

Insights

Worldwide Centers of Commerce Index™

2008



NAVIGATING THE 2008 WORLDWIDE CENTERS OF COMMERCE INDEX

The 2008 *Worldwide Centers of Commerce Index* offers a comprehensive comparative ranking of 75 of the world's leading global cities and their instrumental role in driving the global economy, including an evaluation of their strengths and challenges across several key measurement dimensions.

Contained in this report is an overview of the structure of the *Worldwide Centers of Commerce Index*. Next is the presentation of the results of the 2008 Index. This section provides the overall ranking of the 75 cities included in this year's study and explores the rankings according to each of the measurement dimensions used. Where useful, the report probes more deeply to explore the rankings of cities against specific indicators and sub-indicators.

Introduction

The *MasterCard Worldwide Centers of Commerce Index™* is an innovative research program designed to identify and rank the world's leading cities and explore their role in driving global commerce. Developed by a world-renowned panel comprised of a group of experts in economics, sociology and urban studies and chaired by Dr. Michael Goldberg on behalf of MasterCard Worldwide, this Index examines the compelling global and regional economic trends that distinguish Centers of Commerce from other cities around the world.

MasterCard developed the Centers of Commerce Index after recognizing a notable milestone in global urbanization: In 2006, for the first time in human history, more people lived in cities and towns than in the rural countryside. In fact, a recent listing of the world's urban centers indicates that there are 161 urban regions containing 2.5 million or more people¹—together encompassing a population larger than that of 97 of the world's countries. Another study highlights 707 urban agglomerations with 500,000 or more people.²

A closer look at major cities reveals that the diversity, scale, scope and reach of their economies far exceed what would be expected from size alone. A majority of these urban areas are truly "global cities,"³ serving as critical links in a network that directs commerce and finance across the globe.

Together, these trends, insights and statistics called for a new method of understanding how global cities connect markets and impact the world economy. This knowledge is particularly important for companies seeking to expand their global presence.

Many multinational companies have responded to global urbanization and to an increased need to improve efficiencies by flattening their organizational structures and distributing core business functions across international borders. At the same time, multinational companies are increasingly interested in leveraging location advantages created by a broader global network of suppliers, competitors and partners. As a result, understanding how to capitalize on local market conditions has become an important factor in defining a company's competitive advantage.

Successful companies of the future will be truly transnational, operating seamlessly as a single global entity, employing people and positioning resources in alignment with location advantages. This approach will require a deep understanding not only of how global cities are interrelated, but also of how they compete with and complement each other. Understanding how to leverage the advantages of these interrelationships will distinguish truly transnational companies from their competitors.

For businesses in consumer markets, knowledge about the rise of global cities and how they function as Centers of Commerce is equally indispensable. Global cities—where the most skilled workers, the most innovative companies and the best public and private institutions are concentrated—are also centers of high productivity, where wages are highest and where wealth is created. Not surprisingly, the most exciting and dynamic global consumer markets are found in Centers of Commerce.

While many multinational companies may claim to be global businesses today, in the coming decades only those capable of building a globally integrated structure will rise



Truly "global cities" serve as critical links in a network that directs commerce and finance around the world.

1. These data come from Thomas Brinkhoff, *City Population*, <http://www.citypopulation.de>, 2008.

2. Demographia, *World Urban Areas: World Agglomerations* (Belleville, IL: Demographia), March 2007, pages 9-30; includes all urban agglomerations above 500,000 people and smaller urban areas in some countries so the list comprises 1,302 urban areas. <http://www.demographia.com>.

3. See S. Sassen, 2001. *The Global City*. Princeton and Oxford: Princeton University Press.

above the competition. Understanding the dynamics of global cities and their critical role as Worldwide Centers of Commerce is a key element of that competitive advantage.

The MasterCard Worldwide Centers of Commerce Index

The 2008 *Worldwide Centers of Commerce Index* evaluates 75 cities across seven dimensions consisting of 43 indicators and 74 sub-indicators.⁴

Figure 1 summarizes the dimensions and indicators in the 2008 *Worldwide Centers of Commerce Index*, giving a broad overview of the dimensions.

Together, the dimensions span the core functional traits of a Worldwide Center of Commerce. The “legal and political framework” dimension captures national institutional elements, while global connectedness is covered by the “financial flow” and “business center” dimensions. Risk factors tied to the city are covered by the “economic stability” dimension.

The seven dimensions of the Index:

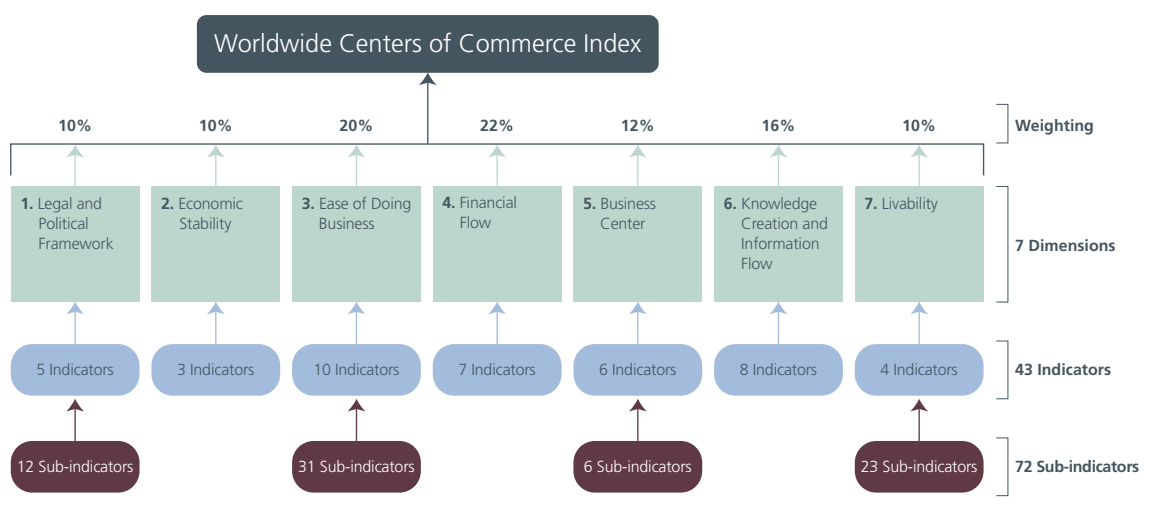
1. Legal and political framework
2. Economic stability
3. Ease of doing business
4. Financial flow
5. Business center
6. Knowledge creation and information flow
7. Livability

The Index goes beyond characteristics typically used in identifying international financial and business centers, including a new dimension in 2008 that focuses on the “livability” or the quality of life factors needed to compete in today’s global labor market. The “ease of doing business” dimension considers regulations for urban development as well as social policies. In today’s knowledge-driven economy, innovation and creativity drive local and global economic activities, which the “knowledge creation and information flow” dimension seeks to capture for each Worldwide Center of Commerce.

The weights assigned to each of the seven dimensions were determined after much discussion and careful consideration by the panel.

Figure 1 summarizes the dimensions and indicators in the 2008 Worldwide Centers of Commerce Index™, giving a broad overview of the dimensions.

Figure 1: Worldwide Centers of Commerce Index Dimension and Indicator Map



4. The pioneering work by Professors Peter J. Taylor and John Beaverbrook at the University of Loughborough—the Globalization and World Cities Study Group—is an important data source; updated by MasterCard for this project.

The overall pattern reflects the view that country- or economy-wide data should have less weight than city-specific data.

The Results

Overall 2008 Rankings

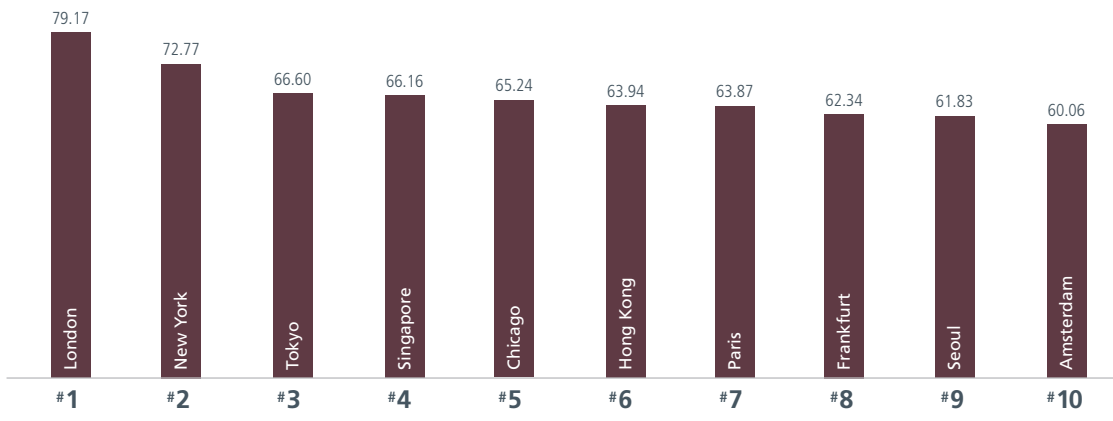
Using the weighting structure in conjunction with the indicators and sub-indicators allows for the creation of a ranking of the 75 cities in our sample. The full ranking of all 75 cities appears in the Appendix section. Chart 1 is a list of the top ten Worldwide Centers of Commerce.

Not surprisingly, London, New York, and Tokyo are once again ranked #1, #2 and #3, respectively. However, there have been several

notable shifts in the rest of the top ten cities. Singapore is now ranked #4 compared with its #6 ranking in 2007, very closely behind third-ranked Tokyo. Accordingly, Chicago and Hong Kong both moved down a position to #5 and #6, respectively, in 2008. Paris moved up to #7 from its #8 ranking in 2007, while Seoul retained its spot at #9. Frankfurt is at #8 compared with its #7 ranking in 2007, while Amsterdam moved into the #10 position from its #11 position in 2007, displacing Los Angeles, which moved to #17 this year.

Charts 2 and 3 present the Index scores for London for the seven dimensions and how it ranked in each dimension. London scores highest in the “financial flow” dimension (dimension 4) as one would expect, as well as in the

Chart 1: Top Ten Centers of Commerce in the World



Not surprisingly, London, New York, and Tokyo are once again ranked #1, #2 and #3, respectively. However, there have been several notable shifts in the rest of the top ten cities.



Chart 2: London Index Score

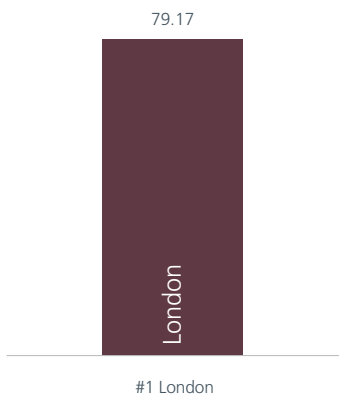
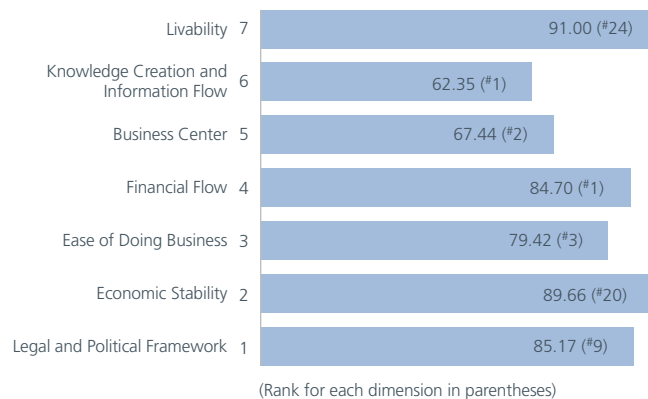


Chart 3: London Rankings by Dimension



“knowledge creation and information flow” dimension (dimension 6). London also ranked highly at #2 in the “business center” dimension (dimension 5), while placing #3 in “ease of doing business” (dimension 3) and #9 in “legal and political framework” (dimension 1). London did not fare as well in “livability” (dimension 7), ranking #24, and “economic stability” (dimension 2), ranking #20.

Looking at the major regions covered by this report, in North America there are 11 US cities and three Canadian cities among the top 40 Centers of Commerce ranked.

North American cities benefit from solid placement in the two dimensions that measure country-level data, dimension 1 (“legal and political framework”) and dimension 2 (“economic stability”), while also scoring highly in dimension 6 (“knowledge creation and information flow”), though scoring less in key dimensions such as dimension 3 (“ease of doing business”), dimension 4 (“financial flow”) and dimension 5 (“business center”) in comparison with top European and Asian cities.

Western Europe’s high scores are expected given the region’s longstanding global business and economic links. Four of the top ten cities and ten of the top 25 cities are European Centers of Commerce. Madrid continues to fare well in the Index jumping to position 11 from 16 in 2007; its strong showing is likely due to its importance as a link and conduit between European and South American markets.

Asia/Pacific, Middle East and Africa, including Australia, were very strong again this year with four of the top ten Centers and eight of the top 25 Centers being in Asia, including Sydney, which moved up to #12.

China has five cities in the top 75, including Shanghai—a rapidly growing and massive city that ranks #24 this year, up from #32 in the 2007 ranking.

Three Indian cities are ranked this year, including Mumbai #48, New Delhi #61 and Bangalore #66.

The Middle East is well represented with Dubai at #44, Tel Aviv at #45, Istanbul at #64, Riyadh at #69, Cairo at #70 and Beirut at #74.

Also included in our top 75 Worldwide Centers of Commerce is one African city, Johannesburg at #58.

Finally, seven cities from Latin America appear in the top 75, including Santiago #53, Mexico City #54, Sao Paulo #56, Bogota #62, Buenos Aires #63, Rio de Janeiro #65 and Caracas #75.

The remarkable strength of the Asia/Pacific, Middle East and Africa cities, especially in comparison to those in Europe, is noteworthy. European Centers of Commerce have been central to world commerce for centuries and are part and parcel of European and world commercial history.

Cities in Asia were not generally major Centers of Commerce in the second half of the 20th century, with the exception of Tokyo and subsequently Hong Kong and Singapore. The very strong rise of Shanghai in the 2008 Index reflects the equally spectacular rise of China. While Shanghai was likely the dominant Asian commercial center before World War II, it faded for many decades until China’s economic reforms of the 1980s catapulted it back to global prominence.

It also is interesting to note that London has maintained its dominant ranking globally and within Europe, despite the introduction of the euro. In fact, euro-denominated business operates out of London despite the fact that when people buy their coffee or take a cab they are using British pounds. Indeed, Frankfurt, which is in the middle of the euro-zone, has slipped a little. Can London keep this momentum up, particularly in light of the recent subprime mortgage crisis, which will doubtless have significant effects on future rankings as different countries’ banks fare differently from the fallout? This is the type of development that underlies the value of the Index in charting the course of Worldwide Centers of Commerce over time.



The top ten Worldwide Centers of Commerce are led by London, a city known for its financial strength, knowledge flow and attractive business climate.

Relative to the financial scene, there has been a “shrinkage of financial space” as money moves globally in a matter of milliseconds and the information that moves markets is also being shared globally at the speed of light. This drives much of the “financial flow” dimension and is possibly what allows a city such as Madrid to grow on the strength of Spanish-speaking countries far away in Latin America.

2008 Regional Rankings

North America

Turning to the first regional rankings, the top five Worldwide Centers of Commerce within the North American region are New York, Chicago, Toronto, Los Angeles and Philadelphia with scores as shown in Chart 4. Overall, there

are 14 cities from the North American region that are ranked in the top 40 Centers of Commerce with 11 US cities and three Canadian cities, Toronto, Montreal and Vancouver.

Unsurprisingly, New York is top ranked in North America and ranked #2 in our 75 Worldwide Centers of Commerce. Details of New York’s Index ranking and seven dimension scores appear in Charts 5 and 6. New York out-ranks London (#1) in the “legal and political framework” dimension and has similar rankings in the “economic stability,” “livability” and “ease of doing business” dimensions. New York ranks lower in key dimensions, such as “financial flow” (dimension 4) and “business center” (dimension 6).



The remarkable strength of the Asia/Pacific, Middle East & Africa cities, especially compared to Europe, is noteworthy.

Chart 4: Top Five Cities in North America

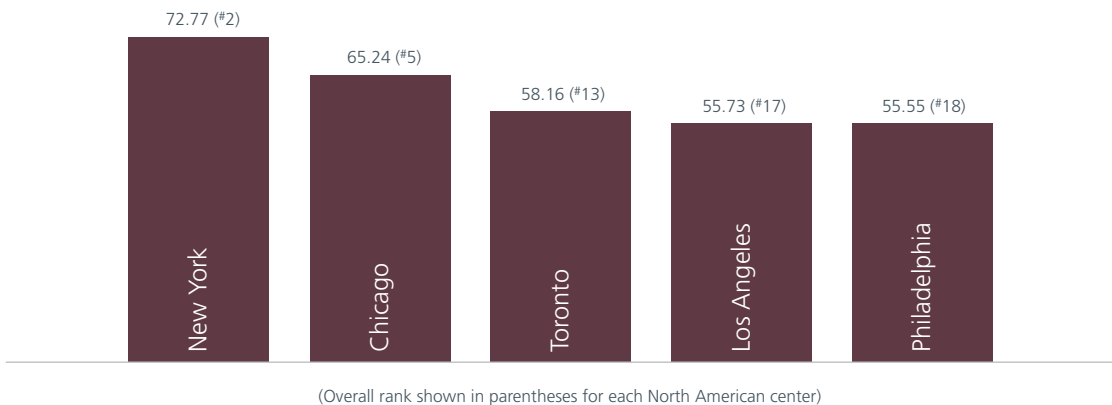
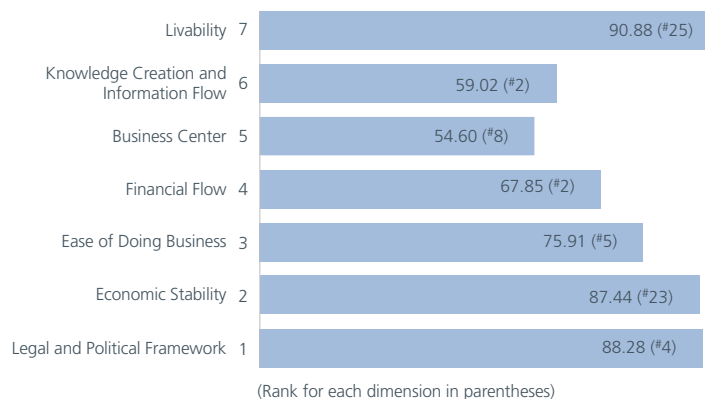


Chart 5: New York Index Score



Chart 6: New York Rankings by Dimension





The top five Worldwide Centers of Commerce within the North American region are New York, Chicago, Toronto, Los Angeles and Philadelphia.

Asia/Pacific, Middle East and Africa (APMEA)

Tokyo retained both its #1 regional position and #3 overall while Singapore jumped to #4 overall and #2 in Asia/Pacific, Middle East and Africa in 2008, outpacing previous #5, Hong Kong, which dropped one spot to #6 overall and to #3 in the region. Tokyo, Singapore, Hong Kong, Seoul and Sydney round out the region’s top five as shown in Chart 7.

Beyond these top five Asia/Pacific, Middle East and Africa cities there is broad representation from China (Shanghai #24, Beijing #57, Shenzhen #60, Chengdu #72 and Chongqing #73).

India has three cities represented by Mumbai #48, New Delhi #61 and Bangalore #66.

Five cities in the Middle East are in the top 75, including Dubai #44, Tel Aviv #45, Istanbul #64, Riyadh #69, Cairo #70 and Beirut #74.

Also in Asia/Pacific, Middle East and Africa are Osaka #19, Taipei #22, Melbourne #41, Bangkok #42, Kuala Lumpur #50, Jakarta #68 and Manila at #71. The only city in Africa is Johannesburg, ranking #58.

The booming Chinese and Indian economies have clearly continued the shift of economic power to Asia. The strong presence of Asia/Pacific, Middle East and Africa cities is further evidence of the growing influence of the region not just in manufacturing and services, but also in broadly based commercial strength.

Charts 8 and 9 present a more detailed analysis of dimensional Index values and rankings for Tokyo, the #1 city in the region. Tokyo scores very well in the dimensions of “financial flow” (dimension 4), “business center” (dimension 5), “livability” (dimension 7) and

Chart 7: Top Five Cities in Asia/Pacific, Middle East and Africa

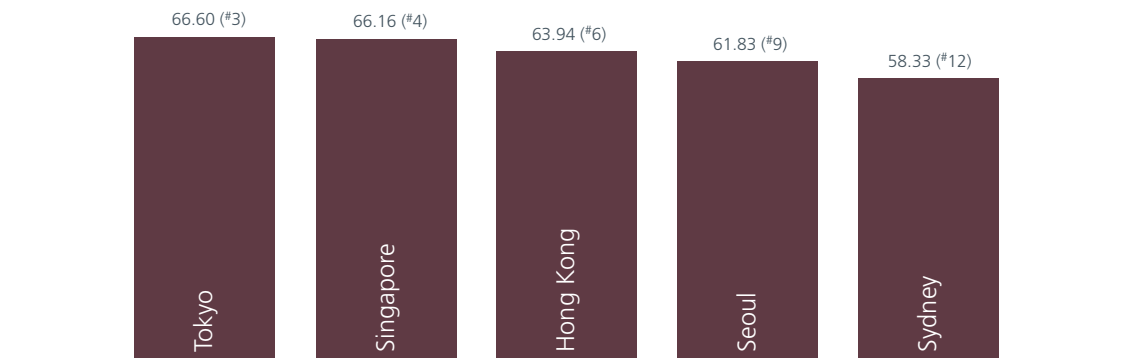


Chart 8: Tokyo Index Score

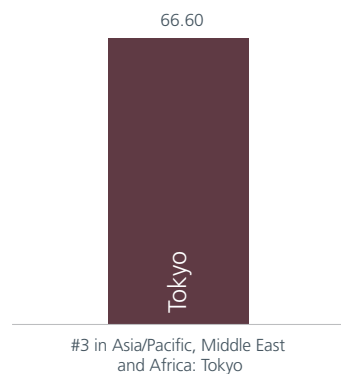
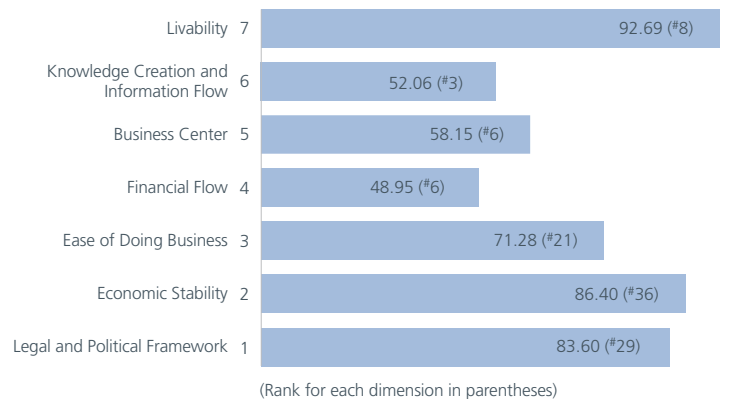


Chart 9: Tokyo Rankings by Dimension



“knowledge creation and information flow” (dimension 6), where it ranked #3 overall.

However, Tokyo scored considerably lower than London and New York in “legal and political framework” (dimension 1), “economic stability” (dimension 2), and “ease of doing business” (dimension 3).

Europe

Moving on to Europe and its leading Centers of Commerce, Chart 10 presents the top five European cities. London, ranked #1, is followed by Paris #2, Frankfurt #3, Amsterdam #4 and Madrid #5. While London is #1, there is a large gap between it, with a score of 79.17, Paris #2 (#7 overall) with a score of 63.87, and Europe’s #5 Center of Commerce, Madrid (#11 overall) with a score of 58.34.

The Index values and dimensions for London have already been presented and discussed in Charts 2 and 3 because of London’s #1 global ranking. They are repeated here as Charts 11 and 12.

European cities are heavily represented at all levels of the 2008 *Worldwide Centers of Commerce Index*. Specifically, four of the top ten Centers of Commerce are in Europe and ten of the top 25 are also European. Overall, there are 28 European cities represented in the 75 cities covered in the study, the most of any region.

It is also important to point out that within the set of European cities examined in the *Worldwide Centers of Commerce Index*, there are significant variations, most notably between the Index values and rankings of the cities in Western and Eastern Europe. For example, Prague is the highest-ranked Eastern European

European cities are heavily represented at all levels with four of the top ten Centers of Commerce in Europe.



Chart 10: Top 5 European Cities

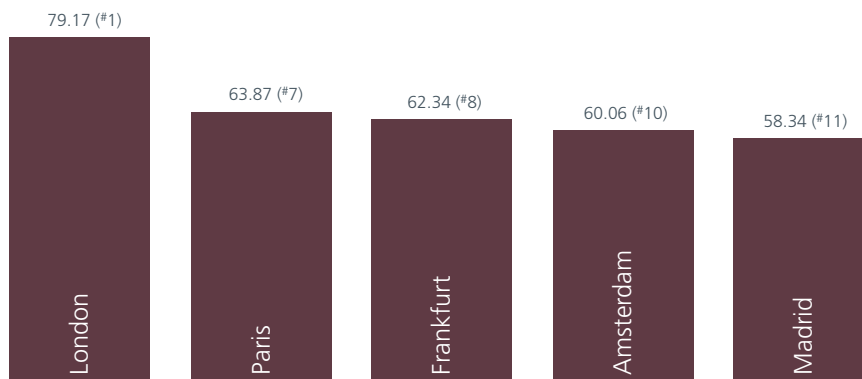
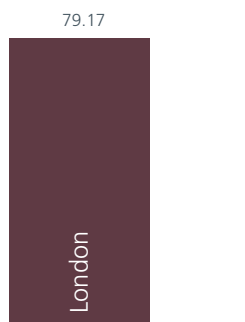
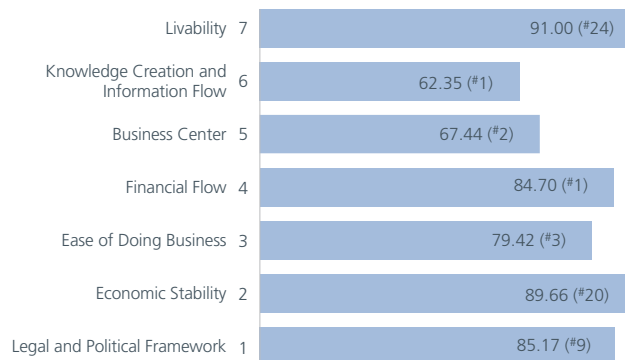


Chart 11: London Index Score



#1 in Europe: London

Chart 12: London Rankings by Dimension



(Rank for each dimension in parentheses)

city at #49. It ranks #22 of the 28 European cities on the list. Indeed, there are only six Eastern European cities on the 2008 Index.

However, there was considerable dynamism exhibited by cities such as Moscow, which saw the most significant score increase of any city in the study when compared to London's score. This important calculation reflects the city's rising economy and its role as a gateway to Eastern Europe.

Latin America and the Caribbean

This year's top five Latin American and Caribbean Centers of Commerce are Santiago #53, Mexico City #54, São Paulo #56, Bogota #62 and Buenos Aires #63.

The highest-ranked Latin American and Caribbean cities in 2007 were Santiago at #39 and Mexico City at #42. Twenty-five new cities were included in this year's Index, making it a much more competitive landscape. Santiago in 2008 ranks #53 and Mexico City ranks #54, so statistically their relative ranks remain virtually unchanged.

Brazil is the only country in the Latin American and Caribbean region that has two cities included in the world's top 75.

The dimensional Index values of Santiago are summarized in Charts 14 and 15. The Index values for the "financial flow," "business center," and "knowledge creation and information flow" dimensions are low compared to its northern neighbors. Nonetheless, the fact that



There was considerable dynamism exhibited by cities such as Moscow, which saw the most significant score increase of any city in the study when compared to London's score.

Chart 13: Top 5 Latin American and Caribbean Cities

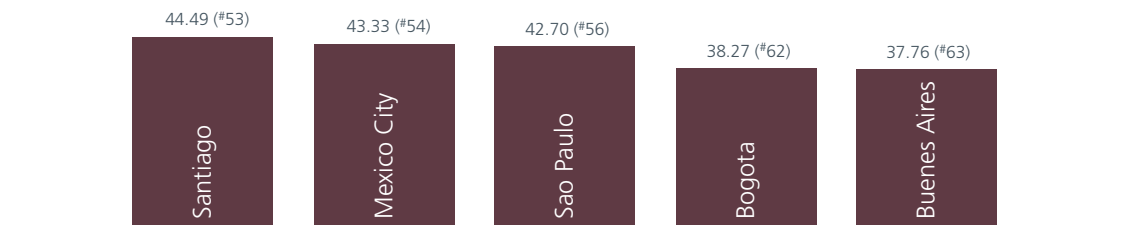


Chart 14: Santiago Index Score



Chart 15: Santiago Rankings by Dimension

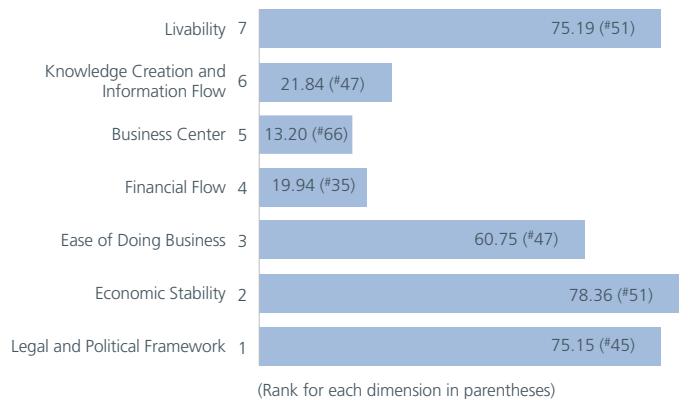
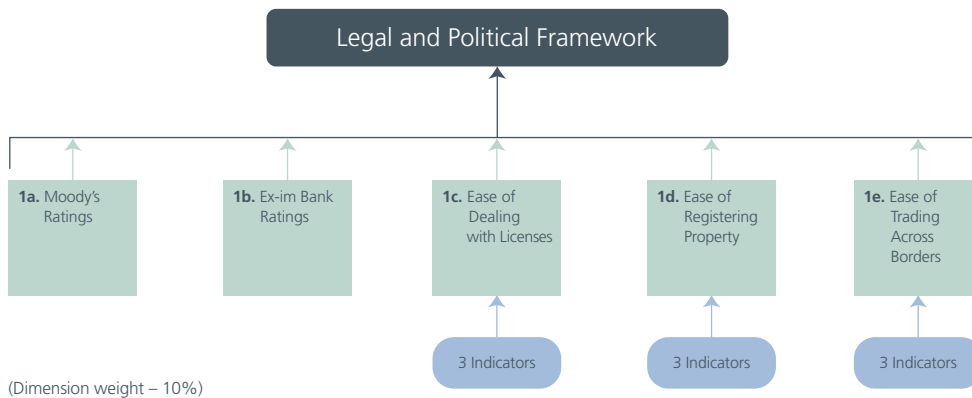


Chart 16: Legal and Political Framework



Brazil is the only country in the Latin American and Caribbean region that has two cities included in the world's top 75.



seven cities from Latin America are among the world's top 75 Worldwide Centers of Commerce is a strong statement of how fast the region is becoming more global and competitive.

A Deeper Exploration of the Rankings by the Seven Dimensions

Up to this point, the study has examined the city rankings based on aggregate Index scores that are a weighted sum of the seven measurement dimensions. It is also valuable to delve into each of the seven dimensions and present the top ten cities in each dimension. This allows for an analysis of where cities have their strengths and weaknesses.

Dimension 1: Legal and Political Framework

The "legal and political framework" dimension is derived from the indicators and sub-indicators noted in Chart 16, all of which are national-level inputs.

This dimension shows the importance of an effective democratic system, a long history of lawmaking, universal suffrage and transparency in government. The Centers of Commerce that are highest-ranked are all Western

Table 1: Legal and Political Framework

Index Value	Worldwide Centers of Commerce
90.82	Stockholm
90.32	Singapore
89.53	Copenhagen
88.28	Atlanta, Boston, Chicago, Dallas, Houston, Los Angeles, Miami, New York, Philadelphia, San Francisco, Washington D.C.
86.68	Geneva, Zurich
85.85	Montreal, Toronto, Vancouver
85.75	Berlin, Dusseldorf, Frankfurt, Hamburg, Munich
85.45	Vienna
85.17	Edinburgh, London
84.96	Amsterdam

European countries or countries where the European system has been imported (mainly from Britain and France), such as the United States, Canada and Singapore.

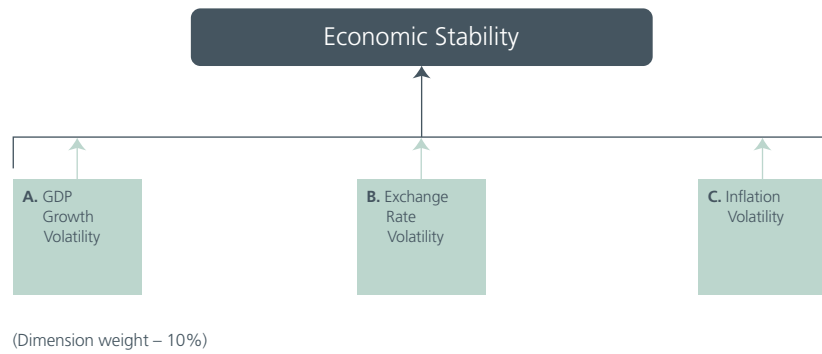
Table 1 presents the top ten groups of cities according to this "legal and political framework" dimension. Two features are worth noting.



The Centers of Commerce countries included in the top ten that demonstrate “economic stability” are all in Western Europe. Larger countries generally have greater economic stability.



Chart 17: Economic Stability



First, except for Singapore, all of the top cities (and countries) are North American and Western European, and less than six points separate tenth place Amsterdam and first place Stockholm. This reflects the maturity of the legal and political institutions in the countries where these cities are located. Emerging markets will take time to develop similarly mature and effective institutions.

A second notable feature is that the indicators and sub-indicators used here are country-wide values. All cities in the same country have identical Index values as is shown in numerous places in Table 1.

Dimension 2: Economic Stability

Chart 17 shows the “economic stability” dimension map and its components. Like the “legal and political framework” dimension, this too is a country-based dimension and is firmly rooted in the development of effective economic management institutions.

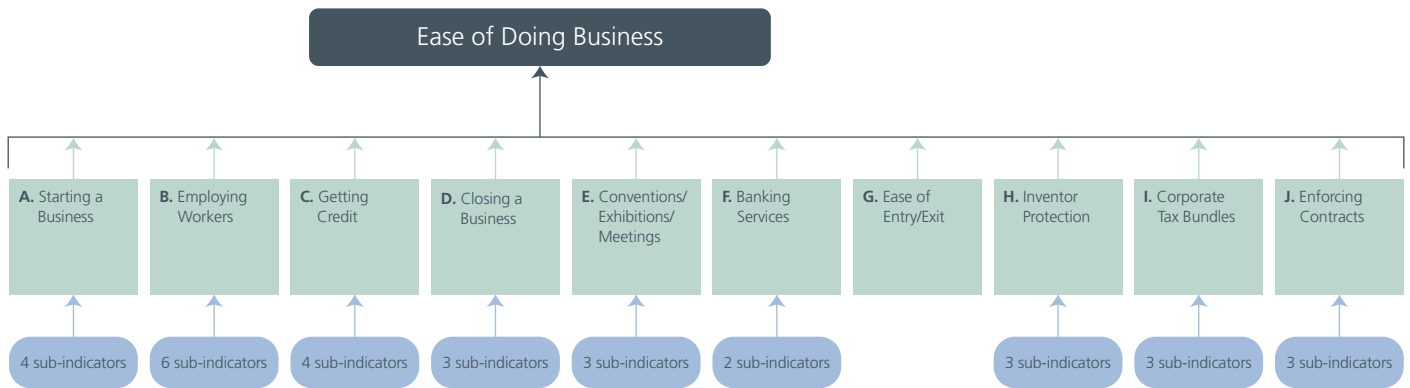
The Centers of Commerce included in the top ten here are all in Western Europe. Larger countries generally have greater economic stability; London, and now Edinburgh, may be experiencing the effects of this.

Table 2: Economic Stability

Index Value	Worldwide Centers of Commerce
92.42	Vienna
92.07	Barcelona, Madrid
91.67	Lisbon
91.65	Brussels
91.58	Paris
91.20	Milan, Rome
90.72	Copenhagen
90.47	Geneva, Zurich, Amsterdam
89.90	Athens
89.88	Berlin, Dusseldorf, Frankfurt, Hamburg, Munich

The range between top cities, shown in Table 2, is even narrower here, with Vienna ranked #1 having an Index score of 92.42 and Berlin, Dusseldorf, Frankfurt, Hamburg and Munich all ranked #10 with a score of 89.88. All are Western European cities reflecting the maturity of both their economic management institutions and their economies.

Chart 18: Ease of Doing Business



(Dimension weight – 20%)

Dimension 3: Ease of Doing Business

Chart 18 sets out the indicators and sub-indicators underlying the “ease of doing business” dimension, which includes assessments of investor protection, quality of banking, the ease with which contracts are enforced, and other basic services.

This dimension is considerably more complex than the previous two dimensions discussed. It is comprised of ten indicators and 31 sub-indicators, and blends national and urban-level data. Table 3 summarizes the rankings in the “ease of doing business” dimension.

Two Asian cities top the list: Singapore at #1 with an Index value of 82.82 and Hong Kong at #2 with an Index value of 80.37. Interestingly, three Canadian cities appear in the top ten: Toronto at #4, Vancouver at #8 and Montreal at #9. The Index values range from 82.82 to 73.81, a bit more dispersed than the previous dimensions but still reasonably close.

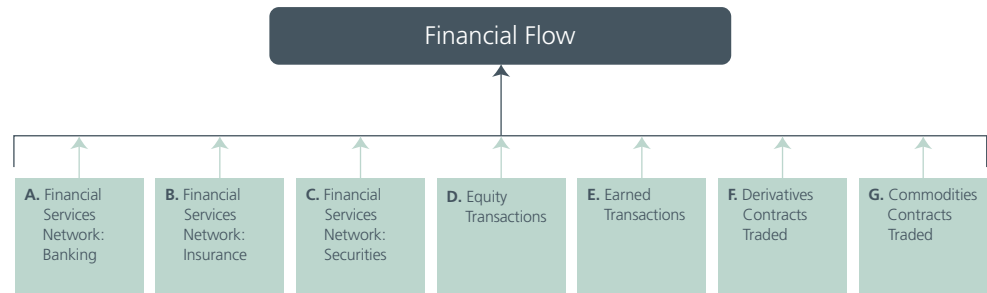
Table 3: Ease of Doing Business

Index Value	Worldwide Centers of Commerce
82.82	Singapore
80.37	Hong Kong
79.42	London
76.24	Toronto
75.91	New York
75.71	Dublin
75.29	Edinburgh
74.89	Vancouver
74.60	Montreal
73.81	Chicago



Canada seems to outperform the United States in ease of doing business. Legal safeguards, which make the US a highly litigious country, may be a contributing factor here.

Chart 19: Financial Flow



(Dimension weight – 22%)

Overall, cities from the Asia/Pacific, Middle East and Africa regions dominate the “business center” dimension, comprising six of the top ten and four of the top five.



Dimension 4: Financial Flow

Chart 19 shows the indicators and sub-indicators used for the “financial flow” dimension.

This dimension is the first to demonstrate significant dispersion among the Index values as shown in Table 4, in part because the Index values are based entirely on city-level data.

London, as expected, ranks #1 in this dimension with an Index value of 84.70. New York, ranking #2, drops to 67.85. This rather large gap between London and New York is due to London’s much higher volumes in bond and derivatives trading—despite the two being similar in equities and commodities trading. This can be attributed to the impact of financial regulation in the 1990s, reinforcing the earlier point that government policy can matter greatly.

European cities are prominent in this dimension, but of greater interest is the very strong placement of cities from the Asia/Pacific region. These cities take four of the top ten spots, and interestingly Seoul ranks #4 ahead of Tokyo at #6.

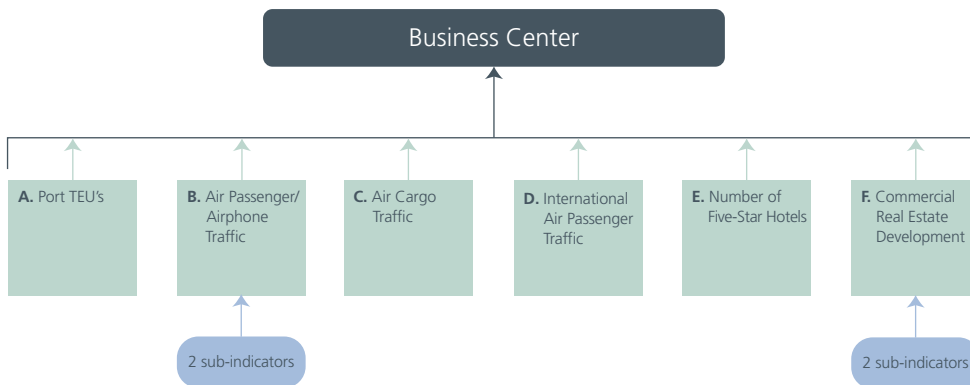
Table 4: Financial Flow

Index Value	Worldwide Centers of Commerce
84.70	London
67.85	New York
52.88	Frankfurt
52.76	Seoul
52.51	Chicago
48.95	Tokyo
47.32	Mumbai
47.27	Moscow
46.54	Shanghai
44.60	Madrid

Also, the appearance of Mumbai at #7 and Shanghai at #9 reflects the growing importance of India and China in global financial markets.

These top-ranking Centers of Commerce are part of the network of global financial transactions and flows, with more detailed analyses showing specialization among the cities in bonds, derivatives and equity trading.

Chart 20: Business Center



(Dimension weight – 12%)

There is no doubting the importance of knowledge generation in explaining economic growth.



Dimension 5: Business Center

The indicators and sub-indicators used for calculating the Index value of the “business center” dimension are summarized in Chart 20. Among the most important factors for this dimension are transport volumes for both passengers and goods. This suggests that statements about the unimportance of distance and the death of geography with the growth of global IT have been overstated.

The “business center” dimension is based firmly on city-level data. Not surprisingly, there is again a reasonably wide dispersion in Index scores among the top ten cities set out in Table 5. Hong Kong is #1 in this dimension with an Index value of 72.25, which is understandable given its booming port and airport and its huge stock of five-star hotels. London ranks #2 at 67.44, with Singapore in the #3 spot with an Index value of 62.58.

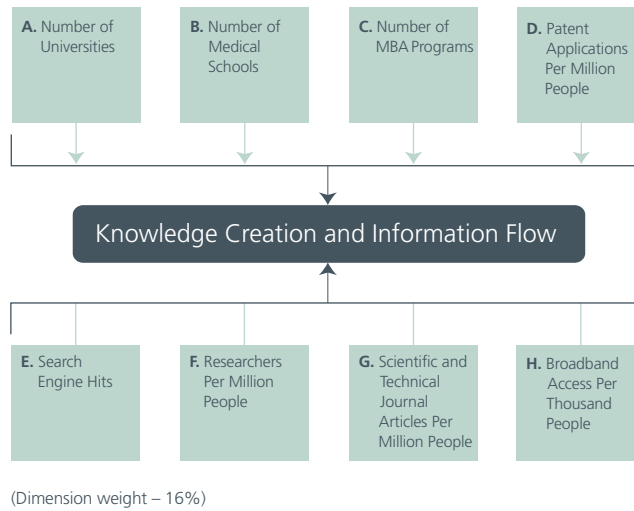
Overall, cities from the Asia/Pacific, Middle East and Africa region dominate this dimension, comprising six of the top ten and four of the top five.

Table 5: Business Center

Index Value	Worldwide Centers of Commerce
72.25	Hong Kong
67.44	London
62.58	Singapore
60.30	Shanghai
59.34	Dubai
58.15	Tokyo
57.73	Paris
54.60	New York
48.00	Amsterdam
47.33	Seoul

This dimension depends on the “clustering effect,” or the dense gathering of businesses supported by efficient logistics and transportation systems. Cities with less sophisticated logistics and transportation scored lower.

Chart 21: Knowledge Creation and Information Flow



Quality and quantity of education count a great deal in the “knowledge creation and information flow” dimension, along with a general environment conducive to innovation and creativity.

Dimension 6: Knowledge Creation and Information Flow

Chart 21 shows the indicators and sub-indicators used to calculate the Index values of the “knowledge creation and information flow” dimension. There is no doubting the importance of knowledge generation in explaining economic growth.

Knowledge creation associated with a large and thriving university complex is to be found in two types of locations: very large cities with a multiplicity of universities and smaller (mostly European) capital cities with attractive environments.

The “buying in” of research and knowledge is at best a short-run stratagem and is no substitute for long-term investments in education, research and continuous knowledge creation.

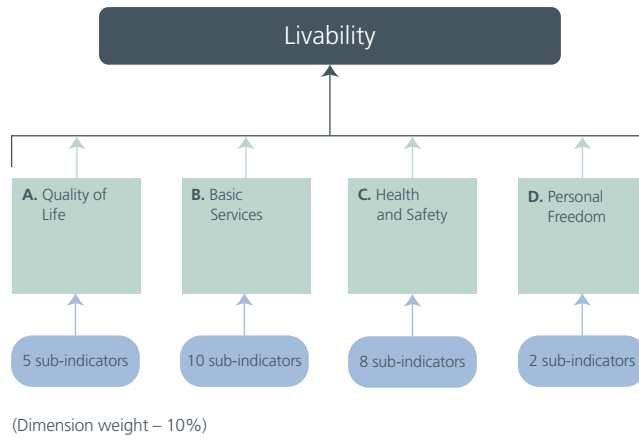
The Index values of the top ten cities as ranked by the “knowledge creation and information flow” dimension appear in Table 6. The Index values again show considerable dispersion, reflecting the underlying city-level data here. London ranks #1 with an Index value of 62.35, while New York, with an Index value of 59.02, is #2. US cities are particularly strong here with three of the top ten, as is Western Europe with five of the top ten.

Table 6: Knowledge Creation and Information Flow

Index Value	Worldwide Centers of Commerce
62.35	London
59.02	New York
52.06	Tokyo
51.65	Paris
51.31	Seoul
47.84	Zurich
46.31	Chicago
45.28	Geneva
44.15	Stockholm
43.08	Los Angeles

High concentrations of universities, MBA programs, research institutions and numbers of researchers drive this dimension, as do the numbers of scientific publications and citations. Quality and quantity of education count a great deal in this dimension, along with a general environment conducive to innovation and creativity.

Chart 22: Livability



Dimension 7: Livability

Chart 22 shows the indicators and sub-indicators used to build the Index value of the “livability” dimension, a new dimension created for the 2008 study. This dimension consists of a mix of city-level and country-level indicators.

The “livability” dimension has growing importance in economic growth and development. This is especially true in the creative sectors where it enhances the synergies between performing arts, design, media and culture, and creates an environment conducive to attracting and retaining the talent that drives the knowledge economy.

Table 7 sets out the Index values for the top ten cities in the “livability” dimension. The range of these values is very limited with #1 ranked Vancouver having an Index value of 94.38 and #9 ranked Copenhagen having an Index value of 92.63.

Interestingly, only one city from the Asia/Pacific, Middle East and Africa region (Tokyo #8) and one US city (San Francisco #3) appear on the list. Western European cities dominate here with seven of the top ten Centers of Commerce, reflecting the high level of environmental concern in these cities, as well as the importance of providing high-quality and accessible basic public services and health care.

Table 7: Livability

Index Value	Worldwide Centers of Commerce
94.38	Vancouver
93.88	Dusseldorf
93.44	San Francisco
93.38	Frankfurt
93.38	Vienna
93.18	Munich
92.81	Zurich
92.69	Tokyo
92.63	Copenhagen
92.63	Paris



The “livability” Dimension—new in 2008—has growing importance in economic growth and development.



Appendices

The Panel

Dr. Michael Goldberg

Professor Emeritus

Sauder School of Business

University of British Columbia, Canada

Dr. Michael Goldberg has consulted to businesses and governments in Canada, the US and Asia, and lectured at 50 research institutes in 16 different countries. He was the chief academic officer at Universitas 21Global in Singapore and, prior to this, the associate vice president international at the University of British Columbia (UBC).

In addition to serving as professor and dean at the UBC Sauder School of Business, he has sat on international panels and the editorial boards of scholarly journals, reviewing articles for more than a dozen international academic journals. Dr. Goldberg has authored or co-authored nine books and more than 200 academic and professional articles.

Dr. Goldberg earned his MA and Ph.D. in Economics at the University of California at Berkeley.

Dr. Yuwa Hedrick-Wong

Economic Advisor

MasterCard Worldwide

Asia/Pacific Region, Singapore

Dr. Yuwa Hedrick-Wong has served as strategy advisor for over 25 years to over 30 leading multinational companies in the Asia/Pacific region and today is the economic advisor to MasterCard Worldwide in Asia/Pacific.

As an economic advisor to MasterCard Worldwide, Dr. Yuwa has monitored and forecasted economic growth and emerging business development trends in this region. He chairs the global MasterCard Intelligence panel, speaks regularly at international conferences, including the Royal Institute of International Affairs and the ASEAN Business & Investment summits, and is a frequent commentator and columnist for magazines, including *Forbes Asia*. He is adjunct professor at the School of Management, Fudan University, Shanghai.

Dr. Yuwa studied at Trent University and pursued post-graduate training at the University of British Columbia and Simon Fraser University in Canada, where he received his Ph.D.

Mr. Manu Bhaskaran

Partner/Head

Economic Research

Centennial Group, Singapore

Mr. Manu Bhaskaran is partner at Centennial Group based in Singapore, heading the group economic research practice for institutions with interests in Asia. He supervised Société Générale's Asian investment banking division and was an Executive Committee member, in charge of Asian equity research.

He is also a member of the Competition Appeals Board, Singapore, a member of the Board of Advisors, Centre for Analytical Finance, Indian School of Business, Hyderabad, India, and Senior Adjunct Fellow, Institute of Policy Studies, Singapore. He is also executive committee member of several boards, including Singapore Institute of International Affairs, and is vice president, Economics Society of Singapore.

Mr. Bhaskaran has earned several degrees from Magdalene College, Cambridge University and Harvard University.

Professor Fan Gang

Director

National Economic Research Institute

Beijing, China

Professor Fan Gang, one of China's leading economists, is director of the National Economic Research Institute, as well as the China Reform Foundation in Beijing. He has also served as advisor to the Board of Monetary Policy of the People's Bank of China, the Board of Foreign Exchange Administration, and the Monetary Administration of the Hong Kong SAR.

He was elected as one of the "Global Leaders for Tomorrow" at the World Economic Forum in Davos in 1995, and in 2005 as one of the world's "top 100 public intellectuals" by *Foreign Policy* (USA) and *Prospectus* (UK) magazines.

Professor Fan was educated at Beijing University and received his Ph.D. in economics from the Graduate School of the Chinese Academy of Social Sciences.

Professor William Lever

Emeritus Professor of Urban Studies

University of Glasgow, Scotland

Professor William Lever focuses his research on urban competitiveness, globalization, comparative urban policy and population migration. He has consulted for the European Union, OECD, the British and Scottish governments, and several development agencies on social and economic dynamics. An author of six books on urban policy and the former editor of the journal *Urban Studies*, he is currently advisor to the Glasgow Urban Laboratory and a member of the World Urban Competitiveness Network. He has held visiting professorships at the Universities of Utrecht, Warsaw, Pittsburgh and Michigan State.

Professor Lever attended Oxford University.

Dr. Maurice Levi

*Bank of Montreal Professor
of International Finance
Sauder School of Business
University of British Columbia, Canada*

Professor Maurice Levi, the Bank of Montreal Professor Chair, is widely acknowledged as one of the world's leading experts on global commerce and international finance.

He has also taught at the Hebrew University in Jerusalem, UC Berkeley, MIT, London Business School, and the University of New South Wales. He is the author of 21 books and 75 papers in academic journals. As a consultant and lecturer, Dr. Levi has been engaged by various international organizations, including the Chinese Ministry of International Trade, the United Nations Conference on Technology and Development, the LG, Korean Telecom and Shanghai Telecom corporations, and the Canadian Federal Budget Task Force.

Professor Levi was educated at the University of Manchester and the University of Chicago, where he received his Ph.D. in economics with the late Nobel Laureate Milton Friedman, arguably the most influential economist in the 20th century, as his thesis supervisor.

Dr. Anthony Pellegrini

*Partner/ Director of the Urban and
Infrastructure Policy and Finance Practice
Centennial Group, Washington, D.C., USA*

Dr. Pellegrini is Director of the Urban and Infrastructure Policy and Finance Practice of the Centennial Group, an international financial advisory firm. He co-founded the International Association of Municipal Development Funds and, from 1996 to 2000, was Director of the Transportation, Water & Urban Development Department at the World Bank. Dr. Pellegrini has chaired the Urban Development and the Water and Sanitation Sector Boards, which assembled sector managers responsible for urban issues.

Dr. Pellegrini helped establish the Cities Alliance, which seeks to improve cities of the developing world. He has chaired the international Advisory Board of Paracidade, a development fund that lends to local governments in Paraná State, Brazil.

Dr. Pellegrini earned his Ph.D. from Stanford University.

Professor Saskia Sassen

*Helen and Robert Lynd Professor of Sociology
Committee on Global Thought and
Department of Sociology
Columbia University*

Professor Saskia Sassen is the author of *Territory, Authority, Rights: From Medieval to Global Assemblages* and *A Sociology of Globalization*. She wrote a lead essay in the 2006 *Venice Biennale of Architecture Catalogue* and has now completed a five-year project for UNESCO on sustainable human settlement based on a network of researchers and activists in over 30 countries. Her books are translated into 16 languages. Her comments have appeared in *The Guardian*, *The New York Times*, *OpenDemocracy.net*, *Le Monde Diplomatique*, *International Herald Tribune*, *Newsweek International*, and *Financial Times*, among others.

She is a Member of the Council on Foreign Relations, and a member of the National Academy of Sciences Panel on Cities, and chaired the Information Technology and International Cooperation Committee of the Social Science Research Council (USA).

Professor Peter J. Taylor

*Co-Director, Globalization and World
Cities Research Group and Network
Loughborough University, UK.*

Peter Taylor is Professor of Geography at Loughborough University and Director of the Globalization and World Cities Research Network. He is a Fellow of the British Academy and has been awarded Honorary Doctorates from the Universities of Oulu and Ghent. He has been published more than 300 times including over 20 books in over 20 different languages. His recent focus on the commercial role of cities in contemporary globalization has spawned two works: *World City Network: A Global Urban Analysis* (2004, Routledge) and *Cities in Globalization* (2006 Routledge). This research considers political and urban analysis in regard to city/state relations.

He has held visiting appointments at the University of Iowa, University of Alberta, Clark University, Dartmouth College, University of Illinois at Champaign-Urbana, Binghamton University, Virginia Tech, University of Delaware, Maison des Sciences de l'Homme (Paris), University of Amsterdam and Ghent University.

Details of Ranking of the 75 Worldwide Centers of Commerce

2008 Rank	2007 Rank	City	Country	Index Value	Dimensions						
					1	2	3	4	5	6	7
1	1	London	United Kingdom	79.17	85.17	89.66	79.42	84.70	67.44	62.35	91.00
2	2	New York	United States	72.77	88.28	87.44	75.91	67.85	54.60	59.02	90.88
3	3	Tokyo	Japan	66.60	83.60	86.40	71.28	48.95	58.15	52.06	92.69
4	6	Singapore	Singapore	66.16	90.32	89.74	82.82	42.15	62.58	39.45	84.94
5	4	Chicago	United States	65.24	88.28	87.44	73.81	52.51	40.52	46.31	90.81
6	5	Hong Kong	Hong Kong	63.94	82.16	81.85	80.37	39.61	72.25	36.62	82.25
7	8	Paris	France	63.87	78.19	91.58	66.17	41.85	57.73	51.65	92.63
8	7	Frankfurt	Germany	62.34	85.75	89.88	66.68	52.88	46.73	30.41	93.38
9	9	Seoul	South Korea	61.83	79.35	84.63	61.50	52.76	47.33	51.31	76.38
10	11	Amsterdam	Netherlands	60.06	84.96	90.47	68.78	34.44	48.00	39.11	91.63
11	16	Madrid	Spain	58.34	81.86	92.07	62.26	44.60	37.71	34.10	87.00
12	14	Sydney	Australia	58.33	82.90	84.97	72.39	39.47	30.55	34.10	92.56
13	12	Toronto	Canada	58.16	85.85	85.74	76.24	30.24	33.42	36.56	92.38
14	15	Copenhagen	Denmark	57.99	89.53	90.72	71.72	33.24	22.59	39.57	92.63
15	19	Zurich	Switzerland	56.86	86.68	90.47	63.19	31.93	21.19	47.84	92.81
16	17	Stockholm	Sweden	56.67	90.82	87.79	68.33	29.69	19.57	44.15	92.00
17	10	Los Angeles	United States	55.73	88.28	87.44	72.34	10.26	44.47	43.08	92.00
18	*	Philadelphia	United States	55.55	88.28	87.44	69.99	26.62	25.60	37.80	90.06
19	*	Osaka	Japan	54.94	83.60	86.40	67.44	22.29	32.40	40.87	91.19
20	25	Milan	Italy	54.73	79.44	91.20	61.06	38.45	36.46	22.89	89.56
21	13	Boston	United States	54.10	88.28	87.44	71.89	17.77	21.03	40.58	92.19
22	*	Taipei	Taiwan	53.32	78.17	86.49	57.79	33.04	37.78	37.00	75.75
23	24	Berlin	Germany	53.22	85.75	89.88	69.73	17.69	18.79	39.41	92.56
24	32	Shanghai	China	52.89	71.09	76.40	57.16	46.54	60.30	17.55	64.31
25	20	Atlanta	United States	52.86	88.28	87.44	71.69	8.78	33.69	38.21	88.63
26	30	Vienna	Austria	52.52	85.45	92.42	67.64	18.95	21.36	32.08	93.38
27	26	Munich	Germany	52.52	85.75	89.88	67.94	17.97	25.46	31.53	93.13
28	18	San Francisco	United States	52.39	88.28	87.44	73.68	8.75	24.95	36.34	93.44
29	21	Miami	United States	52.33	88.28	87.44	71.51	7.54	39.23	32.19	89.44
30	29	Brussels	Belgium	52.16	72.84	91.65	70.21	19.81	25.69	31.72	91.50
31	31	Dublin	Ireland	51.77	81.10	82.54	75.71	18.35	24.25	28.63	87.38
32	27	Montreal	Canada	51.60	85.85	85.74	74.60	9.86	20.81	35.59	91.63
33	*	Hamburg	Germany	51.53	85.75	89.88	64.29	16.81	22.34	35.38	90.75
34	22	Houston	United States	51.30	88.28	87.44	70.16	8.15	27.23	36.09	88.63
35	*	Dallas	United States	51.25	88.28	87.44	71.32	5.73	30.82	33.70	90.63
36	23	Washington D.C.	United States	51.19	88.28	87.44	71.78	5.54	24.14	37.46	91.56
37	28	Vancouver	Canada	51.10	85.85	85.74	74.89	3.83	24.84	35.66	94.38
38	33	Barcelona	Spain	50.90	81.86	92.07	62.42	18.89	27.24	30.63	87.00
39	*	Dusseldorf	Germany	50.42	85.75	89.88	64.70	19.80	13.70	28.32	93.88
40	35	Geneva	Switzerland	50.13	86.68	90.47	62.93	7.79	13.84	45.28	92.06
41	34	Melbourne	Australia	49.93	82.90	84.97	71.34	7.70	22.35	33.35	91.63
42	36	Bangkok	Thailand	48.23	71.29	82.78	61.56	27.07	44.21	15.48	67.75
43	*	Edinburgh	United Kingdom	47.79	85.17	89.66	75.29	2.12	14.59	27.37	86.50

2008 Rank	2007 Rank	City	Country	Index Value	Dimensions						
					1	2	3	4	5	6	7
44	37	Dubai	United Arab Emirates	47.23	81.13	71.18	54.78	24.74	59.34	8.17	71.75
45	44	Tel Aviv	Israel	46.50	66.31	81.88	62.34	18.90	16.88	33.30	77.00
46	*	Lisbon	Portugal	46.46	76.45	91.67	64.31	15.42	17.79	16.58	86.06
47	43	Rome	Italy	45.99	79.44	91.20	58.83	6.49	25.18	24.50	87.94
48	45	Mumbai	India	45.71	60.71	77.66	50.52	47.32	26.89	15.97	55.81
49	41	Prague	Czech Republic	45.50	74.16	86.51	62.76	17.21	12.87	20.76	82.25
50	38	Kuala Lumpur	Malaysia	45.28	69.26	78.90	65.95	24.54	25.66	8.61	74.19
51	*	Moscow	Russia	44.99	45.02	63.52	55.07	47.27	27.71	24.48	54.81
52	40	Budapest	Hungary	44.52	65.08	79.32	61.29	22.22	14.18	20.14	80.13
53	39	Santiago	Chile	44.49	75.15	78.36	60.75	19.94	13.20	21.84	75.19
54	42	Mexico City	Mexico	43.33	69.30	77.05	57.76	24.18	20.98	14.79	69.38
55	*	Athens	Greece	43.25	74.59	89.90	53.80	15.77	16.64	15.61	80.75
56	48	Sao Paulo	Brazil	42.70	57.96	60.60	50.62	34.92	29.16	16.71	68.63
57	46	Beijing	China	42.52	71.09	76.40	56.29	11.95	35.07	24.59	57.38
58	47	Johannesburg	South Africa	42.04	62.75	63.95	60.72	29.76	18.35	3.52	79.19
59	49	Warsaw	Poland	41.26	67.37	75.84	55.32	19.86	11.75	15.16	76.75
60	*	Shenzhen	China	40.04	71.09	76.40	52.09	23.19	29.55	5.80	52.94
61	*	New Delhi	India	39.22	60.71	77.66	50.57	20.28	20.23	17.99	55.00
62	*	Bogota	Colombia	38.27	58.81	74.59	52.41	16.87	16.83	17.22	59.63
63	*	Buenos Aires	Argentina	37.76	40.52	26.25	56.89	25.62	23.66	20.68	79.19
64	*	Istanbul	Turkey	36.14	60.17	10.94	58.82	19.60	28.78	16.46	68.69
65	*	Rio de Janeiro	Brazil	35.91	57.96	60.60	47.95	15.63	15.77	13.93	69.06
66	*	Bangalore	India	35.78	60.71	77.66	48.29	6.36	13.09	24.72	53.56
67	*	St. Petersburg	Russia	35.55	45.02	63.52	53.53	18.07	12.68	21.25	50.94
68	*	Jakarta	Indonesia	35.40	53.48	58.04	45.46	20.49	24.98	11.17	58.63
69	*	Riyadh	Saudi Arabia	35.37	79.52	73.12	54.20	13.38	12.10	3.74	42.75
70	*	Cairo	Egypt	35.29	56.34	64.58	51.95	12.34	20.52	8.09	63.31
71	*	Manila	Philippines	35.15	54.62	76.99	47.95	7.76	22.63	6.38	69.56
72	*	Chengdu	China	33.84	71.09	76.40	51.26	2.34	11.81	10.04	53.00
73	*	Chongqing	China	33.13	71.09	76.40	50.66	0.91	10.29	9.62	52.75
74	*	Beirut	Lebanon	31.81	45.09	79.60	45.60	11.03	12.47	8.27	49.75
75	*	Caracas	Venezuela	26.11	40.90	41.93	36.68	12.42	11.48	5.55	54.94

Dimension

- 1 Legal and Political Framework
- 2 Economic Stability
- 3 Ease of Doing Business

- 4 Financial Flow
- 5 Business Center
- 6 Knowledge Creation and Information Flow
- 7 Livability

For more detailed rankings of cities by individual dimension, please visit www.mastercardworldwide.com/insights.

* In 2007, 63 Centers of Commerce were ranked and the top 50 were published. The 2008 *Worldwide Centers of Commerce Index*™ examines an additional 12 cities and publishes a larger and more comprehensive set of 75 Centers of Commerce. This factor should be taken into consideration when making any year-over-year comparisons.

www.mastercardworldwide.com/insights