

Global Urban Competitiveness Report

(2007-2008)

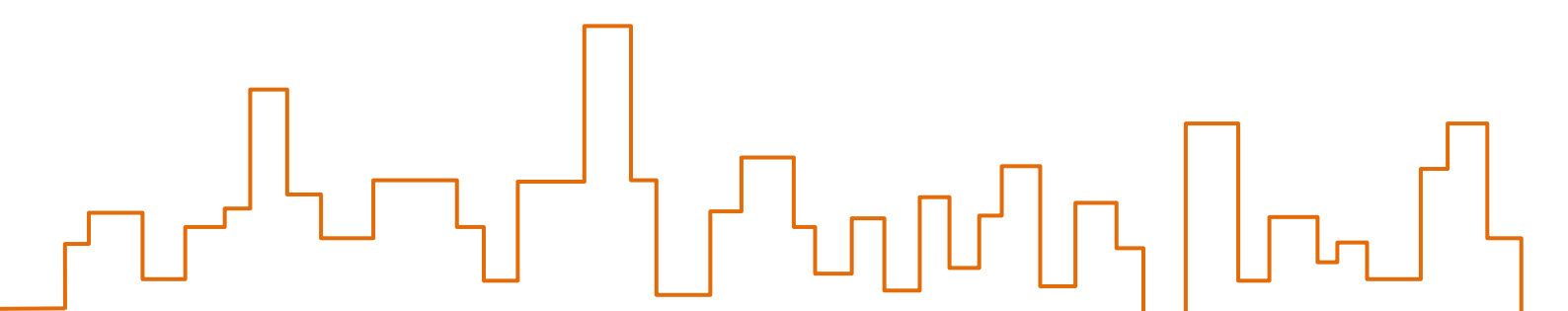
Cities: Everything is possible in the future.

Global Urban Competitiveness Project

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About GUCP

Global Urban Competitiveness Project (GUCP) is sponsored by Professor Peter Karl Kresl (Bucknell University, the U.S.A) and Professor Department of Sociology Pengfei Ni (Chinese Academy of Social Sciences, China) during the first international forum on urban competitiveness in August, 2004. GUCP, which is founded in Ottawa, in April, 2005, is a sustainable project on global urban competitiveness. GUCP aims to gather all specialists and experts who are interested in urban competitiveness to conduct research.. GUCP has a committee, in which Professor Peter Karl Kresl is president and Ni Pengfei is general secretary. The Secretariat of the committee is in the Institute of Finance and Trade Economics (IFTE) , Chinese Academy of Social Sciences (CASS) . Beijing, China.

Aims of GUCP

- 1) analyzing aspects of the competitiveness of the world's urban regions,
- 2) promoting better communication among those who are doing research on urban competitiveness,
- 3) enhancing contact between researchers and practitioners in urban governance and leadership positions,
- 4) encouraging more effective economic strategic planning in cities throughout the world,
- 5) helping to make municipal leaders more able to enhance the competitiveness of their regions and thereby to improve the economic futures of the residents of these regions, and
- 6) increasing the interest in and research in urban competitiveness on the part of researchers ?in

both industrialized and developing economies.

Tasks of GUCP

- 1) In-depth academic research on the Urban Competitiveness with holding an international conference each year on the general topic of urban competitiveness,
- 2) Policy research and policy briefing workshops from a global perspective that contribute constructively to urban government policy deliberations,
- 3) Executive training and research program for urban government in both industrialized and developing economies.

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Prologue 1

It is readily apparent to the reader who is familiar with the study of urban competitiveness that the 2007/2008 Global Urban Competitiveness Report (the Report) is a work of major importance. It is quite extraordinary that Ni Pengfei and his team at the Chinese Academy for Social Sciences have been able to gather comparable data on 500 cities and to gain from this data so many valuable insights. While this achievement is of importance in itself, of at least equal benefit is the use that can be made of this work by decision-makers in cities around the world as they design and implement strategic economic planning initiatives. In this brief commentary on the Report, I would like to speak to both of these aspects.

Outside of government departments, there are few places in the world that could put together a team of about one hundred researchers and students having command of a dozen of the world's major languages – and to devote a year to the project. Fully aware of the difficulties of getting comparable data for many variables for many cities on all continents, Prof. Ni and his team confined themselves to international agencies such as the United Nations, the World Bank, the International Monetary Fund, and the Organization for Economic Cooperation and Development and, with care, to national statistical agencies. This was supplemented by findings from academic researchers and other reliable sources. Given the need for comparable data it was necessary to limit the scope to nine indices on aspects of GDP, prices, growth, patents, and employment. Indeed, some cities had to be excluded from the study because of the unreliability of the data that were available. This work generates the overall urban competitiveness ranking of the 500 cities. Using this body of data Professor Ni and his colleagues place the cities into one of eight “city types,” of which more will be said shortly.

In addition to the competitiveness ranking, for each city analysis is presented for seven sectors of the economy, such as industrial structure, human resources, the living environment, and so forth. Each of these sectoral indices is the result of data for four to seven variables relating to aspects of each sector; for example, for human resources the variables include education, health, and literacy. Again, while one would have been able to include many other variables if doing a study on just cities in the US, Mexico or China (three countries for which adequate data is readily available), for a study that includes 500 cities in scores of countries this is not possible. Nonetheless, the comprehensiveness of the variables included in the overall study gives one a clear and solid understanding of the situation of each of the 500 cities in relation to other cities that might be considered to be its competitors.

The full methodology and sources of data are given extensive explication in a set of three appendices, and from them the reader will be able to gain a appreciation for the thoroughness and diligence with which the team from CASS carried out this project. Since the reader will have the Report in his/her hands I will not be specific as to what these appendices contain; needless to say, they are a must read for a true appreciation of the quality the results of this project. The consistency of the methodology of this project in its several annual up-dates will give an invaluable survey of the evaluation of the evolving competitive situation and development of the areas of relative strength and weakness of each of the 500 cities.

As has been regularly noted in documents and research papers of the Global Urban Competitiveness Project (GUCP) – of which Ni Pengfei is General Secretary,¹ our objective has always been that of giving assistance to local officials and planners when designing and implementing a strategic economic plan for their city or urban region. Several of our members have focused on key aspects or strategies for competitiveness enhancement. For example, Leo van den Berg has written on culture and competitiveness,² Bill Lever on centers of technology³, Pierre-Paul Proulx on globalization and city-regional development and policy,⁴ Shen Jianfa on urban economic regions, Antonio Serrano on city systems⁵, and Dong Song Cho on creation of competitiveness de nouveau in Dubai⁶. In the US, Mexico and China we have been fortunate in being able to have access to sufficient data for a large number of variable and cities/urban regions to do empirical studies of the competitiveness of cities in one of these countries. Jaime Sobrino has written on Mexico⁷, Ni Pengfei on China⁸, and I on the United States (and Canada)⁹. These results have given local leaders in each city an understanding of the relative strengths and weaknesses of their urban economy. This

¹ See our web-site: <www.gucp.org>

² Leo van den Berg and Antonio Paolo Russo, *The Impacts of Culture on the Economic Development of Cities*, Rotterdam: EURICUR, 2007.

³ W.F. Lever, (2002) 'The Knowledge Base and the Competitive City' in Begg, I.(ed.) *Urban Competitiveness: Policies for Dynamic Cities*, Bristol: Policy Press, pp.11-31.

⁴ Pierre-Paul Proulx, "La compétitivité de la région métropolitaine de Montréal en Amérique du Nord," *Policy Options*, April, 2000, pp. 61-64.

⁵ Antonio Serrano, *Forecasting economic development using urban competitiveness and attractiveness factors*. Proceedings of the Regional Science Association Congress, St. Andrews, Scotland. 20th-22nd August, 2003.

⁶ Dong Song Cho,

⁷ Jaime Sobrino, "Competitividad territorial: ámbitos e indicadores de análisis", *Economía, Sociedad y Territorio*, vol. 3, no. 17, 2004.

⁸ Ni Pengfei, *The Blue Book of Chinese Urban Competitiveness*, Beijing: CASS, 2004.

⁹ Peter Karl Kresl and Balwant Singh, "Competitiveness and the Urban Economy: The experience of 24 Large U.S. Metropolitan Areas," *Urban Studies*, vol. 36, May, 1999, pp.1017-1027; Peter Karl Kresl and Pierre-Paul Proulx, "Montreal's Place in the North American Economy," *The American Review of Canadian Studies*, vol. 30, No. 3, Autumn 2000, pp. 283-314.

understanding can then be used in strategic economic planning by suggesting areas in which the city or urban region needs to implement policies to improve performance in areas of weakness – such as the transportation infrastructure, cultural and educational assets, the structure of industry or characteristics of the labor force, to mention just a few. Obviously, it also indicates areas that must be maintained for the degree of competitiveness to retain its degree of competitiveness.

The 5th Global Urban Competitiveness Report is, thus, an excellent tool for strategic economic planning. For such an initiative to be successful, there must be effective governance, an understanding of which individual or entity will provide leadership and assessment of performance, municipal leadership that can mobilize and energize local human assets, tangible assets, such as transportation, cultural and educational institutions, a clear definition of tasks and targets for all participants, and a clear understanding of the city's strengths and weaknesses. Often city leaders feel satisfied and self-congratulatory when they have put in place a conference center or educational institution, when if they would look more widely they would discover that their competitor cities have just done the same thing and that their efforts have done little more than keep them in their original competitive position. What studies such as this Report do is give city leaders a comprehensive, objective understanding of just how their city stacks up against all of the other of the 500 cities.

The reader can appreciate how beneficial this information can be by examining Chapter 5 and, especially, Chapter 6 of the Report. Here, explicit scores and rankings are given for each of the dozens of variables for which data has been gathered. The results presented may at first appear somewhat overwhelming in extent and detail, but the reader will discover a wealth of fascinating detail and description of the 500 cities – an extended perusal of these chapters will certainly be worth the time. One will certainly have questions with regard to the score of a city one knows quite well and wonder whether the Report has got it right. But scores and rankings give one a base for a reasoned discussion with regard to the true attributes of any city. And presumably some sort of “law of large numbers” will cause these concerns to be evened out in the aggregate.

To demonstrate the value of this work to a city strategic planner, let's examine one of the 500 cities – my original home-town, Chicago. Chicagoans have a right to be proud – their city is ranked #10 out of 500, between San Francisco and Toronto and below New York, London, Tokyo, Paris, Washington, Los Angeles Stockholm and Singapore. The question that must be raised by city leaders is that of what ought they be doing to enhance the competitiveness of Chicago? We gain an understanding of this when we look at the positioning of the city in some of the individual indicators. Chicago is scored very high in: corporate culture,

enterprise management, industry structure, development of its manufacturing, service and financial sectors, educational development, hardware environment, science, technology and innovation, “soft” factors such as government services and management, strategy and experience, connectivity and transportation, among others. Areas of weakness include: enterprise operation, brand, enterprise performance, status of labor market, literacy, status of talent, cost of labor, basic elements, and housing. For a full understanding one would have to examine the situation with the several variables that are behind each of these indicators. Those familiar with Chicago will wonder how a city with its world famous Chicago Symphony and Art Institute, a lively blues culture and one of the country’s most innovative theater communities can be ranked number 143 in “Culture and Entertainment” below Detroit, Cincinnati and St. Louis, with New York and Philadelphia. But one would have to examine more carefully the component elements in that particular indicator before commenting definitively.

Each of the indicators of relative strength and weakness are comprised of several variables rather than just the familiar and habitually used. This indicates the real value of this Report; it uses data to give an objective understanding of a city’s strengths and weaknesses by placing familiar impressions in contexts that are, perhaps, more broadly focused than is usually the case. I would certainly be useful for officials in Chicago, New York and Philadelphia to examine carefully this and other indices to see what is being captured by the work of Ni Pengfei and his colleagues. If they find the methodology or definitions to be not useful they can ignore that aspect of the Report; but it is certainly possible that they will find that the Report is telling them something that is indeed worthwhile understanding.

Essentially, city officials have three options for using the findings of the Report in their strategic economic planning. First, they can identify areas of strength that they should work to maintain. Second, they can identify areas of weakness that can be improved with some effort at policy design and implementation. These two areas should be included as components in their strategic economic plan for enhancement of the city’s relative competitiveness. Third, there will be areas that city leaders in their intimate knowledge of the situation will declare to be of little interest given the strategic thrust that has been decided upon, or that will be impossible to achieve with a reasonable expenditure of time and resources, or on which they with their intimate knowledge of the local situation simply disagree about with the team at CASS. This exercise in triage is essential for the effective mobilization and utilization of local and other resources, for the definition of central strategic thrusts, and for proper assessment of performance and measurement of success or failure.

Mention was made above of the eight types of cities that have emerged from this work.

These “city types” are an additional asset for city planners in that they provide a general categorization for each of the 500 cities and allow those who are responsible for policy to put their city in a set of other cities with the same categorization. From this they should be able to be more efficient in their work and to have reference points when they look to the actions of other cities. If a number of cities are in the same category they should be able to observe what policies have been tried in similar cities and which have succeeded and which have failed. This understanding will certainly improve their effectiveness. The eight types are as follows:

1 – Five “world class” cities, London, New York, Paris, Tokyo, and Geneva. These cities have scores that are very good in almost all of the indices.

2 – Twenty-eight cities with generally poor scores on most of the indices. These are cities that are located in Africa, and also Eastern Europe and the Caribbean – e.g., Sarajevo, Groznyj, and Baghdad.

3 – Twenty-five cities with high income per capita, low growth rate and high innovation. These are primarily cities in Europe, the US, and Japan – e.g., Bristol, Lyon, and Lille.

4 – Sixty-nine cities with low income per capita, high growth rate, and low innovation. These tend to be non-central cities in Asia and in Eastern Europe – e.g., Minsk, Omsk, and Tianjin.

5 – Twenty-nine cities with medium income per capita, growth rate and innovation. These are primarily politically or economically central cities in Asia, South America, Southern Europe, and Eastern Europe – e.g., Athens, Madrid, and Beijing.

6 – Sixty-four cities with low income per capita and innovation, and medium growth rate. These are less competitive cities in Asia, Latin America and Africa – e.g., Kiev, Manila, and Delhi.

7 – One hundred forty-eight cities with high income per capita, and low growth rate and innovation. These cities are located in North America, Japan and Europe – e.g., Amsterdam, Stockholm, and Chicago.

8 – One hundred thirty-two cities with medium income per capita and innovation, and low growth. These cities are primarily in Eastern Europe, Latin America and Africa – e.g., Naples, Riga, and Rio de Janeiro.

I appreciate that repeating this listing is a bit redundant, since the material is presented in the Report, but I wanted to emphasize the benefit this could give to city officials. The first thing to note is that the types are all based on general performance categories – growth, per capita income, and innovation capacity. There is no preference for cities that succeed as centers of learning, or research and development, or high-tech manufacturing, or logistics, or any other

specific economic specialization. In most of the eight types of cities there would probably be cities of each specific specialization; all generating the same general performance success or failure. Similarly, none of the specialization ensures success or guarantees failure. Success arises from a city's ability to discern the specialization that is most promising for it, given its particular assets, resources, and aspirations. Failure indicates poor execution and mobilization of local resources, or selection of an inappropriate or unsuitable specialization and strategic thrust.

Urban competitiveness has attracted great attention from economists, geographers and local governments in recent years. Many research results are available now both, as has been noted above, at the level of the national economy and, with publication of this important Report, at the global level. However most of the non-GUCP research results are based on realization of asserted or preferred elements in the economic activity of an urban region or a city. Many researchers assume that a hi-tech center, bio-pharmaceutical activity, information-communications technology, or some specific industry cluster will serve as the only reliable element that drives urban economic development, everywhere. If a city has put in place these competitiveness elements, it is often asserted that it will then enjoy stronger urban competitiveness. However, some cities are quite successful as centers of administration, culture, research and development, niche manufacturing or logistics. They are very successful in that they provide the job opportunities, incomes, social structure and cohesion, urban amenities, and natural environment that are most satisfying to their residents. In the GUCP we are of the opinion that this is the best indicator of urban competitiveness: economic development that meets the aspirations of a city's residents rather than just success in establishing an industrial sector or cluster that is favored by the consultants today. The 2007/2008 Global Urban Competitiveness Report is prime example of how this approach can be used to the benefit of local officials and planners.

Part 4 is an excellent demonstration of the truth of this approach to urban competitiveness. The ten case studies examine cities that have taken their own path to urban competitiveness. While not all are among the most competitive of the 500 cities, each has taken its own path to competitiveness and together they demonstrate that successful cities can be large world cities – London, or small cities – Helsinki; central cities – again, London, or peripheral cities – Vienna; old - Yangzhou, or new – Phoenix and Toronto; narrowly focused – Dubai, or diversified – Toronto. Most of these cities have been able to change their economic specialization as to adapts to the exigencies of the 21st century – Shenzhen, Seoul, Helsinki, and Singapore. London has had a base that has served it well for centuries while Dubai has had to create itself from little of relevance to this century. The value of these ten cases is to

demonstrate graphically to city leaders and planners that there are indeed many paths to urban competitiveness that meets the aspirations of their residents.

In these comments I have endeavored to give the reader a comprehension of what is in the Report, why it is of importance to researchers on urban competitiveness and of value to local officials and planners, and an incentive to read it carefully. The Report's rich collection of data and the sophisticated methodology ensure that its results will be taken seriously and will serve as a contribution to effective urban strategic economic planning.

The release of the Global Urban Competitiveness Report (2007-2008) is indeed a welcome event. Professor Ni Pengfei and his colleagues at the Chinese Academy of Social Sciences have been engaged in urban competitiveness research for more than ten years. Previous urban competitiveness reports were only available in Chinese versions. As a result, scholars and government officials in other countries did not have access to their research results. Fortunately, with this Report that will no longer be the case.

Peter Karl Kresl,

President, GUCP

Professor of Economics, Bucknell University (USA)

July 15th, 2008

Prologue 2

Economic globalization and the development of information technology have enabled cities greater and greater significance in global economic activities. With increasingly heavy competitions among cities, improving urban competitiveness is becoming an important strategic issue to cities, companies and countries in the world. To conduct further research and discussion on this issue, Peter Karl ..., an American scholar, and I initiated the Global Urban Competitiveness Research Project (GUCP) group, made up of scholars with interests in urban competitiveness from several countries. We decided to hold an international forum on urban

competitiveness every year. To provide global cities, companies and the public with comparative information and decision-making reference on urban competitiveness, we decided to release a Global Urban Competitiveness Report every two years. It is a hard and pioneering job. The report for the years 2007-2008 was completed by members of the secretary under the leadership of Dr. Ni Pengfei, the secretary general of GUCP. Great supports and assistants have been received from Professor Peter and members of the GUCP, the CASS and its Finance & Trade Institute, urban research experts from several countries, and governments of some major cities in the world. The report was enabled by more than one year of efforts on theoretical innovation, data collection, on-site investigation, and data processing and analysis.

A comprehensive comparison on 500 cities in the world, emphasized analysis on 150 cities, and case studies on top 10 cities of urban competitiveness are available in the Global Urban Competitiveness Report (2007-2008).

The research has received great supports from many cities in the world. After determining sample cities, the project group sent mails to mayors and officials of involved cities, including London, Sidney, Vienna, Zurich, Paris, Hamburger, ..., ..., Toronto, and Vancouver and received responses. The involved cities provided supports, responded with related materials, or appointed their representatives in China to contact us. In 2007, the project group visited Canada and conducted on-site investigation there. Federal authorities, mayor of Toronto, and officials of Vancouver met members of the project group and introduced information of urban development to them. In 2008, local authorities of some cities in Europe have been prepared for welcoming the GUCP. After determining the topic, they will start the work of finding global partners. Around 100 scholars in the world have joined the research.

The research work is tremendous and features great hardship. The secretariat has recruited around 100 graduate students from universities in Beijing and other areas of China to accomplish the research. After more than one year of great efforts, the work was done timely. Dr. Ni Pengfei decided the basic theories, index system, research framework, and key conclusions. Dr. Hou Qinghu worked on statistics. Dr. Lv Fengyong, Dr. Huang Jin and Master Yang Xiaolan collected and organized the data. Zhang Yao, Gao Jie and Wang Zizhong coordinated the writing and editing efforts. After refining the theories, collecting data, making statistics, and drawing main conclusions, the authors accomplished the writing of the report are listed as following:

Ni Pengfei, Lv Fengyong, Huang Jin, Yang Xiaolan, Zhangyao, ,Zhang Wu, Gao Jie

Finally, Professor Peter Karl Kresl and Professor Jianfa Shen revised and edited the report in English.

Though we had tried our best to accomplish the task, there must be some imperfectness in the report due to limitation to our ability. We are looking forward to comments and suggestions from global municipal officials, urban research experts. Your input will help a lot in turning the report into one of the most useful references to global urban development.

Ni Pengfei

Secretary general, GUCP

Professor of Economics, Chinese Academy of Social Science

July 15th, 2008

Global Urban Competitiveness Index Rankings (GUCI) (2007/2008)

City	Country	Score	Rank
New York	United States	1	1
London	United Kingdom	0.944185	2
Tokyo	Japan	0.790169	3
Paris	France	0.759375	4
Washington	United States	0.696406	5
Los Angeles	United States	0.668836	6
Stockholm	Sweden	0.647921	7
Singapore	Singapore	0.645897	8
San Francisco	United States	0.642095	9
Chicago	United States	0.629848	10
Toronto	Canada	0.617565	11
Seoul	Korea	0.616719	12
Boston	United States	0.596854	13
San Diego	United States	0.588197	14
Oakland(US)	United States	0.582597	15
Helsinki	Finland	0.574753	16
Madrid	Spain	0.571633	17
Vienna	Austria	0.569158	18
Philadelphia	United States	0.564911	19

Houston	United States	0.555491	20
Zurich	Switzerland	0.553014	21
Melbourne	Australia	0.539111	22
Montreal	Canada	0.53355	23
Buenos Aires	Argentina	0.533021	24
Dallas	United States	0.532098	25
Honking	China	0.528636	26
Dublin	Ireland	0.528595	27
Frankfurt	Germany	0.526861	28
Milan	Italy	0.526052	29
Moscow	Russia	0.525475	30
Sydney	Australia	0.520071	31
Miami	United States	0.51699	32
Tel Aviv	Israel	0.516987	33
Minneapolis	United States	0.513508	34
Amsterdam	Netherlands	0.5131	35
Manchester	United Kingdom	0.509526	36
Seattle	United States	0.507735	37
Atlanta	United States	0.504315	38
City	Country	Score	Rank
Dubai	United Arab Emirates	0.492718	39
Hamburg	Germany	0.492447	40
Shanghai	China	0.492362	41
Oslo	Norway	0.49217	42
Stuttgart	Germany	0.491818	43
Bristol	United Kingdom	0.491673	44
Las Vegas	United States	0.491542	45
San Jose	United States	0.489258	46
Vancouver	Canada	0.48754	47
Edinburgh	United Kingdom	0.486998	48
Lyon	France	0.484672	49
Baltimore	United States	0.482026	50
Auckland (NZ)	New Zealand	0.477898	51
Portland	United States	0.475558	52
Austin	United States	0.47498	53
Nottingham	United Kingdom	0.472338	54
Doha	Qatar	0.472179	55
Nagoya	Japan	0.470177	56
Yokohama	Japan	0.469724	57
Arlington	United States	0.469523	58
Denver	United States	0.469246	59
Munich	Germany	0.467361	60
Calgary	Canada	0.466621	61
Glasgow	United Kingdom	0.466228	62

Berlin	Germany	0.459929	63
Shenzhen	China	0.459651	64
Phoenix	United States	0.459434	65
Beijing	China	0.457567	66
Osaka	Japan	0.456957	67
Geneva	Switzerland	0.455911	68
Brussels	Belgium	0.455428	69
Düsseldorf	Germany	0.454314	70
Basel	Switzerland	0.45213	71
Charlotte	United States	0.450775	72
Cleveland	United States	0.449907	73
Mexico City	Mexico	0.448044	74
Wellington	New Zealand	0.446575	75
The Hague	Netherlands	0.440626	76
Honolulu	United States	0.439762	77
Macao	China	0.435852	78
Detroit	United States	0.433812	79
Wilmington	United States	0.427641	80
Rotterdam	Netherlands	0.427638	81
City	Country	Score	Rank
Saint Louis	United States	0.426597	82
Birmingham	United Kingdom	0.424008	83
Indianapolis	United States	0.422544	84
Leeds	United Kingdom	0.422395	85
San Antonio	United States	0.422137	86
Raleigh	United States	0.421062	87
San Juan	Puerto Rico	0.420375	88
Quebec	Canada	0.418411	89
Kawasaki	Japan	0.414119	90
Sacramento	United States	0.413767	91
Copenhagen	Denmark	0.412429	92
Southampton	United Kingdom	0.41142	93
Victoria(CA)	Canada	0.408954	94
Columbus	United States	0.407341	95
Rome	Italy	0.407151	96
Cincinnati	United States	0.406699	97
Buffalo	United States	0.404547	98
Budapest	Hungary	0.403792	99
Ottawa	Canada	0.399202	100
Kyoto	Japan	0.398987	101
Long Beach	United States	0.397802	102
Mannheim	Germany	0.396771	103
Athens	Greece	0.396322	104
Newcastle	United Kingdom	0.396197	105

Chihuahua	Mexico	0.395325	106
Al Kuwait	Kuwait	0.394904	107
Pittsburgh	United States	0.388232	108
Belfast	United Kingdom	0.387762	109
Milwaukee	United States	0.387364	110
Tampa	United States	0.383246	111
Taipei	China	0.381493	112
Brisbane	Australia	0.381405	113
Mumbai	India	0.380337	114
Barcelona	Spain	0.379615	115
Mesa	United States	0.377331	116
Riyadh	Saudi Arabia	0.375656	117
Fukuoka	Japan	0.375199	118
Hannover	Germany	0.375113	119
Toulouse	France	0.374148	120
Palo Alto	United States	0.373869	121
Memphis	United States	0.372577	122
Cardiff	United Kingdom	0.371757	123
Edmonton	Canada	0.370033	124
City	Country	Score	Rank
Sakai	Japan	0.368088	125
Fort Worth	United States	0.366957	126
Omaha	United States	0.365877	127
Chiba	Japan	0.365122	128
Albuquerque	United States	0.36355	129
Guangzhou	China	0.363116	130
Strasbourg	France	0.362726	131
Plymouth	United Kingdom	0.362515	132
Marseille	France	0.359808	133
Warsaw	Portland	0.359606	134
Kansas City	United States	0.357482	135
Istanbul	Turkey	0.355207	136
Kobe	Japan	0.352034	137
Nashville	United States	0.351875	138
Manama	Bahrain	0.351825	139
Essen	Germany	0.351584	140
Valencia	Spain	0.349676	141
Winnipeg	Canada	0.346666	142
Monterrey	Mexico	0.345063	143
Dresden	Germany	0.344291	144
Tucson	United States	0.344116	145
Bologna	Italy	0.341669	146
Fresno	United States	0.339762	147
Hobart	Australia	0.33892	148

Dortmund	Germany	0.33723	149
Santiago	Chile	0.336659	150
Lisbon	Portugal	0.335754	151
Hiroshima	Japan	0.335251	152
Nice	France	0.334834	153
Saint Petersburg	Russia	0.331316	154
Bangkok	Thailand	0.330798	155
Halifax	Canada	0.329912	156
Chester	United Kingdom	0.328874	157
Veracruz	Mexico	0.328722	158
Ljubljana	Slovenia	0.328552	159
Leon	Mexico	0.327822	160
Prague	Czech republic	0.327605	161
Ulsan	Korea	0.322858	162
Sheffield	United Kingdom	0.320552	163
Aberdeen	United Kingdom	0.319989	164
Bordeaux	France	0.318272	165
Utrecht	Netherlands	0.31586	166
Norwich	United Kingdom	0.31438	167
City	Country	Score	Rank
Saltillo	Mexico	0.313454	168
Reykjavik	Iceland	0.313153	169
Jacksonville	United States	0.310009	170
Sapporo	Japan	0.308707	171
Christchurch	New Zealand	0.307878	172
Perth	Australia	0.306639	173
Virginia Beach	United States	0.306501	174
Bergen	Norway	0.306163	175
Shizuoka	Japan	0.306112	176
Lille	France	0.305671	177
Queretaro	Mexico	0.305472	178
Sendai	Japan	0.304613	179
Guadalajara	Mexico	0.304492	180
Leipzig	Germany	0.303851	181
Hamilton(CA)	Canada	0.303353	182
Bremen	Germany	0.302976	183
Oklahoma City	United States	0.302496	184
Regina	Canada	0.30157	185
New Orleans	United States	0.301164	186
Bratislava	Slovakia	0.300795	187
Liverpool	United Kingdom	0.2994	188
Tallinn	Estonia	0.29722	189
Turin	Italy	0.296677	190
Nuremberg	Germany	0.296086	191

Toluca	Mexico	0.296023	192
Malmo	Sweden	0.2953	193
Adelaide	Australia	0.29411	194
Ciudad Juarez	Mexico	0.293775	195
Bonn	Germany	0.292835	196
El Paso	United States	0.292112	197
Torreon	Mexico	0.290458	198
Chichibu	Japan	0.289501	199
Tampico	Mexico	0.288743	200
Sao Paulo	Brazil	0.286908	201
Santo Domingo	Dominican Republic	0.285934	202
Daejeon	Korea	0.285446	203
Bern	Switzerland	0.284577	204
Tulsa	United States	0.28237	205
Bucharest	Romania	0.280178	206
Morelia	Mexico	0.280135	207
Mainz	Germany	0.277897	208
Kuala Lumpur	Malaysia	0.276306	209
Zagreb	Croatia	0.275867	210
City	Country	Score	Rank
Aguascalientes	Mexico	0.275806	211
Cologne	Germany	0.275692	212
Delhi	INDIA	0.275214	213
Vilnius	Lithuania	0.274921	214
Hamamatsu	Japan	0.274324	215
Zhongshan	China	0.272792	216
Göteborg	Sweden	0.271389	217
Suzhou	China	0.270572	218
Canberra	Australia	0.27009	219
Merida	Mexico	0.269994	220
Incheon	Korea	0.26823	221
Hangzhou	China	0.265866	222
Tianjin	China	0.265484	223
Johannesburg	South Africa	0.265329	224
Kanazawa	Japan	0.26516	225
Puebla	Mexico	0.26196	226
Kaohsiung city	China	0.260831	227
Århus	Denmark	0.26074	228
Ankara	Turkey	0.260603	229
Nicosia	Cyprus	0.259951	230
Dalian	China	0.259832	231
Wuxi	China	0.259372	232
Okinawa	Japan	0.257385	233
Chengdu	China	0.254666	234

Beirut	Lebanon	0.254599	235
Bangalore	India	0.254574	236
Xiamen	China	0.254411	237
Saskatoon	Canada	0.253784	238
Nanjing	China	0.253192	239
San Luis Potosi	Mexico	0.25188	240
Montevideo	Uruguay	0.251509	241
Busan	Korea	0.249538	242
Tijuana	Mexico	0.249227	243
Wichita	United States	0.248612	244
Lima	Peru	0.247242	245
Sofia	Bulgaria	0.24672	246
Baotou	China	0.245689	247
Jakarta	Indonesia	0.24505	248
Changsha	China	0.244421	249
Genoa	Italy	0.243936	250
Trieste	Italy	0.243432	251
Qingdao	China	0.240426	252
Dongguan	China	0.240194	253
City	Country	Score	Rank
Cuernavaca	Mexico	0.23942	254
Manaus	Brazil	0.23773	255
Betim	Brazil	0.237104	256
Shenyang	China	0.237027	257
Rio de Janeiro	Brazil	0.236665	258
Kitakyusy	Japan	0.235968	259
Foshan	China	0.235951	260
Hamilton(NZ)	New Zealand	0.232864	261
Palermo	Italy	0.232323	262
Zhuhai	China	0.229402	263
Panama City	Panama	0.226068	264
Hefei	China	0.225084	265
Ningbo	China	0.22444	266
Bogota	Colombia	0.223603	267
Chennai	India	0.22349	268
Akita	Japan	0.223077	269
Minsk	Belarus	0.223054	270
Shijiazhuang	China	0.222451	271
Yerushalayim	Israel	0.221786	272
Naples	Italy	0.219577	273
Nanchang	China	0.218891	274
Yantai	China	0.218677	275
Nassau	Bahamas	0.218214	276
Wuhan	China	0.217524	277

Zibo	China	0.21703	278
Acapulco	Mexico	0.216979	279
Cape Town	South Africa	0.216261	280
Weihai	China	0.21608	281
Belo Horizonte	Brazil	0.214155	282
Taiyuan	China	0.213419	283
Huhehaote	China	0.212841	284
Jinan	China	0.212681	285
Cairo	Egypt	0.212604	286
Daegu	Korea	0.211665	287
Cordoba	Argentina	0.211665	288
Wuhu	China	0.20945	289
Begawan	Bandar Seri Begawan	0.208921	290
Fuzhou	China	0.208436	291
Chongqing	China	0.206556	292
Kingston	Jamaica	0.206279	293
Kiev	Ukraine	0.205809	294
Gyeongju	Korea	0.20575	295
Okayama	Japan	0.205617	296
City	Country	Score	Rank
Nantong	China	0.203946	297
Takamatsu	Japan	0.20355	298
Hsinchu city	China	0.203132	299
Krakow	Portland	0.202995	300
Changzhou	China	0.202443	301
Riga	Latvia	0.202394	302
Sao Bernardo do Campo	Brazil	0.202236	303
Campinas	Brazil	0.201574	304
Caracas	Venezuela	0.201387	305
Venice	Italy	0.200434	306
Alamaty	Kazakhstan	0.19891	307
Brazilia	Brazil	0.198534	308
Hyderabad	India	0.198304	309
Curitiba	Brazil	0.197556	310
Shaoxing	China	0.197512	311
Baku	Azerbaijan	0.196621	312
Recife	Brazil	0.196424	313
Duque de Caxias	Brazil	0.194456	314
Harbin	China	0.193665	315
Muscat	Oman	0.193079	316
Hanoi	Vietnam	0.192682	317
Ho Chi Minh City	Vietnam	0.192522	318
Alexandria	Egypt	0.192056	319
Omsk	Russia	0.191354	320

Sao Jose dos Campos	Brazil	0.191258	321
Pretoria	South Africa	0.190659	322
Manila	Philippines	0.190379	323
Keelung	China	0.18979	324
Xuzhou	China	0.18907	325
Huizhou	China	0.189001	326
Novosibirsk	Russia	0.188954	327
Changchun	China	0.18888	328
Zhengzhou	China	0.188204	329
Xi'an	China	0.188193	330
Karachi	Pakistan	0.187832	331
Tehran	Iran	0.187466	332
Calcutta	India	0.185938	333
San Salvador	Brazil	0.185585	334
Liuzhou	China	0.183908	335
Rayong	Thailand	0.18311	336
Jiaxing	China	0.182182	337
Wenzhou	China	0.182167	338
Weifang	China	0.181674	339
City	Country	Score	Rank
Medellin	Colombia	0.18145	340
Kunming	China	0.180108	341
Quanzhou	China	0.179994	342
Tainan	China	0.177663	343
Gaborone	Botswana	0.176604	344
Ahmedabad	INDIA	0.176575	345
Yangzhou	China	0.176185	346
Quito	Ecuador	0.176183	347
Columbo	Sri Lanka	0.175234	348
Murmansk	Russia	0.174697	349
Belgrade	Serbia	0.174491	350
Taizhou	China	0.172933	351
Algiers	Algeria	0.172193	352
Porto Alegre	Portugal	0.171471	353
Luanda	Angola	0.170822	354
Belgorod	Russia	0.170381	355
Havana	Cuba	0.169972	356
Amman	Jordan	0.169966	357
Tripoli	Libya	0.169254	358
Rizhao	China	0.168939	359
Guarulhos	Brazil	0.16768	360
Lahore	Pakistan	0.167579	361
Durban	South Africa	0.16735	362
Lipeck	Russia	0.164801	363

Porto Alegre	Brazil	0.163751	364
Port Louis	Mauritius	0.163139	365
Pune	India	0.159031	366
Nanning	China	0.156693	367
Medan	Indonesia	0.155998	368
Guatemala City	Guatemala	0.155704	369
Archangelsk	Russia	0.155639	370
Bandung	Indonesia	0.155608	371
Haikou	China	0.155056	372
Samara	Russia	0.154497	373
Bhopal	India	0.154056	374
Islamabad	Pakistan	0.150164	375
Cochi	India	0.149426	376
Jekaterinburg	Russia	0.148555	377
Labuan	Malaysia	0.147642	378
Kemerovo	Russia	0.147072	379
Tunis	Tunis	0.146832	380
Cel'abinsk	Russia	0.146538	381
Taichung	China	0.146032	382
City	Country	Score	Rank
Guayaquil	Ecuador	0.145314	383
Phnom Penh	Cambodia	0.144471	384
Vladivostok	Russia	0.143189	385
Yerevan	Armenia	0.14132	386
Baghdad	Iraq	0.140229	387
Tegucigalpa	Honduras	0.139914	388
Kaliningrad	Russia	0.139307	389
Krasnojarsk	Russia	0.139139	390
Volgograd	Russia	0.138227	391
Penang	Malaysia	0.137771	392
T'umen	Russia	0.137712	393
Izhevsk	Russia	0.137229	394
Ufa	Russia	0.136711	395
Tashkent	Uzbekistan	0.136168	396
Petrozavodsk	Russia	0.135502	397
Perm	Russia	0.134958	398
Casablanca	Morocco	0.132727	399
Damascus	Syria	0.132457	400
Jaroslavl	Russia	0.130243	401
Kaluga	Russia	0.129173	402
Kursk	Russia	0.128898	403
Visakhapatnam	India	0.125931	404
Ranchi	India	0.125225	405
Pimpri-Chichwad	India	0.125093	406

Ryazan	Russia	0.124119	407
Sanaa	Yemen	0.123949	408
Uljanovsk	Russia	0.123784	409
Rostov-na-Donu	Russia	0.123512	410
Chabarovsk	Russia	0.12265	411
Windhoek	Namibia	0.122475	412
Accra	Ghana	0.12218	413
Kazan	Russia	0.119951	414
Barnaul	Russia	0.119948	415
Georgetown	Guyana	0.119671	416
La Paz	Bolivia	0.119549	417
Stavropol	Russia	0.119188	418
Or'ol	Russia	0.118741	419
Orenburg	Russia	0.118476	420
Madurai	India	0.11767	421
Machackala	Russia	0.11762	422
Dushanbe	Tajikistan	0.116954	423
Lucknow	India	0.116782	424
Thane	India	0.116495	425
City	Country	Score	Rank
Indore	India	0.116303	426
Yangon	Myanmar	0.116008	427
Srinagar	India	0.115794	428
Jaipur	India	0.115755	429
Managua	Nicaragua	0.115526	430
Dhaka	Bangladesh	0.115292	431
Niznij Novgorod	Russia	0.114678	432
Saratov	Russia	0.113192	433
Krasnojarsk	Russia	0.112697	434
Douala	Cameroon	0.112427	435
Malacca	Malaysia	0.111536	436
Voronez	Russia	0.111145	437
Faridabad	India	0.110529	438
Ghaziabad	India	0.110272	439
Asuncion	Paraguay	0.110086	440
Astra Chan	Russia	0.110061	441
Penza	Russia	0.1098	442
Addis Ababa	Ethiopia	0.109719	443
Dakar	Senegal	0.109715	444
Surat	India	0.108876	445
Vladimir	Russia	0.108803	446
Ivanovo	Russia	0.108799	447
Tula	Russia	0.108718	448
Nagpur	India	0.108459	449

Tver	Russia	0.107866	450
Dar Es Salaam	Tanzania	0.107847	451
Tambov	Russia	0.107499	452
Vadodara	India	0.106864	453
Lagos	Nigeria	0.106573	454
kalyan	India	0.106413	455
Nasik	India	0.106148	456
Maputo	Mozambique	0.106129	457
Bryansk	Russia	0.105365	458
Nairobi	Kenny	0.105136	459
Cebu	Philippines	0.103958	460
Victoria(SC)	Seychelles	0.102571	461
Coimbatore	India	0.101657	462
Ulan Bator	Mongolia	0.101425	463
Kabul	Afghanistan	0.096871	464
Smolensk	Russia	0.095579	465
Pondicherry	India	0.095229	466
Lusaka	Zambia	0.094845	467
Kirov	Russia	0.09474	468
City	Country	Score	Rank
Ludhiana	India	0.0943	469
Mysore	India	0.092788	470
Rabat	Morocco	0.09237	471
Kanpur	India	0.092166	472
Varanasi	India	0.091881	473
Trivandrum	India	0.091547	474
Agra	India	0.089916	475
Sarajevo	Bosnia and Herzegovina	0.089078	476
Freetown	Sierra Leone	0.088983	477
Amritsar	India	0.088056	478
Kampala	Uganda	0.087316	479
Patna	India	0.085973	480
Allahabad	India	0.083421	481
Conakry	Guinea	0.082216	482
Yaounde	Cameroon	0.080402	483
Meerut	India	0.080058	484
Rajkot	India	0.079577	485
Brazzaville	Congo	0.077836	486
Jabalpur	India	0.077169	487
Asansol	India	0.07673	488
Haora	India	0.075575	489
Abidjan	Côte d'Ivoire	0.074823	490
Vijayawada	India	0.073168	491
Lome	Togo	0.067305	492

Port Moresby	Papua New Guinea	0.06508	493
Kinshasa	Zaire	0.063458	494
Blantyre	Malawi	0.054121	495
Pyongyang	Korea	0.052684	496
Port-au-Prince	Haiti	0.042224	497
Groznyj	Russia	0.03634	498
Djibouti	Djibouti	0.028275	499
Harare	Zimbabwe	0	500

1. Introduction

1.1 Global urban competitiveness: The conceptual framework and index system

Global urban competitiveness is defined as a city's ability to attract and transform resources, control and dominate the market, thus creating more wealth in a faster and better manner as well as providing welfare for its citizens, this is the result of the combination of urban enterprise operational elements with industrial systems in comparison with other cities in the world. in the light of the definition, There are two conceptual frameworks and two index systems about global urban competitiveness in the aspect of input and output

From the definition of urban competitiveness, we know it means the ability to continuously creating the most wealth at the lowest cost within the shortest time. From the perspective of manifestation or output, we can assess global urban competitiveness with the following framework.

$$UC = F(C, S, L, A, E, P, G, I, D)$$

UC is urban competitiveness, also named urban Comprehensive competitiveness by the report.

C = cost, S = Economic scale, E = Employment, A = Aggregation, L = Development

Level, P = Labor Productivity, I = Innovation, G = Economy Growth, and D = Decision-making Ability.

Cost is the most important comparative advantage of a city and significant sources of urban competitiveness. Obviously, commodities of the same quality can obtain greater market share if they are sold at a lower price. The ratio of the nominal exchange rate to the real exchange rate, an important index of urban competitiveness, can partially reflect the advantage of a city in a country or region in price compared with that of other countries.

Economic scale is an important indicator of competitiveness. Economies of scale promote market competitiveness through reducing the cost of unit products. If market share is an important index of competitiveness, then the magnitude of GDP is a reflection of the market share of a city in both internal and external markets.

Economic growth is an important reflection of a city's potential competitiveness. The growth rate of GDP, especially long-term growth rate, is an important index of a city's economic speed.

development level is for a reflection of the city's competitiveness and development. GDP per capita is an important indicator of a city or a region's development level. It is also an important reflection of its citizens' incomes.

Production efficiency is the decisive factor for urban competitiveness and development. To a significant degree, competitiveness lies in the production efficiency. Labor productivity, the key to production efficiency, reflects the value added or wealth created by per unit of labor.

Employment also reflects a city's competitive performance in global competition. It is also an important reflection of citizens' welfare. Therefore, we consider it to be an important indicator of urban competitiveness.

Economic aggregation promotes competitiveness through a reduction of the transaction cost. The aggregation effect can lead to knowledge sharing, technology spillovers, brand effect, external economies and other economic effects. GDP per square kilometer is an important indicator of output aggregation resulting from the aggregation of production factors. It is also an important indicator of efficiency, reflecting the amount of wealth created per square kilometer.

technological innovation is at the core of urban competitiveness and its achievements are an important reflection of urban competitiveness. The number of international patent applications is another useful indicator of urban competitiveness. Due to the diffusion effect in the transformation of scientific and technological results, we use the gross index instead of the average index.

decision-making ability show the extent to which a city control the world economy. the ability is decided by the number of multinational corporations located in a city, and we use this as an indicator of urban competitiveness.

Based on the above analysis, the output index system of global urban competitiveness is listed as below.

Table 1.1 output Index System of Urban Competitiveness

Index	Implications of the Index
GDP	A city's products and service market share

GDP per capita	A city's development level and residents' welfare level
GDP per square kilometer	Degree of economic aggregation
GDP growth rate	Economic speed
Labor productivity	Economic efficiency
Employment rate	Important macro economy performance and residents' welfare level
Ratio of nominal exchange rate to real exchange rate	Advantage in the price of commodities and services
Number of international patent applications	Ability of scientific and technological innovation
multinational corporation score	Economic decision-making and controlling ability

1.2 Global urban competitiveness: definition of city

City usually refers to a concentrated residential area with relatively high degree of urbanization. But countries vary from each other in terms of the concrete definition of city and the definition of scope. Some take the population size as the definition standard; while others take the historical, legal or administrative concept as the defining standard of city.

The so-called city in this Report refers to the concentrated residential area under the governance of an administrative management center, including not only the urbanized area, but also the suburb or village. From this definition, it can be seen clearly that the city we refer to is a city in the administrative concept. Nevertheless, it is still necessary to explain the difference and connection between this concept of city and urbanized area and urban area specially.

City and region. the administrative division varies from country to country. Some countries set up the administrative unit of region below state (province) and above city, such as China and India and many European countries. The administrative center of these regions is usually a city; while the supreme administrative organ of the city governs some other cities. Under this circumstance, city hereof only refers to the district itself, excluding other cities under it.

City and urbanized area. The difference between city and urbanized area is that city is a region in the administrative sense; while urbanized area refers to a region in the social and economic sense, namely, urbanized area means an urbanized region excluding the village. According to this difference, urbanized area are usually differentiated from the urban area. When an area is highly urbanized, the size of the urbanized area may be larger than certain urban area, because the former probably includes some areas of other cities. While when the urbanized degree of an area is relatively low, the size of the urbanized area will be smaller than certain urban area, because the latter will include the suburb or village on .

City and metropolitan area. Some countries also have the concept of metropolitan area (e. g. the US and Canada). This concept is in the statistical sense, namely, when the urbanization of some countries reaches certain degree, the connection of neighboring urban areas will be enhanced in terms of economy and society and the sharing degree of infrastructures will be high. In order to reflect the development of this area more comprehensively, statistic institution will deem these urban areas as a unit in statistics, namely, metropolitan area. Therefore, generally speaking, the size of a metropolitan area is usually larger than that of the urban area.

What needs to be pointed out is that in the course of research, due to the accessibility of data, some cities adopt the concept of urbanized area, while others adopt the concept of metropolitan area. We have made special explanation in these parts. Cities without special

explanation are the ones in the administrative sense.

1.3 Global urban competitiveness: 500 sample cities

The candidate cities are selected for the Global Urban Competitiveness (GUC) study. 500 sample cities across the world are selected for general assessment of their competitiveness.

In the first step, a rough scanning is made for cities in countries and regions of the 6 continents. Candidates are selected from major cities for initial screening.

Next, the number of sample cities in each country or region is identified within the total of 500 worldwide, referring to local population and income per capita.

Then specific sample cities are selected in each country or region sequentially according to the size and competitiveness.

Finally, adjustments are made for sample cities in each country with considerations of the availability, accuracy and standardization of the statistical data of each city. Eventually, those with more standard and accurate data available are selected as sample cities.

In terms of geographic distribution, the 500 cities selected through the above steps are located in 130 countries and regions in 6 continents. Specifically, 181 of the cities are in Asia, 143 in Europe, 100 in North America, 36 in Africa, 28 in South America and 12 in Oceania. In terms of development stage, the 500 cities may be divided into 4 groups by the standard of GDP per capita (based on official exchange rates as of 2005). 91 of the sample cities are with GDP per capita of more than 40,000 dollars, 72 between 30,000 and 39,999 dollars, 74 between 10,000 and 29,999 dollars and 263 less than 10,000 dollars. In general, these 500 cities represent the development levels of different regions in today's world. The reader should refer to the Global Urban Competitiveness Index Ranking for the 500 sample cities.

1.4 Global urban competitiveness: specific data sources

Nominal exchange rate/ PPP exchange rate. The data come from the website of World Bank (<http://www.worldbank.org>).

Gross domestic product. The data about the gross domestic product primarily come from official websites of the cities; municipal, regional or national statistical websites; websites of municipal, regional or national departments; municipal, regional or national statistical yearbook; statistical report of the European Union, wikipedia website (http://en.wikipedia.org/wiki/Main_Page), national GDP rank by the WB, websites of city mayors (<http://www.citymayors.com>), and relevant reports on the internet media.

GDP per capita. Data source: same as the gross domestic product.

GDP per square kilometer. Data source: same as the gross domestic product.

Real economic growth rate (for 5 Years). Data source: same as the gross domestic product.

Employment rate. Data source: same as the gross domestic product.

Labor productivity. Data source: same as the gross domestic product.

Number of international patent applications. Data source: website of the World

Intellectual Property Organization (WIPO) (<http://www.wipo.int/>).

multinational corporation score. Data source: websites of sample enterprises.

1.5 Global urban competitiveness: data processing

In view of the above data collecting channels and the challenges and complexity in the collection, the following methods are employed for data processing:

1.5.1 data about population and area : unified processing

For some indexes, e.g., population and area, first-hand data are available in every city. However, these data might have been collected according to different standards. In such cases, we would first study the indexes and standards of United Nations Statistical Division (UNSD), World Bank World Development Indexes, OECD Database and other international organizations. Then we would determine an approach for the conversion of data of each country and set up the most proper, comparable and widely used statistical standards for data processing. Eventually, we were able to build a uniform database to cover the 500 international cities. With regard to population, for example, some cities only provide domiciliary population, some provide permanent population, and others include temporary population in their statistics. In our study, they are all converted into permanent population. For another example, the “area” might be land area only for some cities, and the sums of land and water areas for others. In our study, adjustments are made so that the area means land area only.

1.5.2 Calculation of GDP based on other GVA

If some data cannot be obtained directly, then they can be calculated according to their quantitative relations with the relevant variables collected. For example, if we cannot obtain the accurate GDP information on a city, but can obtain its accurate GVA data, then we can calculate the country’s or the city’s GDP in accordance with its similar quantitative relationship with its GVA. This method has mainly been adopted in GDP data processing in the British cities, as well as some other European cities.

1.5.3 Estimation of GDP

Since this is a method of estimation, the data obtained in this way are less accurate than those obtained by the above two methods. It is the calculation of the city’s variables with other relevant knowledge or experiences on the basis of the relevant variables collected. Though not frequently used, this method has been widely used. That is, it can almost be applied in the data processing of all the index systems, but only a few cities adopt it in their data processing. For example, as the GDP data of some cities in the South America and Africa are hard to obtain, we can only refer to the GDP data of its country or other cities in its country, or even in other countries, and then estimate the GDP data of this city on the basis of the relevant information or sometimes the researcher’s experience. Other examples can be found in the data of various index systems of several cities.

1.5.4. Direct calculation of GDP per capita, GDP per square kilometer, GDP growth rate and labor productivity

When some variable data are not directly available, we will calculate in accordance with strict logical relationship from two or more other relevant variable data. This involves three aspects. One is the reversible calculation between the equalizing value index and the total

amount index. For example, a city's GDP, GDP per capita, GDP per square kilometer as well as the labor productivity can be reversibly calculated through such intervening variables as the city's area, population and employed population. The second is the calculation of the variable static data and the dynamic data. For example, a city's GDP growth rate can be calculated through the chronological data of its GDP. The third is the calculation between the index absolute value and proportion, such as the reversible calculation among number of the labor force, employed population and the unemployment rate. The direct variable calculation method has been extensively used in our research. Due to its conformity to the strict logical relationship between the variables, the calculated variables are undoubtedly accurate on the condition that the existing variables are known to be accurate.

1.5.5. Direct calculation of Nominal exchange rate/ PPP exchange rate.

The ratio of nominal exchange rate to real exchange rate is obtained from the World Bank after converting the nominal income per capita denominated in US dollar and PPP income per capita denominated in US dollar of various countries in 2005, which are national data.

1.5.6. Number of international patent applications.

Number of international patent applications about every city could be searched directly from website of WIPO.

1.5.7. calculation of multinational corporation score

multinational corporation score involved six industries : multinational management consulting corporation score, multinational accounting corporation score, multinational corporation law score, multinational Advertising corporation score, multinational Media corporation score, multinational Financial corporation score.

1.5.7.1 The Sampling of the Multinational Corporations in Different Industries.

In order to make the analysis results comparable, we have made the multinational corporation sampling in accordance with the rankings in each industry of the Forbes Global 2000. For more details, see Table 1.2 below

Table 1.2 Multinational Corporation Score: Sample Multinational Corporation in Each of the Indexes

Index	Sample Enterprise	Remarks
Multinational management consulting Corporations	The global top 25 multinational corporations according to the revenue	The global distribution data of some enterprises are hard to obtain, which are therefore substituted by enterprises ranking 25 -30 in the
Multinational accounting Corporations	The global top 25 multinational corporations according to the revenue	The global distribution data of some enterprises are hard to obtain, which are therefore substituted by enterprises ranking 25 -30 in the
Multi law Corporations	The global top 25 multinational corporations according to the revenue	The global distribution data of some enterprises are hard to obtain, which are therefore substituted by enterprises ranking 25 -30 in the
Multinational Advertising Corporations	The global top 25 multinational corporation according to the revenue	The global distribution data of some enterprises are hard to obtain, which are therefore substituted by enterprises ranking 25 -30 in the
Multinational Media Corporations	The global top 25 multinational corporation according to the revenue	The global distribution data of some enterprises are hard to obtain, which are therefore substituted by enterprises ranking 25 -30 in the
Multinational Financial Corporation	The top 75 financial multinational corporations of the Forbes Global 2000 (2005)	Including the industries of finance, insurance and banking of the Forbes Global 2000 (2005) industrial classification; the global distribution data of some enterprises are hard to obtain, which are

1.5.7.2 Marking Criteria and Principle

In accordance with the global network configuration and distribution characteristics of

the multinational corporations around the world, the following marking criteria will be observed: 1) the city where the multinational corporations' global headquarters congregate (five points); 2) the city where the multinational corporations' regional headquarters congregate (four points); 3) the city where the multinational corporations' national headquarters congregate (three points); 4) the city where the multinational corporations' branches congregate (two points); 5) the city where the multinational corporations' agencies (i.e. the small-scale branches with limited functions) congregate (one point). The above five items make a basic marking criterion, while during the concrete operation, due to the unclear information provided by corporations or the different configurations of multinational corporations' global network, it is very hard to judge directly the grades of the multinational corporations' branches. In such a case, we make the subsidiary judgment mainly from two aspects: one is to search online and decide the status of the multinational corporation's branches according to the relevant information collected in this way; and the other is to make the judgment according to the number and scale of the distribution of the multinational corporations' branches in different cities. Generally speaking, in the same country, if it has the most or the largest branches of a multinational corporation, the city is superior to other cities in the global network of the corporation; moreover, the function of the branches in it are also superior to that of the corporation's branches in other cities. On the basis of combining these two aspects, if it is still unable to make the judgment of a city with the obtained information, then it will be given two points.

After the marking of the distribution status of the chosen multinational corporations in the same industry one by one, A city's multinational corporation score will be figured out by equal-weight accumulation of the city's six industrial score.

1. 6 Global urban competitiveness index: assessment and calculation methods

The global urban competitiveness assessment system is developed from the research model in the Annual Report on Urban Competitiveness of Dr. Ni Pengfei. This book comes down in one continuous line with the Annual Report on Urban Competitiveness in terms of competitiveness analysis framework and main thoughts, and refers to it in the setup of index system. But due to the change of research object, research topic and audience, as well as the restrictions of many subjective and objective factors in the course of data collection, compared with the Annual Report on Urban Competitiveness, this book has made certain update and adjustment in the competitiveness assessment system and measurement methods. Out of academic prudence, the results and main conclusions from the index system used in this book are not directly comparable to the Annual Report on Urban Competitiveness. We suggest readers to deem the two as the measurement to urban competitiveness from different angles and levels. Next we will introduce the technical problem in the data processing and integration.

1. 6.1 Standardization of first-hand data

The index system of the global urban competitiveness is enormous with numerous data. The dimension varies from index to index. First, it needs to conduct the standardized integration. All the index data have to go through the non-dimensional processing. The objective indices can be divided into singular objective indices and composite objective

indices. To conduct the non-dimensional process to the original data of singular objective indices, this paper primarily adopts the standardization, indexation, and threshold value method. The formula for computing standardization is:

$$X_i = (x_i - \bar{x}) / Q^2$$

x_i is the original data, \bar{x} is the mean, Q^2 is the variance, X_i is the data after the standardization.

The calculation formula of the indexation method is:

$$X_i = x_i / X_{0i}$$

x_i is the original value, X_{0i} is the maximum, X_i is the index.

Threshold Value method:

$$X_i = (x_i - x_{\min}) / (x_{\max} - x_{\min})$$

x_i is the value after the conversion, x_{\max} is the maximum sample value, x_{\min} is the minimum sample value, X_i is the original value.

The non-dimensional processing of original data of composite objective index is as follows: first, conduct quantitative process to the single index in the component, and then use the equal weight method to acquire the composite index.

1. 6.2 Global urban competitiveness index (GUCI) of the 500 cities

In the course of the combination of comprehensive competitiveness indices, the non-linear weighted integration method is adopted. The so-called non-linear weighted integration method (or multiplicative integration method) uses the non-linear model:

$$y = \prod_{j=1}^m x_j^{w_j}$$

to conduct the comprehensive assessment. In the formula, w_j is the weight coefficient, $x_j \geq 1$. As far as the non-linear model is concerned, when computing the 9 explicit indices of the urban comprehensive competitiveness, as long as one index is extremely small, the value of the comprehensive competitiveness will approach zero rapidly. In other words, this assessment model is sensitive to indices of small value, and slow to indices of relatively large value. By using the non-linear weighted integration method to measure the urban competitiveness, we can reflect the composite indices more comprehensively and scientifically.

While we synthesize the 9 explicit indices, we first employ the threshold value method to the index data in the non-dimensional processing, and then get the integrated value by applying the non-linear weighted integration method. What needs to be pointed out is that in the course of the non - dimensional processing, some indices with the value of 0 are conferred the minimum of 0. 05 to avoid the phenomenon of 0 integrated product when integrating the indices. See Table 1.3 below for the weights adopted.

Table 1.3 Overview of weights of explicit indices

Index	Normal exchange rate/ real exchange rate	Gross GDP	GDP per capita	GDP per square kilometer	Real economic growth rate (for 5 Years)	Employment rate	Labor productivity	Number of international patent applications	Multinational Corporation Score
Weight	0.05	0.05	0.1	0.1	0.2	0.1	0.1	0.1	0.05

After determining the weights of measuring indices in the comprehensive competitiveness index integration, we can employ the non-linear weighted integration method to calculate the comprehensive competitiveness index of each city, whereupon to rank the comprehensive competitiveness of the 500 cities.

Assuming that such indices as the normal exchange rate/ real exchange rate, gross GDP, GDP per capita, GDP per square kilometer, real economic growth rate (for 5 years) , employment rate, labor productivity, number of international patent applications and Multinational Corporation Score are expressed with, $x_1, x_2, x_3, x_4, x_5, x_6, x_7$ and x_9 , the comprehensive competitiveness indices can be integrated by using the above non-linear model, here $w_1, w_2, w_3, w_4, w_5, w_6, w_7, w_8$ and w_9 are 0.05, 0.05, 0.1, 0.1, 0.2, 0.1, 0.1, 0.05, and 0.05 respectively.

1.7 Global urban competitiveness: dynamic clustering analysis

The underlying idea of dynamic clustering analysis is to select a number of sample points as the clustering centers in the first place; next, the samples are made to concentrate toward the centers in accordance with specific clustering standards for an initial classification; then judgment is made on whether the classification is reasonable; if not, the clustering centers will be revised; the step is performed repeatedly until the classification is reasonable. There are a number of dynamic clustering calculation methods, among which, the most famous ones are the K-average method and the ISODATA method. In this study, the K-average method is employed. The following is a brief introduction to the method:

If there are N samples to be classified, i.e., X_1, X_2, \dots, X_n , and there are K clusters, $N \geq K$,

Step 1: randomly select K initial clustering centers, z_1, z_2, \dots, z_k e.g., the first K samples (called the old clustering centers);

Step 2: put each sample into a category of the old clustering centers in accordance with the neighboring principle;

Step 3: calculate the gravity center of each category after the classification. These gravity

$$Y_i = \frac{1}{N_i} \sum_{k=1}^{N_i} X_{ki} \quad i=1,2,\dots,K$$

centers are called the new clustering centers: , in which, N_i is

the number of samples of category w_i ;

Step 4: check whether z_1, z_2, \dots, z_k equal to Y_1, Y_2, \dots, Y_k respectively; if yes, the calculation is completed; if not, replace z_k with Y_k and return to step 2.

Based on the above theory, dynamic clustering analysis is made on the sample cities, using the 9 explicit indexes of the 500 cities.

2. Global Urban Competitiveness: Which cities are the most competitive in the world?

Global Urban Competitiveness (GUC) is the ability of a city to attract and utilize resources, provide goods and services, create wealth and provide its citizens more, faster and better than other cities in the world. Based on this definition, we collected data on 9 indexes including GDP, GDP per capita, labor productivity, number of multinational companies, number of internationally recognized patent applications, price advantage, economic growth rate and employment rate. We compiled the Global Urban Competitiveness Index (GUCI) for 500 cities around the world. As these 500 cities are distributed in over 130 countries and regions in 5 continents, and all 9 indexes use objective data to measure the general

performance of wealth creation in cities, we can gain insight on the development and competitiveness of cities around the world by comparing and analyzing the GUCI of these 500 cities and their components. The main findings are provided in this chapter.

2.1 World cities are top cities and hi-tech centers are among the leaders

World cities and global hi-tech centers are the most competitive among all cities. New York, London and Tokyo are the top three cities in terms of GUCI. The top 20 include world cities such as Paris, Washington, Los Angeles, Singapore, Chicago, Toronto, Seoul and Madrid, as well as well-known global hi-tech centers, such as Stockholm, San Fransisco, Boston, San Diego, Auckland, Helsinki and Vienna. Figure 1.1 and Table 2.1 show the GUCI distribution of the 500 cities.

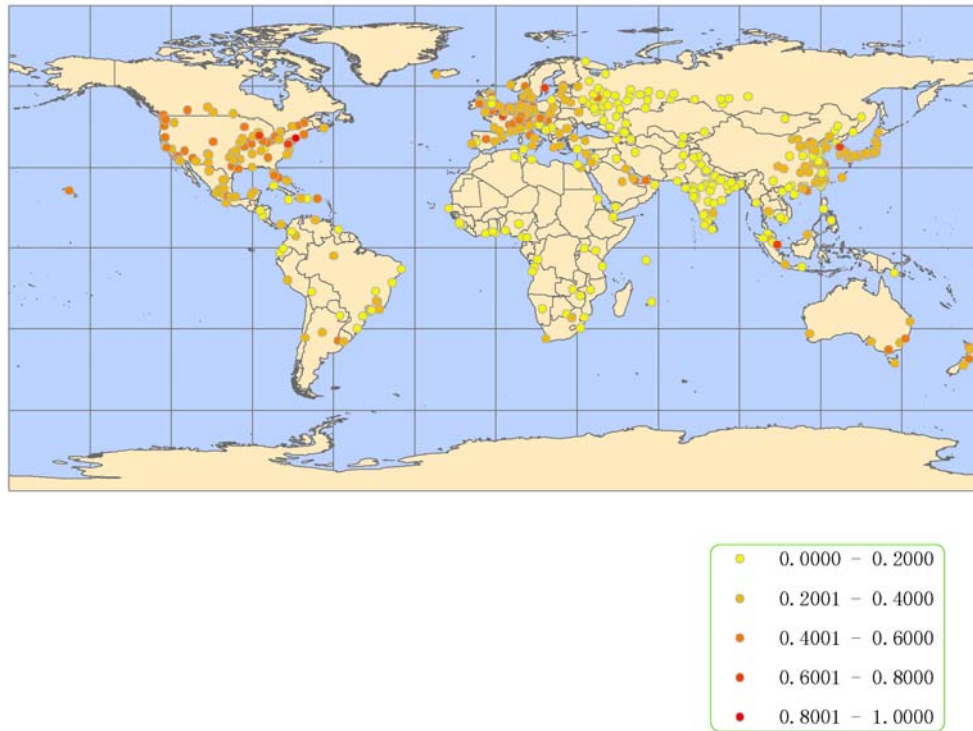


Figure 2.1 Distribution GUCI of 500 cities (Unit: index value)

Table 2.1 The top 20 and bottom 20 cities among the 500 cities in terms of comprehensive competitiveness GUCI

City	Country	Continent	Index	Rank	City	Country	Continent	Index	Rank
New York	US	North America	1	1	Allahabad	India	South Asia	0.08342	481
London	UK	Western Europe	0.94418	2	Conakry	Gunea	West Africa	0.08221	482
Tokyo	Japan	East Asia	0.79016	3	Yaounde	Cmeroon	Central Asia	0.08040	483
Paris	France	Western Europe	0.75937	4	Meerut	India	South Asia	0.08005	484

Washington	US	North America	0.69640 6	5	Rajkot	India	South Asia	0.07957 7	485
Los Angeles	US	North America	0.66883 6	6	Brazzaville	Congo	Central Asia	0.07783 6	486
Stockholm	Sweden	Northern Europe	0.64792 1	7	Jabalpur	India	South Asia	0.07716 9	487
Singapore	Singapore	Southeast Asia	0.64589 7	8	Asansol	India	South Asia	0.07673	488
San Francisco	US	North America	0.64209 5	9	Haora	India	South Asia	0.07557 5	489
Chicago	US	North America	0.62984 8	10	Abijan	Cote d'ivoire	West Africa	0.07482 3	490
Toronto	Canada	North America	0.61756 5	11	Vijayawada	India	South Asia	0.07316 8	491
Seoul	South Korea	East Asia	0.61671 9	12	Lome	Togo	West Africa	0.06730 5	492
Boston	US	North America	0.59685 4	13	Port Moresby	Papua New Guinea	Oceania	0.06508	493
San Diego	US	North America	0.58819 7	14	Kinshasa	Zaire	Central Asia	0.06345 8	494
Oakland(U S)	US	North America	0.58259 7	15	Blantyre	Malawi	South Africa	0.05412 1	495
Helsinki	Finland	Northern Europe	0.57475 3	16	Pyongyang	North Korea	East Asia	0.05268 4	496
Madrid	Spain	Southern Europe	0.57163 3	17	Port-au-Prince	Haiti	Latin America	0.04222 4	497
Vienna	Austria	Central Europe	0.56915 8	18	Groznyj	Russia	East Europe	0.03634	498
Philadelphia	US	North America	0.56491 1	19	Djibouti	Djibouti	East Africa	0.02827 5	499
Houston	US	North America	0.55549 1	20	Harare	Zimbabwe	South Africa	0	500

2.2 North American cities have higher ranks than European and Asian cities

Among the top 20 global competitive cities, 10, or a half are in North America and 7 or 35% in Europe. All together, the North American and European cities account for 90% of the top 20 cities. Only 3 cities are in Asia. None of the top 20 cities are in Oceania, South America and Africa.

Among the top 150 global competitive cities, 59 are in North America, accounting for 84.3% of the sample cities in the region; 52 are in Europe, accounting for 36.4%; 27 are in Asia, accounting for 14.9%; 6 are in Latin America, accounting for 10%; and 6 are in Oceania, accounting for 50%. Again, none of the African cities is on the list of top 150. Figure 1.2 shows the regional distribution of top 150 global competitive cities.

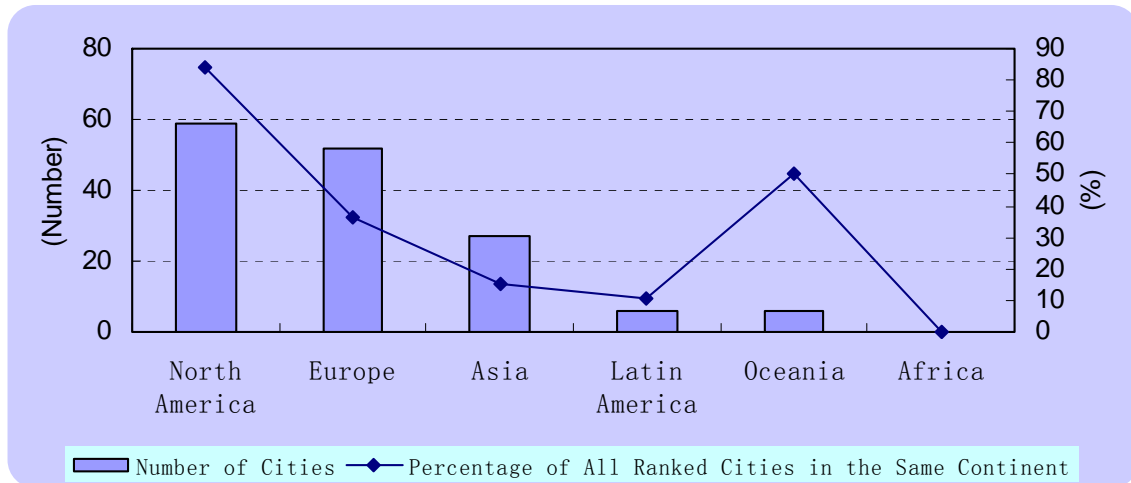


Figure 2.2 Regional distribution of top 150 global competitive cities

Among the bottom 150 cities, 46 are in Europe, accounting for 32.2% of the sample cities of the region; 62 are in Asia, accounting for 34.3%; 11 are in Latin America, accounting for 19%; 1 is in Oceania, accounting for 8.3%; and 30 are in Africa, accounting for 83.3%. No North American city is found on this list.

A comparison of the cities in different continents indicates that, in general, North American cities have the highest GUCI rankings, followed by European cities. Some of the Asian cities have considerable potential, while cities in Latin America (including the Caribbean region and Africa) have weaker competitiveness, and those in Sub-Saharan regions are least competitive.

2.3 World cities, hi-tech centers and national centers are top cities in each continent

Among the top 10 cities in North America, 9 are in the United States and 1, which is Toronto, is in Canada. Most of these cities are national/regional political and economic centers, or major hi-tech centers in the United States and Canada (See Table 2.2).

Among the Asian and Middle Eastern top 10 cities, 3 are in Japan and 2 in China (including Hong Kong). Singapore, South Korea, Israel, United Arab Emirates and Qatar each has one city on the list. It indicates that cities of the developed nations, i.e., Japan and Israel (4 in total), remain the most competitive, followed by those in emerging industrialized countries (3 in total) in Asia. In addition, cities in the oil producing countries in west Asia and China, which is a developing country, are fairly competitive, too.

In Europe, 3 of the top 10 cities are in Western Europe, 2 in Northern Europe, 3 in central Europe, 1 in Southern Europe and 1 in southeast Europe. None of the cities is in Eastern Europe. Most of these cities are capital cities or economic centers of developed nations (See Table 2.2).

Table 2.2 Top 10 global competitive cities of 3 major continents

Regional Rank	North America			Asia			Europe		
	City	Country	Global Rank	City	Country	Global Rank	City	Country	Global Rank
1	New York	US	1	Tokyo	Japan	3	London	UK	2
2	Washington	US	5	Singapore	Singapore	8	Paris	France	4
3	Los Angeles	US	6	Seoul	South Korea	12	Stockholm	Sweden	7
4	San Francisco	US	9	Hong Kong	China	26	Helsinki	Finland	16
5	Chicago	US	10	Tel Aviv	Israel	33	Madrid	Spain	17
6	Toronto	Canada	11	Dubai	United Arab Emirates	39	Vienna	Austria	18
7	Boston	US	13	Shanghai	China	41	Zurich	Switzerland	21
8	San Diego	US	14	Doha	Qatar	55	Dublin	Ireland	27
9	Oakland(US)	US	15	Nagoya	Japan	56	Frankfurt	Germany	28
10	Philadelphia	US	19	Yokohama	Japan	57	Milan	Italy	29

2.4 Cities of developed countries are more competitive while central cities of newly industrializing and transitional countries have higher potential

A comparison of the distribution of the 500 cities by country shows that 10 of the top 20 cities are in the United states, accounting for 17.5% of all US sample cities. Six are in EU, accounting for 8.1%. Canada, Japan, South Korea and Singapore each have one top 20 city, accounting for 7.7%, 4.5%, 14.3% and 100% of their total sample cities respectively (Singapore is a city itself).

Among the top 150 cities, 50 are in the United States, accounting for 87.7% of the sample cities of the nation; 13 in Britain, accounting for 72.2%; 11 in Germany, accounting for 64.7%; 10 in Japan, accounting for 45.5%; 9 in Canada, accounting for 69.2%; 5 in France, accounting for 62.5%; 3 in Italy, accounting for 33.3%. Among the Gold Brick??? nations, China has 7 cities on the list, accounting for 11.3% of its sample cities; Russia and India have one each, accounting for 2.3% and 2% of their respective sample cities. No Brazilian city is on the top 150. list (See Figure 2.3).

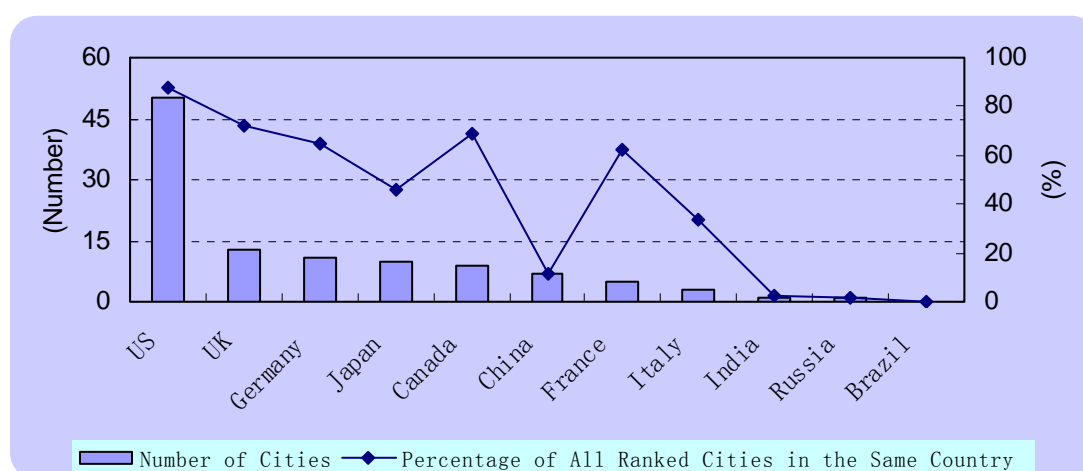


Figure 2.3 The distribution of top 150 cities by country

Among the bottom 150 cities, only one is in a developed country. All the remaining 149 cities are in developing countries and countries in transition. Specifically, 44 are in Russia, accounting for 88% of its sample cities; 36 are in India, accounting for 83.7%; 5 are in China, accounting for 8.1%; 2 are in Brazil, accounting for 13.3%.

In general, cities of developed countries are more competitive, while central cities of newly industrializing or transitional countries have higher potential. Cities of the least developed countries are generally not competitive, except that a few have moderate competitiveness.

2.5 A few countries show distinct national characteristics in competitiveness while most countries have substantial gaps in GUCI among their cities.

In Britain, the cities generally rank high. London tops the country list, and Liverpool is at the bottom. Between them, there are 186 other global cities distributed evenly. For Brazil, St. Paul is at the top and Port Alegre at the bottom of the list, with 163 other cities distributing evenly between them. In general, the ranks of Brazilian cities are low.

With the largest number of entries in the top 150, US cities are highly competitive in general. However, those at the bottom of the country list are no more competitive than some cities in developing countries. For example, the bottom two on the US country list, Wichita and Raleigh ranked the 205th and 245th respectively on the global list. Between New York, the top ranking city and Raleigh, the lowest ranking, there are 244 other cities distributing evenly between the first and 245th, with an average gap of 4.28.

In the case of Russia, the best performing city Moscow is separated by 120 other cities from the second best, St. Petersburg on the global list, and by 468 cities from the worst performing city Grozny. However, 96% of the Russian entries rank between the 300th and 498th. Similar cases include India, whose cities are widely separated on the global list, but mostly distributed in different sections evenly.

Italy has two entries in the top 100 and one below 300. Most of its cities rank between the 100th and 300th in a quasi-normal distribution. Japan is more or less a similar case too. With 5 entries in the top 100 and 4 below the 250th.

This indicates that while the competitiveness gap between cities is narrow in some countries, the gap is wide in most countries. In a few countries, (such as...)the GUCI ranks are in normal distribution.

3. Urban population: uneven distribution and growth, metropolis-style concentration

Population is the sufficient and necessary condition for the development of a city, as well as an important index of the size of a city.

3.1 As the world enters an urban era¹⁰, the trend of metropolization is increasingly clear.

¹⁰ The United Nations Population Fund (UNFPA), "State of world population 2007", June 2007,

Starting from 2008, more than 50% of the world population will live in cities. While the trend of metropolization is becoming increasingly clear worldwide, the development of small and medium cities remains critical. On the one hand, as people continue to move in, major cities are experiencing reverse urbanization and suburbanization in developed countries. As more and more cities join together due to urban sprawls, the trend of metropolization is seen in many developed countries. On the other hand, in developing countries, medium and large cities tend to have better infrastructures. In the course of accelerated urbanization, people tend to concentrate in such cities in massive scale. As a result, more and more metropolises with populations of millions or even tens of millions are emerging, and the trend of metropolization is also clear. Nevertheless, the bulk part of the urban growth will occur in small cities and towns¹¹. By 2025, more than half of the urban population will still live in small and medium cities with populations less than half a million.

Figure 3.1 and Table 3.1 show urban population distribution in the world.

Table 3.1 The top 20 and bottom 20 cities in the 500 cities in terms of population (Unit: person)

City	Country	Continent	Population	Rank	City	Country	Continent	Population	Rank
Mexico City	Mexico	Latin America	19231829	1	Geneva	Switzerland	Central Europe	185028	481
Shanghai	China	East Asia	17784200	2	Regina	Canada	North America	179040	482
Mumbai	India	South Asia	16400000	3	Malacca	Malaysia	Southeast Asia	169321	483
Beijing	China	East Asia	15380000	4	Basel	Switzerland	Central Europe	165212	484
Kuala Lumpur	Malaysia	Southeast Asia	1523945	5	Windhoek	Namibia	South Africa	161059	485
Calcutta	India	South Asia	14277000	6	Mainz	Germany	Central Europe	160530	486
Delhi	India	South Asia	12900000	7	Hamilton(NZ)	New Zealand	Oceania	155698	487
Tokyo	Japan	East Asia	12570904	8	Manama	Bahrain	West Asia	140616	488
Istanbul	Turkey	West Asia	11800000	9	Brussels	Belgium	Western Europe	138855	489
Karachi	Pakistan	South Asia	11608000	10	Port Louis	Mauritius	South Africa	130410	490
Sao Paulo	Brazil	Latin America	10838508	11	Perth	Australia	Oceania	129148	491
Moscow	Russia	East Europe	10406578	12	Niznij Novgorod	Russia	East Europe	128950	492
Seoul	South Korea	East Asia	10297004	13	Bern	Switzerland	Central Europe	127421	493

¹¹ OECD Territorial Reviews: Competitive Cities in the Global Economy, www.oecd.org

Paris	France	Western Europe	977294 5	14	Norwich	United Kingdom	Western Europe	127100	494
Lagos	Nigeria	West Africa	901353 4	15	Rayong	Thailand	Southeast Asia	122747	495
Lima	Peru	Latin America	886616 0	16	Chester	United Kingdom	Western Europe	119100	496
Jakarta	Indonesia	Southeast Asia	869960 0	17	Reykjavik	Iceland	Northern Europe	113848	497
Shenzhen	China	East Asia	827750 0	18	Labuan	Malaysia	Southeast Asia	85575	498
New York	United States	North America	821383 9	19	Begawan	Bandar Seri Begawan	Southeast Asia	30201	499
Tehran	Iran	West Asia	779752 0	20	Victoria	Seychelles	East Africa	25000	500

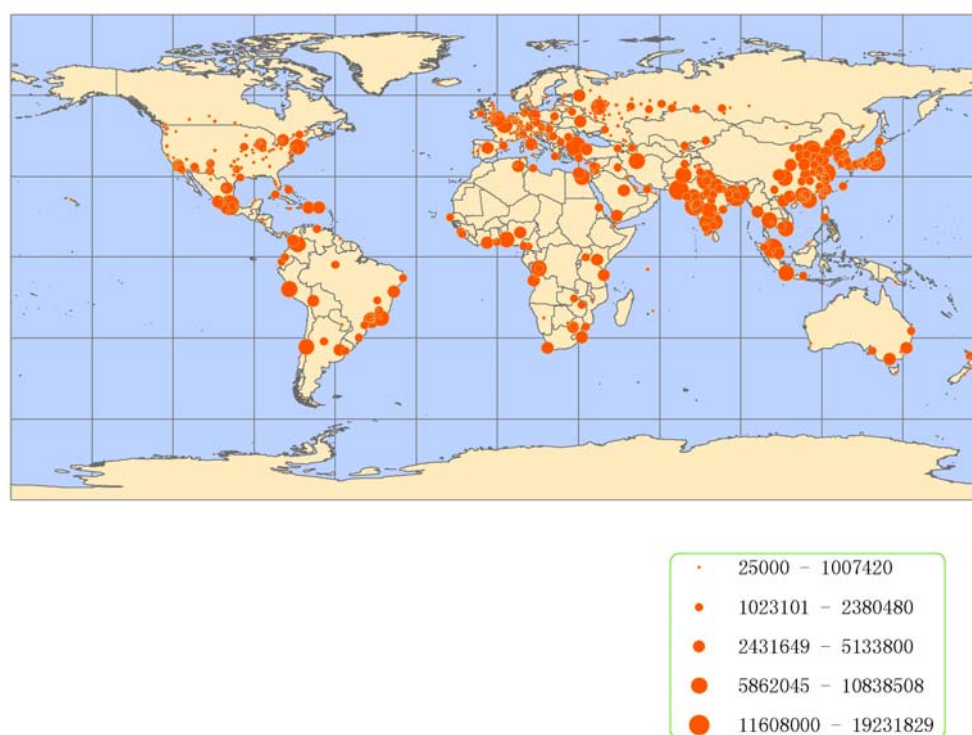


Figure 3.1 The distribution of urban population by city (Unit: person)

3. 2 The urbanization processes and sizes of cities have distinct characteristics in each continent

In Europe, North America, Oceania, and other developed regions, more than 70% of the population live in cities. In some of the developing regions, including Latin America and the Caribbean countries, 78% of the population live in cities. It means that, in Europe, North America, Oceania, Latin America and the Caribbean region, the urbanization process has been basically completed. In the developing regions in Asia and Africa, 40% of the population live in cities. With the increase of income, the urbanization process is accelerating in these regions, particularly in China and India.

Among the 20 most populated cities, the majority are political and economic centers in developing countries in Asia, Latin America and Africa. There are a few, however, located in the developed countries.

Among the largest 150 cities, 84 are in Asia, accounting for 46.4% of the sample cities in the region; 22 are in Latin America, accounting for 37.9%; 20 are in Africa, accounting for 55.6%; 15 are in Europe, accounting for 10.5%; 6 are in North America, accounting for 8.6%; 3 are in Oceania, accounting for 25%. Figure3.1 shows the distribution of the 150 most populated cities by region.

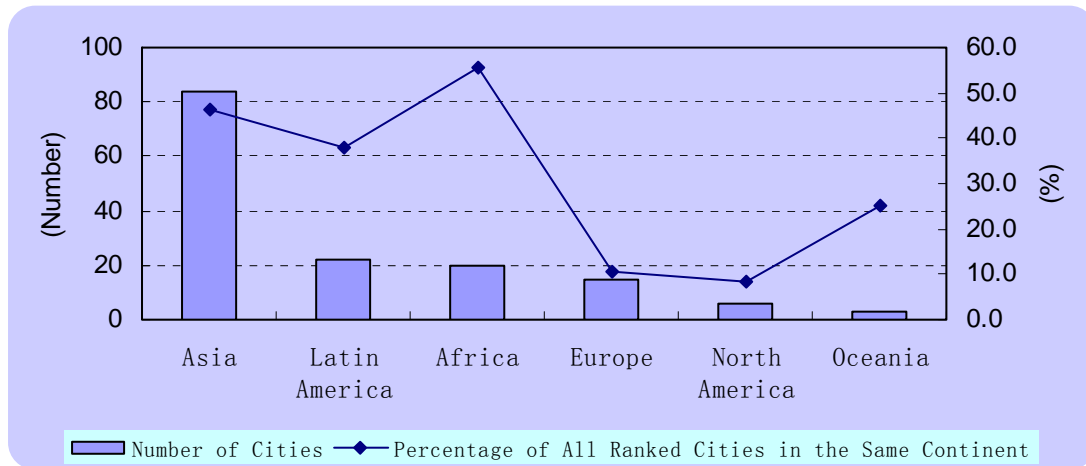


Figure 3.2 The distribution of the 150 most populated cities by region

Among the 150 least populated cities, 79 are in Europe, accounting for 55.2% of the sample cities of the region; 35 are in North America, accounting for 50%; 19 are in Asia, accounting for 10.5%; 7 are in Oceania, accounting for 58.3%; 5 are in Africa, accounting for 13.9%; 5 are in Latin America, accounting for 8.6%.

In terms of population, Asian, Latin American and African cities generally have larger size, and European and North American are smaller. With the urbanization of densely populated areas in Asia and Africa, an accelerated urbanization process as never seen before is underway worldwide.

4. Market structure of urban competition: oligarch monopoly(define this term)

Market share is also an important index of competitiveness. For cities with both internal and external demands, GDP would be a good alternative of market share. Through the comparison of their GDPs, we could identify the market features of the competitiveness of individual cities.

4.1 The structure of an oligarch monopoly market

Wide gaps in GDP exist among the 500 sample cities. Tokyo ranks the first with a GDP of US\$ 584.095 billion, and Grozny, with a GDP of \$ 17 million, is at the bottom of the list. The total GDP of the top 10 cities amounts to \$ 3,121.71 billion, accounting for 27.1% of the total of all 500 cities, or close to the total GDP of the bottom 380 cities, which is \$ 3,131.8 billion, or 27.2% of the total. The average GDP of the top 10 cities is \$ 312(?)171 billion,

while that of the bottom 380 cities is merely \$ 8.24 billion. Table 1.5 indicates the GDP ranks of the 500 sample cities.

Table 4.1 Top 20 and bottom 20 cities of the 500 sample cities in terms of GDP (Unit: US \$ Billions)

City	Country	Continent	GDP	Rank	City	Country	Continent	GDP	Rank
Tokyo	Japan	East Asia	584.95	1	Port Louis	Mauritius	South Africa	0.56	481
Paris	France	Western Europe	525.05	2	Windhoek	Namibia	South Africa	0.53	482
New York	US	North America	502.51	3	Freetown	Sierra Leone	West Africa	0.50	483
London	UK	Western Europe	446.20	4	Maputo	Mozambique	South Africa	0.49	484
Mexico City	Mexico	Latin America	220.08	5	Allahabad	India	South Asia	0.48	485
Los Angeles	US	North America	180.08	6	Mysore	India	South Asia	0.44	486
Hong Kong	China	East Asia	179.78	7	Haora	India	South Asia	0.43	487
Seoul	South Korea	East Asia	176.60	8	Niznij Novgorod	Russia	East Europe	0.42	488
Sydney	Australia	Oceania	171.69	9	Nasik	India	South Asia	0.42	489
Melbourne	Australia	Oceania	134.76	10	Asansol	India	South Asia	0.41	490
Chicago	US	North America	130.03	11	Djibouti	Djibouti	East Africa	0.39	491
Shanghai	China	East Asia	110.74	12	Lome	Togo	West Africa	0.33	492
Yokohama	Japan	East Asia	110.32	13	Labuan	Malaysia	Southeast Asia	0.31	493
Singapore	Singapore	Southeast Asia	109.31	14	Blantyre	Malawi	South Africa	0.31	494
Berlin	Germany	Central Europe	102.91	15	Georgetown	Guyana	Latin America	0.29	495
Toronto	Canada	North America	102.35	16	Victoria(SC)	Seychelles	East Africa	0.26	496
Madrid	Spain	Southern Europe	99.18	17	Vijayawada	India	South Asia	0.25	497
Houston	US	North America	98.91	18	Port Moresby	Papua New Guinea	Oceania	0.23	498
Osaka	Japan	East Asia	98.78	19	Dushanbe	Tajikistan	Central Asia	0.20	499
Rome	Italy	Southern Europe	90.52	20	Groznyj	Russia	East Europe	0.17	500

Note: the data of London covers the Greater London Region.

4.2 Substantial GDP gaps exist among cities in each continent

Large GDP is found in European, North American, Asian and Oceania cities, which either have high GDP per capita or large population, or both. Relatively speaking, GDP of Latin American and African cities is small.

Among the top(most populous) 150 cities, 49 are in Asia, accounting for 27.1% of the sample cities of the region; 43 are in North America, accounting for 61.4%; 37 are in Europe, accounting for 25.9%; 12 are in Latin America, accounting for 20.7%; 7 are in Oceania, accounting for 58%; 2 are in Africa, accounting for 5.6%. Figure 1.6 shows the regional distribution of the top 150 cities.

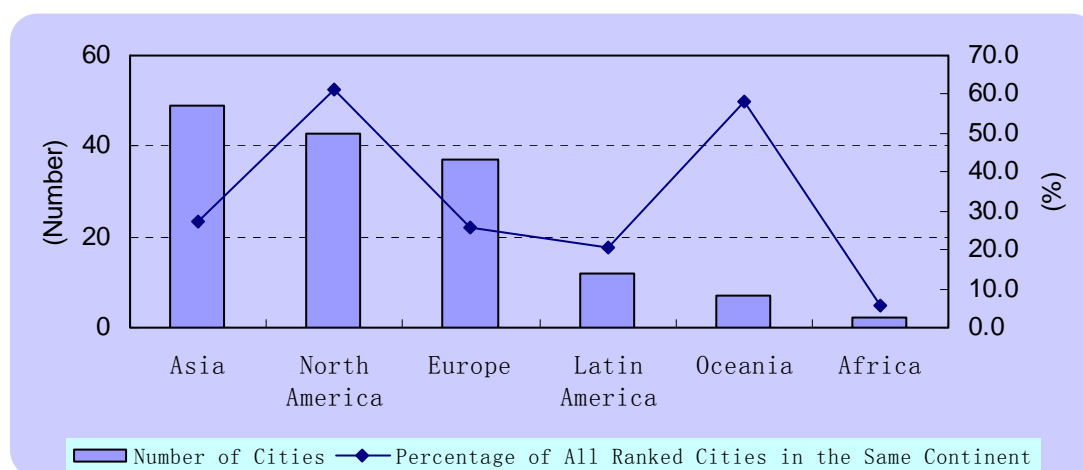


Figure 4.1 The distribution of the top 150 cities by regions

Among the bottom 150 cities, 67 are in Asia, accounting for 37% of the sample cities of the region; 48 are in Europe, accounting for 63.9%; 23 are in Africa, accounting for 38.9%; 10 are in Latin America, accounting for 17.2%; 1 is in North America, accounting for 1.4%; 1 is in Oceania, accounting for 8.3%. Figure 4.1 shows the regional distribution of the bottom 150 cities. See Table 1.5 below for the GDP ranks of the top 10 cities of 3 continents.

Table 4.2 GDP ranking of top 10 cities in North America, Asia and Europe

North America				Asia			Europe		
Regional Rank	City	Country	Global Rank	City	Country	Global Rank	City	Country	Global Rank
1	New York	US	3	Tokyo	Japan	1	Paris	France	2
2	Los Angeles	US	6	Hong Kong	China	7	London	UK	4
3	Chicago	US	11	Seoul	South Korea	8	Berlin	Germany	15
4	Toronto	Canada	16	Shanghai	China	12	Madrid	Spain	17
5	Houston	US	18	Yokohama	Japan	13	Rome	Italy	20
6	Philadelphia	US	28	Singapore	Singapore	14	Manchester	UK	24
7	Montreal	Canada	30	Osaka	Japan	19	Moscow	Russia	25
8	San Diego	US	34	Nagoya	Japan	21	Vienna	Austria	26
9	Dallas	US	35	Istanbul	Turkey	22	Hamburg	Germany	31
10	Phoenix	US	38	Beijing	China	23	Leeds	UK	33

4.3 GDP levels vary substantially among cities in each country

GDP levels vary substantially among cities in each country too. Figure 4.2 shows the difference between the highest and lowest city GDP in major countries. (this is, of course, affected by exchange rates, so be careful what you assert here)

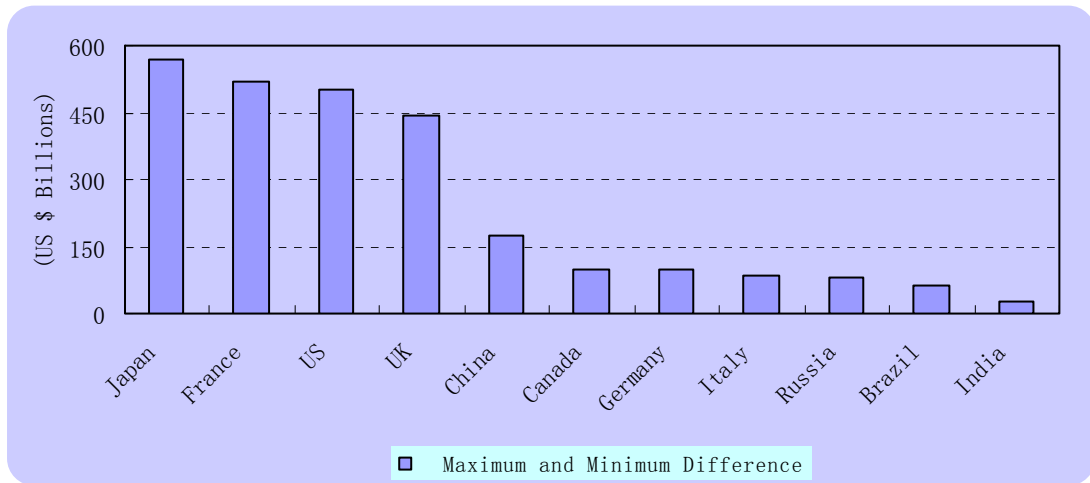


Figure 4.2 The difference between the highest and lowest city GDPs in major countries

In terms of the absolute figure, Japan has the widest city GDP gap—as wide as \$ 569.22 billion; followed by France, \$ 518.92 billion; the United States, \$ 500.16 billion and Britain, \$ 442.43 billion. Brazil has the narrowest gap, which is \$ 62.61 billion. In terms of the ratio of the highest to the lowest city GDP, Russia tops the list with 19.7 times, followed by the United States, 12.4 times and Britain, 9.7 times. Italy and Canada, with 1.4 times and 1.3 times, are at the bottom of the list. In general, the United States and Britain has the largest difference in city GDP.

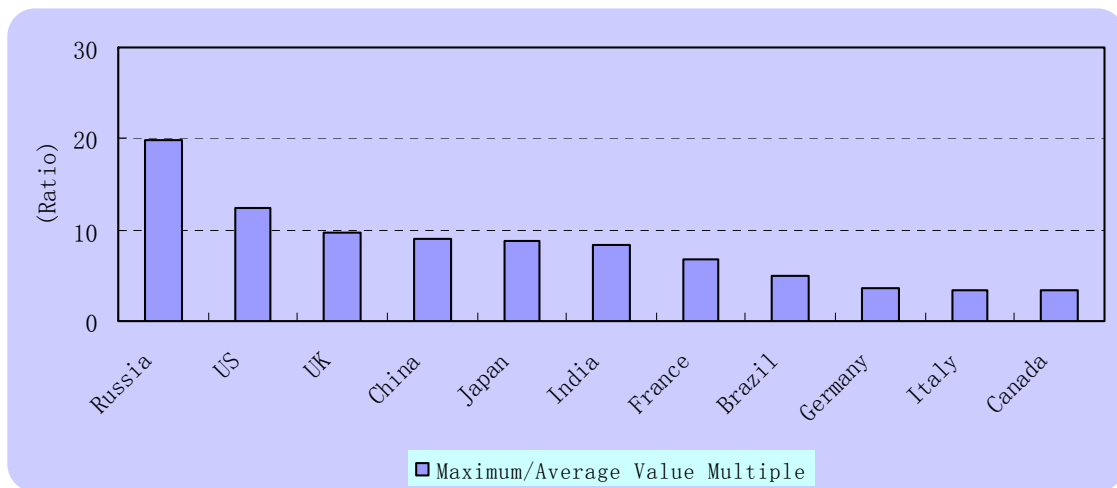


Figure 4.3 The ratios of largest to lowest city GDP in major countries

5. Economic speed: there are distinct national characteristics with

Chinese cities showing the highest growth rate

Economic growth, particularly the long-term economic growth is an important index of sustainable competitiveness of a city. GDP growth rate is an important index(indicator?) of the development growth rate.

5.1 Growth rates vary substantially among cities and Chinese cities have the highest speed

Average annual GDP growth rates of the cities during the 2001-2005 period vary substantially, with Baotou's 20.05% being the highest and Harae's -7.38% being the lowest. The average growth rate of the cities is 5.94% with 98 cities reporting growth rates higher than 10%, and 13 others reporting negative growth rates. Figure 1.9 and Table 1.6 shows the economic growth rates of cities worldwide.

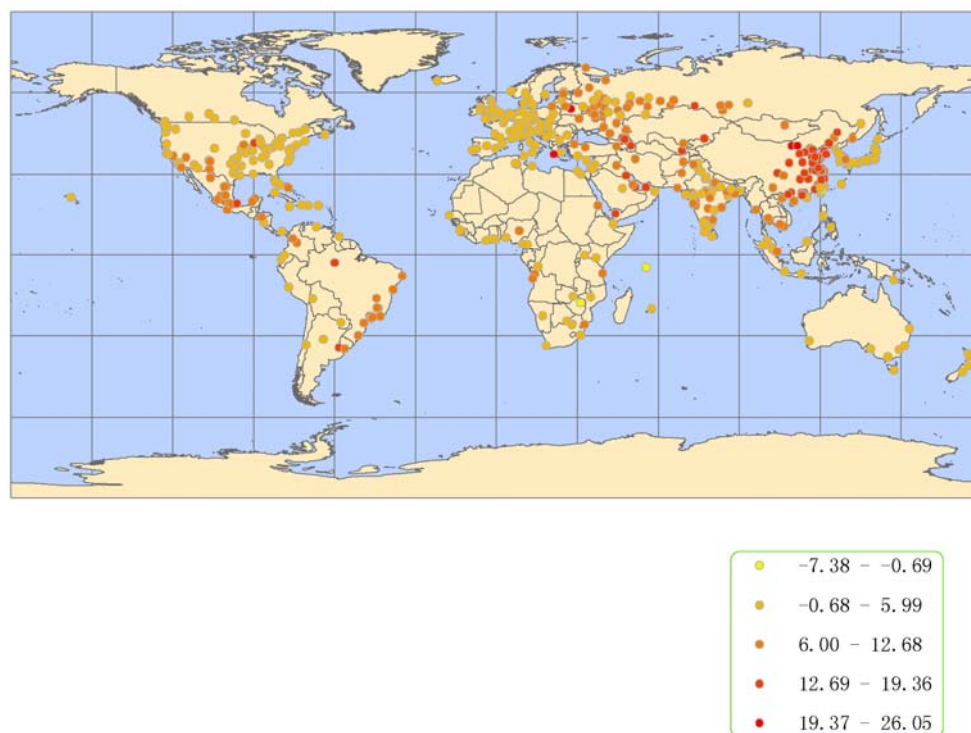


Figure 5.1 Economic growth rates of cities worldwide (Unit: percent)

Table 5.1 The top 20 and the bottom 20 cities in the 500 sample cities in terms of GDP growth rate (Unit: percent)

City	Country	Continent	GDP growth rate	Rank	City	Country	Continent	GDP growth rate	Rank
Baotou	China	East Asia	20.00	1	Nagoya	Japan	East Asia	0.10	481
Huhehote	China	East Asia	20.00	2	Riga	Latvia	East Europe	0.09	482
Yantai	China	East Asia	19.57	3	Berlin	Germany	Central Europe	0.06	483
Dongguan	China	East Asia	19.25	4	Georgetown	Guyana	Latin America	0.04	484
Baku	Azerbaijan	West Asia	19.00	5	Basel	Switzerland	Central Europe	0.02	485
Zhongshan	China	East Asia	18.44	6	Kobe	Japan	East Asia	0.01	486
Huizhou	China	East Asia	18.11	7	Sarajevo	Bosnia and	Southeast	0.00	487

						Herzegovina	Europe		
Weifang	China	East Asia	17.98	8	Sakai	Japan	East Asia	-0.02	488
Wuhu	China	East Asia	17.97	9	Osaka	Japan	East Asia	-0.02	489
Manaus	Brazil	Latin America	17.96	10	Bern	Switzerland	Central Europe	-0.19	490
Weihai	China	East Asia	17.55	11	Sapporo	Japan	East Asia	-0.28	491
Hefei	China	East Asia	17.37	12	Taipei	China	East Asia	-0.30	492
Doha	Qatar	West Asia	17.35	13	Kanazawa	Japan	East Asia	-0.37	493
Rizhao	China	East Asia	17.34	14	Kitakyusyu	Japan	East Asia	-0.54	494
Nanchang	China	East Asia	17.18	15	New Orleans	United States	North America	-0.65	495
Veracruz	Mexico	Latin America	16.90	16	Okayama	Japan	East Asia	-0.86	496
Omsk	Russia	East Europe	16.74	17	Mainz	Germany	Central Europe	-0.97	497
Zibo	China	East Asia	16.74	18	Victoria(SC)	Seychelles	East Africa	-1.79	498
Shenzhen	China	East Asia	16.64	19	Taichung	China	East Asia	-2.43	499
Suzhou	China	East Asia	16.44	20	Harare	Zimbabwe	South Africa	-7.38	500

5.2 Western European and North American cities have maintained slow growth; some Asian cities are emerging as new growth centers; and some African cities continue to deteriorate

Substantial gaps in average GDP growth rates exist among cities in the 2001-2005. The average growth rate of Asian cities is the highest, 8.4%, followed by Latin America, 7.8%; Europe, 4.5% and Africa, 4.1%. At the bottom of the list are North America and Oceania, at 2.7% and 2.5% respectively. Among the cities with GDP growth rate higher than 10%, 72 cities are in Asia, 14 in Latin America, 11 in Europe (mainly in Russia) and 1 in Africa. None is in North America or Oceania. Among those with GDP growth rate lower than 2%, 44 cities are in Europe, 24 in North America, 22 in Asia (mainly in Japan), 5 in Latin America, 5 in Oceania and 5 in Africa. Figure 1. 10 shows the average GDP growth rates of cities during the 2001-2005 by continent. Among the cities with negative growth, 6 are in Japan. In the Sub-Saharan regions, the average growth rate of the cities is as low as 1.82%, with 7 cities reporting negative growth.

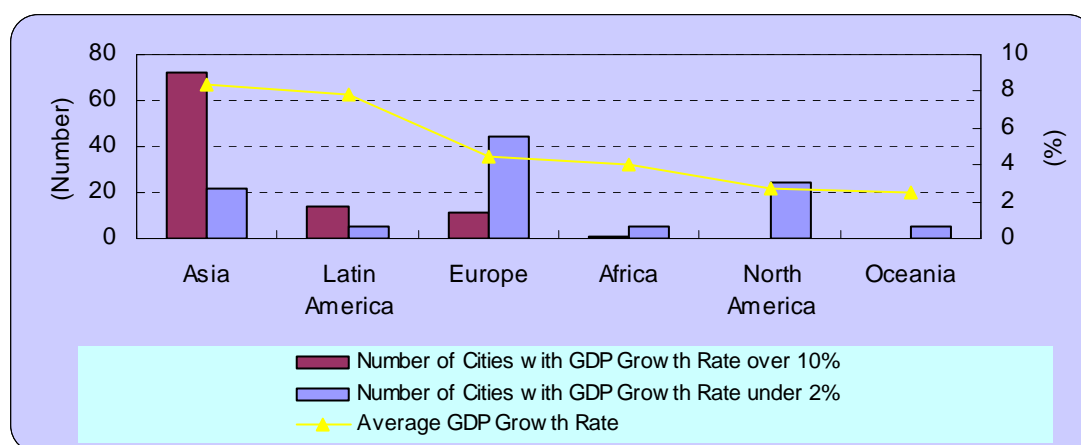


Figure 5.2 Average GDP growth rates of cities during 2001-2005 by continent

5.3 Cities in the core regions of the continents have slow growth while those in the peripheral regions have been growing fast

In core regions of Europe, such as Britain and Germany, the average growth rates are as low as 2.65% and 1.72% respectively. In CIS states, such as Russia and Belarus, it is as high as 8.50%. In Asia, it is 0.51% in Japan, where 6 cities have reported negative growth, and up to 11.62% and 6.38% in China and India respectively. In the Americas, the average growth rates of US and Canadian cities are 2.65% and 2.78% respectively, while those of Mexico and Brazil are 10.73% and 9.21% respectively.

See the following table for top cities based on the 5-year average GDP growth rates of cities in the 3 continents.

Table 5.2 Top cities based on 5-year average GDP growth rates in North America, Asia and Europe

Regional Rank	North America			Asia			Europe		
	City	Country	Global Rank	City	Country	Global Rank	City	Country	Global Rank
1	Fresno	United States	129	Baotou	China	1	Omsk	Russia	17
2	El Paso	United States	174	Huhehaote	China	2	Machackala	Russia	56
3	Las Vegas	United States	186	Yantai	China	3	Groznyj	Russia	57
4	Arlington	United States	240	Dongguan	China	4	Minsk	Belarus	58
5	Fort Worth	United States	241	Baku	Azerbaijan	5	Lipeck	Russia	63
6	Sacramento	United States	242	Zhongshan	China	6	Belgorod	Russia	65
7	Long Beach	United States	262	Huizhou	China	7	Tumen	Russia	66

		States							
8	Oakland(US)	United States	267	Weifang	China	8	Moscow	Russia	71
9	Oklahoma City	United States	271	Wuhu	China	9	Saint Petersburg	Russia	90
10	Tucson	United States	272	Weihai	China	11	Kemerovo	Russia	92

5.4 Slow growth in cities of developed countries but fast economic growth in cities of emerging countries undergoing industrialization and transition

The GDP growth of some cities have distinct national characteristics. In general, the GDP growth in cities of developed countries has been slow. For example, no GDP growth rate of a city in Britain, Germany, Japan, the United States and Canada exceeds 3%. On the other hand, countries undergoing industrialization or transition have maintained high growth. Developing countries, such as China, India, Mexico, Brazil and Russia have maintained GDP growth rates higher than 6%. In some of the Latin American and African countries, both GDP growth rates and city development have been slow. In many developing countries, GDP has been growing in cities very lowly.

6. Development level: substantial spatial gaps and distinct regional groups exist

Economic development level is the foundation for the competitiveness and development of a city. GDP per capita is an important index of the development level of a city or a region.

6.1 Substantial gaps exist between regions in the world

In spite of the substantial gaps, GDP per capita of cities shows a normal distribution. Geneva is the city with the highest income per capita, which is \$ (do this throughout the text) 62,676.92 (2005), and Kinshasa has the lowest, which is \$ 206.77. 22 cities have reported GDP per capita higher than \$ 50,000; 162 higher than \$ 30,000; 235 higher than \$ 10,000; 299 higher than \$ 5,000; and 47 lower than \$ 1,000. Figure 6.1 and Table6.1 show the incomes per capita of the cities worldwide.

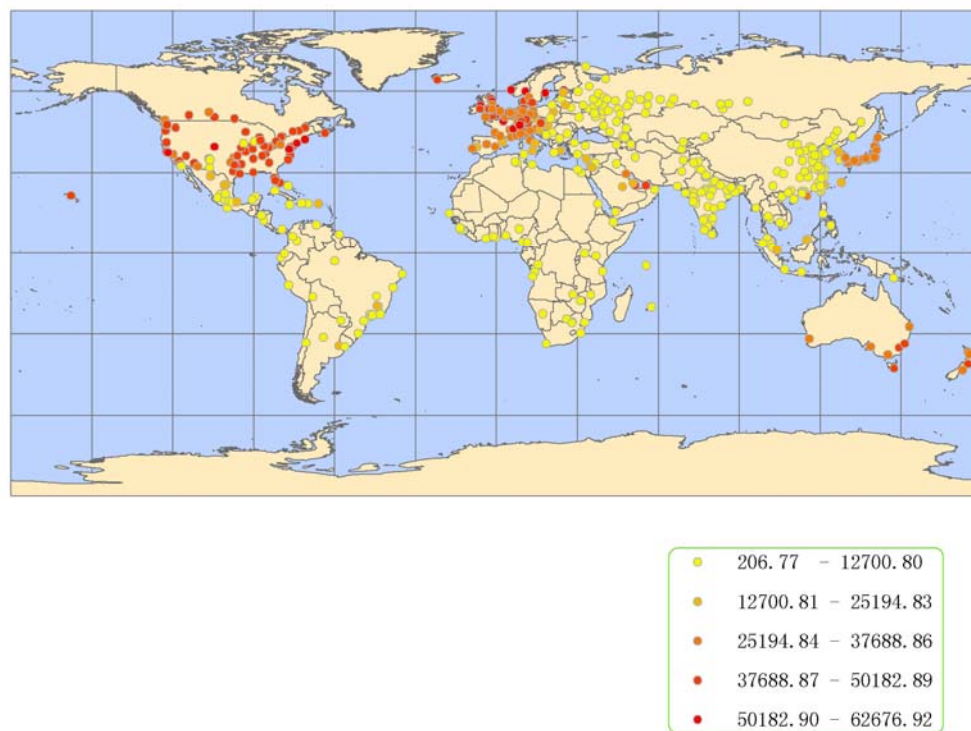


Figure 6.1 GDP per capita of cities in the world (Unit: \$)

Table 6.1 The top 20 and the bottom 20 cities among the 500 sample cities in terms of GDP per capita (Unit: U\$)

City	Country	Continent	GDP per capita	Rank	City	Country	Continent	GDP per capita	Rank
Geneva	Switzerland	Central Europe	62676.92	1	Madurai	India	South Asia	534.76	481
New York	United States	North America	61178.19	2	Agra	India	South Asia	477	482
Oakland(US)	United States	North America	60638.41	3	Kampala	Uganda	East Africa	473.6	483
Edinburgh	United Kingdom	Western Europe	59540.23	4	Meerut	India	South Asia	458.01	484
Washington	United States	North America	58548.98	5	Maputo	Mozambique	South Africa	454.76	485
London	United Kingdom	Western Europe	57948.69	6	Mysore	India	South Asia	448.2	486
Oslo	Norway	Northern Europe	57931.4	7	Pyongyang	North Korea	East Asia	444.6	487
Belfast	United Kingdom	Western Europe	56105.86	8	Blantyre	Malawi	South Africa	435	488
Basel	Switzerland	Central Europe	55247.85	9	Allahabad	India	South Asia	406.7	489
Zurich	Switzerland	Central Europe	54056	10	Haora	India	South Asia	370.61	490
Helsinki	Finland	Northern Europe	53920.26	11	Freetown	Sierra Leone	West Africa	370.17	491
Paris	France	Western Europe	53725.29	12	Lome	Togo	West Africa	361.14	492
Boston	United States	North America	53456.08	13	Yangon	Myanmar	Southeast Asia	360.95	493
San Jose	United States	North America	52990.76	14	Asansol	India	South Asia	331.75	494
San Francisco	United States	North America	52905.12	15	Nasik	India	South Asia	323.36	495
Stockholm	Sweden	Northern Europe	52812.58	16	Kabul	Afghanistan	West Asia	319.26	496
Nottingham	United Kingdom	Western Europe	51438.05	17	Addis Ababa	Ethiopia	North Africa	308.47	497
Bergen	Norway	Northern Europe	51169.84	18	Dushanbe	Tajikistan	Central Asia	302.5	498
Glasgow	United Kingdom	Western Europe	51044.35	19	Vijayawada	India	South Asia	251.4	499

Copenhagen	Denmark	Northern Europe	51001.45	20	Kinshasa	Zaire	Central Asia	206.77	500
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Note: the data of London covers the Greater London Region; the Data of Rangoon covers the urban districts only.

6.2 North American and European cities have the highest levels of development

In terms of GDP per capita, all of the top 20 cities are in North America and Europe. Specifically, 6 are in North America and the rest are in west, central and Northern Europe.

Among the top 150 cities, 68 are in North America, accounting for 97.1% of the sample cities of the region; 57 are in Europe, accounting for 39.9%; 16 are in Asia, accounting for 8.8%; 9 are in Oceania, accounting for 75%. None of the Latin American and African cities is on the top 150 list.

Among the bottom 150 cities, 83 are in Asia, accounting for 45.9% of the sample cities of the region; 32 are in Europe, accounting for 22.4%; 26 are in Africa, accounting for 72.2%; 8 are in Latin America, accounting for 13.8%; 1 in Oceania, accounting for 8.3%. None of the North American cities is on the bottom 150 list.

By region, North America and Oceania have the highest GDP per capita, which are \$ 43,077.1 and \$ 34,530.3 respectively, followed by Europe, \$ 23,396.4; Asia and \$ 9,087.4. Latin America and Africa have the lowest GDP per capita, which are \$ 8,362.3 and \$ 2,615.5 respectively. In general, GDP per capita of coastal cities are higher than those of inland cities. Figure 6.2 shows the average GDP per capita of cities in different regions. See table 1.9 for GDP per capita of cities in 3 major continents. The highest ranking city in Asia lags far behind those in Europe and North America.

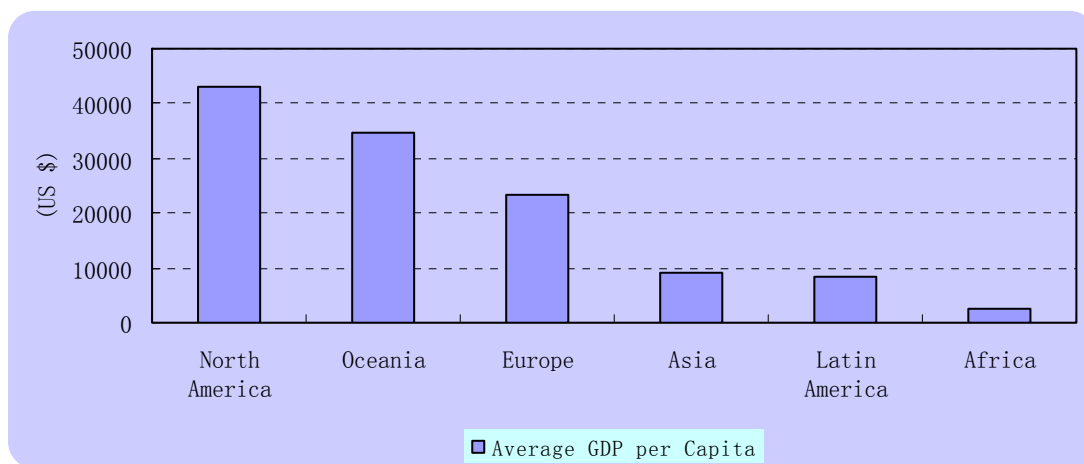


Figure 6.2 GDPs per capita of cities by continent

Table 6.2 Top 10 cities in terms of GDP per capita in North America, Asia and Europe

Regional	North America			Asia			Europe		
	City	Count	Global	City	Country	Global	City	Country	Global

Rank	City	Country	Rank	City	Country	Rank	City	Country	Rank
1	New York	US	2	Tokyo	Japan	39	Geneva	Switzerland	1
2	Oakland	US	3	Doha	Qatar	58	Edinburgh	UK	4
3	Washington	US	5	Dubai	United Arab Emirates	80	London	UK	6
4	Boston	US	13	Nagoya	Japan	85	Oslo	Norway	7
5	San Jose	US	14	Osaka	Japan	106	Belfast	UK	8
6	San Francisco	US	15	Kyoto	Japan	110	Basel	Switzerland	9
7	Dallas	US	21	Shizuoka	Japan	111	Zurich	Switzerland	10
8	Denver	US	22	Kanazawa	Japan	117	Helsinki	Finland	11
9	Seattle	US	23	Akita	Japan	120	Paris	France	12
10	Minneapolis	US	24	Ulsan	South Korea	122	Stockholm	Sweden	16

6.3 North American and European cities have the highest development level

Among the top 150 cities, 56 are in the United States, accounting for 98.2% of the sample cities of the nation; 16 are in Britain, accounting for 55.6%; 13 are in Japan, accounting for 59.1%; 13 are in Germany, accounting for 76.5%; 12 are in Canada, accounting for 92.3%; 8 are in France, accounting for 100%; 3 are in Italy, accounting for 33.3%.

Among the bottom 150 cities, none is in G7 countries; 43 are in India, accounting for 100% of its sample cities; 31 are in Russia, accounting for 62%; 16 are in China (including Taiwan), accounting for 25.8%; 1 in Brazil, accounting for 6.7%.

7. Economic concentration: uneven spatial distribution and unclear regional grouping

Economic concentration enables economies to benefit from external economies and improve their efficiency. GDP per square kilometre is an important index of output concentration resulting from the concentration of production factors.

7.1 Substantial spatial gaps exist and both large and small cities are among the top cities

Figure 7.1 and Table 7.1 show that, the GDP per square kilometre ranking is not like that of GDP per capita. On the top ranking list, there are both large and small cities. Specifically, 6 of the cities are in Asia, 7 in North America and 7 in Europe, indicating an even geographical distribution.

Table 7.1 The top 20 and bottom 20 cities in the 500 sample cities in terms of GDP per square kilometer (Unit: \$ Thousands)

City	Country	Continent	GDP per square	Rank	City	Country	Continent	GDP per square	Rank
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				kilometer						kilometer	
New York	US	North America	643498.2	1	Abijan	Cote d'ivoire	West Africa	761.3	481		
Geneva	Switzerland	Central Europe	633715.1	2	Pyongyang	North Korea	East Asia	744.93	482		
Victoria(CA)	Canada	North America	565083.3	3	Thane	India	South Asia	678.01	483		
Macao	China	East Asia	482636.2	4	Rabat	Morocco	North Africa	626.23	484		
Lyon	France	Western Europe	337620.8	5	Meerut	India	South Asia	611.23	485		
San Francisco	US	North America	326156.5	6	Victoria(SC)	Seychelles	East Africa	562.43	486		
Manchester	UK	Western Europe	309761.2	7	Vijayawada	India	South Asia	557.4	487		
San Juan	Puerto Rico	Latin America	302016.4	8	Amritsar	India	South Asia	530.43	488		
Nottingham	UK	Western Europe	300355.8	9	Indore	India	South Asia	517.03	489		
Kawasaki	Japan	East Asia	296998.8	10	Varanasi	India	South Asia	512.24	490		
Seoul	South Korea	East Asia	291700.6	11	Asansol	India	South Asia	507.62	491		
London	UK	Western Europe	278009.3	12	Agra	India	South Asia	480.86	492		
Milan	Italy	Southern Europe	275183	13	Allahabad	India	South Asia	414.93	493		
Nagoya	Japan	East Asia	274949.6	14	Visakhapatnam	India	South Asia	402.4	494		
Tokyo	Japan	East Asia	267458.6	15	Jabalpur	India	South Asia	256.59	495		
Boston	US	North America	260997.8	16	Rajkot	India	South Asia	185.31	496		
Yokohama	Japan	East Asia	253615.2	17	Ulan Bator	Mongolia	East Asia	152.09	497		
Wilmington	US	North America	252058.8	18	Kinshasa	Zaire	Central Asia	125.51	498		
Bristol	UK	Western Europe	247874.5	19	Groznyj	Russia	East Europe	55.97	499		
Honolulu	US	North America	247117	20	Djibouti	Djibouti	East Africa	49.01	500		

Note: the data of London covers the Greater London Region.

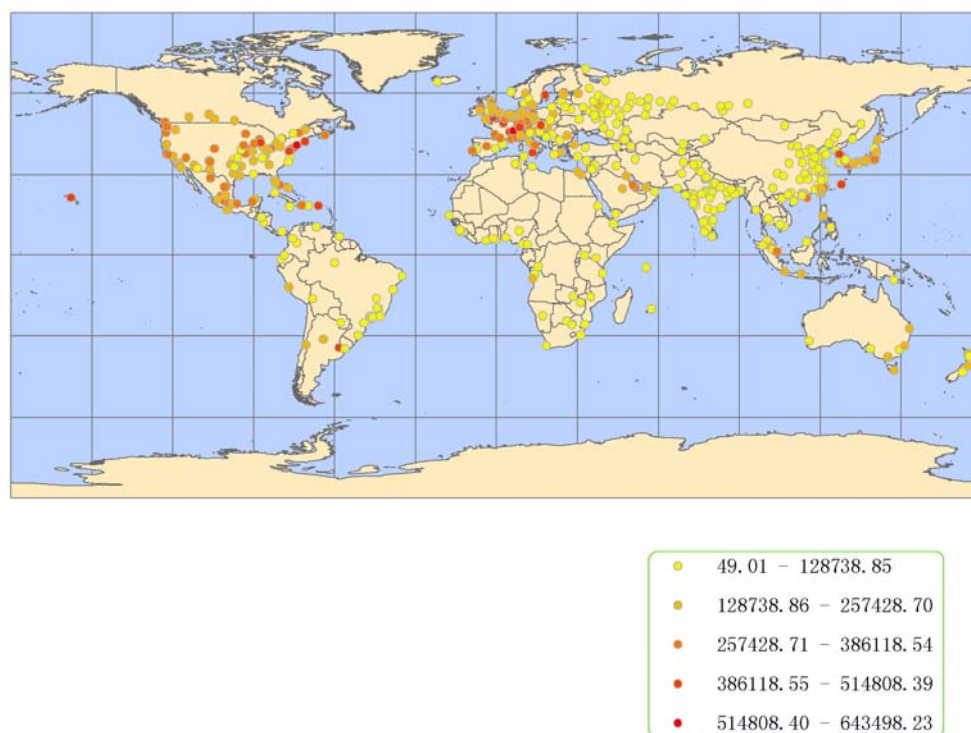


Figure 7.1 GDP per square kilometer of cities worldwide (Unit: \$ thousands)

7.2 Continental top cities are largely close with substantial gaps between continental average cities

See the following table for the GDP per square kilometer ranks of cities in 3 major continents. Asia's top ranking cities are close to those of Europe and North America. Similarly, most of the high-ranking cities in terms of GDP per square kilometer are in Europe, North America and Asia.

Table 7.2 Top 10 cities in North America, Asia and Europe in terms of GDP per square kilometer

North America				Asia			Europe		
Regional Rank	City	Country	Global Rank	Regional Rank	City	Country	Global Rank	Regional Rank	City
1	New York	United States	1	Macao	China	4	Geneva	Switzerland	2
2	Victoria	Canada	3	Kawasaki	Japan	10	Lyon	France	5
3	San Francisco	United States	6	Seoul	South Korea	11	Manchester	United Kingdom	7
4	Boston	United States	16	Nagoya	Japan	14	Nottingham	United Kingdom	9
5	Wilmington	United States	18	Tokyo	Japan	15	London	United Kingdom	12
6	Honolulu	United States	20	Yokohama	Japan	17	Milan	Italy	13
7	Chicago	United States	23	Okinawa	Japan	29	Bristol	United Kingdom	19
8	Washington	United States	27	Sakai	Japan	31	Basel	Switzerland	21
9	Philadelphia	United States	28	Tel Aviv	Israel	41	Palermo	Italy	22
10	Vancouver	Canada	37	Hong Kong	China	46	Turin	Italy	24

North America and Europe have the highest average GDP per square kilometer, which are \$ 107,576,100 and 72,854,530 respectively, followed by Oceania, \$ 42,128,520; Latin America, \$ 60,499,960; Asia, \$ 34,087,390 and Africa, \$ 10,778,990. The GDP per square kilometer of the lowest ranking cities in Latin America and Africa are as low as \$ 8,362.3 and US\$ 2,615.5 respectively (see Figure 7.2).

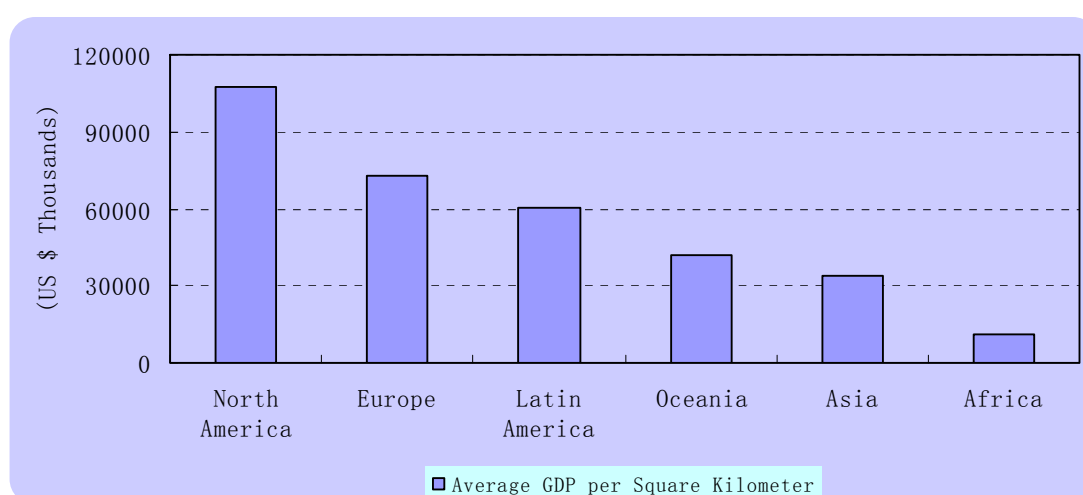


Figure 7.2 GDP per square kilometer of cities by continent

7.3 North American and Oceania cities generally have high rankings and narrow gaps while Asian, African and South American cities have wide gaps with a few top cities

Among the top 150 cities, 58 are in Europe, accounting for 40.6% of the sample cities of the region; 38 are in North America, accounting for 54.3%; 26 are in Latin America, accounting for 44.8%; 22 are in Asia, accounting for 12.2%; 4 are in Oceania, accounting for 33.3%; 2 are in Asia, accounting for 5.6%. Figure 1.14 shows the regional distribution of the top 150 cities.

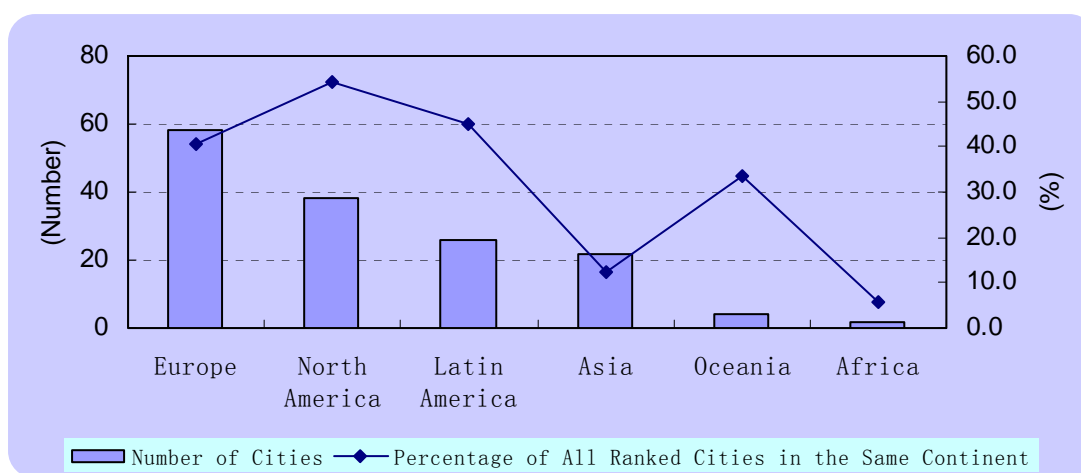


Figure 1.15 GDP per square kilometer of the top 150 cities by continent

Among the bottom 150 cities, 80 are in Asia, accounting for 44.2% of the sample cities of the region; 36 are in Europe, accounting for 25.2%; 22 are in Africa, accounting for 61.1%; 9 are in Latin America, accounting for 15.5%; 3 are in Oceania, accounting for 25%; none of the North American cities is on the bottom 150 of the rankings.

8. Employment: cities in transitional and industrializing countries have the highest ranking

Employment rate of urban residents is closely connected with the macro-economic situation of a nation. In general, countries undergoing transition and industrialization, e.g., China, Russia and Mexico have higher employment rates. Table 8.1 shows the employment rates of selected cities.

Table 8.1 The top 20 and bottom 20 cities in the 500 sample cities in terms of employment rate

(Unit: percent)

City	Country	Continent	Employment rate	Rank	City	Country	Continent	Employment rate	Rank
Moscow	Russia	East Europe	99.20	1	Conakry	Gunea	West Africa	70.00	481
Tijuana	Mexico	Latin America	99.10	2	Lome	Togo	West Africa	70.00	482

Baku	Azerbaijan	West Asia	99.02	3	Freetown	Sierra Leone	West Africa	70.00	483
Acapulco	Mexico	Latin America	99.00	4	Yaounde	Cameroon	Central Asia	70.00	484
Quanzhou	China	East Asia	98.83	5	Johannesburg	South Africa	South Africa	69.20	485
Oakland(US)	United States	North America	98.67	6	Windhoek	Namibia	South Africa	69.00	486
Al Kuwayt	KUWAIT	West Asia	98.51	7	Addis Ababa	Ethiopia	North Africa	68.60	487
Minsk	Belarus	East Europe	98.50	8	Belgrade	Srbija	Southeast Europe	68.40	488
Shenzhen	China	East Asia	98.40	9	Durban	South Africa	South Africa	67.00	489
Huizhou	China	East Asia	98.20	10	Sanaa	Yemen	West Asia	65.00	490
Weihai	China	East Asia	98.09	11	Nairobi	Kenny	North Africa	60.00	491
Dushanbe	Tajikistan	Central Asia	98.00	12	Luanda	Angola	South Africa	60.00	492
Victoria(SC)	Seychelles	East Africa	98.00	13	Kampala	Uganda	East Africa	57.00	493
Beijing	China	East Asia	97.92	14	Sarajevo	Bosnia and Herzegovina	Southeast Europe	56.00	494
San Luis Potosi	Mexico	Latin America	97.90	15	Port-au-Prince	Haiti	Latin America	50.00	495
Saint Petersburg	Russia	East Europe	97.80	16	Harare	Zimbabwe	South Africa	50.00	496
Dongguan	China	East Asia	97.76	17	Kinshasa	Zaire	Central Asia	50.00	497
Merida	Mexico	Latin America	97.70	18	Djibouti	Djibouti	East Africa	41.00	498
Morelia	Mexico	Latin America	97.70	19	Brazzaville	Congo	Central Asia	40.00	499
Arlington	United States	North America	97.69	20	Groznyj	Russia	East Europe	25.80	500

In the less developed African countries and warring countries in Europe and Asia, e.g., the sub-Saharan regions and southeast European and the Middle East regions, urban employment rates tend to be low. The bottom 20 cities on the employment ranking list are, sequentially: Lome, Blantyre, Freetown, Kabul, Johannesburg, Windhoek, Addis Ababa, Belgrade, Durban, Sana'a, Luanda, Nairobi, Kampala, Sara Jevo, Port-au-Prince, Harare, Kinshasa, Djibouti, Brazzaville and Grozny. In Russia's Chechen Republic, the employment rate is as low as 25.8%. In Djibouti, it is 41%, and in Brazzaville, 40%.

In developed countries, the employment rate is generally maintained at a high level. However, some individual cities in these countries have relatively low employment rates, for example, 86.8% in Lille, France, 79.5% in Detroit, the United States, 79.2% in Leipzig and 78.5% in Berlin, Germany and 77.79% in Naples, Italy.

See the following table for the top 10 cities in 3 major continents. It indicates that Asian, particularly Chinese cities have the highest employment rates.

Table 8.2 Top 10 cities in North America, Asia and Europe in terms of employment rate

Regional Rank	North America			Asia			Europe		
	City	Country	Global Rank	City	Country	Global Rank	City	Country	Global Rank
1	Oakland	US	6	Baku	Azerbaijan	3	Moscow	Russia	1
2	Arlington	US	20	Quanzhou	China	5	Minsk	Belarus	8
3	Fort Worth	US	21	Al Kuwayt	Kuwait	7	Saint Petersburg	Russia	16
4	El Paso	US	24	Shenzhen	China	9	Chester	UK	30
5	Tucson	US	27	Huizhou	China	10	Reykjavik	Iceland	43
6	Long Beach	US	32	Weihai	China	11	Kiev	Ukraine	50

7	Fresno	US	39	Dushanbe	Tajikistan	12	Norwich	UK	59
8	Omaha	US	51	Beijing	China	14	Prague	Czech republic	66
9	Virginia Beach	US	62	Dongguan	China	17	Nottingham	UK	78
10	Oklahoma City	US	70	Zhuhai	China	22	Sofia	Bulgaria	94

9. Labour productivity : North American and European cities are leading cities

9.1 Substantial productivity gaps exist among cities in the world

On the top of this list is London, \$ 161,120.66, which is 317.6 times of Dushanbe's \$ 507.26, the bottom city. The average level of the top 10 cities in terms of productivity is \$ 128,487.0, which is 158.5 times of that of the bottom 10 cities on the list, \$ 810.9. The average level of the top 150 cities is \$ 86,301.9, which is 21 times of that of the bottom 150 cities, \$ 4,114.063. Figure 9.1 and Table 1.14 show productivity ranks of cities worldwide.

Table 9.1 The top 20 and bottom 20 cities in the 500 sample cities in terms of productivity (Unit: US \$)

City	Country	Continent	Productivity	Rank	City	Country	Continent	Productivity	Rank
London	United Kingdom	Western Europe	161120.7	1	Agra	India	South Asia	1543.21	481
New York	United States	North America	141880.7	2	Rajkot	India	South Asia	1535.2	482
Detroit	United States	North America	141259.2	3	Meerut	India	South Asia	1465.09	483
New Orleans	United States	North America	126097.1	4	Blantyre	Malawi	South Africa	1435.74	484
Philadelphia	United States	North America	124986.8	5	Madurai	India	South Asia	1353.76	485
Boston	United States	North America	121893.5	6	Allahabad	India	South Asia	1278.36	486
Cleveland	United States	North America	119658.1	7	Maputo	Mozambique	South Africa	1253.57	487
Oslo	Norway	Northern Europe	118069.9	8	Mysore	India	South Asia	1252.2	488
San Jose	United States	North America	116237.8	9	Freetown	Sierra Leone	West Africa	1252.08	489
Baltimore	United States	North America	113666.5	10	Lome	Togo	West Africa	1203.81	490
Stockholm	Sweden	Northern Europe	112377.1	11	Haora	India	South Asia	1199.18	491
Helsinki	Finland	Northern Europe	111562.7	12	Kinshasa	Zaire	Central Asia	1198.67	492
Oakland(US)	United States	North America	111534.6	13	Asansol	India	South Asia	1027.41	493
Buffalo	United States	North America	109947.1	14	Kabul	Afghanistan	West Asia	894.27	494
Houston	United States	North America	109813.6	15	Nasik	India	South Asia	813.95	495
Glasgow	United Kingdom	Western Europe	108941.1	16	Addis Ababa	Ethiopia	North Africa	697.15	496
Chicago	United States	North America	108559.2	17	Yangon	Myanmar	Southeast Asia	660.98	497
Nice	France	Western Europe	108162.2	18	Vijayawada	India	South Asia	600.48	498
Atlanta	United States	North America	107250.7	19	Pyongyang	North Korea	East Asia	509.34	499
Marseille	France	Western Europe	106964.2	20	Dushanbe	Tajikistan	Central Asia	507.26	500

Note: the data of London covers the Greater London Region.

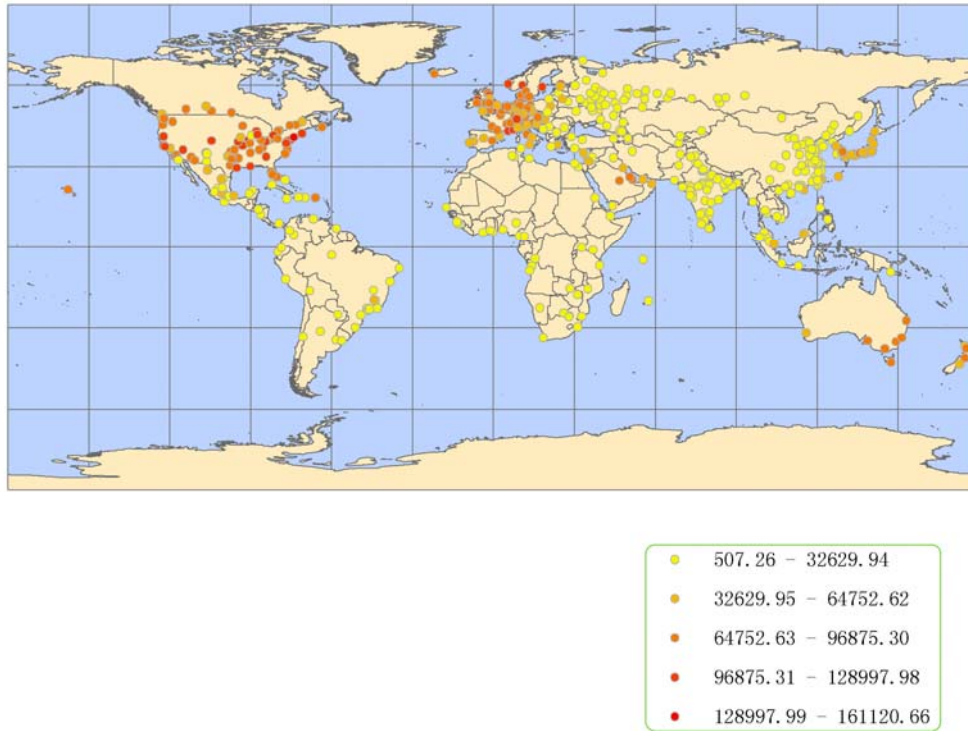


Figure 8.1 Labor productivities of cities in the world (Unit: US \$)

9.2 North American, European and East Asian cities have higher productivity levels than African and Latin American cities

Similar to the case of GDP per capita, most cities with high productivity levels are in Europe and North America. Among the top 20 cities, 13 are in north America and 7 in Europe.

Among the top 150 cities, 66 are in North America, accounting for 94.3% of the sample cities of the region; 60 are in Europe, accounting for 42%; 14 are in Asia, accounting for 7.7%; 9 are in Oceania, accounting for 75%; 1 in Latin America, accounting for 1.7%; none of the African cities is on the top 150 list. Figure 9.2 shows the distribution of the 150 most productive cities by continent.

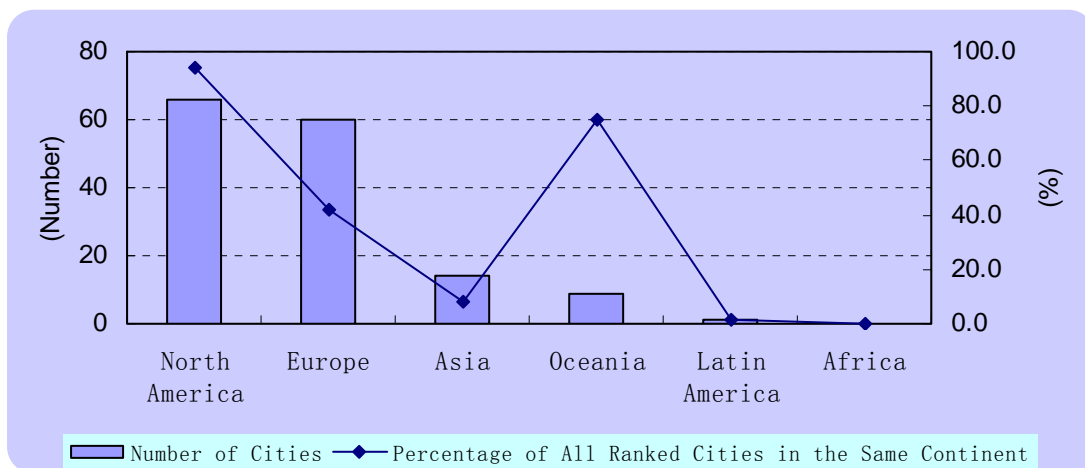


Figure 9.2 The distribution of the 150 most productive cities by continent

Among the bottom 150 cities, 80 are in Asia, accounting for 44.2% of the sample cities of the region; 34 are in Europe, accounting for 23.8%; 24 are in Africa, accounting for 16.7%; 11 are in Latin America, accounting for 7.3%; 1 in Oceania, accounting for 0.7%; none of the North American cities is on the bottom 150 list.

Statistics for the top 10 cities of the 3 major continents (see the following table) indicate that the North American cities maintain an absolute leadership, and that the Asian cities have a long way to go.

Table 9.2 Top 10 cities in North America, Asia and Europe in terms of labor productivity

North America				Asia			Europe		
Regional Rank	City	Country	Global Rank	City	Country	Global Rank	City	Country	Global Rank
1	New York	US	2	Tokyo	Japan	69	London	UK	1
2	Detroit	US	3	Ulsan	South Korea	91	Oslo	Norway	8
3	New Orleans	US	4	Nagoya	Japan	110	Stockholm	Sweden	11
4	Philadelphia	US	5	Osaka	Japan	114	Helsinki	Finland	12
5	Boston	US	6	Manama	Bahrain	125	Glasgow	UK	16
6	Cleveland	US	7	Okayama	Japan	126	Nice	France	18
7	San Jose	US	9	Kyoto	Japan	128	Marseille	France	20
8	Baltimore	US	10	Kanazawa	Japan	130	Edinburgh	UK	22
9	Oakland	US	13	Doha	Qatar	134	Rotterdam	Netherlands	24
10	Buffalo	US	14	Shizuoka	Japan	137	Copenhagen	Denmark	26

9.3 US cities maintain an absolute leadership while Indian cities have extremely low productivity levels

Among the top 20 cities, 13 are in the United States; 2 are in Britain and 2 in France. 10 of the bottom 20 cities are in India.

Among the top 150 cities, 114 are in the G7 countries; none is in the four Gold Brick (again, explain this term) countries. Specifically, 54 are in the United States, accounting for 36.0% of the sample cities of the country; 14 are in Britain, accounting for 9.3%; 14 are in Germany, accounting for 9.3%; 12 are in Canada, accounting for 8.0%; 10 are in Japan, accounting for 6.7%; 8 are in France, accounting for 5.3%; 2 are in Italy, accounting for 1.3%. (see Figure 9.3)

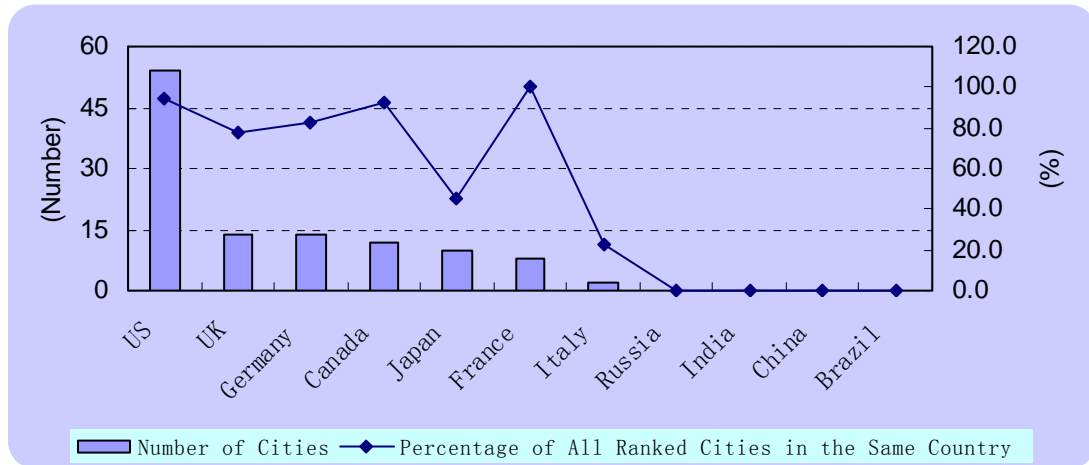


Figure 9.3 The distribution of the most productive 150 by country

Among the bottom 150 cities, none is in the G7 countries; 95 are in the four Gold Brick countries. Specifically, 43 are in India, accounting for 100 of the sample cities of the country; 43 are in India, accounting for 100%; 33 are in Russia, accounting for 66%; 16 are in China (including Taiwan), accounting for 25.8%; 3 are in Brazil, accounting for 20%.

10. Technical innovation is dominated by major cities in developed countries, while many cities in developing countries are rising fast

Technological innovation is the core part of a city's competitiveness. The results of technical innovation are important reflections of the competitiveness. The number of patent applications is one of the key indexes of urban competitiveness, if not all about it.

10.1 Most of the world's innovation centers are in world cities and central hi-tech cities

The top 20 cities in terms of patent application are Tokyo, Osaka, Paris, London, New York, Seoul, Stuttgart, San Diego, San Jose, Stockholm, Wilmington, Houston, Yokohama, Washington, Palo Alto, Kawasaki, San Francisco, Chiba, Berlin and Kyoto.

The number of patent applications of some cities, including Bryansk, Oronez, Lipeck, Ryazan, Archangelsk, Machackala, Groznyj, Astra Chan, Niznij Novgorod, Uljanovsk, T'umen, Cel'abinsk, Chabarov forget this change, Kanpur, Surat, Nagpur, Bhopal, Ludhiana, Asansol, Haora, Pimpri-Chichwad, Cochi, Ghaziabad, Srinagar and Vijayawada are almost zero.

Analysis indicates that most of the world's innovation centers are world cities and central hi-tech cities in major countries. In spite of the fast rise of some of the central cities, most other cities in the peripheral regions remain weak in terms of innovation capability. Figure 10.1 shows the distribution of technical innovation cities worldwide.

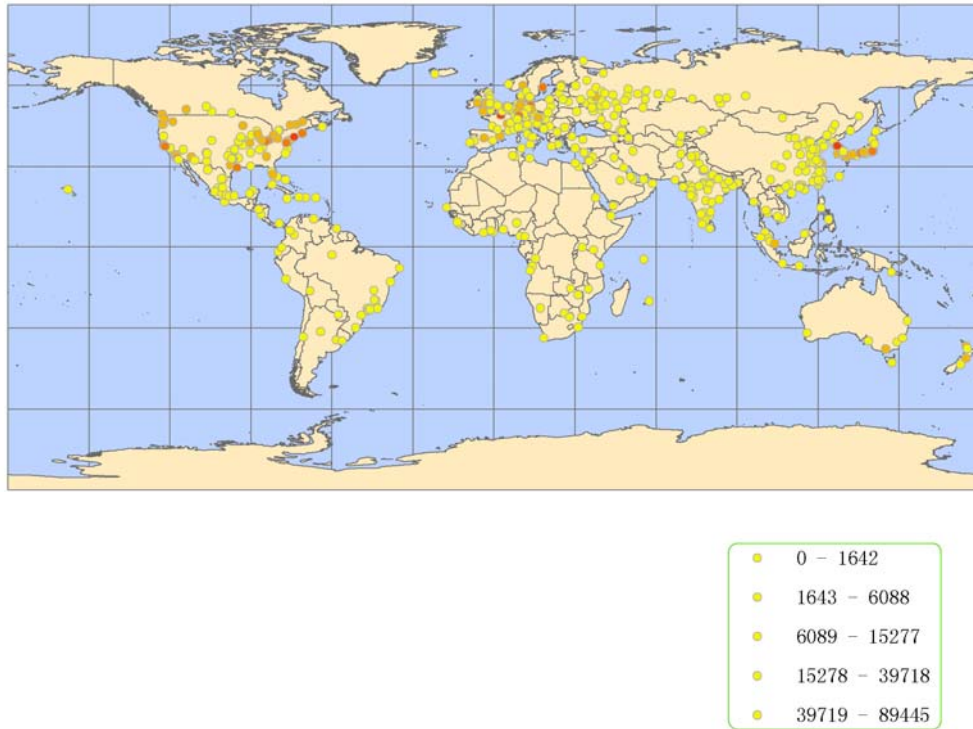


Figure10.1 International patent applications by cities worldwide (Unit: number)

10.2 North American, European and East Asian cities dominate the list

Among the top 20 cities in terms of patent applications, 8 are in North America, 8 in east Asia, 2 in Western Europe, 2 in central Europe and 1 in Northern Europe.

Among the top 150 cities, 57 are in Europe, accounting for 39.9% of the sample cities of the region; 51 are in North America, accounting for 72.9%; 32 are in Asia, accounting for 17.7%; 6 are in Oceania, accounting for 50%; 2 are in Latin America, accounting for 3.4%; 2 are in Africa, accounting for 5.6%. Figure 10.2 shows the distribution of the top 150 cities by continent.

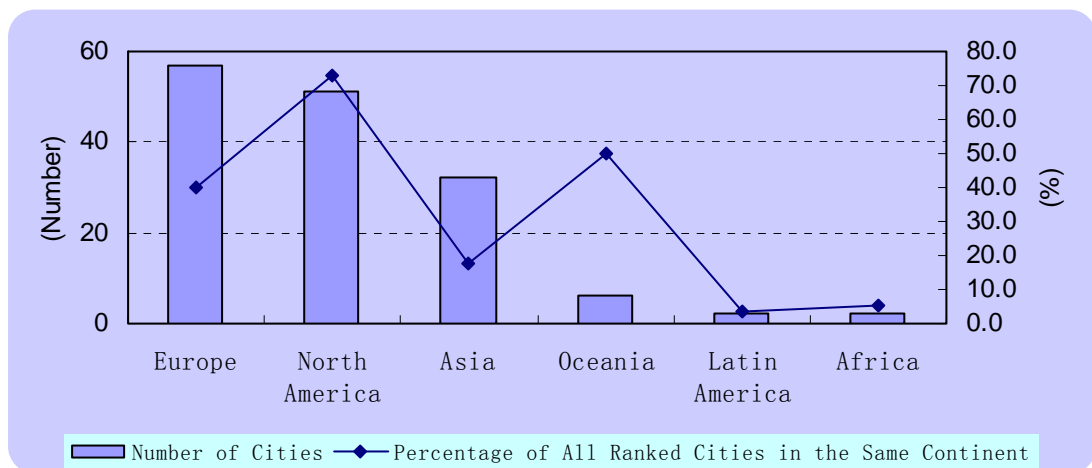


Figure 10.2 The distribution of the 150 most innovative cities by continent

Among the bottom 150 cities, 68 are in Asia, accounting for 37.6% of the sample cities of the region; 35 are in Europe, accounting for 24.5%; 23 are in Latin America, accounting for

39.7%; 22 are in Africa, accounting for 61.1%; 2 are in Oceania, accounting for 16.7%; none is in North America.

The continental top 10 lists indicate that Asia, North America and Europe are roughly at the same level in terms of technical innovation. However, within these regions, technical innovations are mostly made in developed countries, for example, the United States and Japan.

Table 10.1 Top 10 cities in North America, Asia and Europe in terms of technical innovation

North America				Asia			Europe		
Regional Rank	City	Country	Global Rank	City	Country	Global Rank	City	Country	Global Rank
1	New York	US	5	Tokyo	Japan	1	Paris	France	3
2	San Diego	US	8	Osaka	Japan	2	London	UK	4
3	San Jose	US	9	Seoul	South Korea	6	Stuttgart	Germany	7
4	Wilmington	US	11	Yokohama	Japan	13	Stockholm	Sweden	10
5	Houston	US	12	Kawasaki	Japan	16	Berlin	Germany	19
6	Washington	US	14	Chiba	Japan	18	Dusseldorf	Germany	22
7	Palo Alto	US	15	Kyoto	Japan	20	Basel	Switzerland	24
8	San Francisco	US	17	Shizuoka	Japan	29	Frankfurt	Germany	25
9	Cincinnati	US	21	Shenzhen	China	33	Hamburg	Germany	26
10	Boston	US	23	Nagoya	Japan	37	Helsinki	Finland	28

10.3 US and Japanese cities have the greatest capacity for technical innovation while many central cities in South Korea, China and India are catching up fast

In terms of technical innovation, developed countries remain the dominating power. Among the top 20 cities, 8 are in the United States and 6 in Japan. Among the top 150 cities, most are in the G7 countries. Specifically, 44 are in the United States, accounting for 77.2% of the sample cities of the country; 16 are in Japan, accounting for 72.7%; 15 are in Britain, accounting for 83.3%; 14 are in Germany, accounting for 82.4%; 7 are in Italy, accounting for 53.8%; 5 are in France, accounting for 62.5%; 3 are in Italy, accounting for 33.3%. Among the four Gold Brick countries, China (including Taiwan) have 5 entries on the list, accounting for 8.1% of its sample cities; India has 4, accounting for 9.3%; Russia has 2; accounting for 4%; Brazil has none (see Figure10.3)

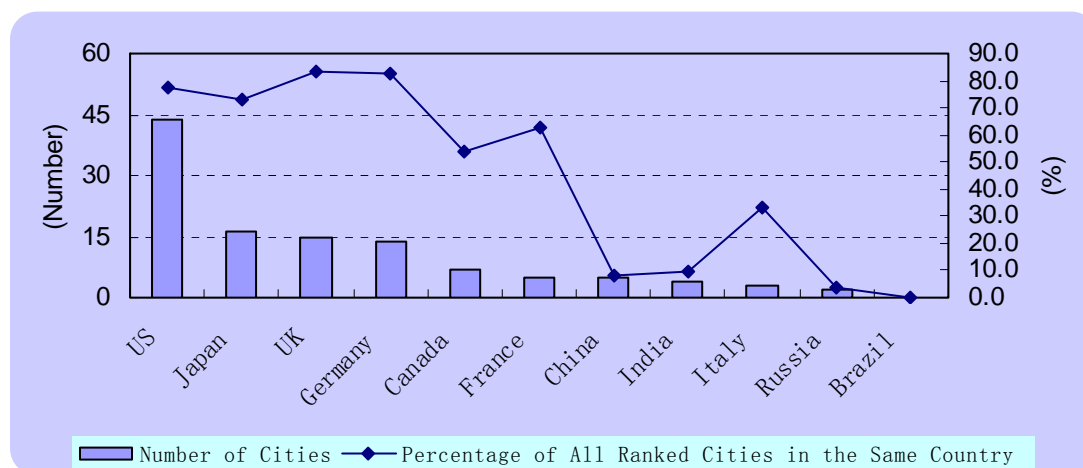


Figure 10.3 The distribution of the most innovative 150 by country

Among the bottom 150 cities, none is in the G7 countries, and 87 are in the four Gold Brick countries. Specifically, 33 are in Russia, accounting for 66% of the sample cities of the country; 25 are in India, accounting for 58.1%; 17 are in China (including Taiwan), accounting for 27.4%; 5 are in Brazil, accounting for 33.3% .

Some cities in emerging industrializing developing countries are rising as world innovation centers and innovative cities. Notably, Seoul ranks No.6, Shenzhen No.33, Singapore No.41, Shanghai No.47 and Bombay No.49 on the list.

11. Economic control center: new evolution underway

Economic decision making power is the ability of a city to control the global economy resulting from global competition within the context of globalization. The ability is a reflection of the competitiveness of a city. One of the most important indexes of economic control is the distribution or the number of multinational companies.

11.1 Wide gaps exist in the economic control power among cities in the world, as the trends of concentration and deconcentration become increasingly clear

Wide gaps exist in economic control power among cities in the world. Cities are becoming increasingly different. While a few cities get very high scores, many others get extremely low scores. The total scores of the top 10 and top 150 cities account for 12.5% and 72.2% of that of all 500 cities respectively. The total scores of the bottom 150 cities account for merely 4.7% of that of all 500 cities.

World cities, e.g., New York, London, Tokyo, Paris and Hong Kong have powerful economic control. Total score of these cities accounts for as much as 7.2% of that of all 500 cities, indicating a distinct feature of concentration. In the meantime, the trend of deconcentration is becoming increasingly clear, too. That means the capitals and economic centers of many developing countries, e.g., Singapore, Beijing, Shanghai and Moscow are among the top 10, while Taipei, Seoul, Bombay, Bangkok, Buenos Aires, Mexico City and Dubai have high ranks, too.

Geographic location has considerable impact on the economic control power of a city. In this aspect, coastal cities, with natural advantages, have attracted more multinational companies, which contributed to the improvement of their economic decision making power.

These cities have considerable advantages over the inland cities. Yet a further examination reveals that, many inland cities, for example, Beijing, Frankfurt and Delhi have very high scores too. Figure 11.1 and Table 1.17 show the distribution of world cities with high and low ranks.

Table 11.1 The top 20 and bottom 20 cities in the 500 cities in terms of the presence of multinational companies

City	Country	Continent	Numerical Value	Rank	City	Country	Continent	Numerical Value	Rank
New York	US	North America	20.00	1	Sao Jose dos Campos	Brazil	Latin America	5	481
London	UK	Western Europe	20.00	2	Kalyan	India	South Asia	5	482
Hong Kong	China	East Asia	19.57	3	Sao Bernardo do Campo	Brazil	Latin America	5	483
Paris	France	Western Europe	19.25	4	Tver	Russia	East Europe	5	484
Tokyo	Japan	East Asia	19.00	5	Vladimir	Russia	East Europe	5	485
Singapore	Singapore	Southeast Asia	18.44	6	Visakhapatnam	India	South Asia	5	486
Beijing	China	East Asia	18.11	7	Duque de Caxias	Brazil	Latin America	5	487
Shanghai	China	East Asia	17.98	8	Pyongyang	North Korea	East Asia	5	488
Moscow	Russia	East Europe	17.97	9	Rajkot	India	South Asia	5	489
Sydney	Australia	Oceania	17.96	10	Yerushalayim	Israel	West Asia	5	490
Milan	Italy	Southern Europe	17.55	11	Kemerovo	Russia	East Europe	5	491
Madrid	Spain	Southern Europe	17.37	12	Petrozavodsk	Russia	East Europe	5	492
Frankfurt	Germany	Central Europe	17.35	13	Bryansk	Russia	East Europe	5	493
Brussels	Belgium	Western Europe	17.34	14	Voronez	Russia	East Europe	5	494
Los Angeles	US	North America	17.18	15	Lipeck	Russia	East Europe	5	495
Toronto	Canada	North America	16.90	16	Machackala	Russia	East Europe	5	496
Taipei	China	East Asia	16.74	17	Groznyj	Russia	East Europe	5	497
Seoul	South Korea	East Asia	16.74	18	Astra Chan	Russia	East Europe	5	498
Washington	US	North America	16.64	19	Tumen	Russia	East Europe	5	499
Warsaw	Poland	East Europe	16.44	20	Djibouti	Djibouti	East Africa	5	500

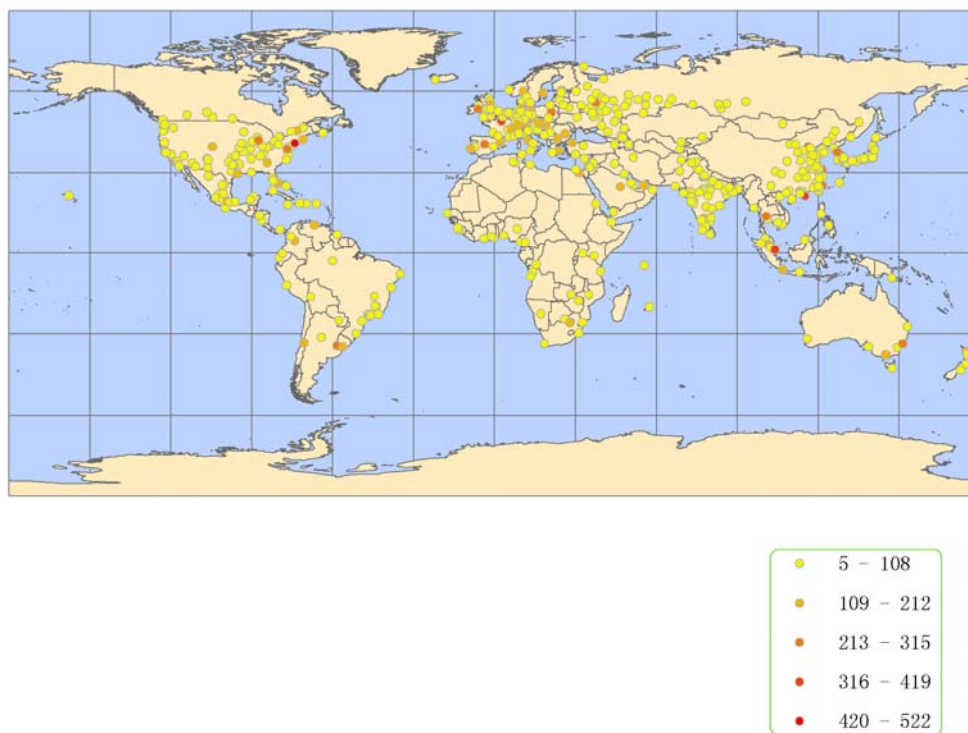


Figure 11.1 The distribution of multinational companies in the world (Unit: index)

11.2 A shifting trend of the world economic centers is emerging

World economic centers have been located in Europe, the United States and Japan exclusively. Yet in addition to Tokyo, Beijing, Shanghai, Taipei and Seoul(I suggest you do this, omitting the country, throughout) have entered the top 20 cities in terms of the presence of multinational companies. It indicates that many Asian cities outside Japan are rising in terms of economic control power and might become new world economic centers.

In general, US and European cities still dominate the list. Some Latin American and African cities, for example, Johannesburg and Cairo have fairly high ranks. Many central cities in Asia, including Hong Kong, Beijing, Shanghai and Taipei in China, Singapore, Bangkok, Kuala Lumpur and Jakarta in southeast Asia, Seoul in South Korea and Bombay in India are among the top 50.

Among the top 150 cities, 49 are in Europe, accounting for 34.3% of the sample cities of the region; 34 are in Asia, accounting for 18.8%; 33 are in North America, accounting for 47.1%; 19 are in Latin America, accounting for 32.8%; 8 are in Africa, accounting for 22.2%; 7 are in Oceania, accounting for 58.3%. Figure 11.2 shows the distribution of the top 150 cities by continent.

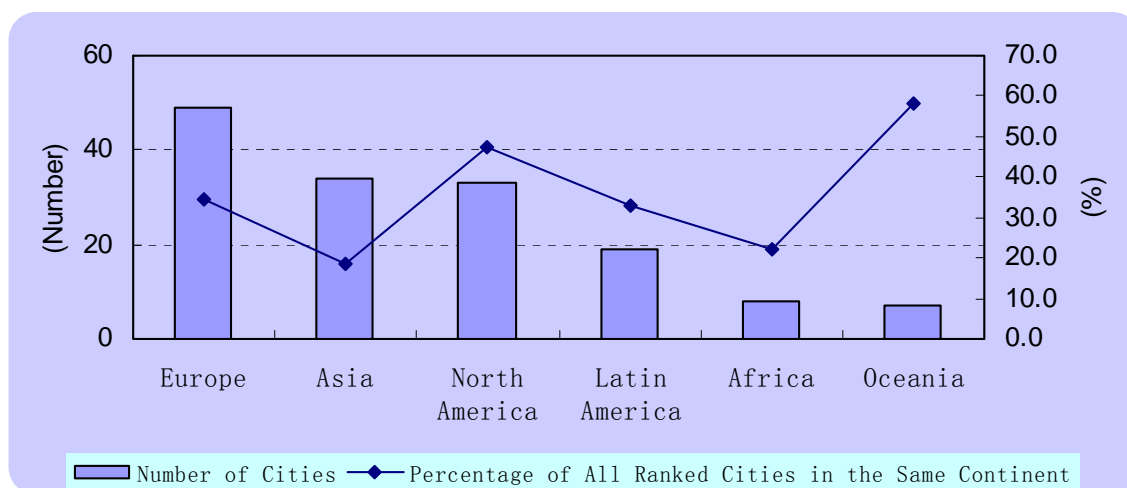


Figure 11.2 The distribution of the top 150 cities in terms of the presence of multinational companies by continent

Among the bottom 150 cities, 80 are in Asia, accounting for 44.2% of the sample cities of the region; 44 are in Europe, accounting for 30.8%; 17 are in Latin America, accounting for 29.3%; 8 are in Africa, accounting for 22.2%; 1 in Oceania, accounting for 8.3%; none is in North America.

A comparison of the top 10 cities in 3 major continents in terms of the presence of multinational companies (see the following table) indicates that Europe, North America and Asia are roughly at the same level.

Table 11. 2 Top 10 cities in North America, Asia and Europe in terms of the number of multinational companies

North America				Asia			Europe		
Regional Rank	City	Country	Global Rank	City	Country	Global Rank	City	Country	City
1	New York	US	1	Hong Kong	China	3	London	United Kingdom	2
2	Los Angeles	US	15	Tokyo	Japan	5	Paris	France	4
3	Toronto	Canada	16	Singapore	Singapore	6	Moscow	Russia	9
4	Washington	US	19	Beijing	China	7	Milan	Italy	11
5	Chicago	US	26	Shanghai	China	8	Madrid	Spain	12
6	San Francisco	US	38	Taipei	China	17	Frankfurt	Germany	13
7	Atlanta	US	41	Seoul	South Korea	18	Brussels	Belgium	14
8	Miami	US	52	Bangkok	Thailand	21	Warsaw	Poland	19
9	Dallas	US	53	Mumbai	India	24	Dublin	Ireland	23
10	Boston	US	57	Kuala Lumpur	Malaysia	28	Amsterdam	Netherlands	27

12. Price advantage: cities in developing countries have distinct advantages

Price and cost are important aspects of a city’s competitiveness and the ratio of nominal exchange rate to PPP exchange rate shows price and cost advantages. The ratio of nominal exchange rate to PPP exchange rate could reflect the actual price level of a country. If the ratio is smaller than 1, it indicates that the actual price level is higher than the nominal price level; if it is larger than 1, the actual price level is lower than the nominal price level. However, the ratio of nominal exchange rate to PPP exchange rate is not calculated on the basis of cities, but on the basis of countries. That is, in each country, there’s only one ratio of nominal exchange rate to PPP exchange rate. With regard to the 500 sample cities, the ratios of Northern Europe, central Europe, Western Europe, Japan, Kuwait and the United States are smaller than 1, indicating that actual price levels in these countries are higher than nominal price levels, which poses as a disadvantage. The ratio of Australia is 1, indicating that its actual price level is the same of its nominal price level. For the remaining countries, their actual price levels are lower than their nominal price levels, creating considerable price advantages. Notably, Switzerland, Kuwait, Iceland, Norway and Sweden have the most disadvantages and Burma, Zimbabwe, Ethiopia, Cambodia and Zaire have the most advantages in actual price level. Among the four Gold Brick countries, China and India have more advantages than Russia and Brazil.

13. Cities: Everything is possible in the future.

One of the most important contributions of the study is the establishment of a database of 9 objective indicators of the 500 sample cities, an action never before tried in the world. This data enabled us to conduct analysis and comparison through a number of different approaches, and to draw valuable findings. We tried to conduct overall analysis of the 9 indicators of the 500 sample cities through dynamic clustering methods and processes, which will be explained in detail in Part 7.

Based on the dynamic clustering theory, we used the SPSS model to conduct clustering analysis for the 9 explicit indicators of the 500 sample cities, and divided the samples into 10 classes (see Table 3.2).

Table 13.1 Number of cases in each cluster

										Valid	Missing
1	2	3	4	5	6	7	8	9	10		
2	22	3	100	64	102	2	29	151	25	500	0

Based on the above theory, we revised the results repeatedly with SPSS, and obtained 10 final cluster centers for each of the 9 explicit indicators.

Table 13.2 Final cluster centers

Indicator	Cluster									
	1	2	3	4	5	6	7	8	9	10
Nominal /Real Exchange Rate Ratio	.023	.028	.032	.028	.028	.305	.020	.230	.208	.145
GDP	.811	.094	.020	.033	.070	.019	.949	.008	.010	.097

GDP per Capita	.950	.505	.663	.553	.741	.071	.799	.034	.066	.186
GDP per Square Kilometer	.716	.288	.871	.100	.196	.032	.358	.015	.029	.105
Real Economic Growth Rate	.190	.163	.278	.204	.186	.565	.136	.279	.301	.323
Employment Rate	.907	.903	.939	.913	.903	.927	.907	.503	.897	.902
Labor Productivity	.940	.376	.375	.436	.597	.063	.554	.047	.061	.169
Number of International Patents	.637	.379	.017	.087	.281	.018	.848	.007	.012	.106
Multinational Corporation Score	.980	.133	.117	.076	.209	.045	.642	.054	.046	.400

Then the cities were classified in accordance with the absolute difference between the values of the 9 indicators and those of the 10 clusters by the 9 indicators. The narrower the gap is, the more valid the classification. The following table is the classification of the 500 sample cities by the 10 clusters:

Table 13.3 Classification of the 500 sample cities by K-average method

City	Cluster	City	Cluster	City	Cluster	City	Cluster
London	1	Dublin	5	Paris	7	Rio de Janeiro	9
New York	1	.....	5	Tokyo	7	Brazilia	9
Manchester	2	Vienna	5	Sarajevo	8	San Salvador	9
.....	2	Oslo	5	Belgrade	8	Lima	9
Berlin	2	Stockholm	5	Groznyj	8	Quito	9
Lyon	2	Helsinki	5	Baghdad	8	Cairo	9
Madrid	2	Copenhagen	5	Sanaa	8	Bucharest	10
Kyoto	2	Milan	5	Kabul	8	Warsaw	10
San Juan	2	Los Angeles	5	Port-au-Prince	8	Prague	10
Geneva	3	Chicago	5	Tripoli	8	Budapest	10
Macao	3	Boston	5	Addis Ababa	8	Moscow	10
Victoria(CA)	3	Philadelphia	5	Nairobi	8	Beijing	10
Liverpool	4	Minsk	6	Djibouti	8	Shanghai	10
Lille	4	Saint Petersburg	6	Kampala	8	Hongkong	10
Toulouse	4	Tumen	6	Porto Alegre	9	.....	10
.....	4	Suzhou	6	Sofia	9	Singapore	10
Marseille	4	Hangzhou	6	Kaohsiung city	9	Bangkok	10
Turin	4	Ho Chi Minh City	6	Busan	9	Kuala Lumpur	10
Sapporo	4	Hanoi	6	Kiev	9	Mumbai	10
Sendai	4	Phnom Penh	6	Penang	9	Istanbul	10
Pittsburgh	4	Delhi	6	.....	9	Mexico City	10
Memphis	4	Calcutta	6	Malacca	9	Sao Paulo	10
Tampa	4	Bangalore	6	Manila	9	Buenos Aires	10
Tulsa	4	Monterrey	6	Cebu	9	Santiago	10

Cities of cluster 1 usually have world-leading economy size, per capita GDP, productivity, per land unit GDP, patent applications, and number of transnational companies, as well as a relatively high employment rate and economic growth. Cities of cluster 1 are New York and London. As global economic centers, they are getting stronger and stronger, and leading other cities by increasingly clear advantages.

Cluster 2 cities have relatively high per capita GDP, productivity and per land unit GDP. However, they are restricted by relatively small economic size and weak decision making ability. Particularly, they have very low, or even negative economic growth. There are 22 such cities in total, including Manchester, Lyon, Berlin, Kyoto and Kobe. Most of these cities are regional centers with a splendid history, but signs of economic decline.

Cluster 3 cities usually have strong economic growth, in spite of limited edge in per capita income, productivity, economic clustering, economy size, and ability of innovation. In total, there are 3 such cities. In fact, the cluster should include Las Vegas and a number of others. They are special cities that depend on special service industries. Currently, they have strong momentum of development.

Cluster 4 cities usually have low per capita income, productivity and economic clustering, weak innovation ability and economic control, low economic growth and little price advantage. In total, there are 100 such cities, distributed mainly in developed countries or the outskirts of global economic centers. As less developed cities in developed countries, they tend to have weak competitiveness and slow economic development.

Cluster 5 cities have relatively high per capita GDP, productivity and per land unit GDP. However, compared with London and New York, they have lower indicators in terms of GDP size, patent application, and number of transnational companies. In spite of high employment rate and economic growth, they do not have a clear competitive edge in terms of prices. In total, there are 64 such cities, mostly international cities in developed regions. In general, such cities can be divided into two classes. The first class includes cities that have been and are still among the developed cities, including Chicago, Boston, Philadelphia, Frankfurt, Munich, Milan, Amsterdam and Rotterdam, which have strong competitiveness and momentum of development. The second class includes many cities that were once less developed, e.g. those in the Nordic region and the west coast of the United States such as Dublin, Oslo, Stockholm, Helsinki, Copenhagen, Los Angeles, Seattle, Phoenix, San Francisco, San Jose, San Diego and Melbourne. Once in the outer rims of global economic centers, these cities are on their way to becoming regional centers. With strong competitiveness and momentum, they are quickly surpassing their rivals.

Cluster 6 cities tend to have low GDP, per capita GDP, productivity, per land unit GDP, patent applications, and number of transnational companies. However, they have a competitive edge in prices and dynamic economic growth. In total, there are 102 such cities, including many regional centers (instead of national economic and political centers) in China, Russia, Mexico, India and other emerging countries and countries undergoing transformation. Most of these cities, e.g. Minsk, Omck, Tianjin, Suzhou, Baku and Manaus are located at advantageous regions outside global economic centers and on the rise.

Cluster 7 cities are Tokyo and Paris, both with world-leading economic size, development level, productivity, technological innovation and decision making ability. However, they have maintained low economic growth. During the 2001-2005 timeframe, the

economic growth of Paris was 1% and that of Tokyo was as low as 0.1%, showing signs of decline.

Cluster 8 cities have prominent price advantages. However, they tend to be the weakest by other indicators, particularly per capita income and patent applications, negative economic growth and low employment rate. In total, there are 29 such cities, which are mostly located in Africa, and the Caribbean region, as well as the warring countries and regions in East Europe and Asia, including Sarajevo, Belgrade, Grozny, Baghdad, Kabul, Port Au Prince, Tripoli, Addis Ababa, Nairobi, Djibouti and Kampala. Most of these cities are located in the outer rims of the world economy. As they continue to decline, they are expanding the gap with other cities.

Cluster 9 cities has distinct price advantages, but are weak in terms of other indicators. However, they have much better overall performance than cluster 8, the worst performing cities. In total, there are 150 such cities, mostly central cities with weak competitiveness in smaller economies in Asia, Europe and Latin America, e.g. Baltimore, Kaohsiung, Pusan, Rio de Janeiro and Cape Town.

Cluster 10 cities have prominent price advantages, but relatively low per capita income, productivity and per land unit GDP. They have leading economic size, patent application and number of transnational companies and high economic growth and employment rate. In total, there are 29 such cities, mostly political and economic centers in emerging countries undergoing transformation and industrialization in East Europe, Southern Europe, Asia and South Africa, e.g. Prague, Moscow, Beijing, Singapore, Dubai, St. Paul, Buenos Aires and Alaska. Most of them are located at the centers of outer rims of the world economy and rising fast.

The above clustering shows that, in global economic centers, top ranking cities are getting increasingly stronger and expanding the gap with other cities. Some other cities are relatively weak, with slowing-down, or even declining economies. Many cities in the relatively outer rims of the world economy are rising fast and surpassing rivals. In the outer rims of the world economy, cities have extremely low competitiveness and continue to decline. Some central cities or those with distinct advantage in geographic location are rising fast. It proves that the economic globalization and fast evolving technologies have brought both the opportunity of a fast rise and the threat of decline to cities around the world, big or small, developed or undeveloped, currently on the rise or on the fall. Given the context of global competition, the relations between cities across the world are getting increasingly uncertain. For each city, anything is possible. On the other hand, every city should take positive actions in accordance with rules to avoid failure and achieve success.

14. What have city governments around the world been doing

In face of the opportunities and challenges of globalization, informationalization, urbanization, and the increasingly fierce competition in the world market, central and local governments have been taking actions since the beginning of the new century to consolidate their positions, move upward along the value chain, lead the trends, catch up with and surpass world leaders, and improve their global competitiveness.

14.1 Adopting development strategies, plans and guidelines

City governments around the world are adopting development plans to guide the fast

development of their cities. Dubai has identified the target of being the No.1 in the world. London has adopted a series of strategic development plans, including London Innovation Strategy and Action Plan 2003-2006 and London: Cultural Capital, the Mayor's Culture Strategy to implement a strategic development of cooperation with other major cities in the world. Vienna is adopting a strategy with international identities to facilitate industrial development with music and to develop the hi-tech industry. Many other cities, including Sydney and Melbourne have developed their 2030 visions.

14.2 Improving business environment and supporting the development of SMEs

Employment is the foundation of the welfare of the people. Many city governments are taking positive actions to improve their business environment and establish their service systems to support the development of small and medium enterprises (SMEs). They have realized that SMEs are key to a robust local economy. In spite of their sizes, the achievements of SMEs prove to be the foundation of their cities. In Osaka, there are SME-oriented financial institutions, the Japan Finance Corporation for Small and Medium Enterprise, National Life Finance Corporation, Credit and Insurance Corporation for Small and Medium Enterprise and Corporation for the Support of Small and Medium Enterprise established to provide services to SMEs and to develop SME entrepreneurs. Similarly, Singapore, the United States, Canada, EU, and almost every other country in the world has adopted policies to support SMEs as one of the top priorities.

14.3 Promoting the upgrading of industries and achieving the transformation of the cities

The adjustment and upgrade of industrial structures will ultimately decide to what extent the functions of a city can be improved, and what position it will take along the value chain. Promoting industrial upgrade is the permanent theme of development for cities. Birmingham, which was a star city during the industrial revolution, has taken a series of actions in line with the latest changes in the market to integrate its traditional culture with the service. Today, it is admired for its tourism and cultural industries and its successful transformation. From a small port city on the south coast of the Arabian Peninsula, Dubai has grown into an appealing international tourism city, as well as an international financial center. The secret of its success lies in its unyielding transformation and industrial upgrade. From canal operation in the 1970s to international trade in the 1980s to tourism in the 1990 to high-end service sector in the 2000s, every step is a link in Dubai's history of industrial transformation, which proves to be a successful model for other cities.

14.4 Implementing national life-time education program and attracting talents from around the world

It is generally accepted that human resources is the most important contributor to competitiveness. Cities are taking various actions to attract talents from around the world and develop human resources internally. New York has announced to increase input in education and human resources development, and to implement intelligent children education. While highlighting the importance of education, it is assigning an increasingly significant role on the education sector. Regarding people as a resource, Paris has introduced effective measures to integrate diploma education with certificate examination and special training to create a sound room of development for its citizens and fair market opportunities. In addition, it has adopted strict rules for on-job training, expenses and mechanisms concerned. For example, it orders that each enterprise shall pay an employee training fee not less than 1% of the total payrolls to support on-job training. Tokyo is known for its powerful research institutions. Yet it is also trying to attract talents by creating a sound research and living environment. In 2004, the

largest economic body in the city—Japan Federation of Economic Organizations proposed to extend the visa of each foreign student for 2-3 years, even if he/she cannot find a job. Helsinki has adopted a number of economic policies to encourage innovation. The first one is for the attraction and retaining of talents. It aims at improving the internationalization level and influence of local universities to build Helsinki into an international education and research base by improving the service to foreign students and researchers. Singapore offers a series of preferential treatments to foreign laborers and technicians concerning salary, residence, spouse arrangement and taxation. The government has specifically established a Professional Profile and Employment Intermediary Service Committee and a Foreign Talent Absorption Committee to attract human resources in larger scope and at higher level.

14.5 Focusing on environmental protection and pursuing sustainable development

Known as a “garden city” across the world, Singapore is highly concerned with environmental protection and has introduced intensive publicity programs for the purpose. With huge amount of investment in environmental infrastructure development and energy utilization, and strict law enforcement, Singapore is able to maintain the image of world-famous garden city. In Sustainable Sydney 2030, Sydney announced the goal of becoming a “world leading city with a beautiful environment” and its plan to build a green urban transport network. In the meantime, it is going to develop infrastructures for sustainable energy and water resource utilization and wastewater treatment in an effort to satisfy the resource demand and further improve the efficiency of resource utilization.

14.6 Shaping brand images and staging marketing programs for their cities

Cities around the world have realized that improving their brand images and promoting themselves to the world would be helpful to bring local industries into the world market. As an old Chinese saying goes, “a brewery located in a long valley needs to promote itself no matter how good its wine is”. In this respect, the marketing efforts of Seoul have been really remarkable. In 1988, Seoul hosted the 24th Olympic Games and the 10th Asian Games, which turned out to be the start of the city’s massive marketing campaign. At the end of 2003, the city government adopted Strategic Marketing Plan to Build Seoul into A First-Class City in the 21st Century proposed by South Korean Advertising Society. In the same year, it appointed 13 celebrities and the image ambassadors of the city. A series of intensive marketing festivals, exhibitions, cultural/sports events and online marketing campaigns eventually delivered satisfactory results. Sydney, on the other hand, leveraged its global Olympic tourism strategy to build world-class tourist resorts and gulf. In addition, many other cities are introducing their own marketing campaigns, e.g., “Special Singapore”, “Flying Dragon Hong Kong”, “Infinite Toronto”, “Smiling Glasgow” and “New York, with Love” .

14.7 Building service-oriented governments with business-level management

Worldwide, major international cities are introducing positive actions to enhance their management level. Phoenix, an important city in the west of United States has announced to adopt a business-level management and operation, whereby the city council is regarded as a corporation, and citizens its shareholders and customers. By paying taxes, Phoenix citizens are buying the stocks and services of that corporation. The innovative idea has improved the service awareness of the public and the sense of responsibility of the government with satisfactory result. The business-level government management idea is a good example to learn from.

14.8 Building the city of innovation and the city of knowledge

Cities around the world, particularly, those in developed countries are taking actions to enhance their positions in the field of science and technology, and leverage knowledge to promote their development. Through industrial agglomeration, Stockholm is pushing for the industrialization of the hi-tech sector and the commercialization of the wisdom capital, and encouraging innovation and venture. Shenzhen, on the other hand, has been strengthening its IPR protection, helping businesses to solve the financing problem for their R&D activities, and building a “virtual university town” and a “Shenzhen International Hi-tech Business Platform”. Helsinki has identified the hi-tech manufacturing as its pillar industry. It is taking opportunities in the IT market to guide the development of the semiconductor and biotech sectors. Vienna is building its science and technology center. Melbourne has announced to develop a knowledge-based city. Many other cities, including Boston, Sydney, Ruhr, Helsinki, Glasgow, Birmingham, Huddersfield and Montpellier are committed to the development of cities of innovation or knowledge-based cities.

14.9 Developing information networks to build the wireless city

Information network is the focal point of the infrastructure development contest among international cities, as well as a requirement of the global Internet economy. New York, for example, has announced an online city development plan to lead the information revolution. Taipei and Pusan are doubtlessly shining stars in this contest. With the vision for a “convergent city”, Pusan is engaged in the development of a modern, convergent and digital, intelligent city based on Samsung’s Ubigate series convergent network products. In the mean time, it is integrating its port, transport, conference, medical and a number of other service systems, with the aim of becoming the first city in the world to introduce a comprehensive “convergence architecture”. Taipei initiated a networked city development plan in 1999. Based on Guidelines for Phased Development of a New Networked City, it developed Taipei Wireless Broadband Network Development Program to promote the application of wireless network and the relevant services, and to achieve the goal of “wireless Taipei, infinite Taipei”.

14.10 Shaping the identities of the cities by fostering diversified cultures

The higher-level competition among cities is the competition of cultures. As the leaders in the world, the world cities are facing particularly fierce competition in terms of cultural strategy and innovation. Cities around the world are working hard to protect their heritages, promote their own cultures, shape their own identities, attract migrants, advocate convergence and foster a diversified culture. In the field of cultural diversification, Toronto has made really remarkable achievements, as it is called “the melting pot of world cultures”. New York and London are engaged in the development of a diversified culture, too. Melbourne is trying to develop its cultural industry to attract migrants and foreign students from around the world. It proves to be an effective means to drive the development of the city’s higher education sector, to increase the reserves of its knowledge resources, and to promote its headquarters economy. Vienna has impressed the world with its art and culture. It has received both satisfactory economic benefits and admirable international reputation for its awe-inspiring music art. Based on the traditional oriental culture, the Chinese city of Yangzhou is following a path of sustainable development, and is regarded as a paradigm of success in developing countries.

14.11 Attracting multinational companies’ headquarters for decision making and enhancing global connectivity

As key sectors and critical functions of the world economy, finance, R&D, transportation, culture and management directly affect the position of a city in the global industrial chain, which, in turn, affects the distribution of multinational companies. Therefore, cities around the world are taking actions to build international financial, transportation, innovation, cultural

and management centers to attract multinational companies and enhance global connectivity. Hong Kong has positioned itself as an Asian metropolis to attract more world-leading multinational companies to move their regional headquarters there and to consolidate its position as an international financial and business service center. Melbourne is trying to improve its business environment to attract more corporate headquarters. The growth of Helsinki is the result of opening up to the world, the lifting of restrictions on foreign capital, the implementation of joint research plans with EU and partnerships with Northern European countries. Dublin, on the other hand, is today the base of the European headquarters of many North American companies. Many Asian cities, including Dubai, Seoul, Shanghai and Bombay have announced plans to build international financial centers. In Europe, Frankfurt and a number of other cities have announced ambitious plans for the development of financial centers.

In general, cities around the world are taking actions to enhance their strategies, enterprises, industries, human resource reserves, hard/soft environments and global connectivity to consolidate their positions in the global competition and to move upward along the value chain. In a word, the cities are busy, which indicates that the competition among them are getting more and more intensified.

15. How should city governments handle challenging relations in the future?

As of 2008, 50% of the world population live in cities. Today is in a real urban era, as the world is at its peak of urbanization. On the one hand, urbanization has promoted economic growth and the potential for world development. On the other hand, it has created severe challenges in the poverty population, housing, and environmental protection. Therefore, governments need to re-examine the sustainable economic, social, environmental, and cultural development of their cities, and make foresighted plans for the education, employment and housing of the large number of migrants, and build pleasant homes for the people.

In the meantime, technology, information and economic globalization are changing the concept and decision making processes of economic, technological and social activities worldwide. While enhancing the role of cities in global affairs, they have further intensified the competition among them. For every city, anything is possible in the fierce global competition. They need to take action to maintain their central and leading positions, to avoid being marginalized or declining. They need to catch up and surpass others by taking opportunities and addressing challenges, leveraging advantages and avoiding disadvantages, and developing and implementing scientific growth strategies and correct competition policies. Only by following the rules and taking positive actions can the city achieve success and avoid failure.

In this view, central and local governments, as well as relevant government agencies should properly handle the following general issues in addition to specific problems. (You could say something here that would make this all the more important – such as how the center of activity to enhance urban competitiveness has shifted in recent years to the level of the city or urban region – why are you/we focusing on cities?)

15.1 Central governments v.s. local governments: decentralization

The division of public power, particularly the power of taxation between central and local governments has a significant impact on the development of countries and sub-regions.

In the time of globalization, cities are important platforms, as well as carriers of global competition. In local strategic development, the building of infrastructures, the provision of diversified public products and services (including the provision of compulsory education, the establishment of universities, helping SMEs implement financing programs, providing new enterprises with information needed, and helping companies and research centers establish effective technological connections), handling local affairs and addressing external competition, cities have information and cost advantages.

Therefore, city governments should assume more responsibilities and play more important roles. Central governments should grant more decision making power to city governments to enable active and flexible handling of issues encountered in the competition and development of cities. In the meantime, governments should review their fiscal and taxation systems, and build sound fiscal and taxation systems allowing proper division of power to enable city governments to better fulfill their duties and support the development of local enterprises and the improvement of public welfare.

15.2 Government v.s. market: mutual infiltration

The relation between government and market is a permanent topic worldwide. However, in order to win in the fierce competition, city governments must re-think and adjust their relations with market. In addition, the governments, which bear more responsibilities for social and economic development, shall take actions not only to improve their public service, but also to facilitate restructuring. On the one hand, city governments should take an active part in market competition, create a sound business environment, build a strong brand and increase their appeal to more valuable enterprises. On the other hand, with innovative systems, and extensively applicable technologies, enterprises and non-government organizations are now able to provide more public services and quasi-public services and to improve the efficiency and quality of their service. It is necessary to encourage more enterprises, non-government organizations and private businesses to participate in city management and to build an extensive city governance mechanism.

15.3 Globalization v.s. localization: take it both ways

The city is a complicated open system. In an integrated world market, every city must carefully handle the relation between globalization and localization.

They must have a global mindset and take actions in line with the specific situation in the local market. Cities should grasp the trend in the world market, adopt world-leading standards, comply with the rules of global economic development, draw from the experience of leading cities, develop objectives in line with specific time and local market conditions, and select the right paths and strategies.

Cities should facilitate the development of world market-oriented industries, while protecting local industries. The former consists of enterprises with worldwide business presence and leading edges in price and competitiveness, while the latter mainly includes local manufacturing and service enterprises, which are established to ensure the employment and welfare of local people. While ensuring the complete privatization of world market-oriented industries, the approach enables the adoption of proactive social policies toward local economy.

To be able to utilize the two types of resources and both markets, cities need to absorb and utilize production factors, talents and resources from around the world, increase global market share and leverage their comparative advantages, which they should try to convert into their competitive advantages in line with their geographic location, industrial features and the

availability of capital and human resources.

15.4 Industrial upgrading and employment: national life-long education

Industrial upgrading is a permanent theme of development, as well as the momentum of sustainable development for a city. However, industrial upgrading, or the development of high-end industries would result in higher demand for talents, and the conflict of the human resource supply-demand structure. In other words, while a large number of high-end professionals are needed, many low-end workers would lose their jobs. This has been a challenge for many international cities.

The key to solving this challenge is to promote life-long education for every citizen. By building and improving a sound education system, cities would be able to improve the quality and skill structure of their populations, and eventually solve the conflict between employment and industrial upgrading.

15.5 Introduction of talents v.s. local population: nationwide drive for business startup

The introduction of high-end external talents is a basic strategy to improve competitiveness and achieve sustainable development. Cities across the world are taking actions to attract high-end foreign talents to sustain their own development. These personnel, however, could increase the employment pressure of local citizens. The increasingly sharp conflict between the talents introduced and the local population has been a challenge for many cities across the world.

In order to facilitate development and achieve win-win of the local population and talents introduced, cities need to create a sound business startup environment, guide their citizens to start their own businesses, and to expand the employment market. Through this means, they would be able to achieve growth, allow the sharing of prosperity and fundamentally solve the employment conflict between local population and talents introduced.

15.6 Economic development v.s. social security: a proper balance needed

It is necessary to ensure the complementation and mutual support of social security and economic development. Social security is the stabilizer of economic development and the foundation of market competition. Economic development is the pillar of social security. The economic strength is critical to the success of the social security system. In view of the fierce competition in the global market, city governments need to provide their citizens with good education, job opportunities and housing, as well as necessary life facilities and public services. In the meantime, they should also try to create a sound business environment, support competitive industries and assume responsibilities for economic development.

In this regard, cities in the East and West countries have much to learn from each other. Cities in the developed countries in the West have solid and extensive social security system, but are less motivated and passionate about economic development. Cities in the East, particularly those in east Asia have strong momentum for economic development, but need to do more for their social security.

15.7 Specialization v.s. diversification: refocusing strategy

Specialization and diversification are two different strategies for the development of cities. Both have their respective advantages and disadvantages. Specialization could improve efficiency but may result in too few industries in a city. If these industries are not transformed in time, the city would be easily caught in a decline. Diversification is helpful for avoiding market risks, but would create too many industries, which would consume resources and

affect the economies of scale.

To leverage the advantages and avoid the disadvantages, it is necessary for cities to adopt the strategy of refocusing for function positioning and industrial structure development. That means that they should select neither just one industry, nor numerous industries. Instead, they should select a number of interrelated industries as their pillar industries. This approach could ensure the economic benefits of the specialization model and the stability of the diversification model, and avoid the disadvantages of both.

15.8 Business environment v.s. living environment: both are important

Business environment and living environment are both consistent and conflicting. On the one hand, job opportunities are important conditions to support the life of the citizens, while a good living environment could attract high-end talents and is helpful for the development of high-end industries. On the other hand, however, industrial development is often achieved at the cost of life and environmental quality. Overemphasis on the living environment would affect the development of local industries.

Properly handle the relations between them could facilitate the prosperity of both to the extent possible. Ensuring a good living environment should be regarded as the ultimate objective of industrial development. In the meantime, maximum efforts should be made in the industrial development to ensure the protection of the living environment. The principle of mutual support between the living environment and the business environment should be adopted to build a new mechanism for the sustainable and harmonious development of ecological, cultural and social elements in both the living environment and the business environment.

15.9 Cities and rural areas: co-development should be achieved

In countries and regions of low urbanization level, the relation between cities and rural areas is a challenging issue. In highly urbanized countries and regions, the relation between central and peripheral regions is also very complicated. Actions should be taken to properly handle the relations between rural areas and cities to ensure their co-development.

Co-development does not mean that cities and rural areas must have identical objectives, tasks and measures. On the contrary, different but mutual supporting tasks and measures should be identified for cities and rural areas in accordance with their specific situations. The market mechanism should be used to ensure a win-win result. In addition, it is necessary to ensure the integration of the soft environment, including mechanisms, management and service, and the hard environment and infrastructures of both cities and rural areas to provide equal opportunities and to allow the sharing of the benefits from external economic development. In view of the relatively weak strength of the rural areas, the government should make up the defect of the market by increasing transfer payment to the rural areas to support their development.

15.10 Competition v.s. cooperation: both are essential for development

Due to the independence of economic benefits, the scarcity of resources and restriction of the market, competition among cities is inevitable. On the other hand, cities' difference in natural resources, initial conditions, development paths and the foundations for labor division have paved way for their cooperation. Therefore, competition and cooperation between cities are natural phenomena. However, the competition between cities could be of zero sum, negative sum, or positive sum, i.e., win-win models.

A wise city government should employ both competition and cooperation strategies. It

shall not sacrifice competition for cooperation, or vice versa. Right competition and cooperation strategies would enable the sharing of the benefits and the taking of opportunities to avoid zero sum or negative sum games and to achieve win-win or success for both.

15.11 History v.s. future: both should be taken care of

It has been a challenge for economists to properly handle the conflict between history and the present, and that between the present and the future. History could be both a fortune and a burden for a city. For the protection of historical heritages, many cities have lost the opportunity to win competition. On the other hand, to ensure a city to win in a future full of uncertainties, it is necessary to save resources and protect the environment at the present time, which could turn out to be restriction of the city. The historical heritages should be protected in ways that would turn them from burdens into fortunes. To win in the future, it is necessary to turn the environment from resources to capital. Therefore, while protecting unique and precious historical heritages and turning them into core assets of a city, it is necessary to introduce protective development measures. On the other hand, environmental protection and eco-city development means should be adopted to increase the appeal of a city to high-end factors and promote industrial upgrading. In the meantime, it is necessary to explore a win-win approach for the coordinated development of the economy, ecology, society and culture, and to facilitate sustained development of the economic, ecological and social systems.

15.12 Uniqueness v.s. diversity: openness and convergence

The most fundamental form of competition between cities is the competition of cultures. The national identities would most probably be accepted by the world. A competitive culture must be unique in the first place. Unique identity could differentiate a city from its rivals, and become an important cause for its survival and development. In this era of globalization, it is particularly important to maintain the identity and the unique culture of a city. A competitive culture must be an innovative culture at the same time. The convergence and collision of diversified cultures have created the conditions not only for the concentration of the best, but also for the introduction of innovations and creations.

To properly handle the relations between local culture and diversification, cities should persist on openness and convergence, which is not to keep all cultures identical, but to absorb and draw from external cultures to create a more competitive and more advanced one while maintaining the identities of their own.

Appendix: Global Urban Competitiveness Data tables

Table 16.1 Score, Rank and Level of Comprehensive Competitiveness of Global 500 Cities

City	Nominal/Real Exchange Rate Ratio			GDP		
	score	Rank	Level	score	Rank	Level
London	0.016	470	D++	0.763	4	A++
Glasgow	0.016	470	D++	0.05	90	A
Liverpool	0.016	470	D++	0.025	196	B+
Manchester	0.016	470	D++	0.14	24	A++
Edinburgh	0.016	470	D++	0.046	105	A-
Leeds	0.016	470	D++	0.11	33	A+
Bristol	0.016	470	D++	0.034	153	B++
Nottingham	0.016	470	D++	0.025	202	B+
Belfast	0.016	470	D++	0.025	195	B+
Southampton	0.016	470	D++	0.016	261	B-
Sheffield	0.016	470	D++	0.029	172	B++
Plymouth	0.016	470	D++	0.013	291	B--
Birmingham	0.016	470	D++	0.064	68	A
Chester	0.016	470	D++	0.008	345	C+
Cardiff	0.016	470	D++	0.023	213	B
Aberdeen	0.016	470	D++	0.016	258	B-
Norwich	0.016	470	D++	0.006	363	C
Newcastle	0.016	470	D++	0.016	259	B-
Paris	0.022	434	C--	0.898	2	A++
Lyon	0.022	434	C--	0.027	184	B+
Lille	0.022	434	C--	0.01	320	C++
Strasbourg	0.022	434	C--	0.015	269	B-
Toulouse	0.022	434	C--	0.023	214	B
Nice	0.022	434	C--	0.019	235	B
Marseille	0.022	434	C--	0.045	110	A-
Bordeaux	0.022	434	C--	0.012	300	B--
Dublin	0.025	432	C--	0.095	42	A+
Amsterdam	0.021	442	C--	0.054	79	A
Rotterdam	0.021	442	C--	0.043	119	A-
The Hague	0.021	442	C--	0.036	139	A--
Utrecht	0.021	442	C--	0.014	275	B--
Brussels	0.025	432	C--	0.01	319	C++
Zurich	0	497	D+	0.034	154	B++
Geneva	0	497	D+	0.02	232	B

Bern	0	497	D+	0.007	355	C+
Basel	0	497	D+	0.015	267	B-
Vienna	0.026	414	C-	0.135	26	A++
Berlin	0.026	415	C-	0.176	15	A++
Frankfurt	0.026	415	C-	0.045	113	A-
Munich	0.026	415	C-	0.089	46	A+
Hamburg	0.026	415	C-	0.112	31	A+
Nuremberg	0.026	415	C-	0.036	136	A--
Cologne	0.026	415	C-	0.056	76	A
Bonn	0.026	415	C-	0.017	253	B-
Stuttgart	0.026	415	C-	0.038	131	A--
Dresden	0.026	415	C-	0.022	218	B
Dortmund	0.026	415	C-	0.036	138	A--
Hannover	0.026	415	C-	0.028	181	B+
Dusseldorf	0.026	415	C-	0.035	143	A--
Leipzig	0.026	415	C-	0.024	207	B+
Essen	0.026	415	C-	0.034	150	A--
Mainz	0.026	415	C-	0.01	326	C++
Mannheim	0.026	415	C-	0.021	225	B
Bremen	0.026	415	C-	0.031	166	B++
Oslo	0.014	493	D+	0.052	86	A
Bergen	0.014	493	D+	0.021	228	B
Stockholm	0.014	488	D+	0.069	60	A+
Göteborg	0.014	488	D+	0.029	174	B++
Malmö	0.014	488	D+	0.019	237	B
Helsinki	0.02	446	C--	0.036	137	A--
Copenhagen	0.014	488	D+	0.004	384	C
Århus	0.014	488	D+	0.021	224	B
Reykjavík	0.012	495	D+	0.009	331	C+
Athens	0.044	313	C++	0.032	160	B++
Rome	0.034	340	C+	0.155	20	A++
Milan	0.034	340	C+	0.088	47	A+
Turin	0.034	340	C+	0.042	124	A--
Naples	0.034	340	C+	0.025	201	B+
Venice	0.034	340	C+	0.014	284	B--
Bologna	0.034	340	C+	0.022	217	B
Genoa	0.034	340	C+	0.028	180	B++
Trieste	0.034	340	C+	0.01	322	C++
Palermo	0.034	340	C+	0.019	240	B
Madrid	0.034	340	C+	0.169	17	A++
Barcelona	0.034	340	C+	0.05	91	A-

Valencia	0.034	340	C+	0.041	126	A--
Lisbon	0.052	308	C++	0.023	211	B
Porto	0.052	308	C++	0.006	359	C
Sarajevo	0.206	142	A--	0.002	427	C--
Belgrade	0.114	255	B-	0.01	329	C++
Zagreb	0.086	267	B-	0.017	254	B-
Ljubljana	0.057	304	C++	0.012	302	C++
Bucharest	0.174	172	B++	0.022	222	B
Sofia	0.199	145	A--	0.01	326	C++
Bratislava	0.118	246	B-	0.011	312	C++
Riga	0.114	255	B-	0.014	276	B--
Warsaw	0.124	241	B-	0.042	121	A--
Krakow	0.124	241	B-	0.014	283	B--
Prague	0.095	262	B-	0.038	132	A--
Budapest	0.083	268	B-	0.049	97	A-
Tallinn	0.095	262	B-	0.011	305	C++
Vilnius	0.121	245	B-	0.013	294	B--
Minsk	0.168	175	B++	0.007	350	C+
Kiev	0.308	120	A-	0.008	341	C+
Moscow	0.148	188	B+	0.137	25	A++
Saint Petersburg	0.148	188	B+	0.044	114	A-
Novosibirsk	0.148	188	B+	0.008	343	C+
Kazan	0.148	188	B+	0.002	417	C-
Belgorod	0.148	188	B+	0.002	433	C--
Omsk	0.148	188	B+	0.007	350	C+
Bryansk	0.148	188	B+	0.001	462	D++
Vladimir	0.148	188	B+	0.001	471	D++
Voronez	0.148	188	B+	0.003	405	C-
Ivanovo	0.148	188	B+	0.001	475	D++
Kaluga	0.148	188	B+	0.001	454	D++
Kursk	0.148	188	B+	0.002	441	C--
Lipeck	0.148	188	B+	0.004	390	C-
Or'ol	0.148	188	B+	0.001	459	D++
Ryazan	0.148	188	B+	0.002	425	C--
Smolensk	0.148	188	B+	0.001	461	D++
Tambov	0.148	188	B+	0.001	479	D++
Tver	0.148	188	B+	0.001	446	C--
Tula	0.148	188	B+	0.001	450	C--
Jaroslavl	0.148	188	B+	0.004	393	C-
Petrozavodsk	0.148	188	B+	0.002	443	C--

Archangelsk	0.148	188	B+	0.003	411	C-
Kaliningrad	0.148	188	B+	0.002	426	C--
Murmansk	0.148	188	B+	0.003	401	C-
Machackala	0.148	188	B+	0.001	477	D++
Groznyj	0.148	188	B+	0	500	D+
Krasnojarsk	0.148	188	B+	0.003	403	C-
Stavropol	0.148	188	B+	0.001	465	D++
AstraChan	0.148	188	B+	0.002	430	C--
Rostov-na-Donu	0.148	188	B+	0.004	387	C
Volgograd	0.148	188	B+	0.005	378	C
Ufa	0.148	188	B+	0.006	365	C
Izhevsk	0.148	188	B+	0.003	394	C-
Niznij Novgorod	0.148	188	B+	0	488	D+
Kirov	0.148	188	B+	0.001	453	D++
Orenburg	0.148	188	B+	0.003	400	C-
Penza	0.148	188	B+	0.001	448	C--
Perm	0.148	188	B+	0.008	348	C+
Samara	0.148	188	B+	0.009	335	C+
Saratov	0.148	188	B+	0.003	395	C-
Uljanovsk	0.148	188	B+	0.002	421	C--
Barnaul	0.148	188	B+	0.002	439	C--
Krasnojarsk	0.148	188	B+	0.003	403	C-
Kemerovo	0.148	188	B+	0.003	398	C-
Vladivostok	0.148	188	B+	0.003	397	C-
T'umen	0.148	188	B+	0.002	429	C--
Cel'abinsk	0.148	188	B+	0.007	357	C+
Chabarovsk	0.148	188	B+	0.004	385	C
Jekaterinburg	0.148	188	B+	0.009	336	C+
Beijing	0.355	59	A+	0.141	23	A++
Tianjin	0.355	59	A+	0.071	59	A+
Shenyang	0.355	59	A+	0.038	133	A--
Dalian	0.355	59	A+	0.033	158	B++
Shanghai	0.355	59	A+	0.189	12	A++
Nanjing	0.355	59	A+	0.046	104	A-
Yangzhou	0.355	59	A+	0.007	354	C+
Suzhou	0.355	59	A+	0.034	151	B++
Hangzhou	0.355	59	A+	0.049	98	A-
Ningbo	0.355	59	A+	0.029	179	B++
Wenzhou	0.355	59	A+	0.014	279	B--
Hefei	0.355	59	A+	0.014	279	B--
Fuzhou	0.355	59	A+	0.015	274	B--

Xiamen	0.355	59	A+	0.021	226	B
Nanchang	0.355	59	A+	0.014	277	B--
Qingdao	0.355	59	A+	0.03	168	B++
Wuhan	0.355	59	A+	0.046	102	A-
Guangzhou	0.355	59	A+	0.1	39	A+
Shenzhen	0.355	59	A+	0.103	36	A+
Dongguan	0.355	59	A+	0.045	111	A-
Chongqing	0.355	59	A+	0.052	87	A
Chengdu	0.355	59	A+	0.031	163	B++
Xi'an	0.355	59	A+	0.024	208	B+
Hongkong	0.055	305	C++	0.307	7	A++
Macao	0.055	305	C++	0.022	220	B
Taipei	0.118	246	B-	0.066	65	A
Kaohsiung city	0.118	246	B-	0.029	171	B++
Hsinchu city	0.118	246	B-	0.008	346	C+
Shijiazhuang	0.355	59	A+	0.015	268	B-
Taiyuan	0.355	59	A+	0.016	261	B-
Huhehaote	0.355	59	A+	0.011	310	C++
Baotou	0.355	59	A+	0.015	271	B--
Changchun	0.355	59	A+	0.025	199	B+
Harbin	0.355	59	A+	0.025	197	B+
Xuzhou	0.355	59	A+	0.013	288	B--
Changzhou	0.355	59	A+	0.02	229	B
Nantong	0.355	59	A+	0.008	344	C+
Wuxi	0.355	59	A+	0.034	156	B++
Jiaxing	0.355	59	A+	0.006	370	C
Shaoxing	0.355	59	A+	0.005	374	C
Taizhou	0.355	59	A+	0.01	330	C+
Wuhu	0.355	59	A+	0.005	373	C
Quanzhou	0.355	59	A+	0.007	356	C+
Jinan	0.355	59	A+	0.029	170	B++
Zibo	0.355	59	A+	0.024	206	B+
Yantai	0.355	59	A+	0.016	260	B-
Weifang	0.355	59	A+	0.008	342	C+
Weihai	0.355	59	A+	0.007	353	C+
Rizhao	0.355	59	A+	0.009	339	C+
Zhengzhou	0.355	59	A+	0.015	266	B-
Changsha	0.355	59	A+	0.019	238	B
Zhuhai	0.355	59	A+	0.013	289	B--
Foshan	0.355	59	A+	0.05	95	A-

Huizhou	0.355	59	A+	0.01	328	C++
Zhongshan	0.355	59	A+	0.018	245	B-
Nanning	0.355	59	A+	0.01	315	C++
Liuzhou	0.355	59	A+	0.007	352	C+
Haikou	0.355	59	A+	0.006	367	C
Kunming	0.355	59	A+	0.017	255	B-
Tainan	0.118	246	B-	0.011	306	C++
Taichung	0.118	246	B-	0.017	251	B-
Keelung	0.118	246	B-	0.006	362	C
Tokyo	0.017	448	C--	1	1	A++
Osaka	0.017	448	C--	0.169	19	A++
Nagoya	0.017	448	C--	0.153	21	A++
Kyoto	0.017	448	C--	0.092	43	A+
Kawasaki	0.017	448	C--	0.073	55	A+
Kobe	0.017	448	C--	0.086	50	A+
Sapporo	0.017	448	C--	0.099	40	A+
Sendai	0.017	448	C--	0.055	78	A
Yokohama	0.017	448	C--	0.188	13	A++
Fukuoka	0.017	448	C--	0.075	54	A+
Hiroshima	0.017	448	C--	0.065	67	A
Okinawa	0.017	448	C--	0.013	293	B--
Kitakyusyu	0.017	448	C--	0.053	84	A
Chichibu	0.017	448	C--	0.06	73	A
Chiba	0.017	448	C--	0.046	108	A-
Takamatsu	0.017	448	C--	0.015	269	B-
Shizuoka	0.017	448	C--	0.043	116	A-
Hamamatsu	0.017	448	C--	0.047	101	A-
Sakai	0.017	448	C--	0.05	93	A-
Akita	0.017	448	C--	0.02	230	B
Okayama	0.017	448	C--	0.037	135	A--
Kanazawa	0.017	448	C--	0.027	188	B+
Seoul	0.068	292	B--	0.302	8	A++
Busan	0.068	292	B--	0.075	53	A+
Ulsan	0.068	292	B--	0.066	66	A
Incheon	0.068	292	B--	0.062	70	A
Gyeongju	0.068	292	B--	0.029	176	B++
Daejeon	0.068	292	B--	0.03	169	B++
Daegu	0.068	292	B--	0.043	117	A-
Pyongyang	0.443	5	A++	0.002	419	C-
Ulan Bator	0.282	124	A--	0.001	468	D++

Singapore	0.037	331	C+	0.187	14	A++
Bangkok	0.206	142	A--	0.097	41	A+
Rayong	0.206	142	A--	0.002	427	C--
Kuala Lumpur	0.153	182	B+	0.019	241	B-
Penang	0.153	182	B+	0.001	446	C--
Labuan	0.153	182	B+	0	493	D+
Malacca	0.153	182	B+	0.001	473	D++
Jakarta	0.259	130	A--	0.05	93	A-
Medan	0.259	130	A--	0.013	285	B--
Bandung	0.259	130	A--	0.013	289	B--
Ho Chi Minh City	0.418	8	A++	0.012	296	B--
Hanoi	0.418	8	A++	0.009	333	C+
Manila	0.355	59	A+	0.006	365	C
Cebu	0.355	59	A+	0.002	423	C--
Phnom Penh	0.471	4	A++	0.001	450	C--
Yangon	1	1	A++	0.002	420	C-
Begawan	0.041	330	C++	0.001	465	D++
Karachi	0.338	116	A-	0.023	215	B
Lahore	0.338	116	A-	0.011	304	C++
Islamabad	0.338	116	A-	0.001	468	D++
Delhi	0.374	12	A++	0.034	149	A--
Mumbai	0.374	12	A++	0.046	107	A-
Calcutta	0.374	12	A++	0.037	134	A--
Bangalore	0.374	12	A++	0.014	278	B--
Ahmedabad	0.374	12	A++	0.009	337	C+
Lucknow	0.374	12	A++	0.003	406	C-
Hyderabad	0.374	12	A++	0.009	333	C+
Jaipur	0.374	12	A++	0.003	395	C-
Chennai	0.374	12	A++	0.011	311	C++
Pune	0.374	12	A++	0.005	372	C
Kanpur	0.374	12	A++	0.004	389	C
Surat	0.374	12	A++	0.004	382	C
Nagpur	0.374	12	A++	0.003	415	C-
Indore	0.374	12	A++	0.003	401	C-
Bhopal	0.374	12	A++	0.004	381	C
Ludhiana	0.374	12	A++	0.003	407	C-
Vadodara	0.374	12	A++	0.003	413	C-
Madurai	0.374	12	A++	0.001	467	D++
Varanasi	0.374	12	A++	0.001	463	D++
Jabalpur	0.374	12	A++	0.001	472	D++

Amritsar	0.374	12	A++	0.001	456	D++
Nasik	0.374	12	A++	0	488	D+
Visakhapatnam	0.374	12	A++	0.002	416	C-
Rajkot	0.374	12	A++	0.001	475	D++
Allahabad	0.374	12	A++	0.001	485	D+
Agra	0.374	12	A++	0.001	468	D++
Asansol	0.374	12	A++	0	490	D+
Faridabad	0.374	12	A++	0.001	450	C--
Patna	0.374	12	A++	0.002	422	C--
Thane	0.374	12	A++	0.002	437	C--
Kalyan	0.374	12	A++	0.003	412	C-
Meerut	0.374	12	A++	0.001	478	D++
Haora	0.374	12	A++	0	487	D+
Pimpri-Chichwad	0.374	12	A++	0.003	410	C-
Cochi	0.374	12	A++	0.001	449	C--
Mysore	0.374	12	A++	0	486	D+
Pondicherry	0.374	12	A++	0.001	455	D++
Ranchi	0.374	12	A++	0.001	473	D++
Trivandrum	0.374	12	A++	0.001	456	D++
Ghaziabad	0.374	12	A++	0.001	456	D++
Coimbatore	0.374	12	A++	0.001	459	D++
Srinagar	0.374	12	A++	0.002	444	C--
Vijayawada	0.374	12	A++	0	497	D+
Dhaka	0.374	12	A++	0.01	323	C++
Columbo	0.308	120	A-	0.002	435	C--
Tel Aviv	0.062	301	C++	0.049	99	A-
Yerushalayim	0.062	301	C++	0.027	183	B+
Ankara	0.09	264	B-	0.045	111	A-
Istanbul	0.09	264	B-	0.144	22	A++
Tehran	0.221	138	A--	0.051	88	A
Yerevan	0.282	124	A--	0.002	435	C--
Baku	0.27	129	A--	0.005	377	C
Baghdad	0.148	188	B+	0.011	313	C++
Manama	0.063	300	C++	0.005	380	C
Doha	0.018	447	C--	0.026	189	B+
Ruwi	0.097	260	B-	0.012	301	C++
Damascus	0.199	145	A--	0.007	358	C+
Beirut	0.043	315	C++	0.017	252	B-
Al Kuwayt	0.009	496	D+	0.021	223	B
Dubai	0.03	413	C-	0.091	45	A+
Amman	0.168	175	B++	0.006	361	C

Riyadh	0.046	312	C++	0.129	27	A++
Sanaa	0.062	301	C++	0.005	376	C
Kabul	0.174	172	B++	0.001	464	D++
Nicosia	0.043	315	C++	0.009	340	C+
Dushanbe	0.308	120	A-	0	499	D+
Alamaty	0.148	188	B+	0.013	286	B--
Tashkent	0.374	12	A++	0.003	409	C-
Washington	0.031	356	C+	0.058	74	A
New York	0.031	356	C+	0.859	3	A++
Los Angeles	0.031	356	C+	0.308	6	A++
Chicago	0.031	356	C+	0.222	11	A++
Boston	0.031	356	C+	0.054	80	A
Philadelphia	0.031	356	C+	0.119	28	A++
Seattle	0.031	356	C+	0.049	96	A-
Detroit	0.031	356	C+	0.067	62	A
Dallas	0.031	356	C+	0.105	35	A+
Houston	0.031	356	C+	0.169	18	A++
Phoenix	0.031	356	C+	0.101	38	A+
Pittsburgh	0.031	356	C+	0.018	243	B-
San Francisco	0.031	356	C+	0.067	63	A
Denver	0.031	356	C+	0.048	100	A-
San Jose	0.031	356	C+	0.083	52	A+
San Diego	0.031	356	C+	0.105	34	A+
Cleveland	0.031	356	C+	0.032	161	B++
Columbus	0.031	356	C+	0.054	81	A
Cincinnati	0.031	356	C+	0.023	216	B
Las Vegas	0.031	356	C+	0.044	115	A-
Atlanta	0.031	356	C+	0.035	142	A--
Austin	0.031	356	C+	0.055	77	A
Baltimore	0.031	356	C+	0.051	89	A
Charlotte	0.031	356	C+	0.05	92	A-
Memphis	0.031	356	C+	0.046	103	A-
Miami	0.031	356	C+	0.025	200	B+
Milwaukee	0.031	356	C+	0.042	122	A--
Minneapolis	0.031	356	C+	0.031	164	B++
Nashville	0.031	356	C+	0.042	120	A-
Portland	0.031	356	C+	0.038	130	A--
Sacramento	0.031	356	C+	0.035	147	A--
San Antonio	0.031	356	C+	0.087	49	A+
Saint Louis	0.031	356	C+	0.023	210	B+
Indianapolis	0.031	356	C+	0.058	75	A

Albuquerque	0.031	356	C+	0.034	154	B++
Buffalo	0.031	356	C+	0.019	236	B
Honolulu	0.031	356	C+	0.027	184	B+
Kansas City	0.031	356	C+	0.036	141	A--
New Orleans	0.031	356	C+	0.04	129	A--
Palo Alto	0.031	356	C+	0.004	391	C-
Tampa	0.031	356	C+	0.023	212	B
Tulsa	0.031	356	C+	0.026	194	B+
Arlington	0.031	356	C+	0.027	187	B+
El Paso	0.031	356	C+	0.027	186	B+
Fort Worth	0.031	356	C+	0.046	105	A-
Fresno	0.031	356	C+	0.025	203	B+
Jacksonville	0.031	356	C+	0.053	85	A
Long Beach	0.031	356	C+	0.035	145	A--
Mesa	0.031	356	C+	0.029	178	B++
Oakland (US)	0.031	356	C+	0.041	128	A--
Oklahoma City	0.031	356	C+	0.034	152	B++
Tucson	0.031	356	C+	0.029	173	B++
Virginia Beach	0.031	356	C+	0.029	175	B++
Wilmington	0.031	356	C+	0.019	239	B
Omaha	0.031	356	C+	0.031	165	B++
Wichita	0.031	356	C+	0.035	144	A--
Raleigh	0.031	356	C+	0.072	57	A+
Ottawa	0.043	315	C++	0.061	71	A
Toronto	0.043	315	C++	0.175	16	A++
Vancouver	0.043	315	C++	0.033	157	B++
Montreal	0.043	315	C++	0.113	30	A++
Calgary	0.043	315	C++	0.073	56	A+
Winnipeg	0.043	315	C++	0.046	109	A-
Edmonton	0.043	315	C++	0.054	83	A
Quebec	0.043	315	C++	0.033	159	B++
Halifax	0.043	315	C++	0.018	247	B-
Hamilton(CA)	0.043	315	C++	0.041	125	A--
Regina	0.043	315	C++	0.013	287	B--
Saskatoon	0.043	315	C++	0.009	338	C+
Victoria(CA)	0.043	315	C++	0.018	246	B-
Mexico City	0.081	269	B-	0.376	5	A++
Monterrey	0.081	269	B-	0.087	48	A+
Guadalajara	0.081	269	B-	0.062	69	A
Puebla	0.081	269	B-	0.034	148	A--
Tijuana	0.081	269	B-	0.024	205	B+

Leon	0.081	269	B-	0.025	197	B+
Queretaro	0.081	269	B-	0.018	244	B-
Acapulco	0.081	269	B-	0.01	323	C++
Chihuahua	0.081	269	B-	0.022	221	B
Toluca	0.081	269	B-	0.026	190	B+
Ciudad Juarez	0.081	269	B-	0.026	193	B+
Torreon	0.081	269	B-	0.023	209	B+
San Luis Potosi	0.081	269	B-	0.017	249	B-
Merida	0.081	269	B-	0.016	257	B-
Aguascalientes	0.081	269	B-	0.016	265	B-
Tampico	0.081	269	B-	0.016	256	B-
Cuernavaca	0.081	269	B-	0.013	294	B--
Morelia	0.081	269	B-	0.015	273	B--
Saltillo	0.081	269	B-	0.019	233	B
Veracruz	0.081	269	B-	0.016	263	B-
Panama City	0.075	290	B--	0.005	374	C
Managua	0.249	135	A--	0.003	414	C-
Tegucigalpa	0.179	171	B++	0.003	399	C-
San Juan	0.044	313	C++	0.103	37	A+
Guatemala City	0.136	240	B-	0.006	368	C
Kingston	0.072	291	B--	0.006	371	C
Port-au-Prince	0.186	152	B++	0.002	424	C--
Havana	0.049	311	C++	0.043	118	A-
Santo Domingo	0.09	264	B-	0.026	192	B+
Nassau	0.037	331	C+	0.008	349	C+
Sao Paulo	0.186	152	B++	0.117	29	A++
Rio de Janeiro	0.186	152	B++	0.054	82	A
Brazilia	0.186	152	B++	0.032	162	B++
Recife	0.186	152	B++	0.01	321	C++
San Salvador	0.186	152	B++	0.01	323	C++
Belo Horizonte	0.186	152	B++	0.018	248	B-
Manaus	0.186	152	B++	0.02	231	B
Curitiba	0.186	152	B++	0.014	281	B--
Betim	0.186	152	B++	0.011	314	C++
Duque de Caxias	0.186	152	B++	0.013	292	B--
Campinas	0.186	152	B++	0.01	316	C++
Guarulhos	0.186	152	B++	0.012	297	B--
Sao Bernardo do Camno	0.186	152	B++	0.012	303	C++
Sao Jose dos Campos	0.186	152	B++	0.012	299	B--
Porto Alegre	0.052	308	C++	0.006	359	C

Buenos Aires	0.221	138	A--	0.068	61	A
Cordoba	0.221	138	A--	0.019	242	B-
Santiago	0.124	241	B-	0.083	51	A+
Montevideo	0.259	130	A--	0.017	250	B-
Asuncion	0.282	124	A--	0.002	444	C--
Caracas	0.053	307	C++	0.028	182	B+
Bogota	0.249	135	A--	0.041	127	A--
Medellin	0.249	135	A--	0.012	298	B--
Georgetown	0.374	12	A++	0	495	D+
Lima	0.158	180	B+	0.066	64	A
La Paz	0.186	152	B++	0.004	392	C-
Guayaquil	0.118	246	B-	0.014	281	B--
Quito	0.118	246	B-	0.01	317	C++
Melbourne	0.036	333	C+	0.23	10	A++
Sydney	0.036	333	C+	0.293	9	A++
Brisbane	0.036	333	C+	0.111	32	A+
Adelaide	0.036	333	C+	0.061	72	A
Canberra	0.036	333	C+	0.026	191	B+
Hobart	0.036	333	C+	0.016	264	B-
Perth	0.036	333	C+	0.091	44	A+
Wellington	0.033	352	C+	0.035	145	A--
Auckland(NZ)	0.033	352	C+	0.071	58	A+
Christchurch	0.033	352	C+	0.019	234	B
Hamilton(NZ)	0.033	352	C+	0.008	347	C+
Port Moresby	0.259	130	A--	0	498	D+
Cairo	0.282	124	A--	0.024	204	B+
Alexandria	0.282	124	A--	0.011	308	C++
Algiers	0.186	152	B++	0.011	307	C++
Casablanca	0.186	152	B++	0.009	332	C+
Rabat	0.186	152	B++	0.002	431	C--
Tunis	0.192	151	B++	0.004	383	C
Tripoli	0.114	255	B-	0.015	271	B--
Addis Ababa	0.537	3	A++	0.002	441	C--
Nairobi	0.153	182	B+	0.006	369	C
Djibouti	0.153	182	B+	0	491	D+
Victoria(SC)	0.068	292	B--	0	496	D+
Kampala	0.418	8	A++	0.001	480	D++
Dar Es Salaam	0.14	239	B	0.004	388	C
Johannesburg	0.199	145	A--	0.042	123	A--
Cape Town	0.199	145	A--	0.031	167	B++
Pretoria	0.199	145	A--	0.021	226	B

Durban	0.199	145	A--	0.036	140	A--
Maputo	0.374	12	A++	0.001	484	D+
Luanda	0.097	260	B-	0.01	318	C++
Lusaka	0.124	241	B-	0.003	407	C-
Blantyre	0.308	120	A-	0	493	D+
Port Louis	0.163	177	B++	0.001	481	D+
Windhoek	0.213	141	A--	0.001	482	D+
Gaborone	0.114	255	B-	0.002	417	C-
Harare	0.735	2	A++	0.002	439	C--
Conakry	0.395	11	A++	0.002	438	C--
Dakar	0.174	172	B++	0.004	386	C
Lome	0.322	119	A-	0	492	D+
Freetown	0.355	59	A+	0.001	483	D+
Abijan	0.103	259	B-	0.011	309	C++
Accra	0.443	5	A++	0.002	432	C--
Lagos	0.158	180	B+	0.022	219	B
Douala	0.163	177	B++	0.006	364	C
Yaounde	0.163	177	B++	0.005	379	C
Kinshasa	0.443	5	A++	0.002	434	C--
Brazzaville	0.077	289	B--	0.029	177	B++

Table 16.2 Score, Rank and Level of Comprehensive Competitiveness of Global 500 Cities

City	GDP Per Capita			GDP Per Square Kilometre		
	Score	Rank	Level	Score	Rank	Level
London	0.924	6	A++	0.432	12	A++
Glasgow	0.814	19	A++	0.263	38	A+
Liverpool	0.544	131	A--	0.074	180	B++
Manchester	0.551	128	A--	0.481	7	A++
Edinburgh	0.95	4	A++	0.163	92	A-
Leeds	0.688	63	A	0.179	76	A
Bristol	0.782	26	A++	0.385	19	A++
Nottingham	0.82	17	A++	0.467	9	A++
Belfast	0.895	8	A++	0.212	61	A
Southampton	0.668	75	A	0.301	32	A+
Sheffield	0.527	137	A--	0.073	184	B+
Plymouth	0.497	154	B++	0.11	143	A--
Birmingham	0.6	105	A-	0.222	58	A+
Chester	0.629	94	A-	0.016	312	C++
Cardiff	0.686	64	A	0.111	142	A--
Aberdeen	0.745	37	A+	0.089	169	B++
Norwich	0.471	166	B++	0.151	100	A-
Newcastle	0.563	123	A--	0.132	116	A-
Paris	0.857	12	A++	0.3	34	A+
Lyon	0.552	127	A--	0.525	5	A++
Lille	0.433	172	B++	0.274	36	A+
Strasbourg	0.516	142	A--	0.175	79	A
Toulouse	0.492	159	B++	0.177	78	A
Nice	0.518	140	A--	0.245	51	A+
Marseille	0.518	140	A--	0.173	82	A
Bordeaux	0.495	157	B++	0.226	55	A+
Dublin	0.762	28	A++	0.094	163	B++
Amsterdam	0.685	65	A	0.227	54	A+
Rotterdam	0.669	74	A	0.122	126	A--
The Hague	0.712	44	A+	0.334	26	A++

Utrecht	0.508	147	A--	0.135	112	A-
Brussels	0.71	46	A+	0.059	209	B+
Zurich	0.862	10	A++	0.335	25	A++
Geneva	1	1	A++	0.985	2	A++
Bern	0.528	136	A--	0.127	119	A-
Basel	0.881	9	A++	0.383	21	A++
Vienna	0.762	29	A++	0.295	35	A+
Berlin	0.482	162	B++	0.179	75	A
Frankfurt	0.644	87	A	0.165	90	A
Munich	0.645	84	A	0.261	39	A+
Hamburg	0.6	104	A-	0.135	111	A-
Nuremberg	0.684	67	A	0.179	77	A
Cologne	0.511	145	A--	0.126	122	A--
Bonn	0.502	149	A--	0.109	144	A--
Stuttgart	0.608	99	A-	0.169	86	A
Dresden	0.426	176	B++	0.063	204	B+
Dortmund	0.579	112	A-	0.118	132	A--
Hannover	0.513	144	A--	0.127	120	A-
Dusseldorf	0.572	115	A-	0.149	103	A-
Leipzig	0.446	169	B++	0.074	183	B+
Essen	0.543	132	A--	0.148	104	A-
Mainz	0.593	108	A-	0.095	161	B++
Mannheim	0.602	103	A-	0.132	117	A-
Bremen	0.438	171	B++	0.087	171	B++
Oslo	0.924	7	A++	0.104	146	A--
Bergen	0.816	18	A++	0.041	240	B
Stockholm	0.842	16	A++	0.3	33	A+
Gothenburg	0.57	116	A-	0.058	211	B
Malmö	0.664	77	A	0.111	140	A--
Helsinki	0.86	11	A++	0.249	49	A+
Copenhagen	0.813	20	A++	0.045	231	B
Århus	0.675	72	A	0.041	238	B
Reykjavik	0.782	27	A++	0.032	253	B-
Athens	0.397	184	B+	0.069	194	B+
Rome	0.564	121	A--	0.094	164	B++
Milan	0.635	91	A-	0.428	13	A++
Turin	0.43	174	B++	0.341	24	A++
Naples	0.232	207	B+	0.194	69	A
Venice	0.477	163	B++	0.03	260	B-
Bologna	0.567	118	A-	0.146	105	A-
Genoa	0.432	173	B++	0.12	127	A--
Trieste	0.469	167	B++	0.112	138	A--
Palermo	0.262	200	B+	0.346	22	A++

Madrid	0.5	151	B++	0.254	44	A+
Barcelona	0.319	191	B+	0.05	224	B
Valencia	0.484	161	B++	0.003	444	C--
Lisbon	0.413	181	B+	0.261	40	A+
Porto	0.248	203	B+	0.007	402	C-
Sarajevo	0.055	344	C+	0.015	317	C++
Belgrade	0.079	294	B--	0.025	278	B--
Zagreb	0.223	209	B+	0.024	281	B--
Ljubljana	0.421	178	B++	0.064	202	B+
Bucharest	0.103	269	B-	0.088	170	B++
Sofia	0.085	291	B--	0.056	216	B
Bratislava	0.24	205	B+	0.027	272	B--
Riga	0.179	228	B	0.043	236	B
Warsaw	0.234	206	B+	0.075	178	B++
Krakow	0.168	232	B	0.039	247	B-
Prague	0.303	194	B+	0.07	190	B+
Budapest	0.267	197	B+	0.085	172	B++
Tallinn	0.266	199	B+	0.066	198	B+
Vilnius	0.216	212	B	0.03	265	B-
Minsk	0.037	384	C	0.027	271	B--
Kiev	0.026	411	C-	0.01	375	C
Moscow	0.12	254	B-	0.116	136	A--
Saint Petersburg	0.087	289	B--	0.067	196	B+
Novosibirsk	0.052	357	C+	0.015	318	C++
Kazan	0.019	427	C--	0.006	418	C-
Belgorod	0.056	339	C+	0.013	331	C+
Omsk	0.06	330	C+	0.012	341	C+
Bryansk	0.027	408	C-	0.007	407	C-
Vladimir	0.033	395	C-	0.02	297	B--
Voronez	0.032	397	C-	0.005	431	C--
Ivanovo	0.022	421	C--	0.01	373	C
Kaluga	0.041	373	C	0.011	346	C+
Kursk	0.041	374	C	0.009	381	C
Lipeck	0.072	307	C++	0.012	336	C+
Or'ol	0.039	380	C	0.013	327	C++
Ryazan	0.04	378	C	0.011	349	C+
Smolensk	0.038	381	C	0.006	409	C-
Tambov	0.031	399	C-	0.011	352	C+
Tver	0.037	383	C	0.011	355	C+
Tula	0.03	402	C-	0.01	361	C
Jaroslavl	0.056	338	C+	0.017	304	C++
Petrozavodsk	0.063	324	C++	0.015	316	C++
Archangelsk	0.077	301	C++	0.009	383	C

Kaliningrad	0.049	366	C	0.011	351	C+
Murmansk	0.096	279	B--	0.021	292	B--
Machackala	0.019	427	C--	0.002	457	D++
Groznyj	0.009	469	D++	0	499	D+
Krasnojarsk	0.041	376	C	0.004	442	C--
Stavropol	0.03	403	C-	0.005	435	C--
AstraChan	0.04	379	C	0.004	439	C--
Rostov-na-Donu	0.034	392	C-	0.01	371	C
Volgograd	0.044	371	C	0.008	395	C-
Ufa	0.054	347	C+	0.007	404	C-
Izhevsk	0.052	356	C+	0.01	359	C
Niznij Novgorod	0.049	363	C	0.002	470	D++
Kirov	0.03	401	C-	0.002	464	D++
Orenburg	0.057	335	C+	0.01	357	C+
Penza	0.028	406	C-	0.005	423	C--
Perm	0.071	308	C++	0.009	385	C
Samara	0.073	304	C++	0.017	305	C++
Saratov	0.036	386	C	0.008	392	C-
Uljanovsk	0.034	391	C-	0.007	397	C-
Barnaul	0.026	414	C-	0.002	467	D++
Krasnojarsk	0.041	376	C	0.004	442	C--
Kemerovo	0.06	330	C+	0.011	343	C+
Vladivostok	0.053	349	C+	0.006	416	C-
T'umen	0.038	382	C	0.011	353	C+
Cel'abinsk	0.057	337	C+	0.013	332	C+
Chabarovsk	0.066	318	C++	0.01	374	C
Jekaterinburg	0.063	323	C++	0.008	388	C
Beijing	0.098	278	B--	0.01	356	C+
Tianjin	0.077	299	B--	0.009	387	C
Shenyang	0.065	320	C++	0.01	372	C
Dalian	0.094	281	B--	0.013	334	C+
Shanghai	0.106	266	B-	0.026	275	B--
Nanjing	0.068	312	C++	0.009	384	C
Yangzhou	0.056	340	C+	0.007	398	C-
Suzhou	0.101	272	B--	0.019	300	C++
Hangzhou	0.085	290	B--	0.014	319	C++
Ningbo	0.091	284	B--	0.01	363	C
Wenzhou	0.049	364	C	0.011	350	C+
Hefei	0.069	310	C++	0.021	287	B--
Fuzhou	0.068	311	C++	0.013	330	C+

Xiamen	0.1	275	B--	0.012	338	C+
Nanchang	0.061	328	C++	0.021	288	B--
Qingdao	0.089	288	B--	0.02	296	B--
Wuhan	0.05	362	C	0.005	428	C--
Guangzhou	0.113	264	B-	0.024	280	B--
Shenzhen	0.114	262	B-	0.048	227	B
Dongguan	0.074	303	C++	0.017	306	C++
Chongqing	0.043	372	C	0.007	408	C-
Chengdu	0.053	354	C+	0.013	329	C+
Xi'an	0.037	385	C	0.006	411	C-
Hongkong	0.403	182	B+	0.252	46	A+
Macao	0.421	179	B++	0.75	4	A++
Taipei	0.224	208	B+	0.223	57	A+
Kaohsiung city	0.17	230	B	0.175	80	A
Hsinchu city	0.183	224	B	0.07	192	B+
Shijiazhuang	0.055	342	C+	0.03	262	B-
Taiyuan	0.053	353	C+	0.01	367	C
Huhehaote	0.078	296	B--	0.005	430	C--
Baotou	0.09	285	B--	0.005	436	C--
Changchun	0.063	322	C++	0.006	410	C-
Harbin	0.054	348	C+	0.005	424	C--
Xuzhou	0.059	332	C+	0.01	360	C
Changzhou	0.067	315	C++	0.01	369	C
Nantong	0.077	300	B--	0.021	291	B--
Wuxi	0.105	267	B-	0.019	299	C++
Jiaxing	0.053	355	C+	0.006	415	C-
Shaoxing	0.065	319	C++	0.014	325	C++
Taizhou	0.05	360	C	0.006	414	C-
Wuhu	0.067	317	C++	0.022	285	B--
Quanzhou	0.055	343	C+	0.012	337	C+
Jinan	0.07	309	C++	0.008	390	C-
Zibo	0.076	302	C++	0.007	400	C-
Yantai	0.081	292	B--	0.005	421	C--
Weifang	0.051	358	C+	0.003	446	C--
Weihai	0.101	270	B-	0.009	382	C
Rizhao	0.041	375	C	0.001	472	D++
Zhengzhou	0.047	367	C	0.014	323	C++
Changsha	0.073	305	C++	0.031	256	B-
Zhuhai	0.105	268	B-	0.007	405	C-
Foshan	0.09	286	B--	0.012	340	C+
Huizhou	0.053	352	C+	0.003	445	C--
Zhongshan	0.077	298	B--	0.009	379	C
Nanning	0.035	389	C	0.001	473	D++

Liuzhou	0.053	351	C+	0.01	362	C
Haikou	0.036	387	C	0.002	459	D++
Kunming	0.053	350	C+	0.004	441	C--
Tainan	0.132	249	B-	0.059	210	B+
Taichung	0.144	243	B-	0.095	159	B++
Keelung	0.146	241	B	0.045	232	B
Tokyo	0.741	39	A+	0.416	15	A++
Osaka	0.598	106	A-	0.081	176	B++
Nagoya	0.645	85	A	0.427	14	A++
Kyoto	0.583	110	A-	0.101	152	B++
Kawasaki	0.514	143	A--	0.461	10	A++
Kobe	0.526	139	A--	0.142	109	A-
Sapporo	0.493	158	B++	0.08	177	B++
Sendai	0.499	152	B++	0.063	203	B+
Yokohama	0.49	160	B++	0.394	17	A++
Fukuoka	0.497	155	B++	0.2	68	A
Hiroshima	0.526	138	A--	0.066	200	B+
Okinawa	0.391	185	B+	0.305	29	A++
Kitakyusyu	0.498	153	B++	0.099	155	B++
Chichibu	0.474	165	B++	0.25	47	A+
Chiba	0.468	168	B++	0.155	97	A-
Takamatsu	0.42	180	B++	0.037	249	B-
Shizuoka	0.58	111	A-	0.029	267	B-
Hamamatsu	0.547	129	A--	0.028	269	B-
Sakai	0.56	126	A--	0.303	31	A+
Akita	0.565	120	A-	0.02	293	B--
Okayama	0.531	135	A--	0.052	222	B
Kanazawa	0.569	117	A-	0.052	221	B
Seoul	0.271	196	B+	0.453	11	A++
Busan	0.19	221	B	0.09	168	B++
Ulsan	0.564	122	A--	0.057	212	B
Incheon	0.217	211	B+	0.056	213	B
Gyeongju	0.19	220	B	0.053	220	B
Daejeon	0.191	219	B	0.051	223	B
Daegu	0.158	236	B	0.045	234	B
Pyongyang	0.004	487	D+	0.001	482	D+
Ulan Bator	0.01	458	D++	0	497	D+
Singapore	0.4	183	B+	0.243	52	A+
Bangkok	0.134	248	B-	0.056	214	B
Rayong	0.176	229	B	0.003	452	D++
Kuala Lumpur	0.113	263	B-	0.07	191	B+

Penang	0.078	295	B--	0.005	420	C--
Labuan	0.054	346	C+	0.005	432	C--
Malacca	0.061	327	C++	0.002	458	D++
Jakarta	0.051	359	C+	0.069	195	B+
Medan	0.06	329	C++	0.047	228	B
Bandung	0.05	361	C	0.072	185	B+
Ho Chi Minh City	0.017	431	C--	0.006	419	C-
Hanoi	0.025	416	C-	0.009	380	C
Manila	0.034	390	C	0.149	102	A-
Cebu	0.026	412	C-	0.008	396	C-
Phnom Penh	0.01	457	D++	0.004	440	C--
Yangon	0.002	493	D+	0.003	450	C--
Begawan	0.385	186	B+	0.017	307	C++
Karachi	0.015	438	C--	0.006	412	C-
Lahore	0.014	443	C--	0.015	314	C++
Islamabad	0.012	449	C--	0.001	480	D++
Delhi	0.022	422	C--	0.021	290	B--
Mumbai	0.023	418	C-	0.07	193	B+
Calcutta	0.021	423	C--	0.023	284	B--
Bangalore	0.018	430	C--	0.018	303	C++
Ahmedabad	0.014	444	C--	0.044	235	B
Lucknow	0.009	470	D++	0.001	479	D++
Hyderabad	0.011	454	D++	0.014	324	C++
Jaipur	0.01	462	D++	0.016	311	C++
Chennai	0.011	453	D++	0.055	217	B
Pune	0.009	465	D++	0.007	399	C-
Kanpur	0.009	467	D++	0.002	462	D++
Surat	0.01	456	D++	0.013	333	C+
Nagpur	0.008	472	D++	0.012	339	C+
Indore	0.014	441	C--	0.001	489	D+
Bhopal	0.023	419	C-	0.014	326	C++
Ludhiana	0.016	437	C--	0.002	469	D++
Vadodara	0.013	448	C--	0.018	302	C++
Madurai	0.005	481	D+	0.01	366	C
Varanasi	0.006	477	D++	0.001	490	D+
Jabalpur	0.006	479	D++	0	495	D+
Amritsar	0.009	468	D++	0.001	488	D+
Nasik	0.002	495	D+	0.002	460	D++
Visakhapatnam	0.013	446	C--	0.001	494	D+
Rajkot	0.006	478	D++	0	496	D+
Allahabad	0.003	489	D+	0.001	493	D+
Agra	0.004	482	D+	0.001	492	D+
Asansol	0.002	494	D+	0.001	491	D+

Faridabad	0.01	461	D++	0.001	475	D++
Patna	0.009	464	D++	0.002	465	D++
Thane	0.008	471	D++	0.001	483	D+
Kalyan	0.016	436	C--	0.005	422	C--
Meerut	0.004	484	D+	0.001	485	D+
Haora	0.003	490	D+	0.002	468	D++
Pimpri-Chichwad	0.017	432	C--	0.016	309	C++
Cochi	0.02	426	C--	0.016	313	C++
Mysore	0.004	486	D+	0.005	425	C--
Pondicherry	0.01	459	D++	0.003	453	D++
Ranchi	0.007	475	D++	0.009	377	C
Trivandrum	0.011	451	D++	0.01	376	C
Ghaziabad	0.006	476	D++	0.031	258	B-
Coimbatore	0.009	463	D++	0.003	451	D++
Srinagar	0.014	445	C--	0.031	259	B-
Vijayawada	0.001	499	D+	0.001	487	D+
Dhaka	0.013	447	C--	0.026	276	B--
Columbo	0.026	410	C-	0.022	286	B--
Tel Aviv	0.366	189	B+	0.26	41	A+
Yerushalayim	0.358	190	B+	0.039	246	B-
Ankara	0.115	260	B-	0.016	310	C++
Istanbul	0.111	265	B-	0.072	186	B+
Tehran	0.058	333	C+	0.031	257	B-
Yerevan	0.014	442	C--	0.008	389	C-
Baku	0.022	420	C-	0.002	463	D++
Baghdad	0.045	369	C	0.049	225	B
Manama	0.318	192	B+	0.162	93	A-
Doha	0.696	58	A+	0.184	74	A
Ruwi	0.196	216	B	0.003	448	C--
Damascus	0.035	388	C	0.011	348	C+
Beirut	0.132	250	B-	0.155	95	A-
Al Kuwayt	0.438	170	B++	0.098	156	B++
Dubai	0.652	80	A	0.064	201	B+
Amman	0.045	370	C	0.009	386	C
Riyadh	0.294	195	B+	0.118	133	A--
Sanaa	0.017	435	C--	0.021	289	B--
Kabul	0.002	496	D+	0.001	477	D++
Nicosia	0.373	187	B+	0.009	378	C
Dushanbe	0.002	498	D+	0.003	449	C--
Alamaty	0.099	276	B--	0.041	239	B
Tashkent	0.012	450	C--	0.005	434	C--
Washington	0.934	5	A++	0.326	27	A++
New York	0.976	2	A++	1	1	A++

Los Angeles	0.746	35	A+	0.232	53	A+
Chicago	0.729	41	A+	0.342	23	A++
Boston	0.852	13	A++	0.406	16	A++
Philadelphia	0.76	31	A+	0.307	28	A++
Seattle	0.795	23	A++	0.206	63	A
Detroit	0.708	48	A+	0.174	81	A
Dallas	0.804	21	A++	0.111	141	A--
Houston	0.744	38	A+	0.107	145	A--
Phoenix	0.644	88	A	0.095	162	B++
Pittsburgh	0.544	130	A--	0.118	134	A--
San Francisco	0.844	15	A++	0.507	6	A++
Denver	0.803	22	A++	0.158	94	A-
San Jose	0.845	14	A++	0.172	83	A
San Diego	0.784	25	A++	0.184	73	A
Cleveland	0.667	76	A	0.143	107	A-
Columbus	0.693	60	A+	0.102	151	B++
Cincinnati	0.643	89	A	0.104	147	A--
Las Vegas	0.756	32	A+	0.186	72	A
Atlanta	0.696	57	A+	0.095	160	B++
Austin	0.745	36	A+	0.084	174	B++
Baltimore	0.749	34	A+	0.223	56	A+
Charlotte	0.761	30	A++	0.116	135	A--
Memphis	0.65	81	A	0.062	206	B+
Miami	0.603	102	A-	0.256	43	A+
Milwaukee	0.68	68	A	0.154	98	A-
Minneapolis	0.792	24	A++	0.201	66	A
Nashville	0.694	59	A+	0.031	255	B-
Portland	0.676	71	A	0.119	130	A--
Sacramento	0.723	43	A+	0.126	121	A--
San Antonio	0.644	86	A	0.101	154	B++
Saint Louis	0.626	95	A-	0.135	110	A-
Indianapolis	0.69	61	A	0.066	197	B+
Albuquerque	0.699	54	A+	0.093	165	B++
Buffalo	0.646	83	A	0.169	87	A
Honolulu	0.684	66	A	0.384	20	A++
Kansas City	0.678	70	A	0.04	242	B-
New Orleans	0.704	51	A+	0.04	241	B-
Palo Alto	0.657	78	A	0.06	208	B+
Tampa	0.671	73	A	0.074	181	B+
Tulsa	0.63	93	A-	0.049	226	B
Arlington	0.696	55	A+	0.096	157	B++
El Paso	0.427	175	B++	0.039	245	B-

Fort Worth	0.696	55	A+	0.056	215	B
Fresno	0.5	150	A--	0.084	173	B++
Jacksonville	0.633	92	A-	0.025	279	B--
Long Beach	0.69	62	A	0.245	50	A+
Mesa	0.61	98	A-	0.081	175	B++
Oakland (US)	0.967	3	A++	0.257	42	A+
Oklahoma City	0.596	107	A-	0.02	298	B--
Tucson	0.533	134	A--	0.053	219	B
Virginia Beach	0.623	96	A-	0.041	237	B
Wilmington	0.561	125	A--	0.392	18	A++
Omaha	0.708	47	A+	0.095	158	B++
Wichita	0.562	124	A--	0.062	205	B+
Raleigh	0.706	49	A+	0.188	70	A
Ottawa	0.712	45	A+	0.02	295	B--
Toronto	0.652	79	A	0.252	45	A+
Vancouver	0.539	133	A--	0.265	37	A+
Montreal	0.649	82	A	0.206	64	A
Calgary	0.704	50	A+	0.091	166	B++
Winnipeg	0.678	69	A	0.09	167	B++
Edmonton	0.7	53	A+	0.072	187	B+
Quebec	0.623	97	A-	0.066	199	B+
Halifax	0.605	100	A-	0.171	85	A
Hamilton(CA)	0.604	101	A-	0.033	252	B-
Regina	0.702	52	A+	0.103	150	A--
Saskatoon	0.423	177	B++	0.061	207	B+
Victoria(CA)	0.567	119	A-	0.878	3	A++
Mexico City	0.18	227	B	0.214	60	A+
Monterrey	0.22	210	B+	0.219	59	A+
Guadalajara	0.14	245	B-	0.143	108	A-
Puebla	0.15	240	B	0.134	114	A-
Tijuana	0.15	239	B	0.126	124	A--
Leon	0.161	234	B	0.187	71	A
Queretaro	0.187	223	B	0.168	88	A
Acapulco	0.116	256	B-	0.113	137	A--
Chihuahua	0.256	201	B+	0.201	67	A
Toluca	0.15	238	B	0.122	125	A--
Ciudad Juarez	0.181	226	B	0.152	99	A-
Torreón	0.197	215	B	0.163	91	A-
San Luis Potosi	0.166	233	B	0.15	101	A-
Merida	0.169	231	B	0.133	115	A-
Aguascalientes	0.181	225	B	0.172	84	A
Tampico	0.189	222	B	0.155	96	A-

Cuernavaca	0.152	237	B	0.126	123	A--
Morelia	0.193	218	B	0.166	89	A
Saltillo	0.251	202	B+	0.208	62	A
Veracruz	0.214	213	B	0.205	65	A
Panama City	0.101	273	B--	0.045	233	B
Managua	0.026	413	C-	0.005	433	C--
Tegucigalpa	0.032	398	C-	0.004	438	C--
San Juan	0.366	188	B+	0.469	8	A++
Guatemala City	0.057	336	C+	0.01	368	C
Kingston	0.077	297	B--	0.25	48	A+
Port-au-Prince	0.015	440	C--	0.018	301	C++
Havana	0.14	246	B-	0.053	218	B
Santo Domingo	0.122	253	B-	0.12	129	A--
Nassau	0.313	193	B+	0.005	427	C--
Sao Paulo	0.098	277	B--	0.071	188	B+
Rio de Janeiro	0.08	293	B--	0.039	244	B-
Brazilia	0.127	252	B-	0.005	429	C--
Recife	0.062	326	C++	0.045	230	B
San Salvador	0.034	393	C-	0.017	308	C++
Belo Horizonte	0.068	313	C++	0.046	229	B
Manaus	0.114	261	B-	0.002	471	D++
Curitiba	0.072	306	C++	0.01	364	C
Betim	0.267	198	B+	0.028	268	B-
Duque de Caxias	0.145	242	B-	0.026	277	B--
Campinas	0.094	282	B--	0.012	335	C+
Guarulhos	0.095	280	B--	0.036	250	B-
Sao Bernardo do Campo	0.14	247	B-	0.026	274	B--
Sao Jose dos Campos	0.194	217	B	0.01	365	C
Porto Alegre	0.248	203	B+	0.007	402	C-
Buenos Aires	0.208	214	B	0.305	30	A++
Cordoba	0.131	251	B-	0.071	189	B+
Santiago	0.117	255	B-	0.118	131	A--
Montevideo	0.116	257	B-	0.029	266	B-
Asuncion	0.03	404	C-	0.014	322	C++
Caracas	0.141	244	B-	0.013	328	C++
Bogota	0.047	368	C	0.024	282	B--
Medellin	0.055	341	C+	0.03	263	B-
Georgetown	0.017	434	C--	0.011	345	C+
Lima	0.067	314	C++	0.135	113	A-

La Paz	0.011	455	D++	0.026	273	B--
Guayaquil	0.057	334	C+	0.01	358	C+
Quito	0.063	325	C++	0.03	264	B-
Melbourne	0.59	109	A-	0.101	153	B++
Sydney	0.643	90	A	0.111	139	A--
Brisbane	0.578	113	A-	0.074	182	B+
Adelaide	0.504	148	A--	0.03	261	B-
Canberra	0.751	33	A+	0.01	370	C
Hobart	0.735	40	A+	0.146	106	A-
Perth	0.576	114	A-	0.015	315	C++
Wellington	0.729	42	A+	0.12	128	A--
Auckland(NZ)	0.509	146	A--	0.129	118	A-
Christchurch	0.495	156	B++	0.039	243	B-
Hamilton(NZ)	0.474	164	B++	0.008	394	C-
Port Moresby	0.009	466	D++	0.001	474	D++
Cairo	0.027	407	C-	0.103	148	A--
Alexandria	0.025	415	C-	0.103	149	A--
Algiers	0.067	316	C++	0.038	248	B-
Casablanca	0.027	409	C-	0.005	426	C--
Rabat	0.03	400	C-	0.001	484	D+
Tunis	0.054	345	C+	0.003	454	D++
Tripoli	0.116	258	B-	0.034	251	B-
Addis Ababa	0.002	497	D+	0.003	447	C--
Nairobi	0.018	429	C--	0.008	391	C-
Djibouti	0.008	473	D++	0	500	D+
Victoria(SC)	0.161	235	B	0.001	486	D+
Kampala	0.004	483	D+	0.004	437	C--
Dar Es Salaam	0.011	452	D++	0.003	455	D++
Johannesburg	0.1	274	B--	0.023	283	B--
Cape Town	0.091	283	B--	0.011	344	C+
Pretoria	0.089	287	B--	0.012	342	C+
Durban	0.101	271	B-	0.014	320	C++
Maputo	0.004	485	D+	0.002	456	D++
Luanda	0.033	394	C-	0.075	179	B++
Lusaka	0.015	439	C--	0.008	393	C-
Blantyre	0.004	488	D+	0.002	461	D++
Port Louis	0.065	321	C++	0.02	294	B--
Windhoek	0.049	365	C	0.001	478	D++
Gaborone	0.116	259	B-	0.014	321	C++
Harare	0.006	480	D++	0.002	466	D++
Conakry	0.01	460	D++	0.006	413	C-
Dakar	0.017	433	C--	0.007	406	C-

Lome	0.002	492	D+	0.006	417	C-
Freetown	0.003	491	D+	0.001	476	D++
Abijan	0.024	417	C-	0.001	481	D+
Accra	0.008	474	D++	0.011	354	C+
Lagos	0.02	425	C--	0.032	254	B-
Douala	0.028	405	C-	0.028	270	B-
Yaounde	0.02	424	C--	0.011	347	C+
Kinshasa	0	500	D+	0	498	D+
Brazzaville	0.033	396	C-	0.007	401	C-

Table 16.3 Score, Rank and Level of Comprehensive Competitiveness of Global 500 Cities

City	Real Economic Growth Rate (5 Years)			Employment Rate		
	Score	Rank	Level	Score	Rank	Level
London	0.212	331	C+	0.917	252	B-
Glasgow	0.21	336	C+	0.896	321	C++
Liverpool	0.198	355	C+	0.891	335	C+
Manchester	0.192	367	C	0.9	314	C++
Edinburgh	0.22	319	C++	0.946	144	A--
Leeds	0.198	354	C+	0.94	159	B++
Bristol	0.184	380	C	0.853	400	C-
Nottingham	0.223	315	C++	0.96	76	A
Belfast	0.2	353	C+	0.954	104	A-
Southampton	0.218	321	C++	0.951	129	A--
Sheffield	0.201	352	C+	0.917	252	B-

Plymouth	0.19	374	C	0.929	202	B+
Birmingham	0.172	399	C-	0.887	346	C+
Chester	0.178	394	C-	0.973	30	A++
Cardiff	0.207	342	C+	0.931	196	B+
Aberdeen	0.17	401	C-	0.936	176	B++
Norwich	0.211	334	C+	0.965	57	A+
Newcastle	0.211	335	C+	0.909	282	B--
Paris	0.143	444	C--	0.862	389	C
Lyon	0.156	418	C-	0.892	331	C+
Lille	0.156	418	C-	0.831	424	C--
Strasbourg	0.156	418	C-	0.892	331	C+
Toulouse	0.156	418	C-	0.877	367	C
Nice	0.156	418	C-	0.851	402	C-
Marseille	0.156	418	C-	0.851	402	C-
Bordeaux	0.156	418	C-	0.876	371	C
Dublin	0.179	389	C	0.954	104	A-
Amsterdam	0.138	454	D++	0.903	299	B--
Rotterdam	0.138	454	D++	0.877	367	C
The Hague	0.138	454	D++	0.925	223	B
Utrecht	0.147	441	C--	0.92	242	B-
Brussels	0.185	379	C	0.894	326	C++
Zurich	0.232	303	C++	0.952	116	A-
Geneva	0.143	447	C--	0.91	280	B--
Bern	0.123	490	D+	0.951	129	A--
Basel	0.127	485	D+	0.955	97	A-
Vienna	0.186	377	C	0.879	365	C
Berlin	0.127	483	D+	0.718	467	D++
Frankfurt	0.149	437	C--	0.85	405	C-
Munich	0.149	433	C--	0.881	362	C
Hamburg	0.18	388	C	0.857	395	C-
Nuremberg	0.183	381	C	0.832	423	C--
Cologne	0.132	473	D++	0.805	436	C--
Bonn	0.138	450	D++	0.892	331	C+
Stuttgart	0.205	346	C+	0.876	371	C
Dresden	0.24	284	B--	0.764	450	C--

Dortmund	0.186	378	C	0.764	450	C--
Hannover	0.231	305	C++	0.764	450	C--
Dusseldorf	0.148	439	C--	0.841	414	C-
Leipzig	0.25	265	B-	0.728	463	D++
Essen	0.137	457	D++	0.767	449	C--
Mainz	0.11	497	D+	0.873	376	C
Mannheim	0.191	373	C	0.838	417	C-
Bremen	0.177	395	C-	0.782	447	C--
Oslo	0.168	404	C-	0.94	159	B++
Bergen	0.168	405	C-	0.946	142	A--
Stockholm	0.192	368	C	0.939	167	B++
Gothenburg	0.192	368	C	0.914	262	B-
Malmo	0.192	370	C	0.839	416	C-
Helsinki	0.208	340	C+	0.884	359	C+
Copenhagen	0.168	402	C-	0.913	269	B-
Arhus	0.168	403	C-	0.923	234	B
Reykjavik	0.255	256	B-	0.969	40	A+
Athens	0.248	267	B-	0.894	326	C++
Rome	0.135	461	D++	0.909	283	B--
Milan	0.135	461	D++	0.952	116	A-
Turin	0.135	461	D++	0.935	183	B+
Naples	0.135	461	D++	0.708	470	D++
Venice	0.135	461	D++	0.952	116	A-
Bologna	0.135	461	D++	0.952	116	A-
Genoa	0.135	461	D++	0.909	283	B--
Trieste	0.135	461	D++	0.909	283	B--
Palermo	0.135	461	D++	0.738	457	D++
Madrid	0.207	341	C+	0.925	223	B
Barcelona	0.195	363	C	0.924	227	B
Valencia	0.306	195	B+	0.899	315	C++
Lisbon	0.129	477	D++	0.856	398	C-
Porto	0.129	477	D++	0.79	445	C--
Sarajevo	0.126	487	D+	0.411	494	D+
Belgrade	0.289	215	B	0.58	488	D+
Zagreb	0.259	250	B-	0.823	428	C--

Ljubljana	0.231	304	C++	0.834	421	C--
Bucharest	0.303	198	B+	0.92	243	B-
Sofia	0.284	218	B	0.956	94	A-
Bratislava	0.286	216	B	0.927	219	B
Riga	0.128	482	D+	0.954	104	A-
Warsaw	0.229	308	C++	0.911	275	B--
Krakow	0.229	309	C++	0.763	453	D++
Prague	0.239	289	B--	0.963	65	A
Budapest	0.246	272	B--	0.947	138	A--
Tallinn	0.378	145	A--	0.876	371	C
Vilnius	0.371	153	B++	0.911	278	B--
Minsk	1	1	A++	0.99	8	A++
Kiev	0.381	143	A--	0.967	49	A+
Moscow	0.529	71	A	1	1	A++
Saint Petersburg	0.469	90	A	0.981	16	A++
Novosibirsk	0.436	113	A-	0.905	296	B--
Kazan	0.368	155	B++	0.92	244	B-
Belgorod	0.54	65	A	0.929	202	B+
Omsk	0.682	18	A++	0.894	326	C++
Bryansk	0.356	164	B++	0.92	244	B-
Vladimir	0.313	190	B+	0.888	342	C+
Voronez	0.374	149	A--	0.909	283	B--
Ivanovo	0.309	194	B+	0.918	250	B-
Kaluga	0.39	139	A--	0.933	191	B+
Kursk	0.408	132	A--	0.914	262	B-
Lipeck	0.541	63	A	0.902	305	C++
Or'ol	0.322	186	B+	0.928	216	B
Ryazan	0.375	148	A--	0.939	167	B++
Smolensk	0.25	264	B-	0.905	296	B--
Tambov	0.311	191	B+	0.895	324	C++
Tver	0.296	205	B+	0.931	197	B+
Tula	0.306	196	B+	0.943	151	B++
Jaroslavl	0.33	181	B+	0.956	94	A-
Petrozavodsk	0.378	146	A--	0.891	335	C+
Archangelsk	0.441	107	A-	0.936	176	B++

Kaliningrad	0.436	113	A-	0.921	238	B
Murmansk	0.441	108	A-	0.891	335	C+
Machackala	0.561	57	A+	0.707	471	D++
Groznyj	0.561	57	A+	0	500	D+
Krasnojarsk	0.31	192	B+	0.909	283	B--
Stavropol	0.339	175	B++	0.916	258	B-
AstraChan	0.348	169	B++	0.847	408	C-
Rostov-na-Donu	0.363	161	B++	0.891	335	C+
Volgograd	0.427	119	A-	0.918	250	B-
Ufa	0.375	147	A--	0.914	262	B-
Izhevsk	0.417	127	A--	0.905	296	B--
Niznij Novgorod	0.282	225	B	0.929	202	B+
Kirov	0.261	248	B-	0.914	262	B-
Orenburg	0.28	226	B	0.883	360	C
Penza	0.352	166	B++	0.922	236	B
Perm	0.302	201	B+	0.916	258	B-
Samara	0.359	163	B++	0.943	151	B++
Saratov	0.295	206	B+	0.887	346	C+
Uljanovsk	0.425	120	A-	0.906	294	B--
Barnaul	0.33	182	B+	0.888	342	C+
Krasnojarsk	0.31	192	B+	0.909	283	B--
Kemerovo	0.465	92	A-	0.894	326	C++
Vladivostok	0.452	97	A-	0.902	305	C++
T'umen	0.54	65	A	0.92	244	B-
Cel'abinsk	0.421	122	A--	0.937	171	B++
Chabarovsk	0.293	207	B+	0.933	191	B+
Jekaterinburg	0.409	130	A--	0.92	244	B-
Beijing	0.509	79	A	0.983	14	A++
Tianjin	0.609	38	A+	0.93	200	B+
Shenyang	0.611	35	A+	0.875	375	C
Dalian	0.632	26	A++	0.913	267	B-
Shanghai	0.516	74	A	0.927	221	B
Nanjing	0.595	46	A+	0.923	230	B
Yangzhou	0.568	52	A+	0.907	292	B--
Suzhou	0.671	21	A++	0.91	280	B--

Hangzhou	0.604	41	A+	0.939	166	B++
Ningbo	0.59	47	A+	0.92	241	B-
Wenzhou	0.611	36	A+	0.976	26	A++
Hefei	0.703	13	A++	0.861	392	C-
Fuzhou	0.481	88	A	0.937	174	B++
Xiamen	0.661	24	A++	0.971	34	A+
Nanchang	0.697	16	A++	0.91	279	B--
Qingdao	0.53	70	A	0.924	226	B
Wuhan	0.562	56	A+	0.908	290	B--
Guangzhou	0.596	45	A+	0.974	29	A++
Shenzhen	0.678	20	A++	0.989	9	A++
Dongguan	0.767	5	A++	0.98	17	A++
Chongqing	0.54	64	A	0.905	295	B--
Chengdu	0.589	48	A+	0.96	82	A
Xi'an	0.567	53	A+	0.913	267	B-
Hongkong	0.28	226	B	0.935	183	B+
Macao	0.481	87	A	0.955	97	A-
Taipei	0.121	492	D+	0.96	76	A
Kaohsiung city	0.209	339	C+	0.954	104	A-
Hsinchu city	0.182	383	C	0.965	57	A+
Shijiazhuang	0.601	42	A+	0.961	75	A
Taiyuan	0.617	33	A+	0.94	159	B++
Huhehaote	0.793	2	A++	0.934	189	B+
Baotou	0.793	2	A++	0.925	225	B
Changchun	0.531	69	A	0.961	74	A
Harbin	0.622	30	A++	0.948	136	A--
Xuzhou	0.628	28	A++	0.929	206	B+
Changzhou	0.612	34	A+	0.862	390	C-
Nantong	0.564	54	A+	0.923	233	B
Wuxi	0.671	22	A++	0.902	312	C++
Jiaxing	0.63	27	A++	0.936	175	B++
Shaoxing	0.668	23	A++	0.947	137	A--
Taizhou	0.597	43	A+	0.954	111	A-
Wuhu	0.724	10	A++	0.869	380	C
Quanzhou	0.585	50	A+	0.995	5	A++

Jinan	0.611	37	A+	0.94	165	B++
Zibo	0.682	19	A++	0.953	113	A-
Yantai	0.779	4	A++	0.927	220	B
Weifang	0.724	9	A++	0.974	28	A++
Weihai	0.709	12	A++	0.985	11	A++
Rizhao	0.702	15	A++	0.929	201	B+
Zhengzhou	0.553	60	A+	0.937	170	B++
Changsha	0.621	31	A+	0.931	194	B+
Zhuhai	0.596	44	A+	0.979	22	A++
Foshan	0.652	25	A++	0.941	155	B++
Huizhou	0.729	8	A++	0.986	10	A++
Zhongshan	0.74	7	A++	0.972	33	A+
Nanning	0.564	55	A+	0.954	104	A-
Liuzhou	0.628	29	A++	0.896	321	C++
Haikou	0.541	62	A	0.906	293	B--
Kunming	0.473	89	A	0.971	35	A+
Tainan	0.24	286	B--	0.959	84	A
Taichung	0.085	499	D+	0.955	97	A-
Keelung	0.29	214	B	0.954	104	A-
Tokyo	0.128	480	D++	0.952	122	A--
Osaka	0.126	489	D+	0.922	237	B
Nagoya	0.128	481	D+	0.965	56	A+
Kyoto	0.154	431	C--	0.94	158	B++
Kawasaki	0.142	448	C--	0.954	102	A-
Kobe	0.126	486	D+	0.934	187	B+
Sapporo	0.121	491	D+	0.934	187	B+
Sendai	0.156	425	C--	0.937	173	B++
Yokohama	0.174	396	C-	0.954	102	A-
Fukuoka	0.144	443	C--	0.943	151	B++
Hiroshima	0.155	430	C--	0.957	93	A-
Okinawa	0.136	459	D++	0.919	249	B-
Kitakyusyu	0.117	494	D+	0.931	195	B+
Chichibu	0.138	453	D++	0.946	140	A--
Chiba	0.133	472	D++	0.952	122	A--
Takamatsu	0.138	451	D++	0.959	84	A

Shizuoka	0.132	474	D++	0.964	63	A
Hamamatsu	0.132	475	D++	0.964	63	A
Sakai	0.126	488	D+	0.953	113	A-
Akita	0.183	382	C	0.946	140	A--
Okayama	0.111	496	D+	0.96	76	A
Kanazawa	0.12	493	D+	0.969	40	A+
Seoul	0.196	358	C+	0.946	143	A--
Busan	0.216	324	C++	0.951	125	A--
Ulsan	0.328	183	B+	0.963	69	A
Incheon	0.277	232	B	0.949	135	A--
Gyeongju	0.258	251	B-	0.952	124	A--
Daejeon	0.246	269	B-	0.95	131	A--
Daegu	0.195	361	C	0.953	112	A-
Pyongyang	0.149	432	C--	0.888	342	C+
Ulan Bator	0.335	176	B++	0.966	52	A+
Singapore	0.349	167	B++	0.969	40	A+
Bangkok	0.341	174	B++	0.907	291	B--
Rayong	0.352	165	B++	0.94	159	B++
Kuala Lumpur	0.241	281	B--	0.965	57	A+
Penang	0.195	363	C	0.963	65	A
Labuan	0.283	219	B	0.967	49	A+
Malacca	0.248	268	B-	0.969	40	A+
Jakarta	0.292	210	B+	0.815	432	C--
Medan	0.283	219	B	0.821	429	C--
Bandung	0.278	231	B	0.962	71	A
Ho Chi Minh City	0.494	83	A	0.927	218	B
Hanoi	0.516	75	A	0.923	235	B
Manila	0.245	273	B--	0.824	427	C--
Cebu	0.204	347	C+	0.868	381	C
Phnom Penh	0.395	135	A--	0.901	313	C++
Yangon	0.366	157	B++	0.913	269	B-
Begawan	0.214	328	C++	0.946	144	A--
Karachi	0.466	91	A-	0.951	126	A--
Lahore	0.446	103	A-	0.929	207	B+
Islamabad	0.412	128	A--	0.954	104	A-

Delhi	0.391	136	A--	0.934	190	B+
Mumbai	0.496	82	A	0.885	351	C+
Calcutta	0.489	84	A	0.841	412	C-
Bangalore	0.463	93	A-	0.941	155	B++
Ahmedabad	0.419	124	A--	0.968	45	A+
Lucknow	0.361	162	B++	0.929	208	B+
Hyderabad	0.418	125	A--	0.935	180	B++
Jaipur	0.303	200	B+	0.953	115	A-
Chennai	0.439	110	A-	0.923	231	B
Pune	0.4	133	A--	0.885	351	C+
Kanpur	0.274	238	B	0.929	208	B+
Surat	0.303	199	B+	0.968	45	A+
Nagpur	0.365	160	B++	0.885	351	C+
Indore	0.298	203	B+	0.957	90	A
Bhopal	0.408	131	A--	0.957	90	A
Ludhiana	0.24	287	B--	0.951	127	A--
Vadodara	0.243	276	B--	0.968	45	A+
Madurai	0.276	233	B	0.923	231	B
Varanasi	0.244	275	B--	0.929	208	B+
Jabalpur	0.239	288	B--	0.957	90	A
Amritsar	0.233	298	B--	0.951	127	A--
Nasik	0.446	102	A-	0.885	351	C+
Visakhapatnam	0.512	78	A	0.935	180	B++
Rajkot	0.253	260	B-	0.968	45	A+
Allahabad	0.265	244	B-	0.929	208	B+
Agra	0.259	249	B-	0.929	208	B+
Asansol	0.254	258	B-	0.841	412	C-
Faridabad	0.333	179	B++	0.945	149	A--
Patna	0.261	247	B-	0.857	394	C-
Thane	0.345	170	B++	0.885	351	C+
Kalyan	0.345	170	B++	0.885	351	C+
Meerut	0.257	253	B-	0.929	208	B+
Haora	0.255	257	B-	0.847	409	C-
Pimpri-Chichwad	0.4	133	A--	0.885	351	C+
Cochi	0.389	140	A--	0.71	468	D++

Mysore	0.276	234	B	0.941	155	B++
Pondicherry	0.293	208	B+	0.917	252	B-
Ranchi	0.458	95	A-	0.877	367	C
Trivandrum	0.251	263	B-	0.71	468	D++
Ghaziabad	0.331	180	B+	0.929	208	B+
Coimbatore	0.283	223	B	0.929	208	B+
Srinagar	0.279	229	B	0.853	401	C-
Vijayawada	0.253	261	B-	0.935	180	B++
Dhaka	0.297	204	B+	0.89	340	C+
Columbo	0.292	209	B+	0.913	269	B-
Tel Aviv	0.272	239	B	0.903	299	B--
Yerushalayim	0.266	243	B-	0.899	315	C++
Ankara	0.366	158	B++	0.825	426	C--
Istanbul	0.366	158	B++	0.8	439	C--
Tehran	0.324	184	B+	0.858	393	C-
Yerevan	0.517	73	A	0.899	315	C++
Baku	0.759	6	A++	0.998	3	A++
Baghdad	0.334	177	B++	0.602	476	D++
Manama	0.349	167	B++	0.807	434	C--
Doha	0.703	14	A++	0.928	216	B
Ruwi	0.257	255	B-	0.926	222	B
Damascus	0.216	325	C++	0.841	414	C-
Beirut	0.223	316	C++	0.738	457	D++
Al Kuwayt	0.547	61	A	0.991	7	A++
Dubai	0.605	39	A+	0.978	23	A++
Amman	0.334	177	B++	0.868	381	C
Riyadh	0.275	235	B	0.834	418	C-
Sanaa	0.605	40	A+	0.534	490	D+
Kabul	0.451	98	A-	0.602	476	D++
Nicosia	0.201	351	C+	0.939	167	B++
Dushanbe	0.554	59	A+	0.984	12	A++
Alamaty	0.588	49	A+	0.892	331	C+
Tashkent	0.446	103	A-	0.743	456	D++
Washington	0.236	292	B--	0.913	269	B-
New York	0.167	409	C-	0.896	321	C++

Los Angeles	0.205	344	C+	0.898	318	C++
Chicago	0.149	436	C--	0.861	391	C-
Boston	0.145	442	C--	0.887	346	C+
Philadelphia	0.179	392	C-	0.842	410	C-
Seattle	0.159	414	C-	0.924	227	B
Detroit	0.133	471	D++	0.732	460	D++
Dallas	0.188	375	C	0.894	326	C++
Houston	0.181	385	C	0.887	346	C+
Phoenix	0.237	291	B--	0.935	183	B+
Pittsburgh	0.149	434	C--	0.868	381	C
San Francisco	0.155	427	C--	0.92	244	B-
Denver	0.167	408	C-	0.921	238	B
San Jose	0.14	449	C--	0.911	275	B--
San Diego	0.234	297	B--	0.931	197	B+
Cleveland	0.157	416	C-	0.778	448	C--
Columbus	0.162	410	C-	0.903	299	B--
Cincinnati	0.168	406	C-	0.868	381	C
Las Vegas	0.322	185	B+	0.932	193	B+
Atlanta	0.179	390	C-	0.881	362	C
Austin	0.217	322	C++	0.916	258	B-
Baltimore	0.181	385	C	0.856	399	C-
Charlotte	0.243	278	B--	0.898	318	C++
Memphis	0.174	397	C-	0.865	387	C
Miami	0.228	311	C++	0.895	324	C++
Milwaukee	0.143	444	C--	0.842	410	C-
Minneapolis	0.179	392	C-	0.891	335	C+
Nashville	0.229	307	C++	0.924	227	B
Portland	0.232	299	B--	0.903	299	B--
Sacramento	0.269	242	B-	0.911	275	B--
San Antonio	0.196	360	C	0.917	252	B-
Saint Louis	0.161	412	C-	0.85	405	C-
Indianapolis	0.186	376	C	0.888	342	C+
Albuquerque	0.224	314	C++	0.917	252	B-
Buffalo	0.162	411	C-	0.801	438	C--
Honolulu	0.203	348	C+	0.962	71	A

Kansas City	0.173	398	C-	0.867	385	C
New Orleans	0.115	495	D+	0.831	425	C--
Palo Alto	0.155	427	C--	0.931	197	B+
Tampa	0.234	295	B--	0.916	257	B-
Tulsa	0.155	427	C--	0.914	262	B-
Arlington	0.27	240	B	0.979	20	A++
El Paso	0.342	173	B++	0.978	23	A++
Fort Worth	0.27	240	B	0.979	20	A++
Fresno	0.41	129	A--	0.969	39	A+
Jacksonville	0.205	345	C+	0.955	97	A-
Long Beach	0.253	262	B-	0.973	32	A+
Mesa	0.232	299	B--	0.96	81	A
Oakland (US)	0.249	266	B-	0.993	6	A++
Oklahoma City	0.246	270	B--	0.962	70	A
Tucson	0.246	270	B--	0.975	27	A++
Virginia Beach	0.229	310	C++	0.964	62	A
Wilmington	0.138	452	D++	0.946	144	A--
Omaha	0.236	292	B--	0.967	49	A+
Wichita	0.13	476	D++	0.935	183	B+
Raleigh	0.137	458	D++	0.959	83	A
Ottawa	0.212	333	C+	0.921	238	B
Toronto	0.196	359	C+	0.902	304	C++
Vancouver	0.192	371	C	0.955	97	A-
Montreal	0.226	312	C++	0.864	388	C
Calgary	0.223	317	C++	0.958	89	A
Winnipeg	0.197	356	C+	0.944	150	A--
Edmonton	0.21	337	C+	0.95	132	A--
Quebec	0.245	274	B--	0.913	269	B-
Halifax	0.182	384	C	0.95	132	A--
Hamilton(CA)	0.147	440	C--	0.936	176	B++
Regina	0.194	366	C	0.941	154	B++
Saskatoon	0.222	318	C++	0.94	159	B++
Victoria(CA)	0.21	338	C+	0.952	116	A-
Mexico City	0.389	141	A--	0.946	144	A--
Monterrey	0.447	101	A-	0.956	94	A-

Guadalajara	0.391	137	A--	0.97	36	A+
Puebla	0.417	126	A--	0.97	36	A+
Tijuana	0.439	111	A-	0.999	2	A++
Leon	0.448	100	A-	0.97	36	A+
Queretaro	0.46	94	A-	0.963	65	A
Acapulco	0.427	118	A-	0.997	4	A++
Chihuahua	0.537	67	A	0.966	52	A+
Toluca	0.443	106	A-	0.959	84	A
Ciudad Juarez	0.44	109	A-	0.973	31	A+
Torreon	0.533	68	A	0.962	71	A
San Luis Potosi	0.427	117	A-	0.982	15	A++
Merida	0.517	72	A	0.98	18	A++
Aguascalientes	0.507	80	A	0.96	76	A
Tampico	0.569	51	A+	0.977	25	A++
Cuernavaca	0.424	121	A--	0.965	57	A+
Morelia	0.514	76	A	0.98	18	A++
Saltillo	0.512	77	A	0.937	171	B++
Veracruz	0.687	17	A++	0.966	52	A+
Panama City	0.282	224	B	0.883	360	C
Managua	0.212	332	C+	0.952	116	A-
Tegucigalpa	0.318	189	B+	0.722	466	D++
San Juan	0.181	387	C	0.876	371	C
Guatemala City	0.197	357	C+	0.969	40	A+
Kingston	0.157	415	C-	0.857	395	C-
Port-au-Prince	0.134	470	D++	0.33	495	D+
Havana	0.195	365	C	0.966	52	A+
Santo Domingo	0.391	138	A--	0.897	320	C++
Nassau	0.192	372	C	0.872	377	C
Sao Paulo	0.286	217	B	0.798	440	C--
Rio de Janeiro	0.319	188	B+	0.834	418	C-
Brazilia	0.373	151	B++	0.877	367	C
Recife	0.445	105	A-	0.902	305	C++
San Salvador	0.433	115	A-	0.916	258	B-
Belo Horizonte	0.455	96	A-	0.902	305	C++
Manaus	0.723	11	A++	0.902	305	C++

Curitiba	0.429	116	A-	0.902	305	C++
Betim	0.379	144	A--	0.902	305	C++
Duque de Caxias	0.487	86	A	0.834	418	C-
Campinas	0.421	123	A--	0.798	440	C--
Guarulhos	0.382	142	A--	0.798	440	C--
Sao Bernardo do Campo	0.503	81	A	0.798	440	C--
Sao Jose dos Campos	0.373	150	A--	0.798	440	C--
Porto Alegre	0.129	477	D++	0.79	445	C--
Buenos Aires	0.619	32	A+	0.885	351	C+
Cordoba	0.234	296	B--	0.809	433	C--
Santiago	0.298	202	B+	0.902	303	C++
Montevideo	0.321	187	B+	0.85	405	C-
Asuncion	0.167	407	C-	0.878	366	C
Caracas	0.179	391	C-	0.89	340	C+
Bogota	0.438	112	A-	0.833	422	C--
Medellin	0.367	156	B++	0.819	430	C--
Georgetown	0.127	484	D+	0.887	346	C+
Lima	0.283	222	B	0.913	269	B-
La Paz	0.219	320	C++	0.909	283	B--
Guayaquil	0.214	328	C++	0.857	395	C-
Quito	0.254	259	B-	0.866	386	C
Melbourne	0.226	313	C++	0.94	159	B++
Sydney	0.157	417	C-	0.95	132	A--
Brisbane	0.159	413	C-	0.947	138	A--
Adelaide	0.143	446	C--	0.929	202	B+
Canberra	0.195	362	C	0.959	84	A
Hobart	0.237	290	B--	0.936	176	B++
Perth	0.136	460	D++	0.946	144	A--
Wellington	0.207	343	C+	0.959	84	A
Auckland(NZ)	0.243	277	B--	0.96	76	A
Christchurch	0.24	285	B--	0.963	65	A
Hamilton(NZ)	0.231	306	C++	0.965	57	A+
Port Moresby	0.171	400	C-	0.747	454	D++

Cairo	0.241	282	B--	0.871	378	C
Alexandria	0.241	282	B--	0.871	378	C
Algiers	0.29	213	B	0.802	437	C--
Casablanca	0.232	301	C++	0.73	461	D++
Rabat	0.232	301	C++	0.745	455	D++
Tunis	0.257	254	B-	0.817	431	C--
Tripoli	0.283	221	B	0.602	476	D++
Addis Ababa	0.449	99	A-	0.583	487	D+
Nairobi	0.216	326	C++	0.466	491	D+
Djibouti	0.215	327	C++	0.207	498	D+
Victoria(SC)	0.096	498	D+	0.984	12	A++
Kampala	0.304	197	B+	0.425	493	D+
Dar Es Salaam	0.344	172	B++	0.725	464	D++
Johannesburg	0.275	237	B	0.591	485	D+
Cape Town	0.262	246	B-	0.729	462	D++
Pretoria	0.214	328	C++	0.606	475	D++
Durban	0.202	350	C+	0.561	489	D+
Maputo	0.373	152	B++	0.725	464	D++
Luanda	0.487	85	A	0.466	491	D+
Lusaka	0.258	252	B-	0.602	476	D++
Blantyre	0.149	435	C--	0.602	476	D++
Port Louis	0.235	294	B--	0.881	362	C
Windhoek	0.279	228	B	0.589	486	D+
Gaborone	0.292	211	B	0.657	473	D++
Harare	0	500	D+	0.33	495	D+
Conakry	0.203	349	C+	0.602	476	D++
Dakar	0.279	230	B	0.851	402	C-
Lome	0.217	323	C++	0.602	476	D++
Freetown	0.369	154	B++	0.602	476	D++
Abijan	0.156	426	C--	0.807	434	C--
Accra	0.291	212	B	0.738	457	D++
Lagos	0.148	438	C--	0.67	472	D++
Douala	0.242	279	B--	0.643	474	D++
Yaounde	0.242	279	B--	0.602	476	D++
Kinshasa	0.265	245	B-	0.33	495	D+

Brazzaville	0.275	236	B	0.193	499	D+
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Table 16.4 Score, Rank and Level of Comprehensive Competitiveness of Global 500 Cities

City	Labor Productivity			Number of International Patents		
	Score	Rank	Level	Score	Rank	Level
London	1	1	A++	0.649	4	A++
Glasgow	0.675	16	A++	0.114	127	A--
Liverpool	0.408	135	A--	0.058	167	B++
Manchester	0.317	180	B++	0.301	65	A
Edinburgh	0.659	22	A++	0.142	110	A-
Leeds	0.476	95	A-	0.112	128	A--
Bristol	0.536	62	A	0.249	77	A
Nottingham	0.487	90	A	0.151	104	A-
Belfast	0.61	38	A+	0.038	188	B+
Southampton	0.452	109	A-	0.125	119	A-
Sheffield	0.419	124	A--	0.107	129	A--
Plymouth	0.351	168	B++	0.296	66	A
Birmingham	0.472	100	A-	0.19	92	A-
Chester	0.407	136	A--	0.32	53	A+
Cardiff	0.476	96	A-	0.105	132	A--
Aberdeen	0.512	73	A	0.134	113	A-
Norwich	0.31	183	B+	0.06	166	B++
Newcastle	0.319	179	B++	0.126	118	A-
Paris	0.585	47	A+	0.695	3	A++
Lyon	0.534	63	A	0.32	52	A+
Lille	0.431	115	A-	0.051	171	B++
Strasbourg	0.563	57	A+	0.099	135	A--
Toulouse	0.494	87	A	0.156	101	A-
Nice	0.67	18	A++	0.063	162	B++
Marseille	0.663	20	A++	0.098	136	A--
Bordeaux	0.483	93	A-	0.068	159	B++
Dublin	0.51	75	A	0.311	61	A
Amsterdam	0.565	56	A+	0.261	74	A
Rotterdam	0.652	24	A++	0.326	50	A+
The Hague	0.627	32	A+	0.293	68	A
Utrecht	0.468	103	A-	0.101	133	A--
Brussels	0.628	30	A++	0.15	107	A-
Zurich	0.604	39	A+	0.128	116	A-
Geneva	0.491	89	A	0.012	259	B-
Bern	0.631	28	A++	0.077	154	B++
Basel	0.52	70	A	0.403	24	A++
Vienna	0.426	122	A--	0.301	64	A
Berlin	0.412	131	A--	0.437	19	A++
Frankfurt	0.506	80	A	0.387	25	A++
Munich	0.427	121	A--	0.119	123	A--
Hamburg	0.456	106	A-	0.385	26	A++

Nuremberg	0.368	159	B++	0.005	307	C++
Cologne	0.377	153	B++	0.007	284	B--
Bonn	0.333	175	B++	0.181	93	A-
Stuttgart	0.399	140	A--	0.589	7	A++
Dresden	0.398	141	A--	0.22	82	A
Dortmund	0.455	107	A-	0.14	112	A-
Hannover	0.515	72	A	0.209	85	A
Dusseldorf	0.39	146	A--	0.417	22	A++
Leipzig	0.462	104	A-	0.048	173	B++
Essen	0.523	68	A	0.247	78	A
Mainz	0.389	147	A--	0.216	83	A
Mannheim	0.416	127	A--	0.353	34	A+
Bremen	0.431	117	A-	0.092	140	A--
Oslo	0.732	8	A++	0.262	73	A
Bergen	0.615	37	A+	0.077	153	B++
Stockholm	0.697	11	A++	0.512	10	A++
Gothenburg	0.502	83	A	0.012	257	B-
Malmo	0.573	53	A+	0.014	245	B-
Helsinki	0.691	12	A++	0.379	28	A++
Copenhagen	0.638	26	A++	0.206	87	A
Arhus	0.528	66	A	0.003	340	C+
Reykjavik	0.525	67	A	0.036	191	B+
Athens	0.36	163	B++	0.101	134	A--
Rome	0.437	113	A-	0.092	139	A--
Milan	0.44	112	A-	0.122	121	A--
Turin	0.38	151	B++	0.005	309	C++
Naples	0.286	192	B+	0.036	192	B+
Venice	0.298	188	B+	0.024	210	B+
Bologna	0.366	161	B++	0.116	125	A--
Genoa	0.302	186	B+	0.01	265	B-
Trieste	0.301	187	B+	0.035	194	B+
Palermo	0.221	208	B+	0.022	219	B
Madrid	0.379	152	B++	0.258	75	A
Barcelona	0.255	197	B+	0.268	70	A
Valencia	0.556	58	A+	0.119	122	A--
Lisbon	0.349	169	B++	0.01	266	B-
Porto	0.223	205	B+	0.016	235	B
Sarajevo	0.076	282	B--	0.002	360	C+
Belgrade	0.102	262	B-	0.006	301	C++
Zagreb	0.265	194	B+	0.037	190	B+
Ljubljana	0.411	132	A--	0.04	182	B+
Bucharest	0.102	261	B-	0.009	267	B-
Sofia	0.08	278	B--	0.031	200	B+

Bratislava	0.203	215	B	0.022	218	B
Riga	0.142	237	B	0.022	217	B
Warsaw	0.205	213	B	0.06	165	B++
Krakow	0.181	221	B	0.008	278	B--
Prague	0.224	203	B+	0.011	260	B-
Budapest	0.232	201	B+	0.153	102	A-
Tallinn	0.22	209	B+	0.001	419	C-
Vilnius	0.205	214	B	0.008	277	B--
Minsk	0.016	444	C--	0.021	220	B
Kiev	0.026	416	C-	0.039	186	B+
Moscow	0.082	276	B--	0.344	36	A+
Saint Petersburg	0.059	319	C++	0.173	96	A-
Novosibirsk	0.064	307	C++	0.028	205	B+
Kazan	0.02	433	C--	0.008	276	B--
Belgorod	0.05	341	C+	0.001	389	C
Omsk	0.055	327	C++	0.004	325	C++
Bryansk	0.024	424	C--	0	464	D++
Vladimir	0.027	411	C-	0.003	344	C+
Voronez	0.028	405	C-	0	464	D++
Ivanovo	0.02	432	C--	0.001	404	C-
Kaluga	0.035	383	C	0.001	392	C-
Kursk	0.032	387	C	0.001	408	C-
Lipeck	0.062	314	C++	0	464	D++
Or'ol	0.031	392	C-	0.013	250	B-
Ryazan	0.036	376	C	0	464	D++
Smolensk	0.032	389	C	0	428	C--
Tambov	0.028	406	C-	0.001	404	C-
Tver	0.034	384	C	0.003	336	C+
Tula	0.031	394	C-	0.004	320	C++
Jaroslavl	0.045	355	C+	0	446	C--
Petrozavodsk	0.05	340	C+	0	446	C--
Archangelsk	0.066	302	C++	0	464	D++
Kaliningrad	0.041	365	C	0.002	346	C+
Murmansk	0.074	287	B--	0.001	404	C-
Machackala	0.024	423	C--	0	464	D++
Groznyj	0.031	391	C-	0	464	D++
Krasnojarsk	0.038	370	C	0	451	D++
Stavropol	0.028	407	C-	0.001	408	C-
AstraChan	0.036	380	C	0	464	D++
Rostov-na-Donu	0.031	396	C-	0.005	314	C++
Volgograd	0.037	375	C	0.002	352	C+
Ufa	0.048	346	C+	0.008	280	B--

Izhevsk	0.042	364	C	0.002	357	C+
Niznij Novgorod	0.038	369	C	0	464	D++
Kirov	0.024	421	C--	0.002	377	C
Orenburg	0.048	349	C+	0.001	401	C-
Penza	0.023	425	C--	0.001	381	C
Perm	0.059	317	C++	0.007	289	B--
Samara	0.059	320	C++	0.007	287	B--
Saratov	0.032	388	C	0.006	301	C++
Uljanovsk	0.03	401	C-	0	464	D++
Barnaul	0.026	414	C-	0.002	372	C
Krasnojarsk	0.038	370	C	0	451	D++
Kemerovo	0.052	334	C+	0	436	C--
Vladivostok	0.044	360	C	0.006	296	B--
T'umen	0.025	419	C-	0	464	D++
Cel'abinsk	0.048	350	C+	0	464	D++
Chabarovsk	0.049	344	C+	0	464	D++
Jekaterinburg	0.053	332	C+	0.001	419	C-
Beijing	0.07	291	B--	0.319	56	A+
Tianjin	0.068	296	B--	0.024	210	B+
Shenyang	0.069	294	B--	0.014	243	B-
Dalian	0.077	280	B--	0.017	231	B
Shanghai	0.091	269	B-	0.326	47	A+
Nanjing	0.064	308	C++	0.031	199	B+
Yangzhou	0.052	333	C+	0.002	347	C+
Suzhou	0.09	270	B-	0.017	232	B
Hangzhou	0.073	288	B--	0.03	203	B+
Ningbo	0.072	289	B--	0.007	286	B--
Wenzhou	0.031	395	C-	0.006	296	B--
Hefei	0.063	312	C++	0.005	309	C++
Fuzhou	0.058	323	C++	0.012	256	B-
Xiamen	0.082	275	B--	0.007	292	B--
Nanchang	0.052	335	C+	0.005	315	C++
Qingdao	0.078	279	B--	0.013	247	B-
Wuhan	0.049	345	C+	0.022	216	B
Guangzhou	0.084	273	B--	0.055	169	B++
Shenzhen	0.084	274	B--	0.356	33	A+
Dongguan	0.05	342	C+	0.015	239	B
Chongqing	0.041	366	C	0.014	243	B-
Chengdu	0.042	362	C	0.026	209	B+
Xi'an	0.035	381	C	0.011	264	B-
Hongkong	0.336	173	B++	0.024	213	B
Macao	0.237	200	B+	0	428	C--
Taipei	0.211	212	B	0.107	129	A--

Kaohsiung city	0.164	231	B	0.013	249	B-
Hsinchu city	0.167	227	B	0.002	352	C+
Shijiazhuang	0.047	351	C+	0.005	315	C++
Taiyuan	0.046	353	C+	0.003	343	C+
Huhehaote	0.065	304	C++	0	451	D++
Baotou	0.064	305	C++	0	428	C--
Changchun	0.044	359	C+	0.009	267	B-
Harbin	0.047	352	C+	0.005	309	C++
Xuzhou	0.051	337	C+	0.002	357	C+
Changzhou	0.07	292	B--	0.004	327	C++
Nantong	0.071	290	B--	0.002	368	C
Wuxi	0.101	263	B-	0.017	234	B
Jiaxing	0.048	347	C+	0.001	389	C
Shaoxing	0.057	324	C++	0.001	392	C-
Taizhou	0.035	382	C	0.004	328	C++
Wuhu	0.06	315	C++	0	428	C--
Quanzhou	0.036	378	C	0.002	360	C+
Jinan	0.052	336	C+	0.009	271	B--
Zibo	0.06	316	C++	0.002	363	C
Yantai	0.053	331	C+	0.005	315	C++
Weifang	0.031	393	C-	0.001	408	C-
Weihai	0.066	303	C++	0.001	385	C
Rizhao	0.024	420	C-	0	446	C--
Zhengzhou	0.045	358	C+	0.006	301	C++
Changsha	0.067	297	B--	0.017	230	B
Zhuhai	0.075	283	B--	0.017	232	B
Foshan	0.07	293	B--	0.015	237	B
Huizhou	0.04	368	C	0.002	363	C
Zhongshan	0.056	326	C++	0.148	108	A-
Nanning	0.029	403	C-	0.003	336	C+
Liuzhou	0.054	329	C++	0.001	385	C
Haikou	0.038	372	C	0.002	360	C+
Kunming	0.049	343	C+	0.004	324	C++
Tainan	0.118	249	B-	0.011	262	B-
Taichung	0.138	241	B	0.023	214	B
Keelung	0.139	239	B	0.003	340	C+
Tokyo	0.522	69	A	1	1	A++
Osaka	0.432	114	A-	0.781	2	A++
Nagoya	0.45	110	A-	0.342	37	A+
Kyoto	0.415	128	A--	0.434	20	A++
Kawasaki	0.361	162	B++	0.451	16	A++
Kobe	0.375	154	B++	0.335	43	A+
Sapporo	0.352	167	B++	0.106	131	A--

Sendai	0.356	165	B++	0.175	95	A-
Yokohama	0.344	170	B++	0.478	13	A++
Fukuoka	0.353	166	B++	0.316	59	A+
Hiroshima	0.369	156	B++	0.194	90	A
Okinawa	0.283	193	B+	0.013	251	B-
Kitakyusyu	0.356	164	B++	0.008	275	B--
Chichibu	0.335	174	B++	0.014	246	B-
Chiba	0.329	176	B++	0.441	18	A++
Takamatsu	0.294	190	B+	0.029	204	B+
Shizuoka	0.405	137	A--	0.371	29	A++
Hamamatsu	0.382	150	A--	0.151	106	A-
Sakai	0.394	144	A--	0.238	79	A
Akita	0.4	139	A--	0.019	226	B
Okayama	0.417	126	A--	0.013	251	B-
Kanazawa	0.412	130	A--	0.165	98	A-
Seoul	0.222	207	B+	0.62	6	A++
Busan	0.166	228	B	0.039	185	B+
Ulsan	0.487	91	A-	0.031	201	B+
Incheon	0.185	219	B	0.151	105	A-
Gyeongju	0.168	225	B	0.006	294	B--
Daejeon	0.168	224	B	0.318	57	A+
Daegu	0.131	245	B-	0.091	142	A--
Pyongyang	0	499	D+	0.001	381	C
Ulan Bator	0.011	460	D++	0.002	372	C
Singapore	0.297	189	B+	0.338	41	A+
Bangkok	0.097	266	B-	0.019	224	B
Rayong	0.129	246	B-	0.001	401	C-
Kuala Lumpur	0.107	258	B-	0.019	224	B
Penang	0.074	286	B--	0.011	262	B-
Labuan	0.051	339	C+	0.003	339	C+
Malacca	0.058	321	C++	0.001	414	C-
Jakarta	0.048	348	C+	0.007	292	B--
Medan	0.057	325	C++	0.002	368	C
Bandung	0.042	363	C	0.001	392	C-
Ho Chi Minh City	0.013	453	D++	0.002	372	C
Hanoi	0.019	435	C--	0.002	372	C
Manila	0.02	430	C--	0.013	248	B-
Cebu	0.016	442	C--	0.004	331	C+
Phnom Penh	0.009	474	D++	0	451	D++
Yangon	0.001	497	D+	0	464	D++
Begawan	0.32	177	B++	0.001	404	C-
Karachi	0.021	428	C--	0.001	414	C-

Lahore	0.017	439	C--	0	428	C--
Islamabad	0.016	445	C--	0.001	392	C-
Delhi	0.022	427	C--	0.181	94	A-
Mumbai	0.027	408	C-	0.326	49	A+
Calcutta	0.026	415	C-	0.008	280	B--
Bangalore	0.019	436	C--	0.115	126	A--
Ahmedabad	0.017	440	C--	0.022	215	B
Lucknow	0.012	456	D++	0.015	238	B
Hyderabad	0.015	447	C--	0.088	148	A--
Jaipur	0.012	459	D++	0.002	352	C+
Chennai	0.014	449	C--	0.045	178	B++
Pune	0.01	469	D++	0.039	183	B+
Kanpur	0.013	451	D++	0	464	D++
Surat	0.009	473	D++	0	464	D++
Nagpur	0.01	471	D++	0	464	D++
Indore	0.016	441	C--	0.002	363	C
Bhopal	0.03	400	C-	0	464	D++
Ludhiana	0.017	438	C--	0	464	D++
Vadodara	0.013	455	D++	0.007	284	B--
Madurai	0.005	485	D+	0.002	363	C
Varanasi	0.009	475	D++	0.005	305	C++
Jabalpur	0.007	479	D++	0	428	C--
Amritsar	0.011	464	D++	0.008	283	B--
Nasik	0.002	495	D+	0.002	357	C+
Visakhapatnam	0.013	452	D++	0.002	368	C
Rajkot	0.006	482	D+	0.001	392	C-
Allahabad	0.005	486	D+	0.001	408	C-
Agra	0.006	481	D+	0.002	368	C
Asansol	0.003	493	D+	0	464	D++
Faridabad	0.012	458	D++	0.007	287	B--
Patna	0.013	454	D++	0	428	C--
Thane	0.011	466	D++	0.038	187	B+
Kalyan	0.011	466	D++	0.005	304	C++
Meerut	0.006	483	D+	0	428	C--
Haora	0.004	491	D+	0	464	D++
Pimpri-Chichwad	0.02	431	C--	0	464	D++
Cochi	0.026	418	C-	0	464	D++
Mysore	0.005	488	D+	0.012	258	B-
Pondicherry	0.014	448	C--	0.001	392	C-
Ranchi	0.009	472	D++	0	436	C--
Trivandrum	0.016	443	C--	0.003	336	C+

Ghaziabad	0.009	476	D++	0	464	D++
Coimbatore	0.012	457	D++	0.005	305	C++
Srinagar	0.029	404	C-	0	464	D++
Vijayawada	0.001	498	D+	0	464	D++
Dhaka	0.011	461	D++	0.001	414	C-
Columbo	0.03	398	C-	0.028	206	B+
Tel Aviv	0.32	178	B++	0.319	55	A+
Yerushalayim	0.314	181	B+	0.001	392	C-
Ankara	0.115	250	B-	0.07	156	B++
Istanbul	0.109	254	B-	0.095	137	A--
Tehran	0.062	313	C++	0.002	372	C
Yerevan	0.019	437	C--	0.007	291	B--
Baku	0.03	399	C-	0.004	325	C++
Baghdad	0.063	309	C++	0	436	C--
Manama	0.417	125	A--	0.001	392	C-
Doha	0.408	134	A--	0.002	363	C
Ruwi	0.255	196	B+	0	436	C--
Damascus	0.045	356	C+	0.009	270	B-
Beirut	0.169	223	B	0.003	340	C+
Al Kuwait	0.371	155	B++	0.001	419	C-
Dubai	0.369	158	B++	0.008	280	B--
Amman	0.059	318	C++	0.004	320	C++
Riyadh	0.404	138	A--	0.015	239	B
Sanaa	0.026	417	C-	0	464	D++
Kabul	0.002	494	D+	0	436	C--
Nicosia	0.31	182	B+	0.024	212	B
Dushanbe	0	500	D+	0	446	C--
Alamaty	0.051	338	C+	0.001	419	C-
Tashkent	0.011	468	D++	0.004	328	C++
Washington	0.629	29	A++	0.477	14	A++
New York	0.88	2	A++	0.626	5	A++
Los Angeles	0.649	25	A++	0.34	38	A+
Chicago	0.673	17	A++	0.368	31	A+
Boston	0.756	6	A++	0.414	23	A++
Philadelphia	0.775	5	A++	0.339	39	A+
Seattle	0.574	51	A+	0.35	35	A+
Detroit	0.876	3	A++	0.147	109	A-
Dallas	0.634	27	A++	0.32	54	A+
Houston	0.681	15	A++	0.487	12	A++
Phoenix	0.542	61	A	0.223	80	A
Pittsburgh	0.509	76	A	0.277	69	A
San Francisco	0.62	35	A+	0.449	17	A++

Denver	0.628	31	A+	0.161	99	A-
San Jose	0.721	9	A++	0.524	9	A++
San Diego	0.66	21	A++	0.569	8	A++
Cleveland	0.742	7	A++	0.332	44	A+
Columbus	0.567	55	A+	0.201	88	A
Cincinnati	0.626	33	A+	0.424	21	A++
Las Vegas	0.624	34	A+	0.134	114	A-
Atlanta	0.665	19	A++	0.328	46	A+
Austin	0.552	59	A+	0.385	27	A++
Baltimore	0.705	10	A++	0.265	71	A
Charlotte	0.592	42	A+	0.194	89	A
Memphis	0.583	48	A+	0.127	117	A-
Miami	0.595	41	A+	0.169	97	A-
Milwaukee	0.656	23	A++	0.088	147	A--
Minneapolis	0.589	45	A+	0.361	32	A+
Nashville	0.59	44	A+	0.08	151	B++
Portland	0.532	64	A	0.312	60	A+
Sacramento	0.619	36	A+	0.069	157	B++
San Antonio	0.591	43	A+	0.255	76	A
Saint Louis	0.589	46	A+	0.338	40	A+
Indianapolis	0.572	54	A+	0.324	51	A+
Albuquerque	0.507	79	A	0.09	143	A--
Buffalo	0.681	14	A++	0.141	111	A-
Honolulu	0.575	50	A+	0.035	193	B+
Kansas City	0.6	40	A+	0.13	115	A-
New Orleans	0.782	4	A++	0.047	174	B++
Palo Alto	0.445	111	A-	0.461	15	A++
Tampa	0.579	49	A+	0.09	144	A--
Tulsa	0.517	71	A	0.057	168	B++
Arlington	0.501	85	A	0.331	45	A+
El Paso	0.336	172	B++	0.013	254	B-
Fort Worth	0.501	85	A	0.089	146	A--
Fresno	0.342	171	B++	0.02	221	B
Jacksonville	0.507	78	A	0.068	158	B++
Long Beach	0.55	60	A+	0.053	170	B++
Mesa	0.485	92	A-	0.213	84	A
Oakland (US)	0.691	13	A++	0.368	30	A++
Oklahoma City	0.471	101	A-	0.068	160	B++
Tucson	0.424	123	A--	0.159	100	A-
Virginia Beach	0.457	105	A-	0.018	229	B
Wilmington	0.369	157	B++	0.508	11	A++

Omaha	0.573	52	A+	0.047	175	B++
Wichita	0.389	148	A--	0.031	198	B+
Raleigh	0.472	99	A-	0.303	63	A
Ottawa	0.53	65	A	0.207	86	A
Toronto	0.483	94	A-	0.326	48	A+
Vancouver	0.392	145	A--	0.317	58	A+
Montreal	0.428	120	A-	0.307	62	A
Calgary	0.508	77	A	0.264	72	A
Winnipeg	0.511	74	A	0.047	176	B++
Edmonton	0.505	81	A	0.094	138	A--
Quebec	0.395	143	A--	0.336	42	A+
Halifax	0.41	133	A--	0.039	184	B+
Hamilton(CA)	0.476	97	A-	0.046	177	B++
Regina	0.501	84	A	0.027	208	B+
Saskatoon	0.307	185	B+	0.027	207	B+
Victoria(CA)	0.397	142	A--	0.038	189	B+
Mexico City	0.25	198	B+	0.004	320	C++
Monterrey	0.133	242	B-	0	451	D++
Guadalajara	0.141	238	B	0.014	242	B-
Puebla	0.109	255	B-	0.006	300	B--
Tijuana	0.077	281	B--	0.001	385	C
Leon	0.223	204	B+	0.045	179	B++
Queretaro	0.219	210	B+	0.001	419	C-
Acapulco	0.113	251	B-	0.002	347	C+
Chihuahua	0.287	191	B+	0.004	331	C+
Toluca	0.152	235	B	0.007	290	B--
Ciudad Juarez	0.181	222	B	0	446	C--
Torreon	0.199	216	B	0	436	C--
San Luis Potosi	0.165	230	B	0.001	414	C-
Merida	0.168	226	B	0.001	401	C-
Aguascalientes	0.183	220	B	0.001	392	C-
Tampico	0.189	218	B	0.004	331	C+
Cuernavaca	0.153	233	B	0.005	309	C++
Morelia	0.192	217	B	0.001	408	C-
Saltillo	0.258	195	B+	0.002	347	C+
Veracruz	0.215	211	B+	0.004	319	C++
Panama City	0.095	268	B-	0.034	195	B+
Managua	0.026	413	C-	0.001	419	C-
Tegucigalpa	0.043	361	C	0.001	419	C-
San Juan	0.452	108	A-	0.063	164	B++
Guatemala City	0.075	285	B--	0.001	408	C-

Kingston	0.075	284	B--	0.123	120	A-
Port-au-Prince	0.022	426	C--	0	451	D++
Havana	0.132	243	B-	0.001	385	C
Santo Domingo	0.122	248	B-	0.002	377	C
Nassau	0.225	202	B+	0.048	172	B++
Sao Paulo	0.045	354	C+	0.03	202	B+
Rio de Janeiro	0.045	357	C+	0.04	181	B+
Brazilia	0.096	267	B-	0	451	D++
Recife	0.058	322	C++	0.002	347	C+
San Salvador	0.036	377	C	0.003	344	C+
Belo Horizonte	0.063	311	C++	0.013	253	B-
Manaus	0.106	259	B-	0.002	352	C+
Curitiba	0.067	299	B--	0.012	255	B-
Betim	0.247	199	B+	0	436	C--
Duque de Caxias	0.081	277	B--	0.002	377	C
Campinas	0.067	300	B--	0.02	223	B
Guarulhos	0.067	298	B--	0.002	377	C
Sao Bernardo do Campo	0.1	264	B-	0.005	309	C++
Sao Jose dos Campos	0.139	240	B	0.006	294	B--
Porto Alegre	0.223	205	B+	0.016	235	B
Buenos Aires	0.166	229	B	0.041	180	B++
Cordoba	0.111	252	B-	0.008	272	B--
Santiago	0.11	253	B-	0.064	161	B++
Montevideo	0.107	257	B-	0.011	261	B-
Asuncion	0.031	390	C	0	436	C--
Caracas	0.125	247	B-	0.008	272	B--
Bogota	0.027	412	C-	0.008	279	B--
Medellin	0.054	330	C+	0.001	381	C
Georgetown	0.011	462	D++	0.086	149	A--
Lima	0.038	373	C	0.019	228	B
La Paz	0.016	446	C--	0.009	267	B-
Guayaquil	0.063	310	C++	0.001	414	C-
Quito	0.069	295	B--	0.006	299	B--
Melbourne	0.468	102	A-	0.294	67	A
Sydney	0.503	82	A	0.153	102	A-
Brisbane	0.431	116	A-	0.116	124	A--
Adelaide	0.413	129	A--	0.071	155	B++
Canberra	0.492	88	A	0	464	D++

Hobart	0.476	98	A-	0.015	241	B-
Perth	0.366	160	B++	0.091	141	A--
Wellington	0.43	118	A-	0.223	80	A
Auckland(NZ)	0.308	184	B+	0.193	91	A-
Christchurch	0.389	149	A--	0.063	163	B++
Hamilton(NZ)	0.43	119	A-	0.032	196	B+
Port Moresby	0.007	478	D++	0	436	C--
Cairo	0.036	379	C	0.02	222	B
Alexandria	0.033	385	C	0.089	145	A--
Algiers	0.089	272	B--	0	464	D++
Casablanca	0.03	402	C-	0.004	318	C++
Rabat	0.032	386	C	0.002	352	C+
Tunis	0.054	328	C++	0.004	331	C+
Tripoli	0.158	232	B	0.004	320	C++
Addis Ababa	0.001	496	D+	0	451	D++
Nairobi	0.024	422	C--	0.003	335	C+
Djibouti	0.011	463	D++	0	464	D++
Victoria(SC)	0.151	236	B	0	464	D++
Kampala	0.006	480	D++	0	451	D++
Dar Es Salaam	0.011	465	D++	0	464	D++
Johannesburg	0.105	260	B-	0.081	150	A--
Cape Town	0.098	265	B-	0.032	197	B+
Pretoria	0.107	256	B-	0.079	152	B++
Durban	0.132	244	B-	0.019	226	B
Maputo	0.005	487	D+	0	464	D++
Luanda	0.041	367	C	0.001	419	C-
Lusaka	0.02	429	C--	0	451	D++
Blantyre	0.006	484	D+	0.005	307	C++
Port Louis	0.064	306	C++	0.008	272	B--
Windhoek	0.066	301	C++	0.001	419	C-
Gaborone	0.152	234	B	0	451	D++
Harare	0.01	470	D++	0.004	328	C++
Conakry	0.014	450	C--	0	464	D++
Dakar	0.019	434	C--	0.006	298	B--
Lome	0.004	490	D+	0	436	C--
Freetown	0.005	489	D+	0.001	381	C
Abijan	0.03	397	C-	0	464	D++
Accra	0.008	477	D++	0.001	389	C
Lagos	0.027	409	C-	0.002	347	C+
Douala	0.037	374	C	0	464	D++
Yaounde	0.027	410	C-	0	464	D++
Kinshasa	0.004	492	D+	0	451	D++

Brazzaville 0.09 271 B- 0 451 D++

Table16-5 Score, Rank and Level of Comprehensive Competitiveness of Global 500 Cities

City	Multinational Corporation			City	Multinational Corporation		
	Score	Rank	Level		score	Rank	level
London	0.959	2	A++	Phnom Penh	0.091	168	B++
Glasgow	0.104	143	A--	Yangon	0.015	367	C
Liverpool	0.054	238	B	Begawan	0.035	300	B--
Manchester	0.137	107	A-	Karachi	0.174	85	A
Edinburgh	0.159	95	A-	Lahore	0.099	156	B++
Leeds	0.097	159	B++	Islamabad	0.101	152	B++
Bristol	0.11	138	A--	Delhi	0.261	54	A+
Nottingham	0.06	222	B	Mumbai	0.414	24	A++
Belfast	0.07	197	B+	Calcutta	0.06	222	B
Southampton	0.056	236	B	Bangalore	0.222	66	A
Sheffield	0.05	254	B-	Ahmedabad	0.046	263	B-
Plymouth	0.062	213	B	Lucknow	0.012	383	C
Birmingham	0.103	149	A--	Hyderabad	0.093	162	B++
Chester	0.058	228	B	Jaipur	0.025	334	C+
Cardiff	0.083	176	B++	Chennai	0.159	95	A-
Aberdeen	0.014	377	C	Pune	0.066	206	B+
Norwich	0.068	202	B+	Kanpur	0.006	428	C--
Newcastle	0.228	63	A	Surat	0.017	363	C
Paris	0.652	4	A++	Nagpur	0.006	428	C--
Lyon	0.101	152	B++	Indore	0.039	292	B--
Lille	0.043	284	B--	Bhopal	0.041	288	B--
Strasbourg	0.104	143	A--	Ludhiana	0.014	377	C
Toulouse	0.103	149	A--	Vadodara	0.017	363	C
Nice	0.031	317	C++	Madurai	0.081	181	B++
Marseille	0.06	222	B	Varanasi	0.023	339	C+
Bordeaux	0.039	292	B--	Jabalpur	0.002	476	D++
Dublin	0.427	23	A++	Amritsar	0.01	401	C-
Amsterdam	0.398	27	A++	Nasik	0.004	433	C--
Rotterdam	0.116	129	A--	Visakhapatnam	0	478	D++
The Hague	0.046	263	B-	Rajkot	0	478	D++
Utrecht	0.052	249	B-	Allahabad	0.01	401	C-
Brussels	0.507	14	A++	Agra	0.021	348	C+

Zurich	0.36	33	A+	Asansol	0.01	401	C-
Geneva	0.24	60	A+	Faridabad	0.015	367	C
Bern	0.031	317	C++	Patna	0.004	433	C--
Basel	0.062	213	B	Thane	0.004	433	C--
Vienna	0.319	42	A+	Kalyan	0	478	D++
Berlin	0.222	66	A	Meerut	0.004	433	C--
Frankfurt	0.509	13	A++	Haora	0.004	433	C--
Munich	0.346	37	A+	Pimpri-Chichwad	0.004	433	C--
Hamburg	0.219	71	A	Cochi	0.077	188	B+
Nuremberg	0.046	263	B-	Mysore	0.006	428	C--
Cologne	0.106	141	A--	Pondicherry	0.004	433	C--
Bonn	0.023	339	C+	Ranchi	0.017	363	C
Stuttgart	0.133	108	A-	Trivandrum	0.014	377	C
Dresden	0.058	228	B	Ghaziabad	0.004	433	C--
Dortmund	0.035	300	B--	Coimbatore	0.017	363	C
Hannover	0.035	300	B--	Srinagar	0.012	383	C
Dusseldorf	0.255	56	A+	Vijayawada	0.002	476	D++
Leipzig	0.054	238	B	Dhaka	0.015	367	C
Essen	0.039	292	B--	Columbo	0.132	112	A-
Mainz	0.008	407	C-	Tel Aviv	0.242	59	A+
Mannheim	0.054	238	B	Yerushalayim	0	478	D++
Bremen	0.058	228	B	Ankara	0.133	108	A-
Oslo	0.221	70	A	Istanbul	0.344	38	A+
Bergen	0.033	312	C++	Tehran	0.072	195	B+
Stockholm	0.366	32	A+	Yerevan	0.015	367	C
Gothenburg	0.044	276	B--	Baku	0.06	222	B
Malmo	0.039	292	B--	Baghdad	0.015	367	C
Helsinki	0.222	66	A	Manama	0.153	97	A-
Copenhagen	0.238	61	A	Doha	0.12	123	A--
Arhus	0.06	222	B	Ruwi	0.035	300	B--
Reykjavik	0.052	249	B-	Damascus	0.085	173	B++
Athens	0.309	43	A+	Beirut	0.257	55	A+
Rome	0.348	36	A+	Al Kuwayt	0.18	81	A
Milan	0.544	11	A++	Dubai	0.368	31	A+
Turin	0.062	213	B	Amman	0.118	128	A--
Naples	0.019	353	C+	Riyadh	0.246	58	A+
Venice	0.015	367	C	Sanaa	0.015	367	C
Bologna	0.103	149	A--	Kabul	0.031	317	C++
Genoa	0.056	236	B	Nicosia	0.174	85	A
Trieste	0.033	312	C++	Dushanbe	0.004	433	C--
Palermo	0.027	326	C++	Alamaty	0.008	407	C-
Madrid	0.516	12	A++	Tashkent	0.052	249	B-
Barcelona	0.294	48	A+	Washington	0.443	19	A++
Valencia	0.077	188	B+	New York	1	1	A++

Lisbon	0.304	45	A+	Los Angeles	0.497	15	A++
Porto	0.089	170	B++	Chicago	0.404	26	A++
Sarajevo	0.054	238	B	Boston	0.25	57	A+
Belgrade	0.11	138	A--	Philadelphia	0.149	99	A-
Zagreb	0.168	91	A-	Seattle	0.178	82	A
Ljubljana	0.161	94	A-	Detroit	0.151	98	A-
Bucharest	0.308	44	A+	Dallas	0.263	53	A+
Sofia	0.201	75	A	Houston	0.222	66	A
Bratislava	0.298	47	A+	Phoenix	0.11	138	A--
Riga	0.143	103	A-	Pittsburgh	0.104	143	A--
Warsaw	0.443	19	A++	San Francisco	0.344	38	A+
Krakow	0.06	222	B	Denver	0.211	72	A
Prague	0.333	40	A+	San Jose	0.064	212	B
Budapest	0.352	35	A+	San Diego	0.128	118	A-
Tallinn	0.133	108	A-	Cleveland	0.116	129	A--
Vilnius	0.12	123	A--	Columbus	0.101	152	B++
Minsk	0.097	159	B++	Cincinnati	0.041	288	B--
Kiev	0.193	77	A	Las Vegas	0.083	176	B++
Moscow	0.549	9	A++	Atlanta	0.325	41	A+
Saint Petersburg	0.139	106	A-	Austin	0.116	129	A--
Novosibirsk	0.044	276	B--	Baltimore	0.093	162	B++
Kazan	0.025	334	C+	Charlotte	0.083	176	B++
Belgorod	0.021	348	C+	Memphis	0.114	132	A--
Omsk	0.019	353	C+	Miami	0.28	52	A+
Bryansk	0	478	D++	Milwaukee	0.13	115	A-
Vladimir	0	478	D++	Minneapolis	0.178	82	A
Voronez	0	478	D++	Nashville	0.074	194	B+
Ivanovo	0.025	334	C+	Portland	0.128	118	A-
Kaluga	0.008	407	C-	Sacramento	0.081	181	B++
Kursk	0.008	407	C-	San Antonio	0.054	238	B
Lipeck	0	478	D++	Saint Louis	0.097	159	B++
Or'ol	0	478	D++	Indianapolis	0.085	173	B++
Ryazan	0.004	433	C--	Albuquerque	0.05	254	B-
Smolensk	0.004	433	C--	Buffalo	0.114	132	A--
Tambov	0.008	407	C-	Honolulu	0.149	99	A-
Tver	0	478	D++	Kansas City	0.104	143	A--
Tula	0.004	433	C--	New Orleans	0.091	168	B++
Jaroslavl	0.004	433	C--	Palo Alto	0.062	213	B
Petrozavodsk	0	478	D++	Tampa	0.099	156	B++
Archangelsk	0.004	433	C--	Tulsa	0.035	300	B--
Kaliningrad	0.004	433	C--	Arlington	0.093	162	B++
Murmansk	0.012	383	C	El Paso	0.054	238	B
Machackala	0	478	D++	Fort Worth	0.044	276	B--
Groznyj	0	478	D++	Fresno	0.046	263	B-

Krasnojarsk	0.01	401	C-	Jacksonville	0.044	276	B--
Stavropol	0.029	323	C++	Long Beach	0.035	300	B--
AstraChan	0	478	D++	Mesa	0.031	317	C++
Rostov-na-Donu	0.012	383	C	Oakland (US)	0.112	135	A--
Volgograd	0.012	383	C	Oklahoma City	0.031	317	C++
Ufa	0.004	433	C--	Tucson	0.033	312	C++
Izhevsk	0.004	433	C--	Virginia Beach	0.081	181	B++
Niznij Novgorod	0.021	348	C+	Wilmington	0.037	299	B--
Kirov	0.012	383	C	Omaha	0.066	206	B+
Orenburg	0.008	407	C-	Wichita	0.033	312	C++
Penza	0.008	407	C-	Raleigh	0.062	213	B
Perm	0.006	428	C--	Ottawa	0.12	123	A--
Samara	0.01	401	C-	Toronto	0.495	16	A++
Saratov	0.014	377	C	Vancouver	0.176	84	A
Uljanovsk	0.004	433	C--	Montreal	0.205	73	A
Barnaul	0.046	263	B-	Calgary	0.124	122	A--
Krasnojarsk	0.01	401	C-	Winnipeg	0.068	202	B+
Kemerovo	0	478	D++	Edmonton	0.066	206	B+
Vladivostok	0.004	433	C--	Quebec	0.077	188	B+
T'umen	0	478	D++	Halifax	0.058	228	B
Cel'abinsk	0.008	407	C-	Hamilton(CA)	0.12	123	A--
Chabarovsk	0.004	433	C--	Regina	0.023	339	C+
Jekaterinburg	0.012	383	C	Saskatoon	0.027	326	C++
Beijing	0.592	7	A++	Victoria(CA)	0.039	292	B--
Tianjin	0.075	192	B+	Mexico City	0.389	29	A++
Shenyang	0.054	238	B	Monterrey	0.112	135	A--
Dalian	0.058	228	B	Guadalajara	0.106	141	A--
Shanghai	0.561	8	A++	Puebla	0.044	276	B--
Nanjing	0.066	206	B+	Tijuana	0.046	263	B-
Yangzhou	0.004	433	C--	Leon	0.031	317	C++
Suzhou	0.046	263	B-	Queretaro	0.048	260	B-
Hangzhou	0.058	228	B	Acapulco	0.004	433	C--
Ningbo	0.025	334	C+	Chihuahua	0.132	112	A-
Wenzhou	0.008	407	C-	Toluca	0.099	156	B++
Hefei	0.023	339	C+	Ciudad Juarez	0.054	238	B
Fuzhou	0.046	263	B-	Torreon	0.008	407	C-
Xiamen	0.05	254	B-	San Luis Potosi	0.006	428	C--
Nanchang	0.023	339	C+	Merida	0.012	383	C
Qingdao	0.046	263	B-	Aguascalientes	0.004	433	C--
Wuhan	0.046	263	B-	Tampico	0.004	433	C--
Guangzhou	0.228	63	A	Cuernavaca	0.004	433	C--
Shenzhen	0.145	102	A-	Morelia	0.004	433	C--
Dongguan	0.012	383	C	Saltillo	0.004	433	C--

Chongqing	0.05	254	B-	Veracruz	0.004	433	C--
Chengdu	0.13	115	A-	Panama City	0.17	88	A
Xi'an	0.033	312	C++	Managua	0.079	185	B+
Hongkong	0.721	3	A++	Tegucigalpa	0.101	152	B++
Macao	0.072	195	B+	San Juan	0.128	118	A-
Taipei	0.485	17	A++	Guatemala City	0.17	88	A
Kaohsiung city	0.085	173	B++	Kingston	0.027	326	C++
Hsinchu city	0.062	213	B	Port-au-Prince	0.012	383	C
Shijiazhuang	0.046	263	B-	Havana	0.027	326	C++
Taiyuan	0.058	228	B	Santo Domingo	0.19	79	A
Huhehaote	0.004	433	C--	Nassau	0.081	181	B++
Baotou	0.052	249	B-	Sao Paulo	0.412	25	A++
Changchun	0.014	377	C	Rio de Janeiro	0.172	87	A
Harbin	0.014	377	C	Brazilia	0.054	238	B
Xuzhou	0.004	433	C--	Recife	0.046	263	B-
Changzhou	0.012	383	C	San Salvador	0.133	108	A-
Nantong	0.012	383	C	Belo Horizonte	0.05	254	B-
Wuxi	0.019	353	C+	Manaus	0.035	300	B--
Jiaxing	0.008	407	C-	Curitiba	0.066	206	B+
Shaoxing	0.004	433	C--	Betim	0.004	433	C--
Taizhou	0.004	433	C--	Duque de Caxias	0	478	D++
Wuhu	0.008	407	C-	Campinas	0.062	213	B
Quanzhou	0.008	407	C-	Guarulhos	0.004	433	C--
Jinan	0.023	339	C+	Sao Bernardo do Campo	0	478	D++
Zibo	0.019	353	C+	Sao Jose dos Campos	0	478	D++
Yantai	0.012	383	C	Porto Alegre	0.089	170	B++
Weifang	0.004	433	C--	Buenos Aires	0.441	21	A++
Weihai	0.004	433	C--	Cordoba	0.07	197	B+
Rizhao	0.004	433	C--	Santiago	0.292	49	A+
Zhengzhou	0.019	353	C+	Montevideo	0.203	74	A
Changsha	0.035	300	B--	Asuncion	0.075	192	B+
Zhuhai	0.019	353	C+	Caracas	0.284	51	A+
Foshan	0.012	383	C	Bogota	0.232	62	A
Huizhou	0.004	433	C--	Medellin	0.07	197	B+
Zhongshan	0.004	433	C--	Georgetown	0.089	170	B++
Nanning	0.004	433	C--	Lima	0.191	78	A
Liuzhou	0.004	433	C--	La Paz	0.093	162	B++
Haikou	0.004	433	C--	Guayaquil	0.126	121	A--
Kunming	0.029	323	C++	Quito	0.141	105	A-
Tainan	0.008	407	C-	Melbourne	0.304	45	A+
Taichung	0.008	407	C-	Sydney	0.549	9	A++
Keelung	0.015	367	C	Brisbane	0.162	93	A-

Tokyo	0.632	5	A++	Adelaide	0.104	143	A--
Osaka	0.132	112	A-	Canberra	0.083	176	B++
Nagoya	0.062	213	B	Hobart	0.05	254	B-
Kyoto	0.054	238	B	Perth	0.143	103	A-
Kawasaki	0.008	407	C-	Wellington	0.149	99	A-
Kobe	0.027	326	C++	Auckland(NZ)	0.354	34	A+
Sapporo	0.093	162	B++	Christchurch	0.066	206	B+
Sendai	0.035	300	B--	Hamilton(NZ)	0.008	407	C-
Yokohama	0.035	300	B--	Port Moresby	0.029	323	C++
Fukuoka	0.039	292	B--	Cairo	0.226	65	A
Hiroshima	0.07	197	B+	Alexandria	0.048	260	B-
Okinawa	0.041	288	B--	Algiers	0.054	238	B
Kitakyusyu	0.043	284	B--	Casablanca	0.17	88	A
Chichibu	0.058	228	B	Rabat	0.019	353	C+
Chiba	0.046	263	B-	Tunis	0.104	143	A--
Takamatsu	0.023	339	C+	Tripoli	0.019	353	C+
Shizuoka	0.019	353	C+	Addis Ababa	0.027	326	C++
Hamamatsu	0.035	300	B--	Nairobi	0.164	92	A-
Sakai	0.027	326	C++	Djibouti	0	478	D++
Akita	0.012	383	C	Victoria(SC)	0.015	367	C
Okayama	0.008	407	C-	Kampala	0.044	276	B--
Kanazawa	0.008	407	C-	Dar Es Salaam	0.068	202	B+
Seoul	0.478	18	A++	Johannesburg	0.286	50	A+
Busan	0.048	260	B-	Cape Town	0.182	80	A
Ulsan	0	478	D++	Pretoria	0.083	176	B++
Incheon	0	478	D++	Durban	0.062	213	B
Gyeongju	0.023	339	C+	Maputo	0.035	300	B--
Daejeon	0.019	353	C+	Luanda	0.077	188	B+
Daegu	0.023	339	C+	Lusaka	0.068	202	B+
Pyongyang	0	478	D++	Blantyre	0.025	334	C+
Ulan Bator	0.012	383	C	Port Louis	0.114	132	A--
Singapore	0.603	6	A++	Windhoek	0.043	284	B--
Bangkok	0.441	21	A++	Gaborone	0.07	197	B+
Rayong	0.008	407	C-	Harare	0.079	185	B+
Kuala Lumpur	0.397	28	A++	Conakry	0.041	288	B--
Penang	0.052	249	B-	Dakar	0.044	276	B--
Labuan	0.079	185	B+	Lome	0.021	348	C+
Malacca	0.004	433	C--	Freetown	0.012	383	C
Jakarta	0.375	30	A++	Abijan	0.039	292	B--
Medan	0.021	348	C+	Accra	0.093	162	B++
Bandung	0.015	367	C	Lagos	0.12	123	A--
Ho Chi Minh City	0.195	76	A	Douala	0.044	276	B--

Hanoi	0.13	115	A-	Yaounde	0.008	407	C-
Manila	0.112	135	A--	Kinshasa	0.027	326	C++
Cebu	0.043	284	B--	Brazzaville	0.012	383	C

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