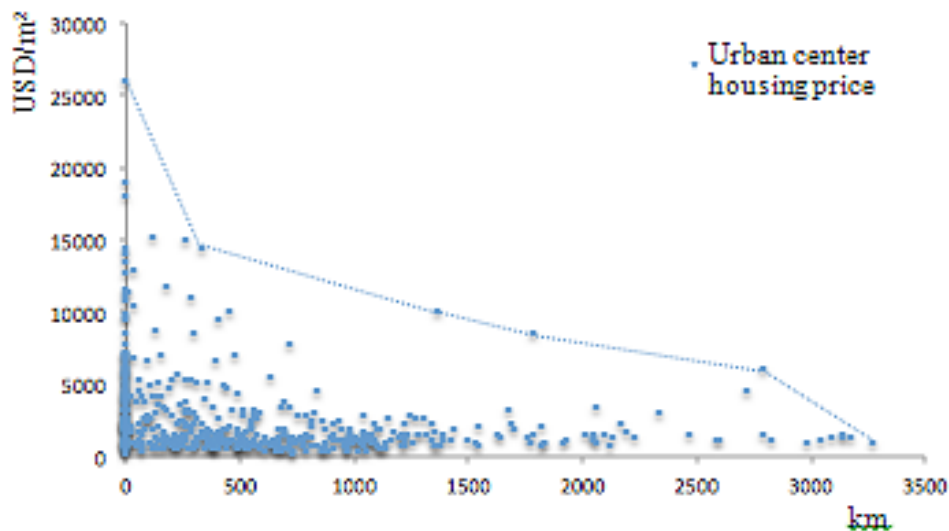
Figure 5–9 Comparison of the housing price distribution interval of urban agglomerations



Source: Numbeo website

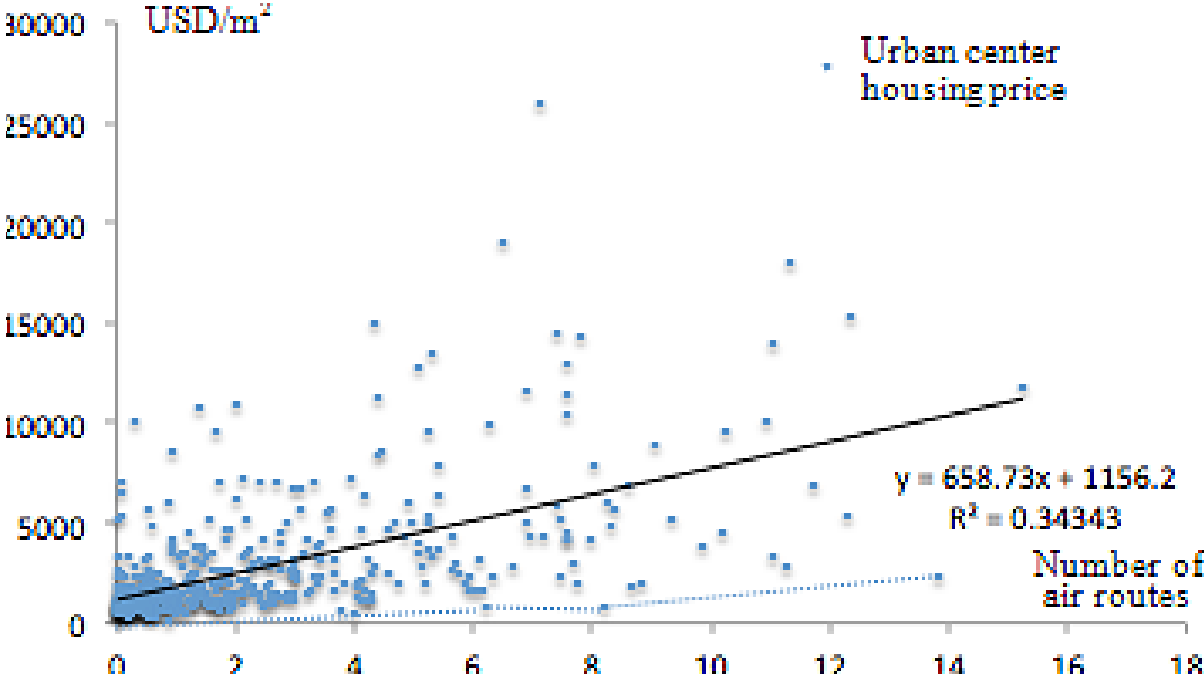
5.7 Transportation determines the upper and lower limits of urban real estate market. (Figure 5–10, Figure 5–11)

Figure 5–10 2007 scatter diagram of urban housing price – the distance from major ports



Note: There are a total of 523 sample cities, and the housing price is measured by the urban center housing price.
Source: Numbeo website. Global urban competitiveness database of Chinese Academy of Social Sciences.

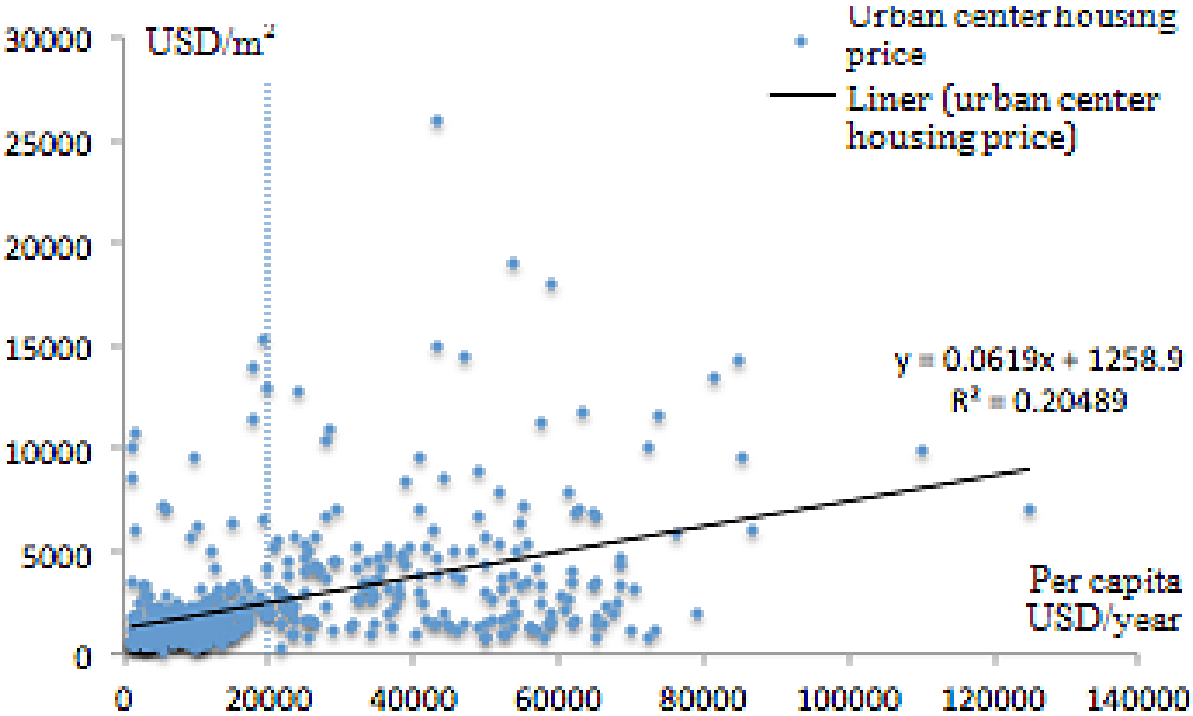
Figure 5-11 2017 urban housing price – number of air routes scatter diagram



Note: There are a total of 523 sample cities, and the housing price is measured by the urban center housing price. Source: Numbeo website. Global urban competitiveness database of Chinese Academy of Social Sciences

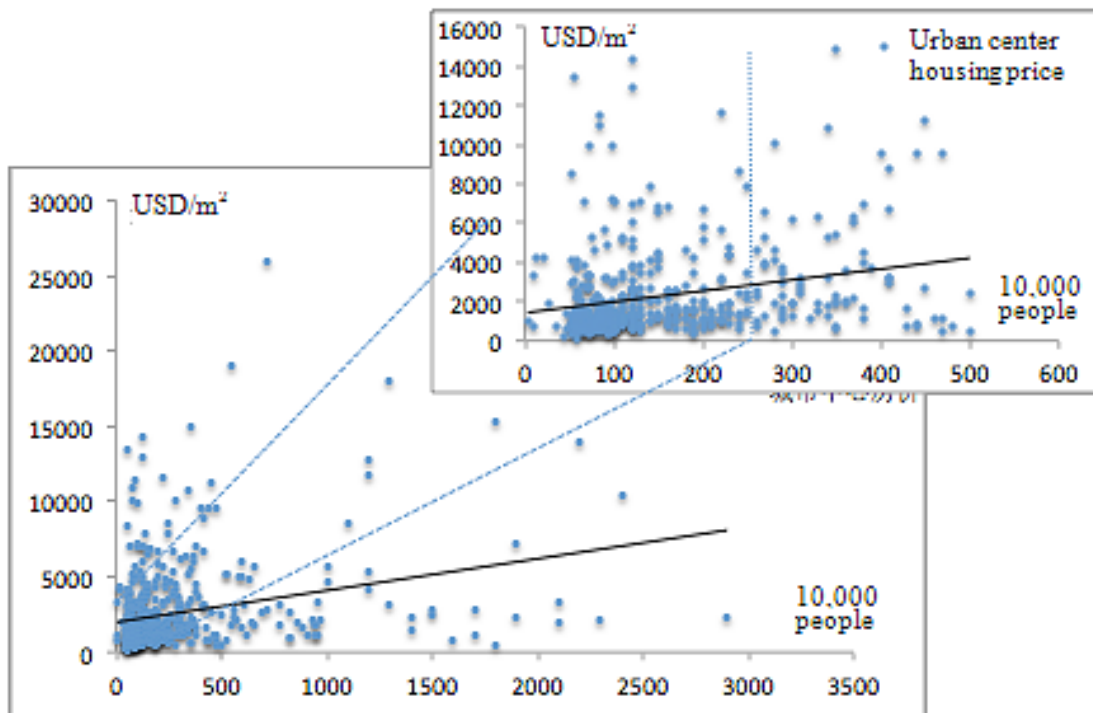
Economic and social development causes differentiation of the real estate market. (Figure 5-12, Figure 5-13).

Figure5-12 2017 urban housing price – per capita GDP scatter diagram



Note: There are a total of 523 sample cities, and the housing price is measured by the urban center housing price. Source: Numbeo website. Global urban competitiveness database of Chinese Academy of Social Sciences

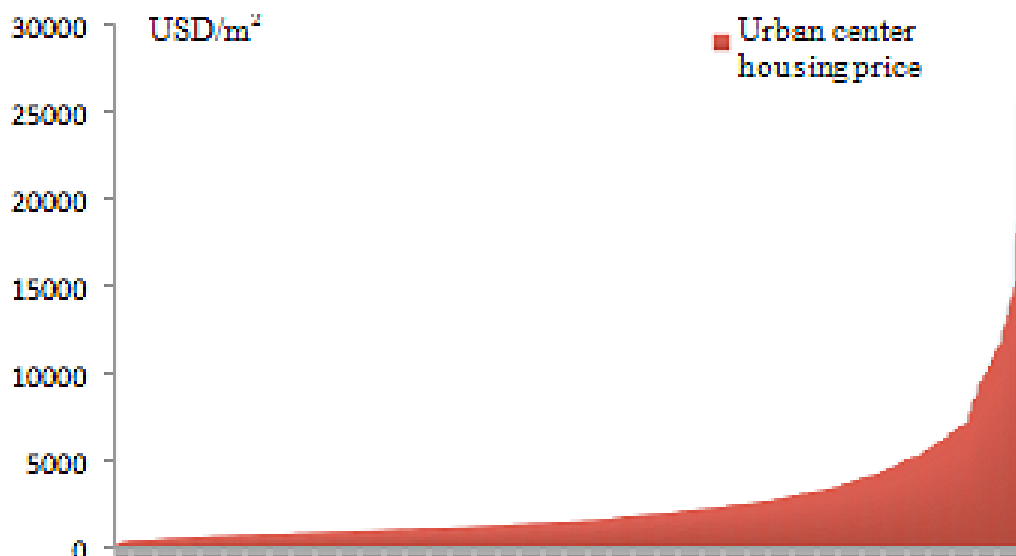
Figure 5-13 2017 urban housing price – population size scatter diagram



Note: There are a total of 523 sample cities, and the housing price is measured by the urban center housing price. Source: Numbeo website. Global urban competitiveness database of Chinese Academy of Social Sciences

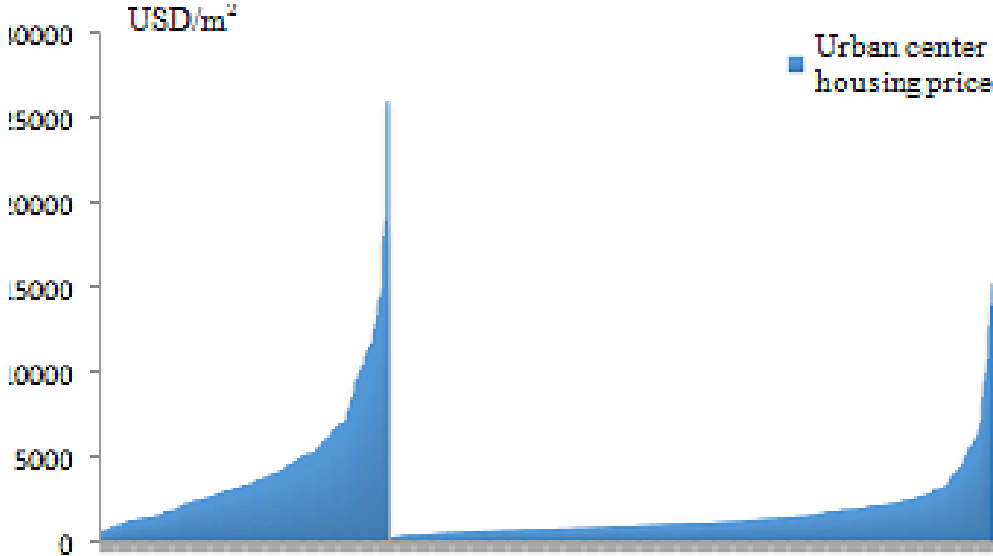
5.8As a long-term result of Matthew Effect, the global urban real estate shows a strong polarization. With the economy entering the developed stage, the Matthew Effect in the real estate market is gradually weakening. (Figure 5-14, Figure 5-15)

Figure 5-14 The ranking of urban housing prices in 2017



Note: There are a total of 523 sample cities. Source: Numbeo website

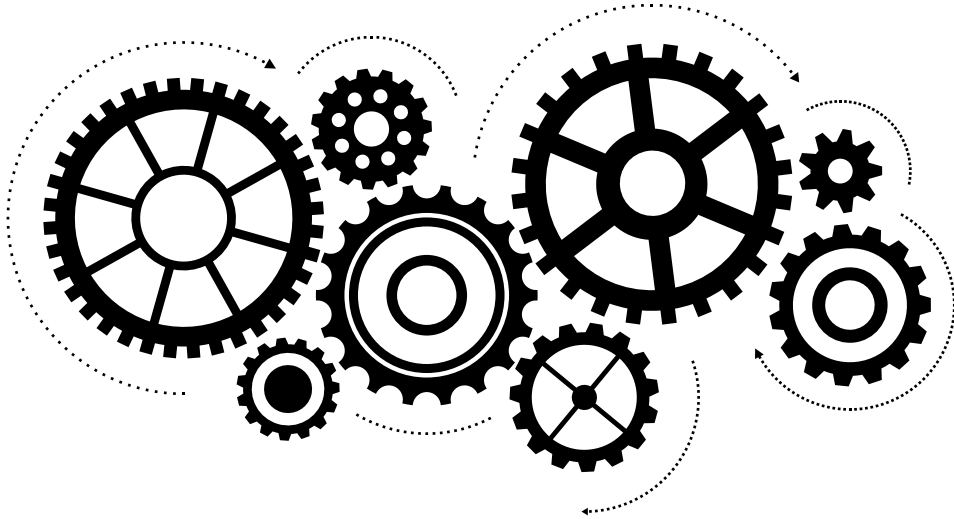
Figure 5–15 The 2017 ranking of urban housing prices in developed and developing economies



Note: The division of developed economies and developing economies adopts that of IMF2016. The left side represents the developed economies and the right side represents the developing economies. Source: Numbeo website

5.9 The effectiveness is based on the long-term expectation and decentralization degree

Long-term expectation originates from credible policy commitment. The monetary policy plays an important role in the correlation of real estate markets worldwide. Both the higher degree of decentralization and centralization in the fiscal system will promote the development of urban real estate market. Administrative intervention usually brings about short-term fluctuation in the urban real estate market, but if the administrative intervention is long-term and solidified into the institution of the real estate market, then the administrative intervention can have a long-term impact on the urban real estate market.





Chapter 6 Relationship between the Housing Price and Competitiveness: Empirical analysis

The global house price is unreasonable, only 16.7% of the sample cities had a house price to income ratio at a reasonable range, and the house price to income ratio is the highest in Asia and Africa, lower in inland areas and developed countries than in coastal areas and developing countries.

Figure 6-1 Global distribution of the price-to-income ratio

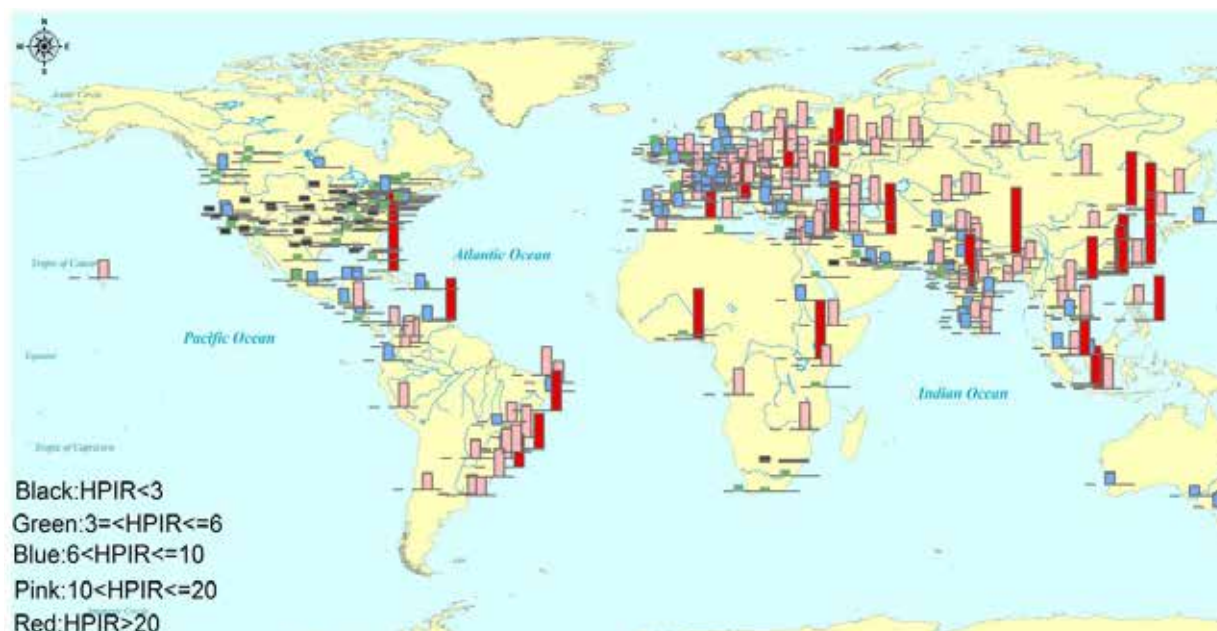


Table 6-1 The description of the housing price to income ratio in different ranges of values

Range of values	Variables	Average value	Standard error	Minimum value	Maximum value
全球	311	10.6245	7.491411	0.44	50.36
HPIR < 3	41 (13.18%)	2.163171	0.604332	0.44	2.97
3 ≤ HPIR ≤ 6	52 (16.72%)	4.450192	0.894814	3.03	6.00
6 < HPIR ≤ 10	76 (24.44%)	8.112500	1.182139	6.12	10.00
10 < HPIR ≤ 15	74 (23.79%)	12.08216	1.364829	10.01	14.95
15 < HPIR ≤ 20	38 (12.22%)	17.00842	1.367765	15.06	19.93
20 < HPIR ≤ 25	13 (4.18%)	22.55077	1.405901	20.06	24.55
25 < HPIR ≤ 30	8 (2.57%)	26.48125	1.162748	25.42	28.80
30 < HPIR ≤ 35	5 (1.61%)	31.55400	1.175322	30.50	33.06
HPIR > 35	4 (1.29%)	41.09750	6.456270	36.53	50.36

The house price is a stimulus for income growth in most of the world, but a restraint in Asia and Europe, in particular in Europe. (see Figure 6-2)

Figure 6-2 The price-income relationship

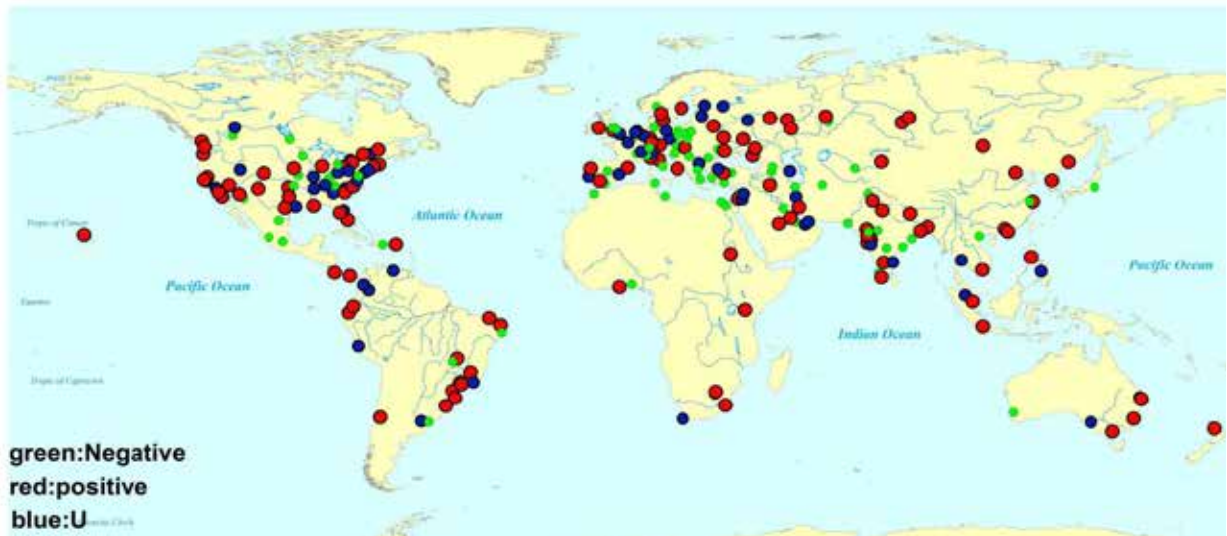


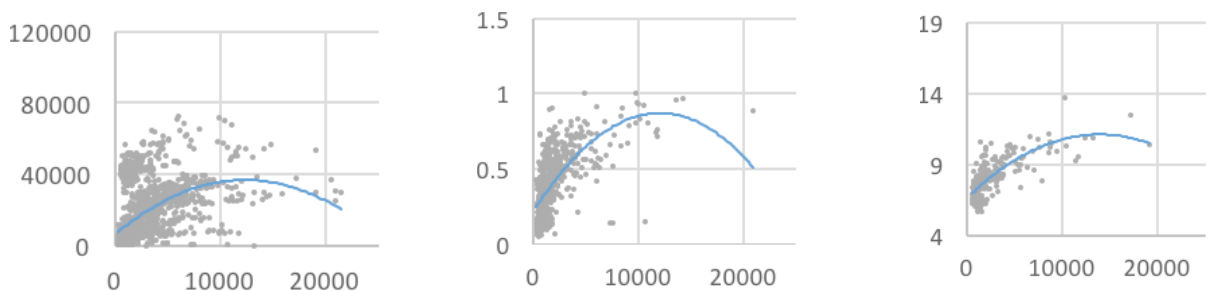
Table 6-2 The price-income relationship in different regions

Region	Sample size	The house price stimulates income growth	The house price suppresses income growth	The house price and income in an inverted U-shaped relationship	最大值
North America	58	13	30	15	50.36
Oceania	7	1	4	2	2.97
Africa	13	8	3	2	6.00
South America	30	6	15	9	10.00
Europe	71	27	28	16	14.95
Asia	67	24	29	14	19.93
G7	81	21	37	23	24.55
BRICS	50	12	31	7	28.80

Source: City and Competitiveness Index Database, CASS

The house price is in an inverted U-shaped relationship with urban per capita income and competitiveness.

Figure 6-3 Scatter diagram of global per capita disposable income ,competitiveness and house prices



Source: City and Competitiveness Index Database, CASS

Asia, Americas and Europe display the inverted U-shaped relationship while in Africa, house prices and competitiveness are low, and the income and the population are evenly distributed(Figure 6-4, Figure 6-5).

Figure 6-4 Scatter diagram of per capita disposable income, competitiveness and house prices

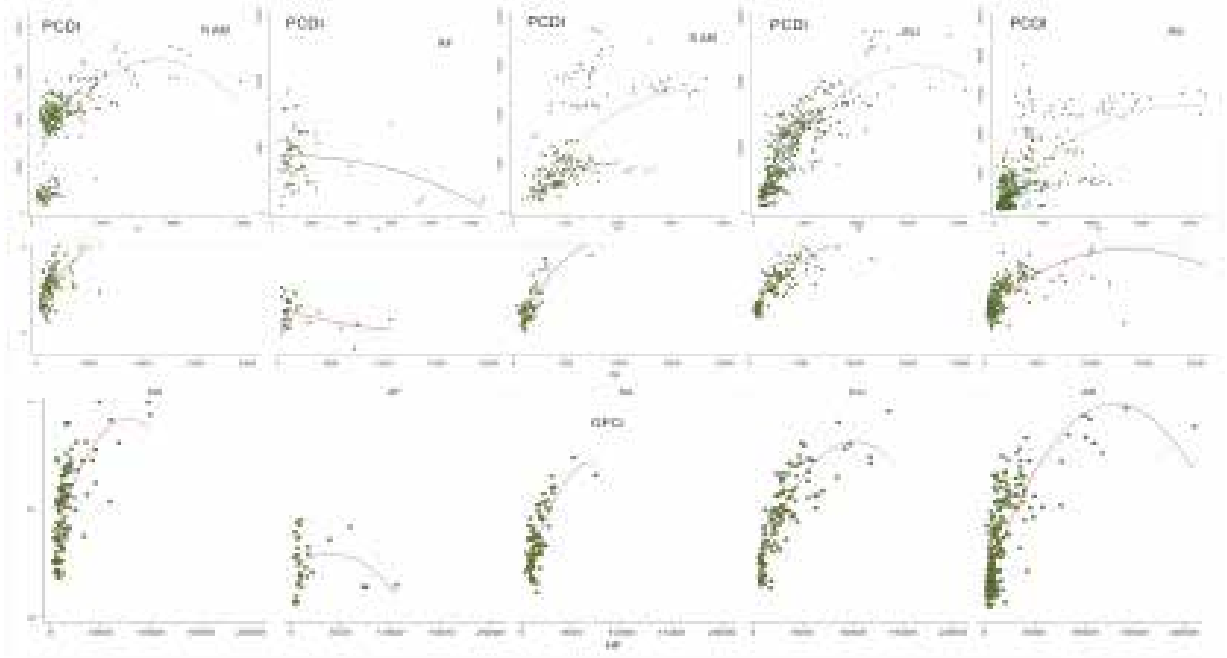
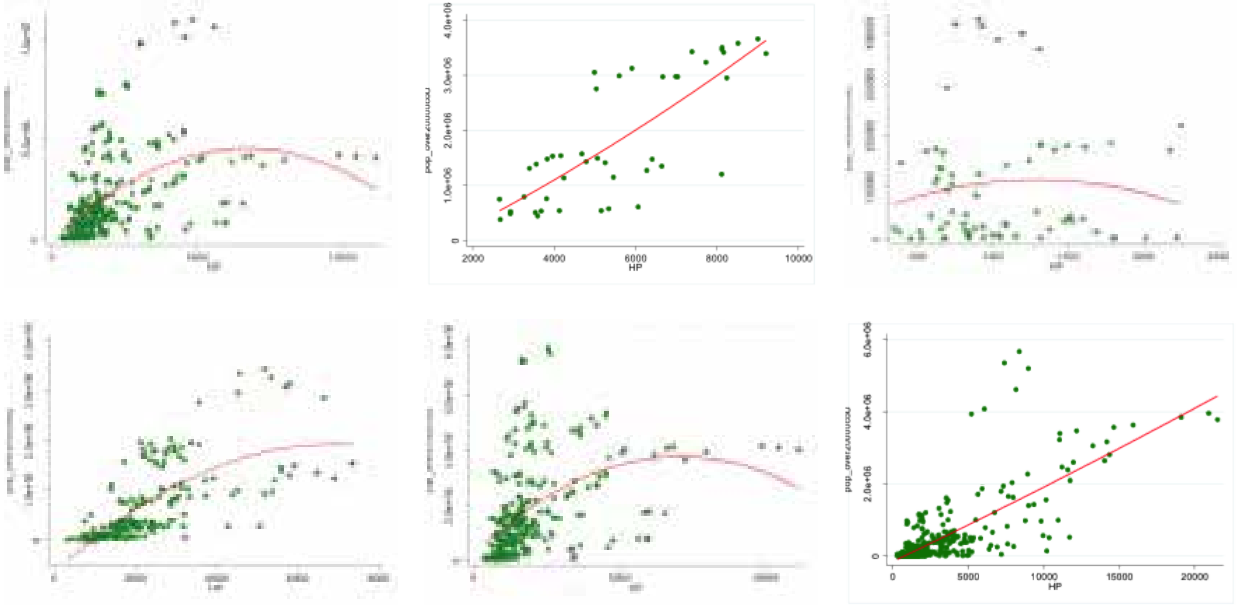


Figure 6-5 The relationship between the high-income population and house prices

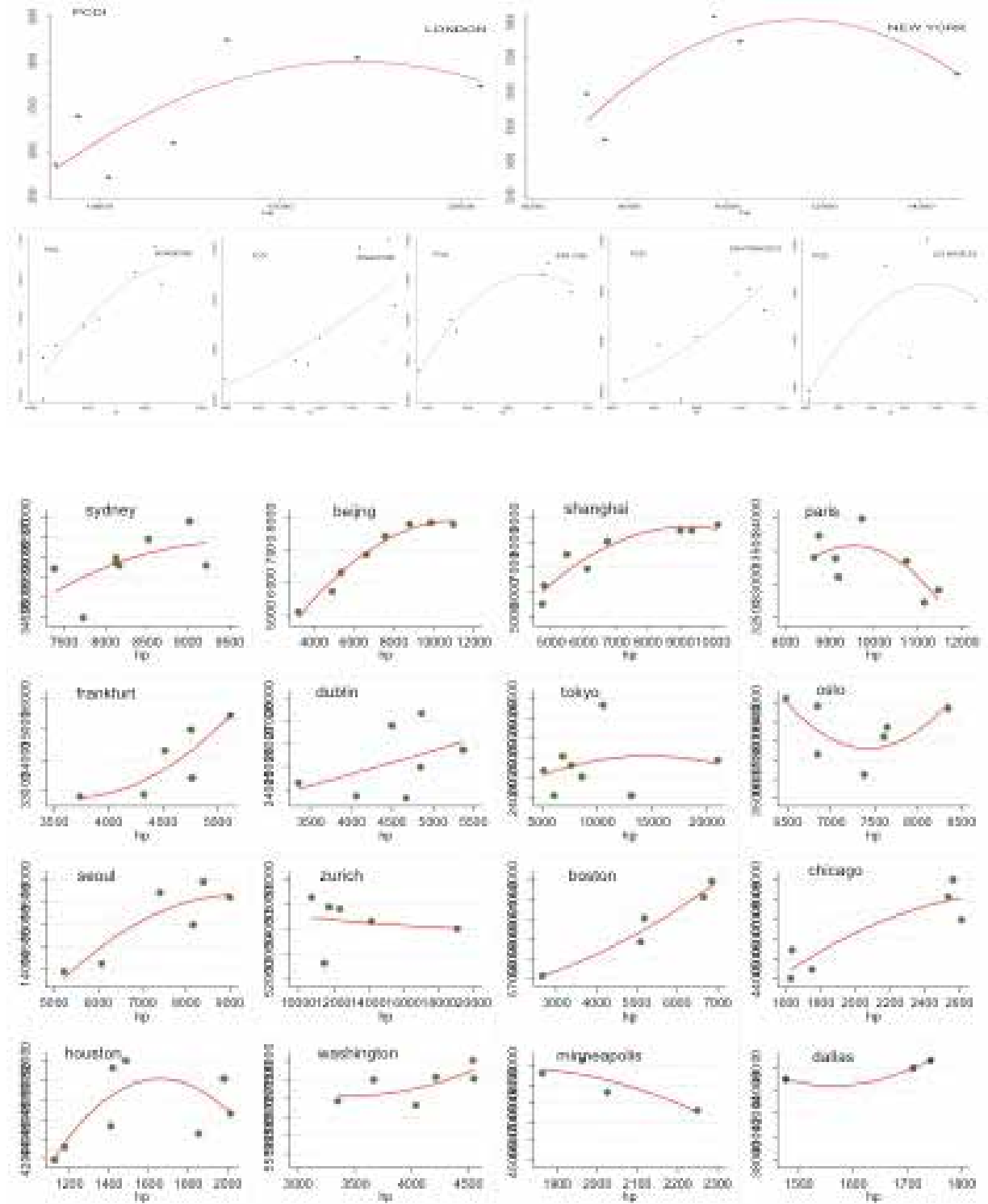


Source: City and Competitiveness Index Database, CASS

First-tier cities display no obvious distribution pattern of per capita disposable income, population and house price; second-tier cities have a concentrated and small population; third-tier cities tend to have low income; and fourth-tier cities are characterized by low house price, low income and a small population.

Top cities have seen the inverted U-shaped relationship between income and house prices and major cities have seen this trend.

Figure 6-6 Scatter diagrams of per capita disposable income and house prices



Source: City and Competitiveness Index Database, CRSS

Major developed and developing countries generally have a clear income-price relationship; India suffers from an extremely uneven income-price relationship.

The high-income population-price, wage-price relationship is not clear for major cities. The major urban agglomerations around the world have already experienced inverted U-shaped relationship between the house price and income. (see Figure 6-7 to Figure 6-8)

Figure 6-7 Relationship between income and house prices in Yangtze River Delta Metropolitan Regions, Pearl River Delta Metropolitan Regions, CHINA

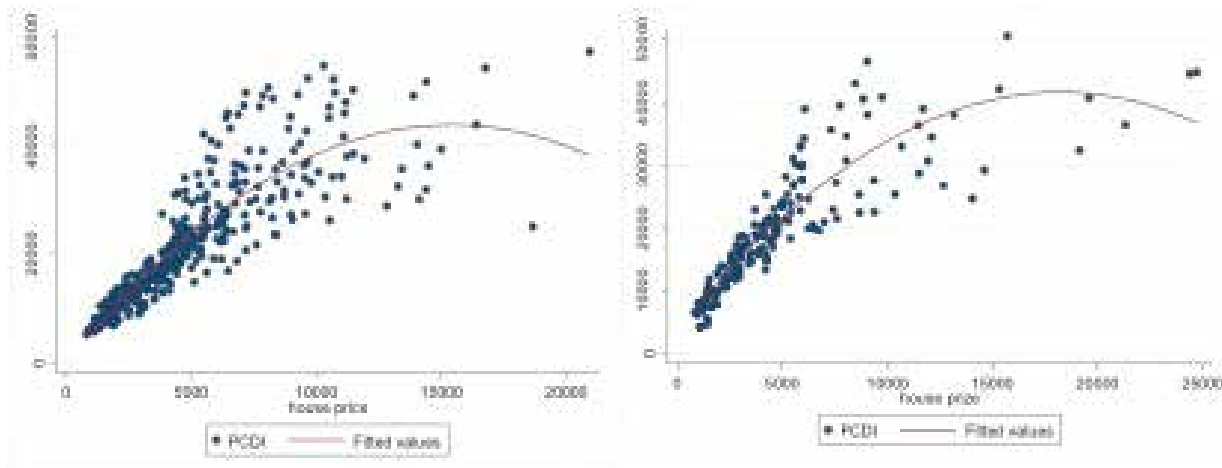


Figure 6-8 Relationship between income and house prices in Boston-Washington Metropolitan Regions, North Carolina Metropolitan Regions, USA

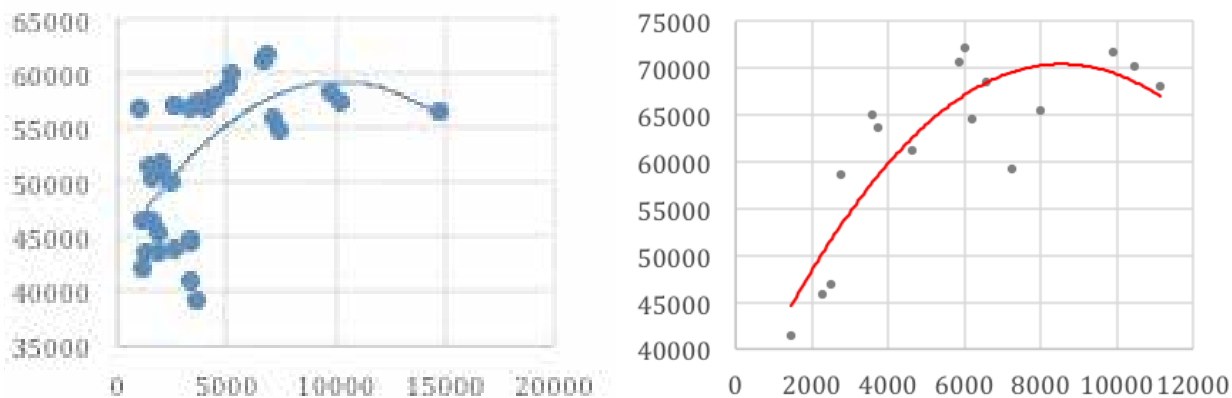
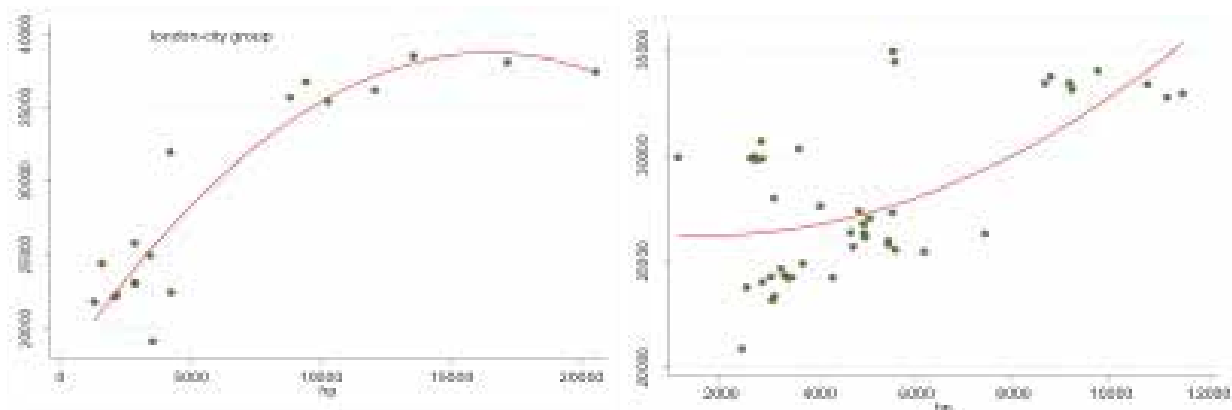


Figure 6-9 Relationship between income and house prices in London - Liverpool Metropolitan Regions, England ; northwestern European Metropolitan Regions



Chapter 7 City story: House Prices and Competitiveness



Figure 7-1 Silicon Valley urban landscape map

7.1 Silicon Valley: Despite the rapid rise in house prices in Silicon Valley, residents bear the decline in capacity, but this did not significantly weaken the competitiveness of the city, especially scientific and technological innovation activities are still booming. The government should find a balance between high prices and economic development.



Figure 7-2 Pittsburgh city landscape

7.2 Pittsburgh: Pittsburgh's relatively low housing prices is not enough to attract industry and talent, is not conducive to the improvement of urban competitiveness. The government should pay attention to the improvement of the quality of life.

7.3 Singapore: A sound housing system is a key guarantee for stabilizing the housing price and enhancing urban competitiveness. Efficient government control is vital for keeping the housing price in a reasonable range.

Figure 7-3 Singapore city landscape





Figure 7-4 urban landscape map of Melbourne

7.4 Melbourne: Melbourne's current high house prices weaken the affordability of residential housing and the cost of labor as a core of competitiveness. This has seriously damaged the competitiveness of the increase.



Figure 7-5 urban landscape map of Tokyo

7.5 Tokyo: The rapid rise in housing prices in Tokyo poses a huge risk to the improvement of urban competitiveness, the elaboration of the real estate tax system is the focus of the problem.



Figure 7-6 urban landscape map of Taipei

7.6 Taipei: Although the price is relatively high, but the rental price is still very reasonable. The government needs to formulate a reasonable housing policy to ensure the competitiveness of the upgrade.

7.7 Guangzhou: A relatively affordable price is positive to attract global talent and enterprises, to promote urban innovation, economic vitality continue to improve, to achieve healthy and rapid economic development.

Figure 7-7 urban landscape map of Guangzhou



7.9 Valencia, Bilbao and Madrid: Spain's urban housing supply and price increases will eventually result in housing market distortions, endangering urban competitiveness.

Figure 7-9 Madrid city landscape map



Figure 7-8 urban landscape map of Foshan

7.8 Foshan: Foshan's effective housing supply system helps to maintain the stability of housing prices, stable housing prices and flexible land supply policy to promote the upgrading of urban competitiveness.





Figure 7–10 urban landscape map of Lima

7.10 Lima: In recent years, house prices have risen, creating an explosive population growth, prompting the Lima city center to expand, suburban economic vitality, but also caused the gap between rich and poor and so on. The government should give a solution from the policy of supply and credit.



Figure 7–11 urban landscape map of Buenos Aires

7.11 Buenos Aires: Real estate development is the main driver of Buenos Aires's urban growth. The need to develop urban regulations, to encourage real estate development and to solve the negative impact of real estate development.

Chapter 8 Economic Foundations for Sustainable Urbanization: The link with Competitiveness²

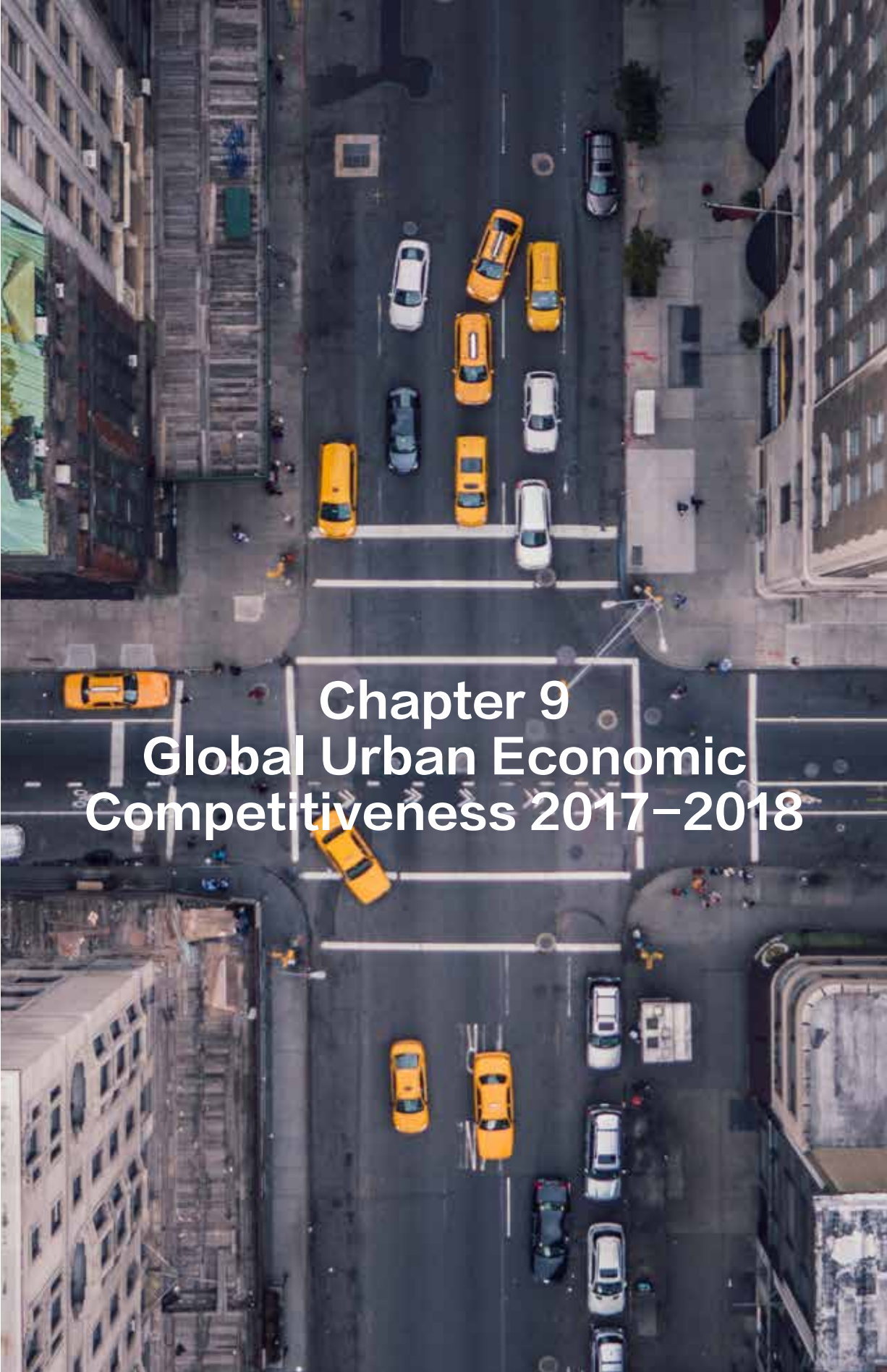


To support city leaders to achieve sustainable urbanisation by providing urban planning methods and systems to address current urbanization challenges such as population growth, urban sprawl, poverty, inequality, pollution, congestion, as well as urban biodiversity, urban mobility, and energy. This work is done with cities, as urban economies generate more than 90% of global gross value added (Gutman 2007). This chapter explains what are the fundamentals needed to design urbanisation policies and what is the link with competitiveness.

We sustain that competitiveness is an expression of productivity, and from a city approach, both are strongly linked to the spatial dimension and urban layout. UN-Habitat promotes five key principles for urban design UN-HABITAT “A New Strategy of Sustainable Neighbourhood Planning: Five

principles” , as concepts for urban planning rather than economics; The second essential pillar for successful PCE is a sound financial plan, meaning proper budgeting, revenue generation and expenditure management; Rules and regulations have the power to shape the form and character of the city by playing an essential role in the implementation of urban plans.

For policy, Rules and regulations have the power to shape the form and character of the city by playing an essential role in the implementation of urban plans. cities need to build and strengthen the core conditions for sustainable urbanization, and those are the rules and regulations, municipal finance, and urban planning and design. Planning, Finance, and Regulations are the base for the Three-Pronged Approach.



Chapter 9 Global Urban Economic Competitiveness 2017–2018

9.1 The imbalance of global urban economic competitiveness poses challenges to emerging market cities

Among the top 10 cities, the United States has an obvious edge while China catches our eyes with the rapid rise of its cities. Our findings show that New York, Los Angeles, Singapore, London, and San Francisco rank top 5 in terms of the global urban economic competitiveness index. Of the top 10 cities, five are from North America, accounting for 50%, three are from Asia, and two are from Europe. No cities from the other three continents enter the top 10 list.

Table 9-1 Top 20 Cities in Global Urban Economic Competitiveness Ranking

Rank	City	Economic Competitiveness	Country	Continent
1	New York	1.000	United States	North America
2	Los Angeles	0.999	United States	North America
3	Singapore	0.971	Singapore	Asia
4	London	0.958	United Kingdom	Europe
5	San Francisco	0.941	United States	North America
6	Shenzhen	0.934	China	Asia
7	Tokyo	0.920	Japan	Asia
8	San Jose	0.916	United States	North America
9	Munich	0.905	Germany	Europe
10	Dallas	0.903	United States	North America
11	Houston	0.900	United States	North America
12	Hong Kong	0.887	China	Asia
13	Seoul	0.848	Korea	Asia
14	Shanghai	0.837	China	Asia
15	Guangzhou	0.835	China	Asia
16	Miami	0.816	United States	North
17	Chicago	0.815	United States	North
18	Boston	0.812	United States	North
19	Dublin	0.811	Ireland	Europe
20	Beijing	0.810	China	Asia

Source: Urban and Competitiveness Index Database of Chinese Academy of Social Sciences

9.2 The overall lagging and imbalance of financial service has become a constraint to restrict the economic competitiveness of global cities

Global financial activities are concentrated in a small number of cities, and the overall level is low. Among the top ten cities, New York ranks the first, and China's cities are upgrading rapidly. China has three cities – Hong Kong of China., Shanghai, Beijing – on the list of top ten global financial cities.

Table 9–2 Top ten global cities in financial services index

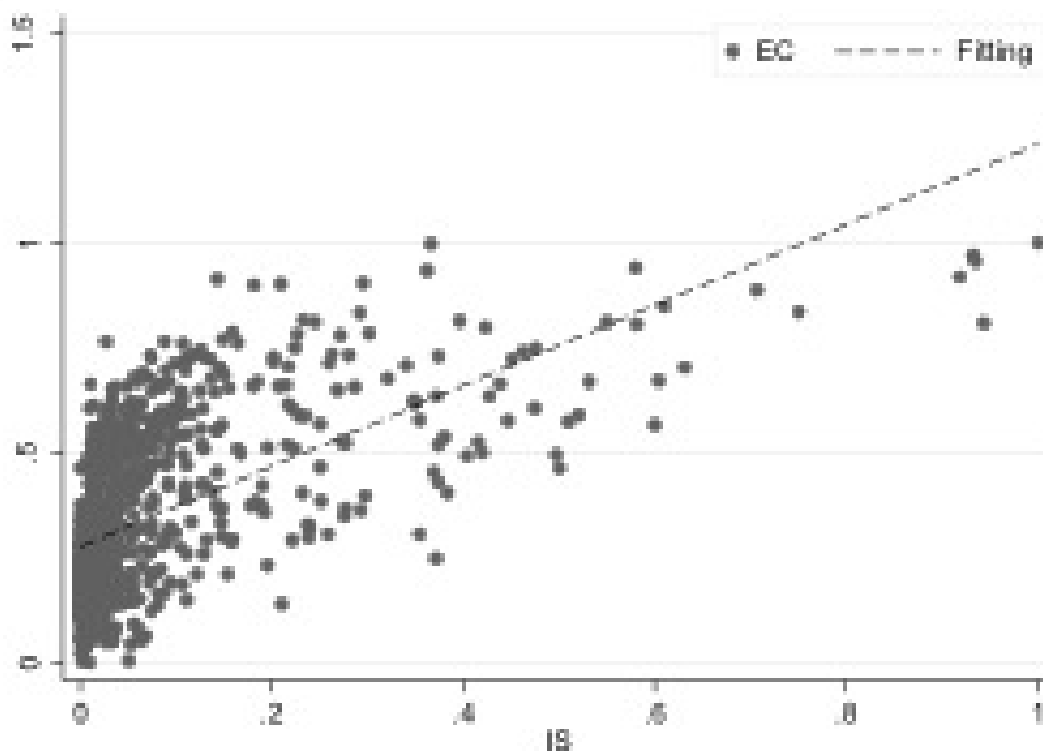
No.	City	Financial services index	Country	Continent
1	New York	1.000	USA	North America
2	London	0.679	UK	Europe
3	Tokyo	0.603	Japan	Asia
4	Hong Kong	0.600	China	Asia
5	Shanghai	0.534	China	Asia
6	Mumbai	0.474	India	Asia
7	Beijing	0.449	China	Asia
8	Singapore	0.447	Singapore	Asia
9	Paris	0.445	France	Europe
10	Seoul	0.444	ROK	Asia

Source: City and Competitiveness Index Database, CASS.

9.3 The global urban industrial system with tier-based jump jump calls for the development of Urban Agglomerations

The global urban industrial system shows the phenomenon of "tier-based jump", with the industrial system concentrated in cities with stronger economic competitiveness. Urban development calls for the reconstruction of value chain of global industrial system. Urban development calls for the reconstruction of value chain of global industrial system. The industrial system index has a significant positive decelerating effect on economic competitiveness. The reconstruction of the global industrial system value chain will have greater effects on enhancing the economic competitiveness, thus boosting global economic growth and balanced development.

Figure 9–1 The dispersion and fitting of global urban economic competitiveness and industrial system index



9.4 The rise of cities in emerging markets is driving the transformation of human resource patterns in global cities

At the continental level, the top 100 global cities in human resources index are mainly in Asia and North America. North America, Oceania, South America, and Asia are leading in the world's human resources, with the mean value and median of human resources higher than the world average level. The mean value and median of human resources in Europe and Africa are slightly lower than the world average.

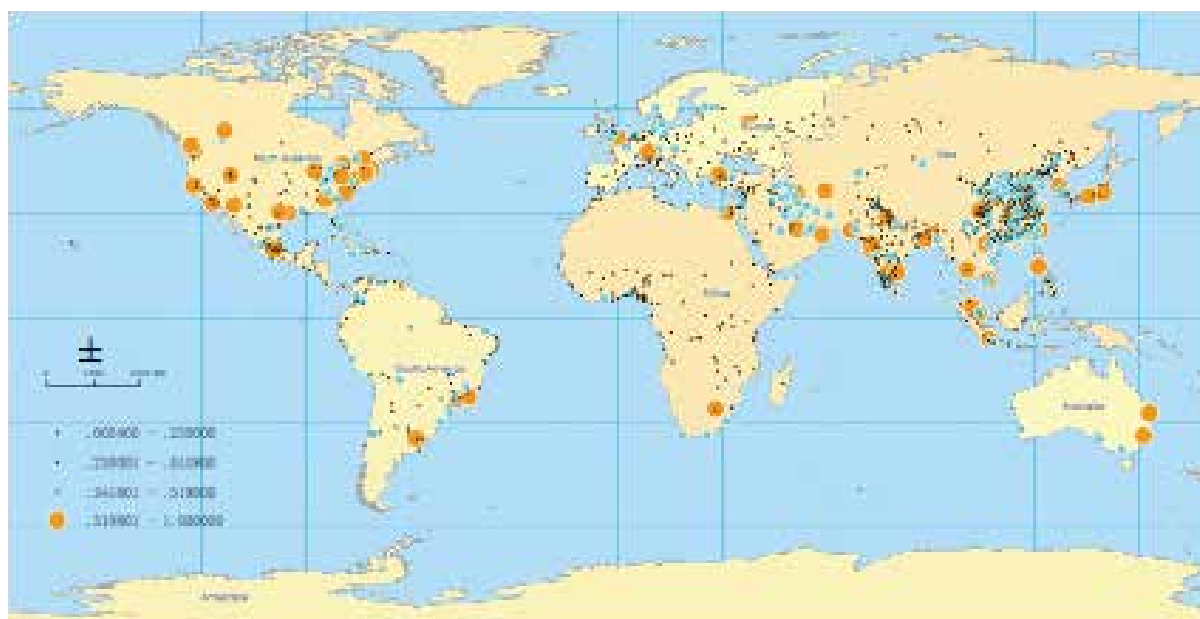
Table 9-3 The continental situation of human resources index and the proportion of top 100 cities

Scope	Number of samples	Mean value	Median	Variation coefficient	Number of top 100 cities	Proportion of top 100 cities	Maximum value		
							City	Index	World ranking
Asia	563	0.299	0.282	0.434	59	10.48%	Tokyo	1.000	1
Europe	127	0.259	0.232	0.381	5	3.94%	London	0.791	9
Africa	104	0.238	0.218	0.369	3	2.88%	Cairo	0.586	39
Oceania	7	0.403	0.414	0.291	2	28.57%	Sydney	0.531	67
North America	132	0.332	0.274	0.500	25	18.94%	New York	0.977	2
South America	74	0.313	0.280	0.337	5	6.76%	Sao Paulo	0.915	3

Source: City and Competitiveness Index Database, CASS

The distribution pattern of global urban human resources shows a situation of China – U.S. confrontation.

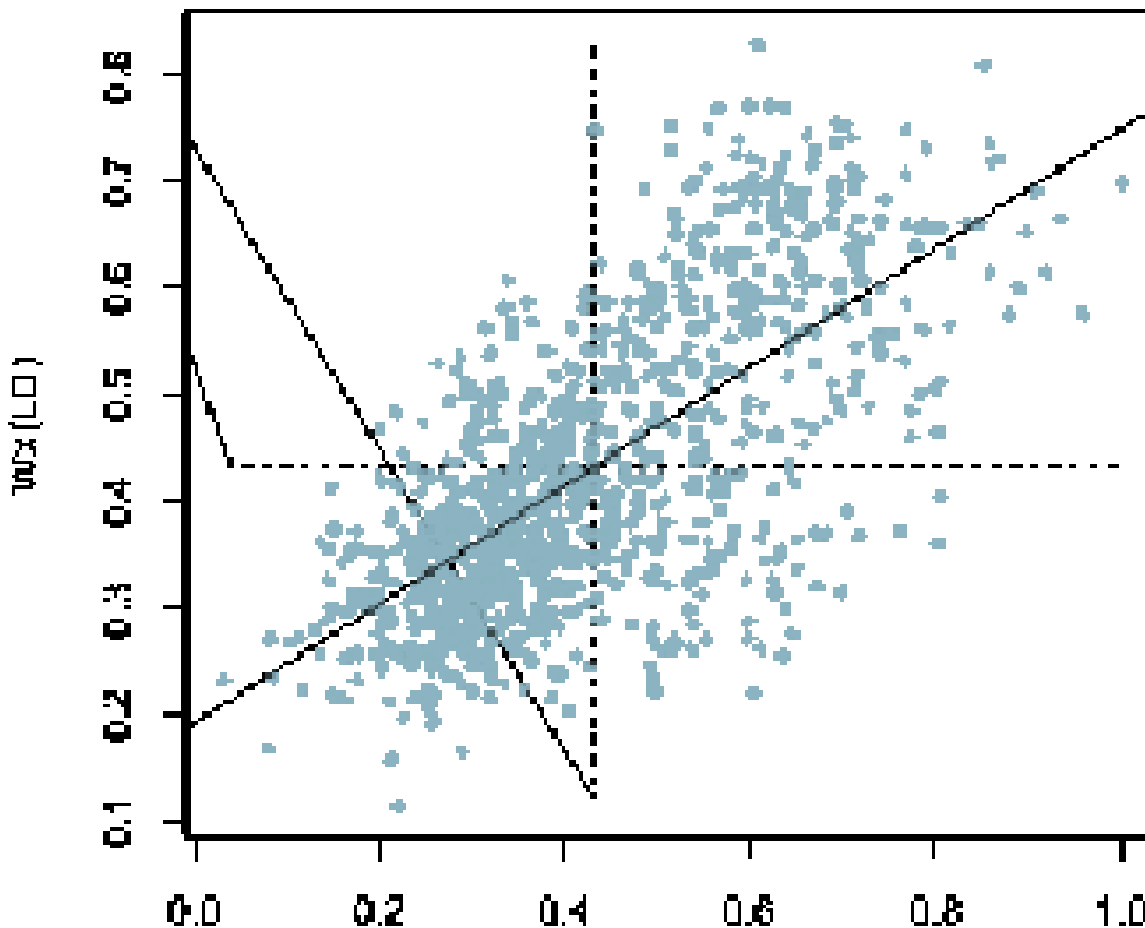
Figure 9-2 Global urban human resources distribution



9.5 The spatial agglomeration effect of local demand in global cities poses a challenge to narrow the differences between North and South

The spatial agglomeration effect of local demand in global cities is obvious, highlighting the importance of the development of urban agglomerations. The spillover effect of adjacent cities, it can better raise the overall local demand level of cities when developing the economy with urban agglomeration as a unit, thus avoiding the negative effects of a single city on its surrounding ones in the development. The pattern of local demand driving up economic competitiveness in the global cities begins to show up. There exists significant quadratic positive correlation between the local demand index level and the economic competitiveness in main cities of the world, which shows that the level of local demand has significant accelerating positive effect on economic competitiveness in major cities of the world.

Figure 9-3 Global cities' local demand index: Moran scatter diagram



Source: City and Competitiveness Index Database, CASS.

At the continental level, the local demand gap between cities in the northern and southern hemispheres is prominent. By contrast, the southern hemisphere is relatively backward. South America, Oceania and Africa have 7 cities, 4 cities and 2 cities on the list respectively, accounting for 9.46%, 57.14% and 1.92% of their corresponding samples, falling behind in the ranking of quantities.

Table 9–4 The continental situation of local demand index and the proportion of top 100 cities

Scope	Number of samples	Mean value	Median	Variation coefficient	Number of top 100 cities	Proportion of top 100 cities	Maximum value		
							City	Index	World ranking
Asia	563	0.372	0.338	0.375	20	3.55%	Tokyo	0.958	2
Europe	127	0.530	0.537	0.260	23	18.11%	London	0.918	4
Africa	104	0.325	0.312	0.430	2	1.92%	Cairo	0.716	57
Oceania	7	0.669	0.682	0.130	4	57.14%	Sydney	0.783	28
North America	132	0.603	0.608	0.246	43	32.58%	New York	1.000	1
South America	74	0.478	0.463	0.247	7	9.46%	Buenos Aires	0.805	19

Source: City and Competitiveness Index Database, CASS

9.6 Reducing the business cost is the prerequisite for cities in emerging economies to catch up

it is found that, the mean value of urban business environment index of BRICS and AIIB member countries is obviously lower than the average level of G7 countries, and the gap between AIIB member countries and G7 in the mean value of urban business environment index is even smaller. From the perspective of differential indicators, the cities' business environment differences of both BRICS and AIIB are significantly higher than those of G7. This indicates that cities of emerging economies represented by BRICS need to improve the business environment and innovation environment through accelerating institutional and legal guarantees, so as to effectively reduce the market operation cost and the burden of enterprises, and improve operational efficiency and international competitiveness, which is an important way for cities of emerging economies to attain their own development and catch up with and surpass developed countries.

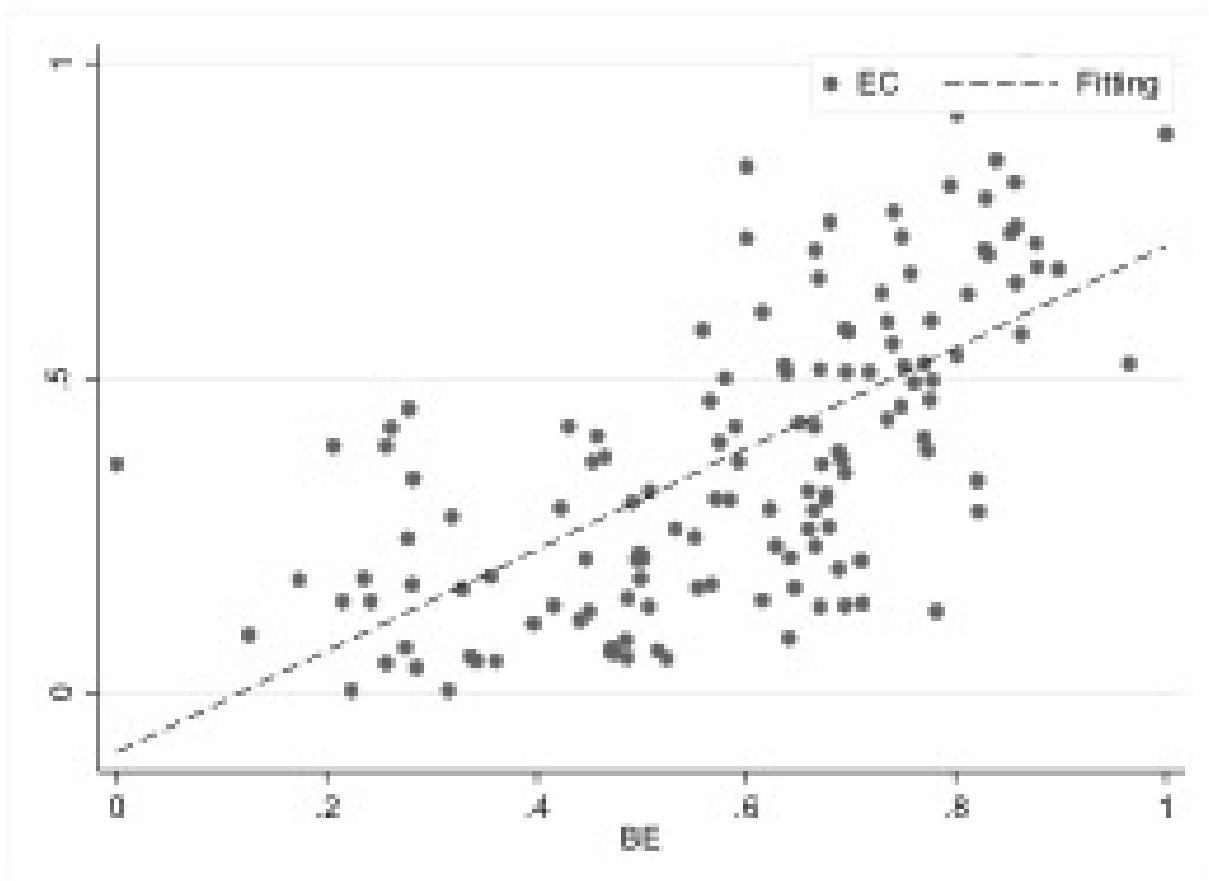
Table 9–5 The business cost index of the primate cities in global representative countries: international organizations

Scope	Sample size	Mean value	Median	Standard deviation	Variation coefficient	Gini coefficient	Theil index
BRICS	7	0.487	0.553	0.218	0.447	0.228	0.094
G7	7	0.635	0.651	0.149	0.235	0.116	0.023
AIIB	35	0.499	0.461	0.171	0.342	0.188	0.056

9.7 The key for emerging economies to catch up and take the lead is to play the positive stimulating role of business environment in economic competitiveness.

Examining the correlation between the business environment index and economic competitiveness of the primate cities of 138 representative countries, there exists significant linear positive correlation between the two, showing that the business environment level of major cities in the world has linear positive promotion effect on their economic competitiveness.

Figure9-4 The scatterplot and fitting of economic competitiveness and business environment index of the primate cities of representative countries



9.8 The spatial agglomeration of global urban infrastructure helps rapidly develop cities in emerging economies

9.9 Advantages of urban living environment to create a foundation for emerging economies to enhance global economic competitiveness

it can be found that the mean value of urban living environment index of BRICS and AIIB member countries has no obvious disadvantage compared with that of G7. But from the differential indicators, we can see that the urban living environment difference of BRICS is slightly greater than that of G7, and the living environment index difference between AIIB member countries is relatively large.

Table 9–6 Global urban living environment index: international organizations

Scope	Number of samples	Mean value	Median	Standard deviation	Variation coefficient	Gini coefficient	Theil index
BRICS	463	0.621	0.650	0.119	0.192	0.101	0.021
G7	141	0.695	0.690	0.108	0.156	0.087	0.012
AIIB	730	0.620	0.645	0.135	0.217	0.117	0.025

9.10 Analysis of the driving forces of the top 100 Cities in the global economic competitiveness

Local demand, infrastructure, institutional environment, and human resources are driving forces that are more closely related to the economic competitiveness of the top 100 cities

Table 9–5 The calculation of grey correlation degree of top 100 global cities in economic competitiveness



9.11 Cities of China and U.S.: Situation Analysis of Chaser and Front-runner

While the United States is the largest developed country, China is the largest emerging market economy. Cities of the two countries are at different development stages and gap is inevitable. Generally, American cities are more advanced than Chinese cities. Except for the living environment index, American cities surpass Chinese cities in all the individual indexes.

Figure 9-6 Radar Map of Individual Indexes of Top 20 Chinese and U.S. Cities

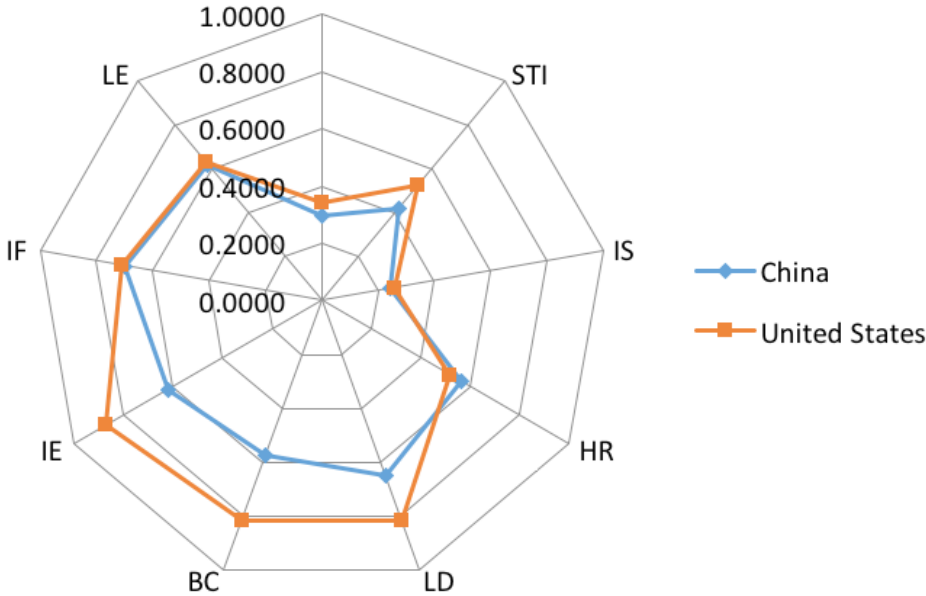
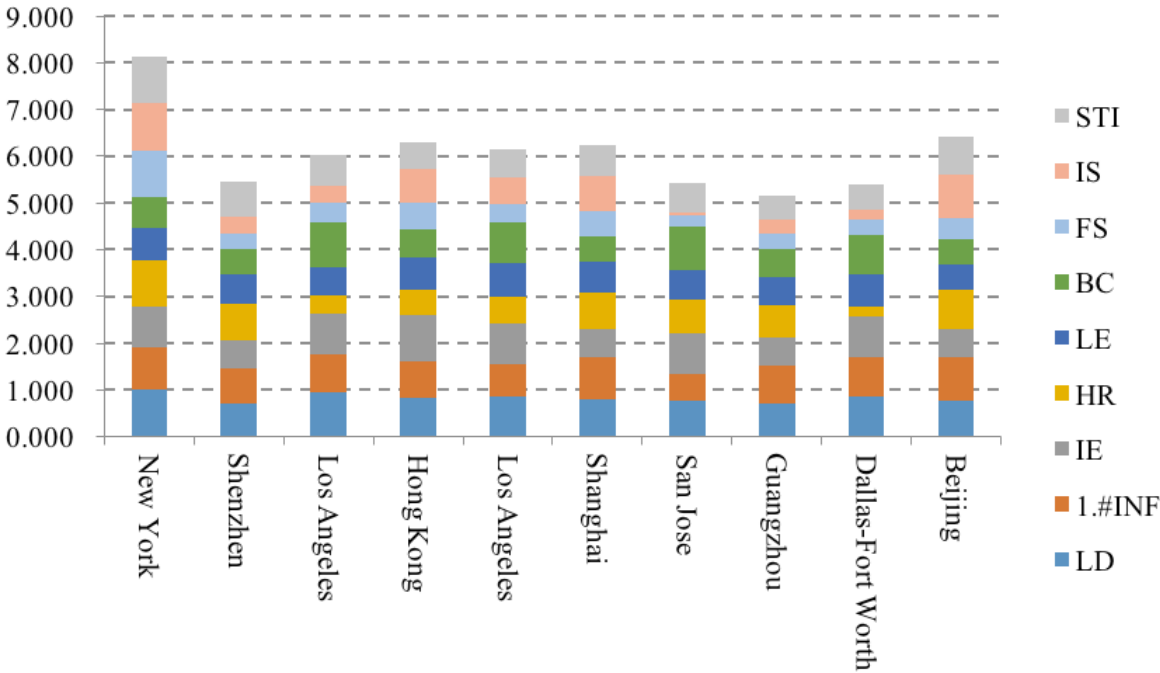



Figure 9-7 Histogram of Individual Indexes of Top 5 Chinese and U.S. Cities





Chapter 10

Global urban Sustainable Competitiveness Report 2017–2018

10.1 Global Urban Sustainable Competitiveness Pattern

The rapid rise of advanced cities in Asia which are at the same sustainable competitive level as European and North American cities. The sustainable competitiveness gap between African cities is the largest. The sustainable competitiveness difference of German cities is the smallest, while the difference of Brazilian cities is the biggest. The urban agglomerations of European and American countries have high proportion of top 100 cities, while in developing countries top cities are mainly economic centers. The increase of high-income population has greater influence on the sustainable competitiveness of cities with a low proportion of high-income population.

Figure 10-1 Distribution of sustainable competitiveness of global cities

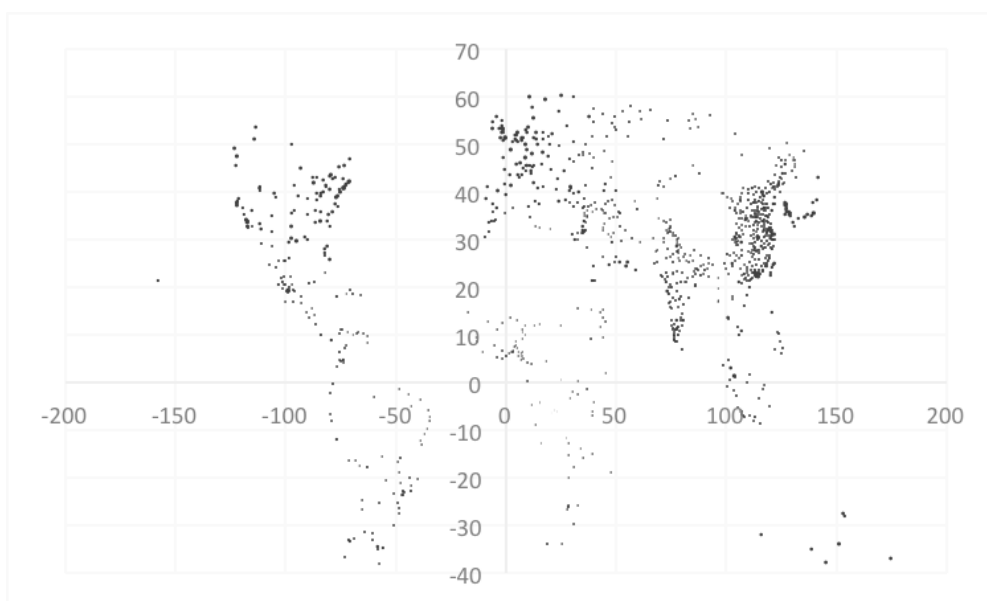
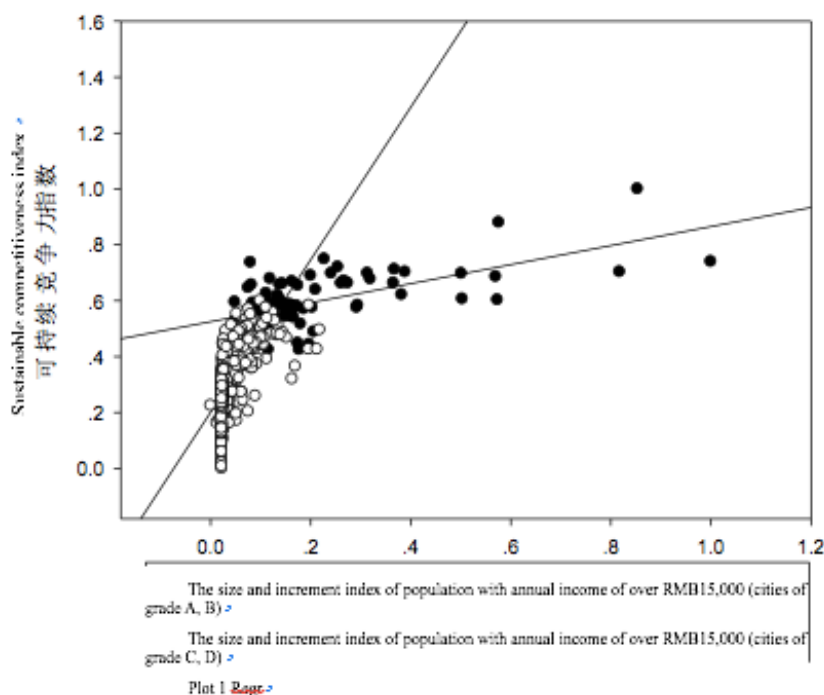


Figure 10-2 Correlation between the revealed competitiveness index and the sustainable competitiveness index



10.2 The Economic Vitality Pattern of Global Cities

U.S. urban economy vitality remains tremendous and China's urban economy vitality is growing rapidly. The economic vitality of African cities is the worst, and the economic vitality difference of Asian cities is the largest. The United States and China have the largest number of cities entering the list of top 100 cities in economic vitality. The economic vitality of urban agglomerations in the United States outshines the rest and the differences within the urban agglomerations of developing countries are huge. The increase of high-income population has greater influence on the economic vitality of cities with a low proportion of high-income population.

Figure 10.3 Distribution of global urban economic vitality

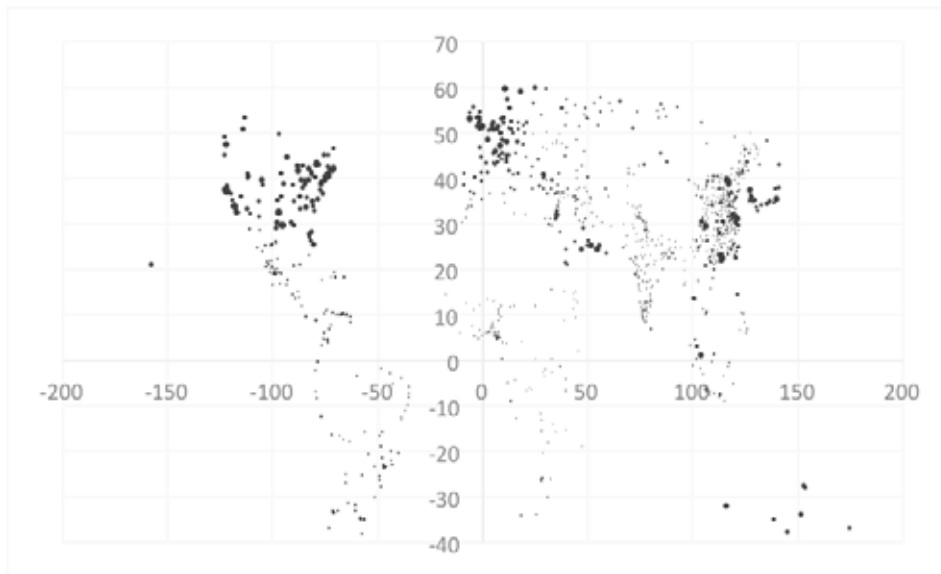
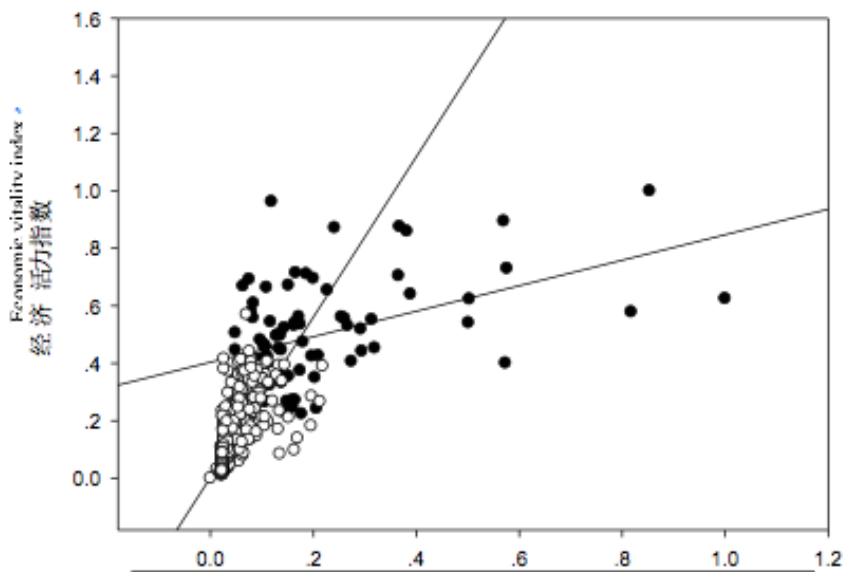


Figure 10-4 Correlation between the revealed competitiveness index and the sustainable competitiveness index



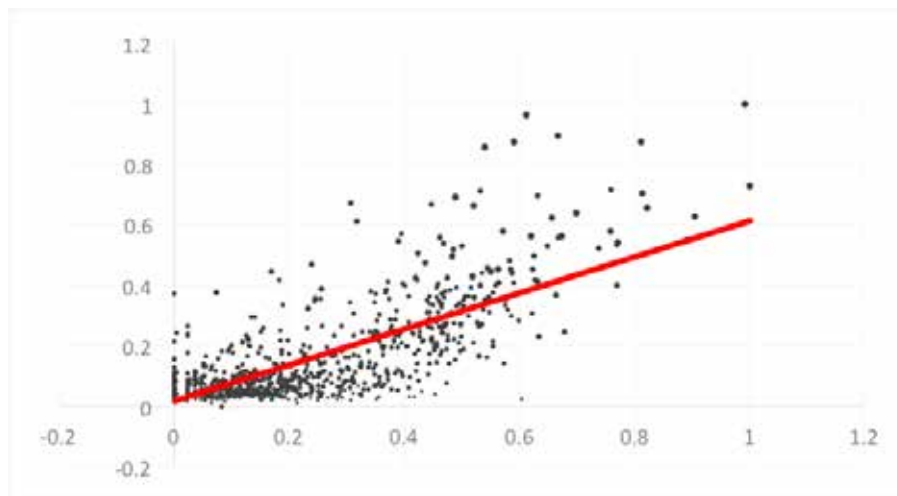
The size and increment index of population with annual income of over RMB15,000 (cities of grade A, B)

The size and increment index of population with annual income of over RMB15,000 (cities of grade C, D)

Plot 1 [Eagc](#)

In addition, it is found that technological innovation and economic vitality are positively correlated.

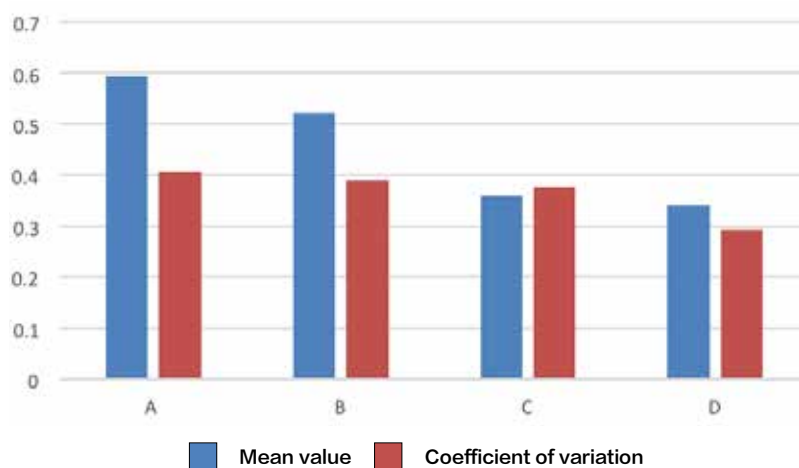
Figure10–5 Correlation between technological innovation and economic vitality



10.3 Global Urban Human Capital Potential Pattern

The human capital of U.S. cities outshines that of other top cities in the world. Asia has the largest number of cities entering the list of top 100 human capital cities, and the human capital difference of cities in North America is the biggest. The United States and China have the largest number of cities entering the list of top 100 cities in human capital. The human capital of American and Chinese urban agglomeration is stronger, while the human capital of German and Korean urban agglomerations is weaker. The higher the level of urban human capital, the greater the internal city differences.

Figure10–6 The mean value and variation coefficient of human capital at different city grades



10.4 Technology Innovation Index: The global focus is in North America, and the development of global cities is extremely unbalanced

Cities are concentrated in low-value regions of technology innovation, while the long tail of distribution extends to the right. It again verifies the conclusion that the gap between indexes of different cities is large.

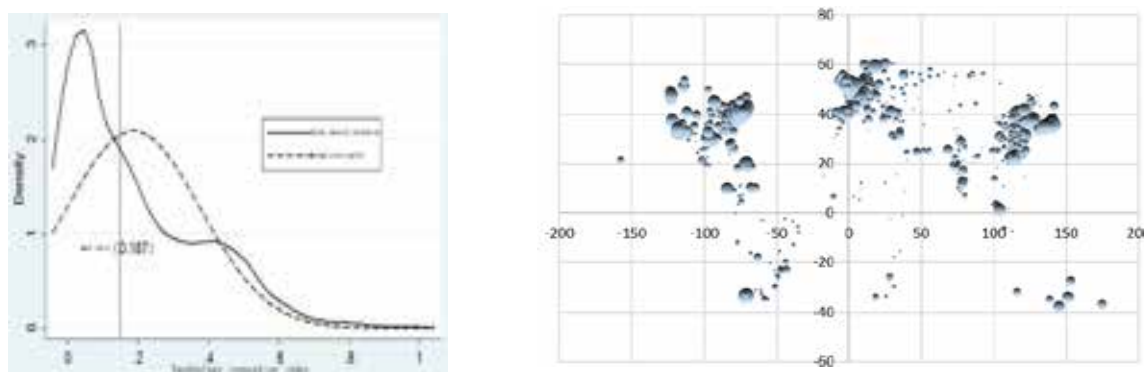
The national gap between North and South is wide, and the difference within Asia is large. The strength of G7 is strong, but the distribution within major countries is uneven. The urban agglomerations of European and American countries are evenly developed, while in developing countries, they are concentrated in the central cities. There is significant positive correlation between the technology innovation index and the size of high-income population.

Table 10-1 Top 20 global cities in technology innovation index

Continent	Country	City	Index	Ranking	Continent	Country	City	Index	Ranking
Europe	UK	London	1.000	1	Asia	China	Shenzhen	0.759	11
North America	USA	New York	0.993	2	Asia	ROK	Seoul	0.758	12
Asia	Japan	Tokyo	0.904	3	Europe	Sweden	Stockholm	0.738	13
North America	USA	Washington DC	0.893	4	North America	USA	Chicago	0.699	14
North America	USA	Boston	0.822	5	Europe	Spain	Madrid	0.678	15
Asia	China	Beijing	0.813	6	North America	USA	Minneapolis	0.674	16
North America	USA	Houston	0.812	7	North America	USA	Los Angeles	0.668	17
North America	USA	San Diego	0.771	8	North America	USA	Philadelphia	0.668	18
Europe	France	Paris	0.770	9	Europe	Germany	Stuttgart	0.663	19
Asia	Japan	Osaka	0.769	10	Asia	China	Shanghai	0.656	20

Source: City and Competitiveness Index Database, CASS

Figure 10-7



Source: City and Competitiveness Index Database, CASS

10.5 Social Index: the global social index is leading and cities of Japan and the Republic of Korea are outstanding on the whole

From the kernel density estimation for European and American countries and African and South American countries respectively, it can be viewed that the peak value of European and American countries was around 0.7. The social instability mainly exists in Africa and South America. East Asia and Europe are in the lead while South America and Africa are lagging behind. The difference between G7 countries is large, while Brazil and South Africa of BRICS are weak. The social index of central cities in urban agglomerations is not dominant, and the Rhine-Ruhr urban agglomeration in Germany is outstanding. At different per

capita income levels, the correlation between the social index and the city is different.

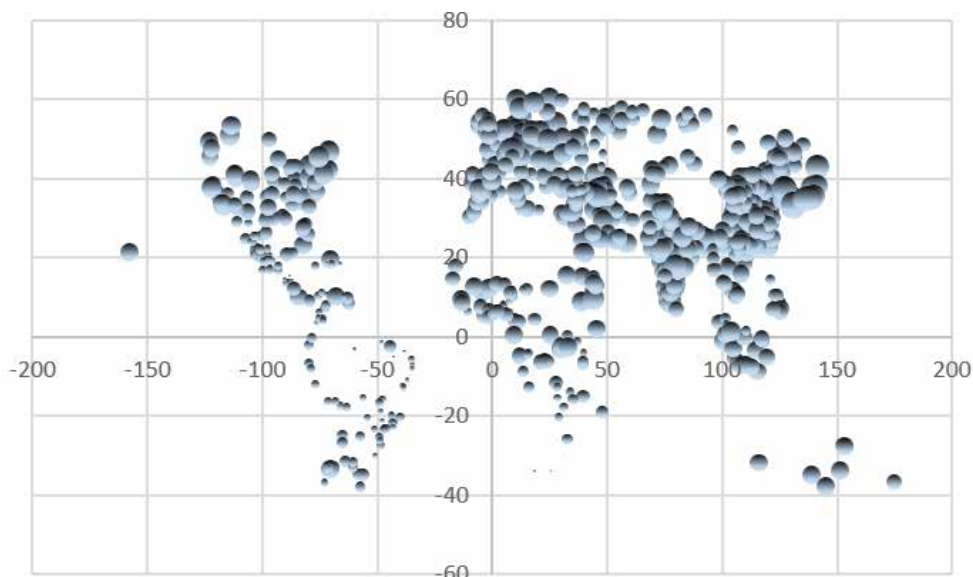
Table10-2 The system management indexes of primate cities among the top ten global countries

City	Jeonju	Zurich	Sapporo	Nagoya	Munich	Kwangju	Daejeon	Daegu	Cheongju	Osaka
Country	ROK	Switzerland	Japan	Japan	Germany	ROK	ROK	ROK	ROK	Japan
Continent	Asia	Europe	Asia	Asia	Europe	Asia	Asia	Asia	Asia	Asia
Index	1	0.976	0.971	0.962	0.962	0.937	0.935	0.935	0.934	0.933
Ranking	1	2	3	4	5	6	7	8	9	10

Table 10-3 The continental situation of social index and the proportion of top 100 cities

Region	Sample	Number of top 100 cities and the proportion	Mean value	Variation coefficient	Maximum value		
					City	Index	World ranking
Asia	585	58 (9.91%)	0.671	0.137	Jeonju	1	1
Europe	132	33 (25%)	0.681	0.184	Zurich	0.976	2
North America	131	7 (5.34%)	0.546	0.311	Quebec	0.861	43
South America	77	0 (0%)	0.321	0.308	Managua	0.543	816
Oceania	7	0 (0%)	0.698	0.066	Sydney	0.765	115
Africa	103	2 (1.94%)	0.480	0.397	Tanzania	0.784	87
World average	1035	100 (100%)	0.187	1.02	Jeonju	1	1

Figure 10-8 The social index distribution of global cities



Source: City and Competitiveness Index Database, CASS

10.6 Environmental Quality Index: The environmental quality of Europe and the United States is leading, and North and South countries show polarization.

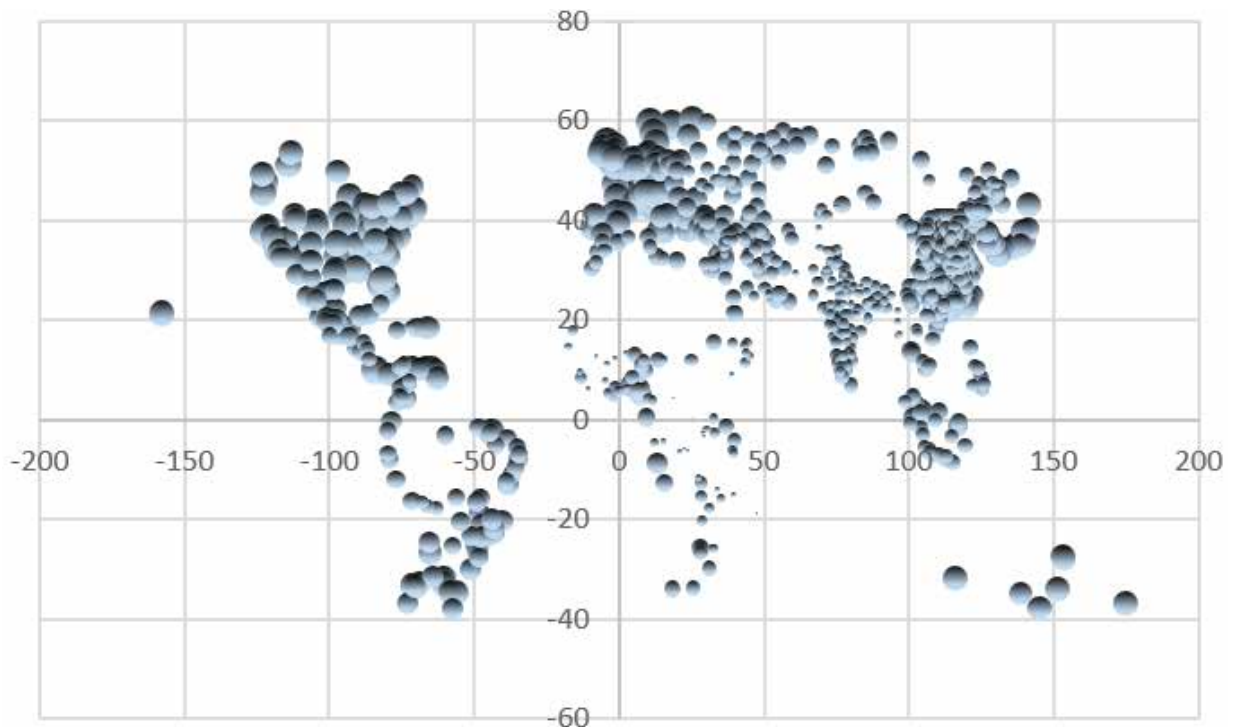
The top ten cities in the social index ranking were all in Europe and North America, of which 8 were European cities and most of them were from North Europe. The environmental quality index of countries in Asia, Africa and Latin America lags behind, with an obvious gap between north and south countries. G7 is ahead of the world, and the BRICS is backward in terms of the environmental quality. The city environmental quality of European and North American urban agglomerations is very balanced, while the urban agglomerations in India and China are obviously backward with remarkable internal differences. The environmental quality index and urban per capita GDP are significantly positively correlated.

Table10-4 Top ten global cities in environmental quality index

City	Zurich	Geneva	Stockholm	London	Bridgeport – Stamford	Oslo	Bristol	Paris	San Jose	Goteborg
Country	Switzerland	Switzerland	Sweden	UK	USA	Norway	UK	France	USA	Sweden
Continent	Europe	Europe	Europe	Europe	North America	Europe	Europe	Europe	North America	Europe
Index	1	0.984	0.928	0.922	0.918	0.907	0.897	0.896	0.894	0.889
Ranking	1	2	3	4	5	6	7	8	9	10

Source: City and Competitiveness Index Database, CASS

Figure 10-9 Urban distribution of environmental quality index



Source: City and Competitiveness Index Database, CASS

10.7 System Management Index: The system management of Oceania and Europe is in the lead, and the system management of developed countries is relatively perfect

The institutional indexes of European and North American countries show an overall advantage, while the system management indexes of Asian, African and South American countries are relatively backward. The index gap between northern and southern countries is obvious. The system management of European and American countries is advanced, while that of Asian, African and Latin American countries lags behind. European and American urban agglomerations are way ahead, while those in India and China lag far behind. The higher the city tier is, the stronger the positive correlation between the system management index and the urban high-income population is.

Table 10-5 The system management indexes of primate cities among the top ten global countries

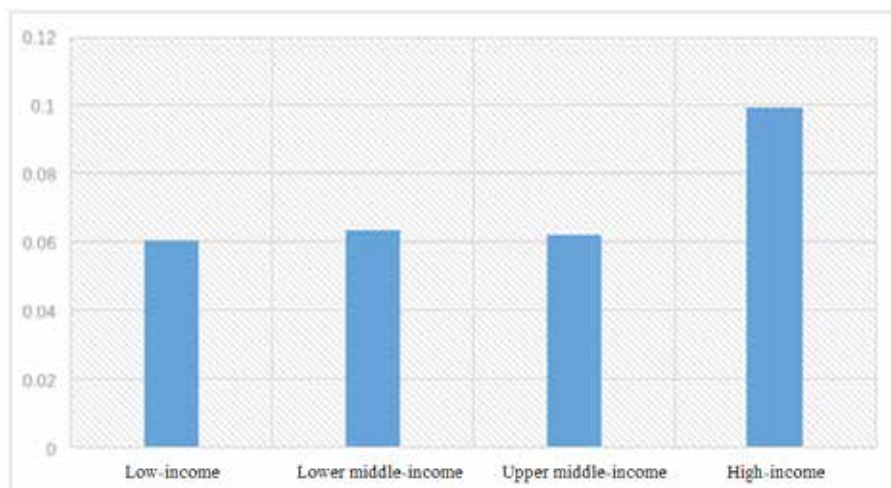
City	Hong Kong	Singapore	Auckland	Sydney	London	Copenhagen	Zurich	New York	Helsinki	Oslo
Country	China	Singapore	New Zealand	Australia	UK	Denmark	Switzerland	USA	Finland	Norway
Continent	Asia	Asia	Oceania	Oceania	Europe	Europe	Europe	North America	Europe	Europe
Index	1	0.991	0.966	0.899	0.880	0.878	0.870	0.870	0.863	0.858
Ranking	1	2	3	4	5	6	7	8	9	10

Source: City and Competitiveness Index Database, CASS

10.8 Global connection Index: high-income developed countries still dominate global connectivity and exchanges, but the emerging-market countries as represented by China are experiencing rapid urban growth

The top ten cities in terms of global connectivity are: New York, London, Hong Kong, Beijing, Singapore, Shanghai, Paris, Tokyo, Sydney, and Dubai.

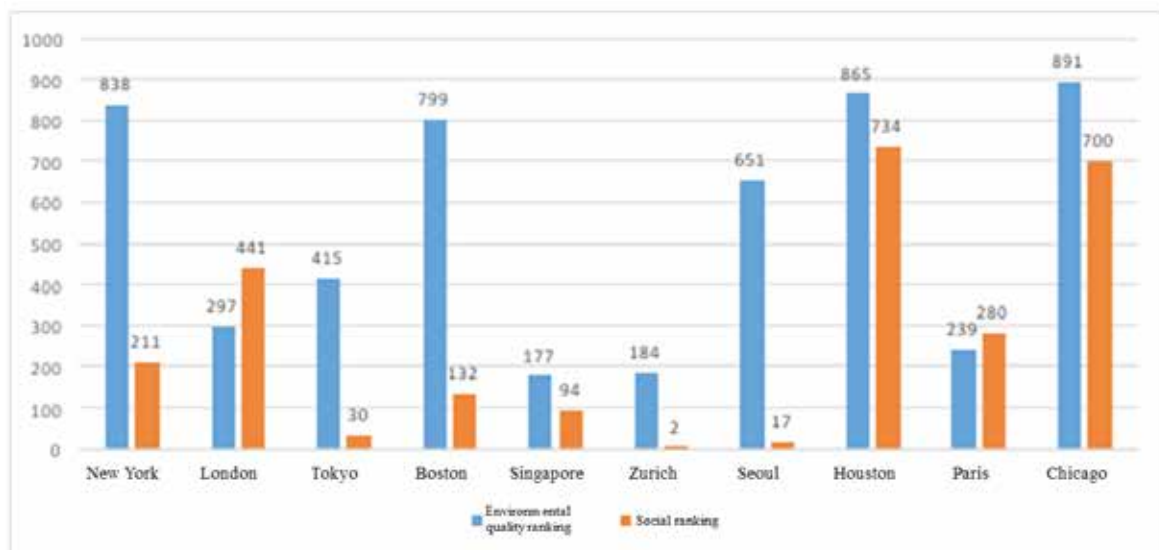
Figure 10-10 Mean global connectivity index of different income levels



10.9 The top 100 cities for sustainable competitiveness represent the blueprint of the topmost urban development in the world

Technological innovation and strong global connectivity are the basic characteristics of the top 100 cities for sustainable competitiveness. The cities from emerging-market countries as represented by China, the Republic of Korea and Singapore are performing increasingly well. In addition, North American cities are the best in technological innovation but have poor environmental quality; whereas European cities are doing well in both innovation drive and environment.

Figure 10-11 World rankings of the top 10 cities for sustainable competitiveness in terms of environmental quality and social condition



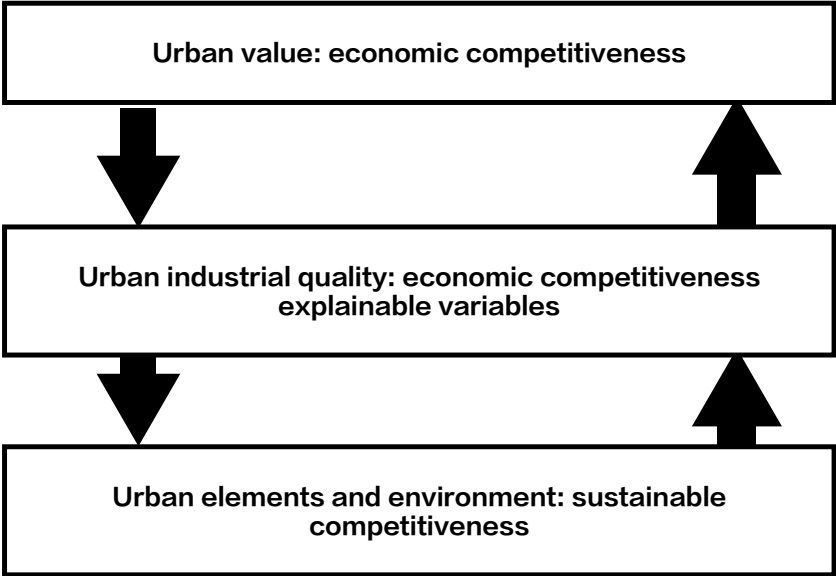
10.10 The cities of the G7 generally have top-ranking sustainable competitiveness

And the BRICS cities have great development potential. The cities of mature developed countries as represented by the US are the most vigorous but have outstanding environmental quality and social problems. The cities of emerging-market countries as represented by the BRICS are generally better than those of the mature developed countries. In addition, none of the cities from the G7 countries are ranked among the top 100 for environmental quality. The BRICS countries are becoming an important part of global connectivity, but their innovation capacity and government management capacity still needs improvement. The cities of emerging-market countries as represented by the BRICS are developing fast in infrastructure. In particular, the infrastructure of Chinese cities has generally caught up with that of developed countries.

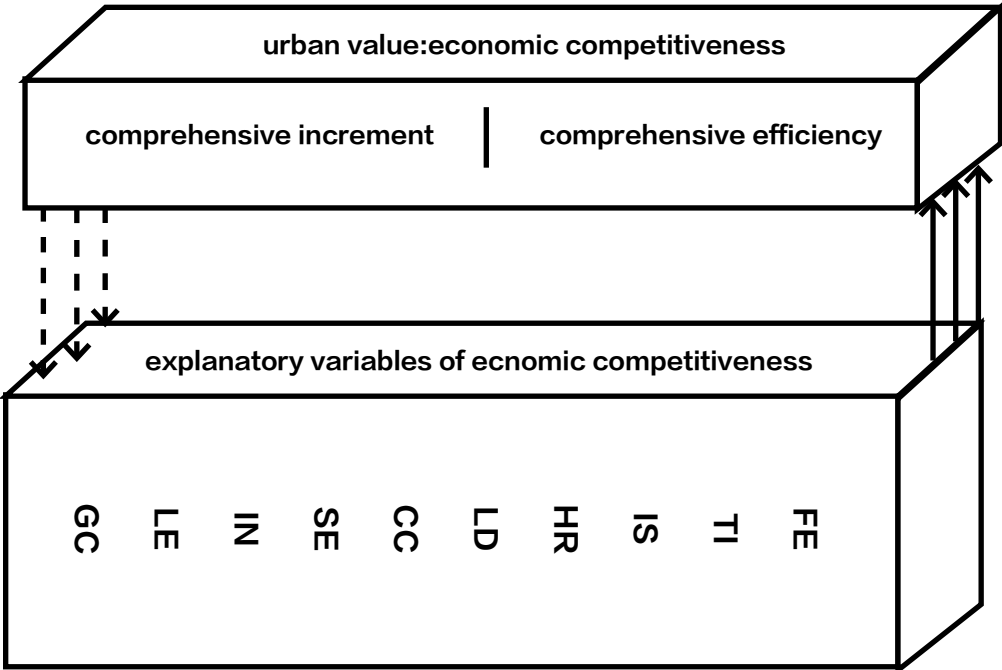
Appendix 1

A.1 Theoretical Framework

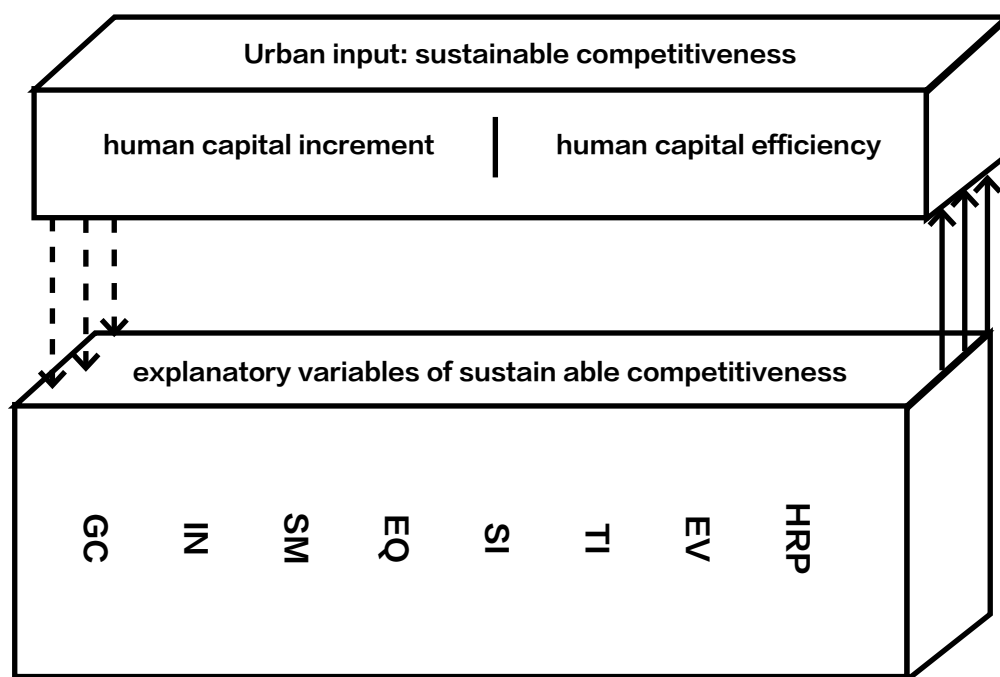
Urban competitiveness is the city's ability of creating value currently and in the future. the sustainable competitiveness determines the urban economic competitiveness via the explanatory variable of economic competitiveness; in turn, the urban economic competitiveness affects the sustainable competitiveness via the explanatory variable of economic competitiveness.



Economic competitiveness is essentially the city's ability to create value and obtain economic rent. The capacity level is reflected by the city's competitive results in the current period, which is the output, current and short-term reflection of urban competitiveness. Economic competitiveness is mainly manifested as the comprehensive long-term growth of urban economy and the economic density, which are measured by the average increment of GDP for 5 consecutive years and the GDP per square kilometer of land.



Urban sustainable competitiveness is essentially the conditions of a city's elements and environment. As the decisive factors in the process of urban development, the situation of a city's elements and environment has a decisive impact on the current and future development of the city.



A.2 Sample Selection and Calculation Method

A city is usually a residential area with a high degree of urbanization, this report uses metropolitan caliber, according to the World Urbanization Prospects released by Department of Economic and Social Affairs of the United Nations in 2015, selects global cities with the population above 500,000 as samples, a total of 1,035 sample cities around the world have been selected. From the view of spatial distribution, The 1,035 cities basically represent the status of cities in different regions and at different levels. For the specific 1,035 sample cities, see Chapter One. It is noteworthy that, GDP per square kilometer is adopted in measuring economic competitiveness, the selection criteria of which are more stringent, and due to its availability and accuracy, only 1,007 cities are selected for the economic competitiveness model and ranking.

The index system of urban competitiveness index includes the first-level index, the second-level index and the third-level index. When the third-level indicator is used to synthesize the second-level indicator and the second-level indicator is used to synthesize the first-level indicator, the method of standardization followed by equal weight addition is adopted. The standardization methods are indexation, thresholding, and percentage ranking and so on. In the sum of the process using a non-linear weighted synthesis method and equal weight method.

Appendix 2

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Postscript

"Global Urban Competitiveness Report 2017–2018" by the Chinese Academy of Social Sciences Institute of Finance and Economics, Dr. Ni Pengfei and UN–HABITAT Marco Kamiya, dozens of international and domestic well-known universities, authoritative statistical departments, corporate R & D institutions of nearly 100 experts to participate, After more than a year, the theory and investigation, measurement and case studies and other empirical research results. The basic theory, index system, research framework and important conclusions of the Global Urban Competitiveness Report 2017–2018 are mainly made by Dr. Ni Pengfei and Marco Kamiya. Deputy editor Wang Haibo (Institute of Finance and Economics, Chinese Academy of Social Sciences) is responsible for reporting data collection, specific calculation, data collection, coordination and scheduling work.

With regard to urban competitiveness, this report divides it into two parts: economic competitiveness and sustainable competitiveness, and designs the index system respectively. The economic competitiveness of 1007 cities in the world and the sustainable competitiveness of 1035 cities are carried out and measured. This report, based on the relationship between global urban competitiveness and house prices, has written a thematic report named by "house prices, changing the city world". The manuscript of the report is written by the author after the theory of tempering, collecting the data, measuring and drawing the basic conclusion.

The contribution of each chapter is: Chapter 1: Annual ranking of general global urban competitiveness in 2017–2018, The whole group; Chapter 2: Global Urban Competitiveness of the overall report, Ni Pengfei, Marco Kamiya, Shen Li (CASS), Gong Weiyong (CASS); Chapter 3: City housing prices and competitiveness: Research Background and Literature Review, Zhang Yangzi (CASS); Chapter 4: The Relationship between Housing Prices and Urban Competitiveness: A Theoretical Framework, Cao Qingfeng(Tianjin University of Finance and Economics); Chapter 5: Global Urban Real Estate Market Status, Guo Hongyu (China Foreign Affairs University); Chapter 6: Chapter 6 Relationship between the Housing Price and Competitiveness :Empirical analysis, Xu Haidong, Wanghaibo; Chapter 7: City story: House Prices and Competitiveness, Desen Lin (University of Pennsylvania), Andrew Renninger(University of Pennsylvania), Aidan T. Thomson(Ernst & Young U.S., LLP), Susan M. Wachter(University of Pennsylvania), Zeng Zhihua(World Bank), Peter Karl Kresl(Bucknell University), Zhanghao Yangzi (CASS), Han Sun Sheng (University of Melbourne), Dai Erbiao(Asian Economic Growth Research Institute, Japan), Qin Jian (Guangzhou Academy of Social Sciences), Lin Chu–Chia(National Chengchi University), Xiao Geng (University of Hongkong) ,LU Wenzhi (Hong Kong University of Science and Technology), Paloma Taltavull de La Paz (University of Alicante, Spain), Marco Kamiya, Oswaldo Molina (Universidad del Pac í fico, Lima), Cynthia

Goythia(Torcuato Di Tella University); Chapter 8 Economic Foundations for Sustainable Urbanization: The link with Competitiveness, Marco Kamiya, Loeiz Bourdic; Chapter 9 Global urban comprehensive economic competitiveness report 2017–2018, Li Bo (Tianjin University of Finance and Economics), Liu Xiaonan (CASS); Chapter 10 Global urban Sustainable Competitiveness report 2017–2018, Wang Yufei(Beijing University of Posts and Telecommunications), Zhou Xiaobo (the Agricultural Bank of China and the University of International Business and Economics), Wei Jie (China Northwestern University); Appendix: Ni Pengfei, Wang Haibo.

"Global Urban Competitiveness Report 2017–2018" and the study of global urban competitiveness have been reported by consultants and many institutions and individuals with sincere and unselfish support. We express our admiration, respect and thanks for all the support and care of this research unit and person.

Ni Pengfei, Marco Kamiya
October 24, 2017

Annual ranking of general global urban competitiveness 2017-2018

(Top 200)

<i>Metropolitan area</i>	<i>Metropolitan area level</i>	<i>Country/Area</i>	<i>Economic Competitiveness Index</i>	<i>Rank</i>	<i>Sustainable Competitiveness Index</i>	<i>Rank</i>
<i>New York</i>	<i>A+</i>	<i>United States</i>	<i>1.0000</i>	<i>1</i>	<i>1.0000</i>	<i>1</i>
<i>Los Angeles</i>	<i>A</i>	<i>United States</i>	<i>0.9992</i>	<i>2</i>	<i>0.6519</i>	<i>16</i>
<i>Singapore</i>	<i>A</i>	<i>Singapore</i>	<i>0.9708</i>	<i>3</i>	<i>0.7082</i>	<i>5</i>
<i>London</i>	<i>A+</i>	<i>United Kingdom</i>	<i>0.9578</i>	<i>4</i>	<i>0.8756</i>	<i>2</i>
<i>San Francisco</i>	<i>A</i>	<i>United States</i>	<i>0.9408</i>	<i>5</i>	<i>0.6554</i>	<i>14</i>
<i>Shenzhen</i>	<i>B</i>	<i>China</i>	<i>0.9337</i>	<i>6</i>	<i>0.5761</i>	<i>35</i>
<i>Tokyo</i>	<i>A-</i>	<i>Japan</i>	<i>0.9205</i>	<i>7</i>	<i>0.7371</i>	<i>3</i>
<i>San Jose</i>	<i>A</i>	<i>United States</i>	<i>0.9158</i>	<i>8</i>	<i>0.6342</i>	<i>22</i>
<i>Munich</i>	<i>B+</i>	<i>Germany</i>	<i>0.9053</i>	<i>9</i>	<i>0.6402</i>	<i>18</i>
<i>Dallas</i>	<i>A-</i>	<i>United States</i>	<i>0.9026</i>	<i>10</i>	<i>0.5805</i>	<i>32</i>
<i>Houston</i>	<i>A-</i>	<i>United States</i>	<i>0.9000</i>	<i>11</i>	<i>0.6792</i>	<i>8</i>
<i>Hong Kong</i>	<i>A</i>	<i>Hong Kong, China</i>	<i>0.8873</i>	<i>12</i>	<i>0.6581</i>	<i>13</i>
<i>Seoul</i>	<i>A-</i>	<i>Korea, South</i>	<i>0.8478</i>	<i>13</i>	<i>0.7023</i>	<i>7</i>
<i>Shanghai</i>	<i>A-</i>	<i>China</i>	<i>0.8367</i>	<i>14</i>	<i>0.6110</i>	<i>27</i>
<i>Guangzhou</i>	<i>B+</i>	<i>China</i>	<i>0.8346</i>	<i>15</i>	<i>0.5746</i>	<i>36</i>
<i>Miami</i>	<i>B+</i>	<i>United States</i>	<i>0.8162</i>	<i>16</i>	<i>0.5305</i>	<i>53</i>
<i>Chicago</i>	<i>A-</i>	<i>United States</i>	<i>0.8151</i>	<i>17</i>	<i>0.6711</i>	<i>10</i>
<i>Boston</i>	<i>A-</i>	<i>United States</i>	<i>0.8121</i>	<i>18</i>	<i>0.7166</i>	<i>4</i>
<i>Dublin</i>	<i>A-</i>	<i>Ireland</i>	<i>0.8109</i>	<i>19</i>	<i>0.5796</i>	<i>33</i>
<i>Beijing</i>	<i>A-</i>	<i>China</i>	<i>0.8102</i>	<i>20</i>	<i>0.6708</i>	<i>11</i>
<i>Paris</i>	<i>A-</i>	<i>France</i>	<i>0.8060</i>	<i>21</i>	<i>0.6771</i>	<i>9</i>
<i>Frankfurt</i>	<i>A-</i>	<i>Germany</i>	<i>0.7993</i>	<i>22</i>	<i>0.6305</i>	<i>23</i>
<i>Tianjin</i>	<i>B-</i>	<i>China</i>	<i>0.7866</i>	<i>23</i>	<i>0.4735</i>	<i>93</i>
<i>Stockholm</i>	<i>B+</i>	<i>Sweden</i>	<i>0.7862</i>	<i>24</i>	<i>0.6373</i>	<i>21</i>
<i>Philadelphia</i>	<i>B+</i>	<i>United States</i>	<i>0.7837</i>	<i>25</i>	<i>0.6232</i>	<i>24</i>
<i>Seattle</i>	<i>B+</i>	<i>United States</i>	<i>0.7808</i>	<i>26</i>	<i>0.6530</i>	<i>15</i>
<i>Kinki</i>	<i>B-</i>	<i>Japan</i>	<i>0.7699</i>	<i>27</i>	<i>0.5826</i>	<i>31</i>
<i>Suzhou</i>	<i>C+</i>	<i>China</i>	<i>0.7648</i>	<i>28</i>	<i>0.4227</i>	<i>160</i>
<i>Stamford</i>	<i>B</i>	<i>United States</i>	<i>0.7644</i>	<i>29</i>	<i>0.4751</i>	<i>90</i>
<i>Tel Aviv-Yafo</i>	<i>B-</i>	<i>Israel</i>	<i>0.7642</i>	<i>30</i>	<i>0.4018</i>	<i>189</i>
<i>Baltimore</i>	<i>B-</i>	<i>United States</i>	<i>0.7602</i>	<i>31</i>	<i>0.5738</i>	<i>37</i>

<i>Metropolitan area</i>	<i>Metropolitan area level</i>	<i>Country/Area</i>	<i>Economic Competitiveness Index</i>	<i>Rank</i>	<i>Sustainable Competitiveness Index</i>	<i>Rank</i>
<i>Stuttgart</i>	<i>B-</i>	<i>Germany</i>	<i>0.7497</i>	<i>32</i>	<i>0.5482</i>	<i>48</i>
<i>Istanbul</i>	<i>B</i>	<i>Turkey</i>	<i>0.7480</i>	<i>33</i>	<i>0.5850</i>	<i>30</i>
<i>Geneva</i>	<i>B</i>	<i>Switzerland</i>	<i>0.7449</i>	<i>34</i>	<i>0.5496</i>	<i>47</i>
<i>Toronto</i>	<i>B+</i>	<i>Canada</i>	<i>0.7414</i>	<i>35</i>	<i>0.6431</i>	<i>17</i>
<i>Cleveland</i>	<i>B-</i>	<i>United States</i>	<i>0.7366</i>	<i>36</i>	<i>0.4779</i>	<i>85</i>
<i>Atlanta</i>	<i>B+</i>	<i>United States</i>	<i>0.7351</i>	<i>37</i>	<i>0.6397</i>	<i>19</i>
<i>Dusseldorf</i>	<i>B-</i>	<i>Germany</i>	<i>0.7333</i>	<i>38</i>	<i>0.5187</i>	<i>62</i>
<i>Perth</i>	<i>B</i>	<i>Australia</i>	<i>0.7326</i>	<i>39</i>	<i>0.4413</i>	<i>131</i>
<i>Wuhan</i>	<i>C+</i>	<i>China</i>	<i>0.7310</i>	<i>40</i>	<i>0.4535</i>	<i>116</i>
<i>Vienna</i>	<i>B-</i>	<i>Austria</i>	<i>0.7300</i>	<i>41</i>	<i>0.5690</i>	<i>41</i>
<i>San Diego</i>	<i>B</i>	<i>United States</i>	<i>0.7291</i>	<i>42</i>	<i>0.6148</i>	<i>25</i>
<i>Denver</i>	<i>B</i>	<i>United States</i>	<i>0.7272</i>	<i>43</i>	<i>0.4879</i>	<i>76</i>
<i>Nanjing</i>	<i>B-</i>	<i>China</i>	<i>0.7261</i>	<i>44</i>	<i>0.4845</i>	<i>79</i>
<i>Doha</i>	<i>B-</i>	<i>Qatar</i>	<i>0.7261</i>	<i>45</i>	<i>0.4358</i>	<i>140</i>
<i>Detroit</i>	<i>B-</i>	<i>United States</i>	<i>0.7247</i>	<i>46</i>	<i>0.4652</i>	<i>102</i>
<i>Taipei</i>	<i>B-</i>	<i>Taiwan, China</i>	<i>0.7232</i>	<i>47</i>	<i>0.5255</i>	<i>57</i>
<i>Hamburg</i>	<i>B-</i>	<i>Germany</i>	<i>0.7175</i>	<i>48</i>	<i>0.5587</i>	<i>45</i>
<i>Cologne</i>	<i>C+</i>	<i>Germany</i>	<i>0.7151</i>	<i>49</i>	<i>0.4867</i>	<i>77</i>
<i>Zurich</i>	<i>A-</i>	<i>Switzerland</i>	<i>0.7147</i>	<i>50</i>	<i>0.7063</i>	<i>6</i>
<i>Nashville</i>	<i>B-</i>	<i>United States</i>	<i>0.7132</i>	<i>51</i>	<i>0.4085</i>	<i>178</i>
<i>Minneapolis</i>	<i>A-</i>	<i>United States</i>	<i>0.7090</i>	<i>52</i>	<i>0.5346</i>	<i>51</i>
<i>Berlin</i>	<i>C+</i>	<i>Germany</i>	<i>0.7055</i>	<i>53</i>	<i>0.5628</i>	<i>43</i>
<i>Charlotte</i>	<i>B-</i>	<i>United States</i>	<i>0.7048</i>	<i>54</i>	<i>0.5062</i>	<i>67</i>
<i>Moscow</i>	<i>B</i>	<i>Russia</i>	<i>0.7042</i>	<i>55</i>	<i>0.5231</i>	<i>59</i>
<i>Las Vegas</i>	<i>C+</i>	<i>United States</i>	<i>0.6990</i>	<i>56</i>	<i>0.4154</i>	<i>168</i>
<i>Raleigh</i>	<i>C+</i>	<i>United States</i>	<i>0.6973</i>	<i>57</i>	<i>0.5111</i>	<i>66</i>
<i>Abu Dhabi</i>	<i>B+</i>	<i>United Arab Emirates</i>	<i>0.6959</i>	<i>58</i>	<i>0.5198</i>	<i>60</i>
<i>Milwaukee</i>	<i>C+</i>	<i>United States</i>	<i>0.6908</i>	<i>59</i>	<i>0.4083</i>	<i>180</i>
<i>Austin</i>	<i>B-</i>	<i>United States</i>	<i>0.6835</i>	<i>60</i>	<i>0.5736</i>	<i>38</i>
<i>Salt Lake City</i>	<i>C+</i>	<i>United States</i>	<i>0.6816</i>	<i>61</i>	<i>0.5263</i>	<i>56</i>
<i>Chengdu</i>	<i>C+</i>	<i>China</i>	<i>0.6775</i>	<i>62</i>	<i>0.4315</i>	<i>148</i>
<i>Copenhagen</i>	<i>B</i>	<i>Denmark</i>	<i>0.6773</i>	<i>63</i>	<i>0.6016</i>	<i>29</i>
<i>Orlando</i>	<i>C+</i>	<i>United States</i>	<i>0.6772</i>	<i>64</i>	<i>0.4815</i>	<i>82</i>
<i>Sydney</i>	<i>A-</i>	<i>Australia</i>	<i>0.6730</i>	<i>65</i>	<i>0.6071</i>	<i>28</i>
<i>Richmond</i>	<i>C+</i>	<i>United States</i>	<i>0.6704</i>	<i>66</i>	<i>0.4558</i>	<i>112</i>
<i>Dubai</i>	<i>B+</i>	<i>United Arab Emirates</i>	<i>0.6701</i>	<i>67</i>	<i>0.4982</i>	<i>71</i>

<i>Metropolitan area</i>	<i>Metropolitan area level</i>	<i>Country/Area</i>	<i>Economic Competitiveness Index</i>	<i>Rank</i>	<i>Sustainable Competitiveness Index</i>	<i>Rank</i>
<i>Wuxi</i>	<i>C-</i>	<i>China</i>	<i>0.6697</i>	<i>68</i>	<i>0.3553</i>	<i>268</i>
<i>Birmingham</i>	<i>B-</i>	<i>United Kingdom</i>	<i>0.6694</i>	<i>69</i>	<i>0.5170</i>	<i>63</i>
<i>Brussels</i>	<i>B</i>	<i>Belgium</i>	<i>0.6657</i>	<i>70</i>	<i>0.5311</i>	<i>52</i>
<i>Changsha</i>	<i>C</i>	<i>China</i>	<i>0.6657</i>	<i>71</i>	<i>0.4125</i>	<i>173</i>
<i>Hannover</i>	<i>C</i>	<i>Germany</i>	<i>0.6655</i>	<i>72</i>	<i>0.4668</i>	<i>100</i>
<i>Vancouver</i>	<i>B-</i>	<i>Canada</i>	<i>0.6616</i>	<i>73</i>	<i>0.5709</i>	<i>40</i>
<i>Hangzhou</i>	<i>C+</i>	<i>China</i>	<i>0.6601</i>	<i>74</i>	<i>0.4655</i>	<i>101</i>
<i>Essen</i>	<i>C</i>	<i>Germany</i>	<i>0.6598</i>	<i>75</i>	<i>0.4688</i>	<i>98</i>
<i>Columbus</i>	<i>B-</i>	<i>United States</i>	<i>0.6597</i>	<i>76</i>	<i>0.4752</i>	<i>89</i>
<i>Riyadh</i>	<i>B-</i>	<i>Saudi Arabia</i>	<i>0.6589</i>	<i>77</i>	<i>0.3924</i>	<i>202</i>
<i>Baton Rouge</i>	<i>C+</i>	<i>United States</i>	<i>0.6586</i>	<i>78</i>	<i>0.4083</i>	<i>179</i>
<i>Louisville</i>	<i>C+</i>	<i>United States</i>	<i>0.6585</i>	<i>79</i>	<i>0.3804</i>	<i>224</i>
<i>Barcelona</i>	<i>B-</i>	<i>Spain</i>	<i>0.6580</i>	<i>80</i>	<i>0.5714</i>	<i>39</i>
<i>Calgary</i>	<i>B-</i>	<i>Canada</i>	<i>0.6557</i>	<i>81</i>	<i>0.5444</i>	<i>49</i>
<i>Ulsan</i>	<i>C</i>	<i>Korea, South</i>	<i>0.6527</i>	<i>82</i>	<i>0.4525</i>	<i>117</i>
<i>Oslo</i>	<i>A-</i>	<i>Norway</i>	<i>0.6513</i>	<i>83</i>	<i>0.6138</i>	<i>26</i>
<i>Manchester</i>	<i>C+</i>	<i>United Kingdom</i>	<i>0.6471</i>	<i>84</i>	<i>0.5762</i>	<i>34</i>
<i>Qingdao</i>	<i>C+</i>	<i>China</i>	<i>0.6462</i>	<i>85</i>	<i>0.4202</i>	<i>164</i>
<i>Chongqing</i>	<i>C+</i>	<i>China</i>	<i>0.6461</i>	<i>86</i>	<i>0.4545</i>	<i>114</i>
<i>Dortmund</i>	<i>C+</i>	<i>Germany</i>	<i>0.6454</i>	<i>87</i>	<i>0.4673</i>	<i>99</i>
<i>Chukyo</i>	<i>C+</i>	<i>Japan</i>	<i>0.6451</i>	<i>88</i>	<i>0.5051</i>	<i>69</i>
<i>Kuala Lumpur</i>	<i>B-</i>	<i>Malaysia</i>	<i>0.6351</i>	<i>89</i>	<i>0.4773</i>	<i>86</i>
<i>Amsterdam</i>	<i>B+</i>	<i>Netherlands</i>	<i>0.6346</i>	<i>90</i>	<i>0.6378</i>	<i>20</i>
<i>Foshan</i>	<i>C</i>	<i>China</i>	<i>0.6319</i>	<i>91</i>	<i>0.3805</i>	<i>221</i>
<i>Antwerp</i>	<i>C+</i>	<i>Belgium</i>	<i>0.6285</i>	<i>92</i>	<i>0.4118</i>	<i>174</i>
<i>Washington</i>	<i>A-</i>	<i>United States</i>	<i>0.6257</i>	<i>93</i>	<i>0.6606</i>	<i>12</i>
<i>Oklahoma City</i>	<i>C+</i>	<i>United States</i>	<i>0.6228</i>	<i>94</i>	<i>0.3890</i>	<i>209</i>
<i>Sendai</i>	<i>C</i>	<i>Japan</i>	<i>0.6186</i>	<i>95</i>	<i>0.4514</i>	<i>118</i>
<i>Melbourne</i>	<i>B</i>	<i>Australia</i>	<i>0.6182</i>	<i>96</i>	<i>0.5376</i>	<i>50</i>
<i>Virginia Beach</i>	<i>C</i>	<i>United States</i>	<i>0.6165</i>	<i>97</i>	<i>0.3850</i>	<i>214</i>
<i>Phoenix</i>	<i>C+</i>	<i>United States</i>	<i>0.6160</i>	<i>98</i>	<i>0.4453</i>	<i>127</i>
<i>Zhengzhou</i>	<i>C</i>	<i>China</i>	<i>0.6151</i>	<i>99</i>	<i>0.3824</i>	<i>217</i>
<i>Tampa</i>	<i>C+</i>	<i>United States</i>	<i>0.6149</i>	<i>100</i>	<i>0.4220</i>	<i>161</i>
<i>Ningbo</i>	<i>C</i>	<i>China</i>	<i>0.6144</i>	<i>101</i>	<i>0.3625</i>	<i>258</i>
<i>Changzhou</i>	<i>C</i>	<i>China</i>	<i>0.6125</i>	<i>102</i>	<i>0.3450</i>	<i>289</i>
<i>Jedda</i>	<i>C</i>	<i>Saudi Arabia</i>	<i>0.6075</i>	<i>103</i>	<i>0.3359</i>	<i>303</i>

<i>Metropolitan area</i>	<i>Metropolitan area level</i>	<i>Country/Area</i>	<i>Economic Competitiveness Index</i>	<i>Rank</i>	<i>Sustainable Competitiveness Index</i>	<i>Rank</i>
<i>Hamilton</i>	<i>B-</i>	<i>Canada</i>	<i>0.6066</i>	<i>104</i>	<i>0.4906</i>	<i>75</i>
<i>Hiroshima</i>	<i>C-</i>	<i>Japan</i>	<i>0.6065</i>	<i>105</i>	<i>0.3991</i>	<i>192</i>
<i>Jakarta</i>	<i>B-</i>	<i>Indonesia</i>	<i>0.6055</i>	<i>106</i>	<i>0.4370</i>	<i>138</i>
<i>Montreal</i>	<i>B-</i>	<i>Canada</i>	<i>0.6048</i>	<i>107</i>	<i>0.5546</i>	<i>46</i>
<i>Indianapolis</i>	<i>B-</i>	<i>United States</i>	<i>0.6038</i>	<i>108</i>	<i>0.4266</i>	<i>156</i>
<i>Macao</i>	<i>B-</i>	<i>Macao, China</i>	<i>0.6029</i>	<i>109</i>	<i>0.3962</i>	<i>196</i>
<i>Gold Coast</i>	<i>C</i>	<i>Australia</i>	<i>0.6025</i>	<i>110</i>	<i>0.3782</i>	<i>230</i>
<i>Bristol</i>	<i>C+</i>	<i>United Kingdom</i>	<i>0.6003</i>	<i>111</i>	<i>0.5243</i>	<i>58</i>
<i>San Antonio</i>	<i>C+</i>	<i>United States</i>	<i>0.5985</i>	<i>112</i>	<i>0.4344</i>	<i>141</i>
<i>Cincinnati</i>	<i>B-</i>	<i>United States</i>	<i>0.5962</i>	<i>113</i>	<i>0.4859</i>	<i>78</i>
<i>Kansas City</i>	<i>C+</i>	<i>United States</i>	<i>0.5955</i>	<i>114</i>	<i>0.4087</i>	<i>177</i>
<i>Kaosiung</i>	<i>C</i>	<i>Taiwan, China</i>	<i>0.5951</i>	<i>115</i>	<i>0.4001</i>	<i>191</i>
<i>Haifa</i>	<i>C</i>	<i>Israel</i>	<i>0.5945</i>	<i>116</i>	<i>0.4235</i>	<i>159</i>
<i>Hague, The</i>	<i>C+</i>	<i>Netherlands</i>	<i>0.5936</i>	<i>117</i>	<i>0.4456</i>	<i>125</i>
<i>Birmingham</i>	<i>C+</i>	<i>United States</i>	<i>0.5932</i>	<i>118</i>	<i>0.4411</i>	<i>132</i>
<i>Madrid</i>	<i>B-</i>	<i>Spain</i>	<i>0.5904</i>	<i>119</i>	<i>0.5663</i>	<i>42</i>
<i>Rome</i>	<i>C+</i>	<i>Italy</i>	<i>0.5896</i>	<i>120</i>	<i>0.4793</i>	<i>84</i>
<i>Pittsburgh</i>	<i>C+</i>	<i>United States</i>	<i>0.5896</i>	<i>121</i>	<i>0.5288</i>	<i>55</i>
<i>Provo-Orem</i>	<i>C</i>	<i>United States</i>	<i>0.5893</i>	<i>122</i>	<i>0.3253</i>	<i>321</i>
<i>Hartford</i>	<i>C</i>	<i>United States</i>	<i>0.5891</i>	<i>123</i>	<i>0.4027</i>	<i>185</i>
<i>Dongguan</i>	<i>C</i>	<i>China</i>	<i>0.5885</i>	<i>124</i>	<i>0.4257</i>	<i>157</i>
<i>Dalian</i>	<i>C-</i>	<i>China</i>	<i>0.5876</i>	<i>125</i>	<i>0.3908</i>	<i>204</i>
<i>Nantong</i>	<i>C-</i>	<i>China</i>	<i>0.5874</i>	<i>126</i>	<i>0.3583</i>	<i>264</i>
<i>Ottawa</i>	<i>C+</i>	<i>Canada</i>	<i>0.5838</i>	<i>127</i>	<i>0.5137</i>	<i>65</i>
<i>Rotterdam</i>	<i>C+</i>	<i>Netherlands</i>	<i>0.5820</i>	<i>128</i>	<i>0.4619</i>	<i>105</i>
<i>Mexico City</i>	<i>B-</i>	<i>Mexico</i>	<i>0.5793</i>	<i>129</i>	<i>0.4126</i>	<i>172</i>
<i>Dresden</i>	<i>C</i>	<i>Germany</i>	<i>0.5786</i>	<i>130</i>	<i>0.4631</i>	<i>104</i>
<i>Buenos Aires</i>	<i>C+</i>	<i>Argentina</i>	<i>0.5770</i>	<i>131</i>	<i>0.4031</i>	<i>184</i>
<i>Bangkok</i>	<i>C+</i>	<i>Thailand</i>	<i>0.5740</i>	<i>132</i>	<i>0.5060</i>	<i>68</i>
<i>Charleston</i>	<i>C</i>	<i>United States</i>	<i>0.5727</i>	<i>133</i>	<i>0.3837</i>	<i>216</i>
<i>Helsinki</i>	<i>B-</i>	<i>Finland</i>	<i>0.5693</i>	<i>134</i>	<i>0.5608</i>	<i>44</i>
<i>Incheon</i>	<i>C</i>	<i>Korea, South</i>	<i>0.5693</i>	<i>135</i>	<i>0.4974</i>	<i>72</i>
<i>Leipzig</i>	<i>C</i>	<i>Germany</i>	<i>0.5688</i>	<i>136</i>	<i>0.4501</i>	<i>122</i>
<i>Hefei</i>	<i>C</i>	<i>China</i>	<i>0.5686</i>	<i>137</i>	<i>0.4026</i>	<i>187</i>
<i>Providence</i>	<i>C+</i>	<i>United States</i>	<i>0.5674</i>	<i>138</i>	<i>0.4751</i>	<i>91</i>
<i>Sapporo</i>	<i>C+</i>	<i>Japan</i>	<i>0.5673</i>	<i>139</i>	<i>0.4715</i>	<i>96</i>

<i>Metropolitan area</i>	<i>Metropolitan area level</i>	<i>Country/Area</i>	<i>Economic Competitiveness Index</i>	<i>Rank</i>	<i>Sustainable Competitiveness Index</i>	<i>Rank</i>
<i>Glasgow</i>	<i>C+</i>	<i>United Kingdom</i>	<i>0.5665</i>	<i>140</i>	<i>0.4972</i>	<i>73</i>
<i>Xiamen</i>	<i>C</i>	<i>China</i>	<i>0.5660</i>	<i>141</i>	<i>0.4692</i>	<i>97</i>
<i>Brisbane</i>	<i>C</i>	<i>Australia</i>	<i>0.5660</i>	<i>142</i>	<i>0.5192</i>	<i>61</i>
<i>Milan</i>	<i>B-</i>	<i>Italy</i>	<i>0.5657</i>	<i>143</i>	<i>0.4970</i>	<i>74</i>
<i>Allentown</i>	<i>C</i>	<i>United States</i>	<i>0.5649</i>	<i>144</i>	<i>0.3526</i>	<i>273</i>
<i>Lille</i>	<i>C-</i>	<i>France</i>	<i>0.5626</i>	<i>145</i>	<i>0.3902</i>	<i>206</i>
<i>Worcester</i>	<i>C+</i>	<i>United States</i>	<i>0.5623</i>	<i>146</i>	<i>0.4336</i>	<i>145</i>
<i>Colorado Springs</i>	<i>C</i>	<i>United States</i>	<i>0.5606</i>	<i>147</i>	<i>0.3458</i>	<i>286</i>
<i>West Yorkshire</i>	<i>C</i>	<i>United Kingdom</i>	<i>0.5590</i>	<i>148</i>	<i>0.4285</i>	<i>152</i>
<i>Riverside-San Bernardino</i>	<i>C</i>	<i>United States</i>	<i>0.5584</i>	<i>149</i>	<i>0.3707</i>	<i>240</i>
<i>Jinan</i>	<i>C</i>	<i>China</i>	<i>0.5570</i>	<i>150</i>	<i>0.3949</i>	<i>197</i>
<i>Grand Rapids</i>	<i>C</i>	<i>United States</i>	<i>0.5570</i>	<i>151</i>	<i>0.3768</i>	<i>232</i>
<i>Gothenburg</i>	<i>C+</i>	<i>Sweden</i>	<i>0.5559</i>	<i>152</i>	<i>0.4750</i>	<i>92</i>
<i>San Jose</i>	<i>C</i>	<i>Costa Rica</i>	<i>0.5554</i>	<i>153</i>	<i>0.3093</i>	<i>347</i>
<i>Liverpool</i>	<i>C+</i>	<i>United Kingdom</i>	<i>0.5538</i>	<i>154</i>	<i>0.4570</i>	<i>109</i>
<i>Zhenjiang</i>	<i>C-</i>	<i>China</i>	<i>0.5518</i>	<i>155</i>	<i>0.3234</i>	<i>323</i>
<i>Quanzhou</i>	<i>C-</i>	<i>China</i>	<i>0.5513</i>	<i>156</i>	<i>0.3383</i>	<i>298</i>
<i>New Haven</i>	<i>C</i>	<i>United States</i>	<i>0.5455</i>	<i>157</i>	<i>0.5018</i>	<i>70</i>
<i>Xi'an</i>	<i>C</i>	<i>China</i>	<i>0.5454</i>	<i>158</i>	<i>0.4043</i>	<i>182</i>
<i>Shenyang</i>	<i>C</i>	<i>China</i>	<i>0.5442</i>	<i>159</i>	<i>0.3876</i>	<i>211</i>
<i>Dayton</i>	<i>C</i>	<i>United States</i>	<i>0.5431</i>	<i>160</i>	<i>0.3891</i>	<i>208</i>
<i>Edmonton</i>	<i>C</i>	<i>Canada</i>	<i>0.5429</i>	<i>161</i>	<i>0.4808</i>	<i>83</i>
<i>Fuzhou(Fj)</i>	<i>C-</i>	<i>China</i>	<i>0.5420</i>	<i>162</i>	<i>0.3706</i>	<i>242</i>
<i>Changwon</i>	<i>C-</i>	<i>Korea, South</i>	<i>0.5415</i>	<i>163</i>	<i>0.4252</i>	<i>158</i>
<i>Lyon</i>	<i>C+</i>	<i>France</i>	<i>0.5413</i>	<i>164</i>	<i>0.4838</i>	<i>80</i>
<i>Fort Myers</i>	<i>C</i>	<i>United States</i>	<i>0.5399</i>	<i>165</i>	<i>0.3261</i>	<i>319</i>
<i>Yantai</i>	<i>C-</i>	<i>China</i>	<i>0.5391</i>	<i>166</i>	<i>0.3628</i>	<i>257</i>
<i>Knoxville</i>	<i>C</i>	<i>United States</i>	<i>0.5388</i>	<i>167</i>	<i>0.4214</i>	<i>162</i>
<i>Samut Prakan</i>	<i>C-</i>	<i>Thailand</i>	<i>0.5386</i>	<i>168</i>	<i>0.3632</i>	<i>255</i>
<i>Fukuoka</i>	<i>C</i>	<i>Japan</i>	<i>0.5373</i>	<i>169</i>	<i>0.4368</i>	<i>139</i>
<i>Honolulu</i>	<i>C+</i>	<i>United States</i>	<i>0.5371</i>	<i>170</i>	<i>0.3494</i>	<i>277</i>
<i>Columbia</i>	<i>C</i>	<i>United States</i>	<i>0.5371</i>	<i>171</i>	<i>0.4303</i>	<i>149</i>
<i>Zhongshan</i>	<i>C-</i>	<i>China</i>	<i>0.5371</i>	<i>172</i>	<i>0.3881</i>	<i>210</i>
<i>Santiago</i>	<i>C+</i>	<i>Chile</i>	<i>0.5364</i>	<i>173</i>	<i>0.3665</i>	<i>245</i>
<i>Mecca</i>	<i>C-</i>	<i>Saudi Arabia</i>	<i>0.5363</i>	<i>174</i>	<i>0.2905</i>	<i>408</i>
<i>Medina</i>	<i>C-</i>	<i>Saudi Arabia</i>	<i>0.5352</i>	<i>175</i>	<i>0.3274</i>	<i>315</i>

<i>Metropolitan area</i>	<i>Metropolitan area level</i>	<i>Country/Area</i>	<i>Economic Competitiveness Index</i>	<i>Rank</i>	<i>Sustainable Competitiveness Index</i>	<i>Rank</i>
<i>Busan</i>	<i>C-</i>	<i>Korea, South</i>	<i>0.5336</i>	<i>176</i>	<i>0.4570</i>	<i>110</i>
<i>Yangzhou</i>	<i>C-</i>	<i>China</i>	<i>0.5327</i>	<i>177</i>	<i>0.3176</i>	<i>331</i>
<i>Akron</i>	<i>C</i>	<i>United States</i>	<i>0.5291</i>	<i>178</i>	<i>0.3805</i>	<i>223</i>
<i>Delhi</i>	<i>C+</i>	<i>India</i>	<i>0.5282</i>	<i>179</i>	<i>0.3817</i>	<i>218</i>
<i>Adelaide</i>	<i>C</i>	<i>Australia</i>	<i>0.5253</i>	<i>180</i>	<i>0.4573</i>	<i>108</i>
<i>Gebze</i>	<i>C</i>	<i>Turkey</i>	<i>0.5241</i>	<i>181</i>	<i>0.3863</i>	<i>213</i>
<i>Auckland</i>	<i>C+</i>	<i>New Zealand</i>	<i>0.5239</i>	<i>182</i>	<i>0.5168</i>	<i>64</i>
<i>Lima</i>	<i>C+</i>	<i>Peru</i>	<i>0.5233</i>	<i>183</i>	<i>0.3457</i>	<i>288</i>
<i>Ogden</i>	<i>C-</i>	<i>United States</i>	<i>0.5232</i>	<i>184</i>	<i>0.3643</i>	<i>250</i>
<i>Bogota</i>	<i>C+</i>	<i>Colombia</i>	<i>0.5214</i>	<i>185</i>	<i>0.3630</i>	<i>256</i>
<i>Jerusalem</i>	<i>C-</i>	<i>Israel</i>	<i>0.5201</i>	<i>186</i>	<i>0.4115</i>	<i>175</i>
<i>Xuzhou</i>	<i>C-</i>	<i>China</i>	<i>0.5201</i>	<i>187</i>	<i>0.3300</i>	<i>311</i>
<i>Bucharest</i>	<i>C</i>	<i>Romania</i>	<i>0.5199</i>	<i>188</i>	<i>0.4151</i>	<i>169</i>
<i>Zhuhai</i>	<i>C-</i>	<i>China</i>	<i>0.5186</i>	<i>189</i>	<i>0.3534</i>	<i>272</i>
<i>Buffalo</i>	<i>C</i>	<i>United States</i>	<i>0.5181</i>	<i>190</i>	<i>0.3985</i>	<i>193</i>
<i>Marseille</i>	<i>C</i>	<i>France</i>	<i>0.5179</i>	<i>191</i>	<i>0.4209</i>	<i>163</i>
<i>Nottingham</i>	<i>C-</i>	<i>United Kingdom</i>	<i>0.5168</i>	<i>192</i>	<i>0.4562</i>	<i>111</i>
<i>Omaha</i>	<i>C+</i>	<i>United States</i>	<i>0.5158</i>	<i>193</i>	<i>0.3799</i>	<i>225</i>
<i>Shaoxing</i>	<i>C-</i>	<i>China</i>	<i>0.5157</i>	<i>194</i>	<i>0.2953</i>	<i>384</i>
<i>Leicester</i>	<i>C</i>	<i>United Kingdom</i>	<i>0.5156</i>	<i>195</i>	<i>0.4341</i>	<i>143</i>
<i>Daegu</i>	<i>C</i>	<i>Korea, South</i>	<i>0.5155</i>	<i>196</i>	<i>0.4504</i>	<i>121</i>
<i>Montevideo</i>	<i>C</i>	<i>Uruguay</i>	<i>0.5140</i>	<i>197</i>	<i>0.3447</i>	<i>290</i>
<i>Dongying</i>	<i>C-</i>	<i>China</i>	<i>0.5132</i>	<i>198</i>	<i>0.2717</i>	<i>514</i>
<i>Taizhou(Js)</i>	<i>C-</i>	<i>China</i>	<i>0.5128</i>	<i>199</i>	<i>0.2991</i>	<i>373</i>
<i>Panama City</i>	<i>C</i>	<i>Panama</i>	<i>0.5114</i>	<i>200</i>	<i>0.3728</i>	<i>236</i>