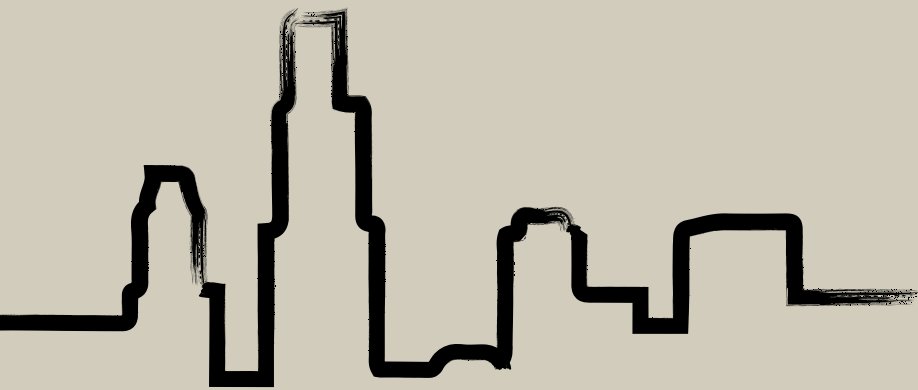




*Achieve
Ambitions*

Which cities are changing fastest?

City Momentum Index 2017













The Cities Changing Fastest

The world's 30 most dynamic cities

1 Bangalore	11 Dubai	21 San Francisco	● Americas
2 Ho Chi Minh City	12 Melbourne	22 Shenzhen	● EMEA
3 Silicon Valley	13 Pune	23 Delhi	○ Asia Pacific
4 Shanghai	14 New York	24 Raleigh-Durham	
5 Hyderabad	15 Beijing	25 Mumbai	
6 London	16 Sydney	26 Hangzhou	
7 Austin	17 Paris	27 Los Angeles	
8 Hanoi	18 Chennai	28 Dublin	
9 Boston	19 Manila	29 Nanjing	
10 Nairobi	20 Seattle	30 Stockholm	

Our model combines 42 socio-economic and real estate indicators

 Population	 Connectivity	 Technology and R&D	 Education	 Environment
 Economic Output	 Corporate Activity	 Construction	 Real Estate Investment	 Property Prices

Source: JLL



What is the City Momentum Index?

- This is the fourth edition of JLL's City Momentum Index (CMI), first published in 2014.
- The CMI tracks the speed of change of a city's economy and commercial real estate market, identifying those cities that have the most dynamic attributes over the short and long term.
- The Index covers 134 major established and emerging business hubs across the globe.
- 42 elements of a city's dynamism are covered, which are grouped into three main sub-indices:



Socio-economic momentum relating to changes in city GDP, population, air passengers, corporate headquarters and foreign direct investment (FDI).



Commercial real estate momentum relating to changes in absorption, construction, rents, investment volumes and real estate transparency covering the office, retail and hotel sectors.



High-value incubators relating to the ability of the underlying attributes of a city to maintain momentum over the longer term (i.e. its future-proofing capacity) in terms of education, innovation and environment.

- This edition focuses primarily on the 30 cities that rank at the top of the CMI 2017.

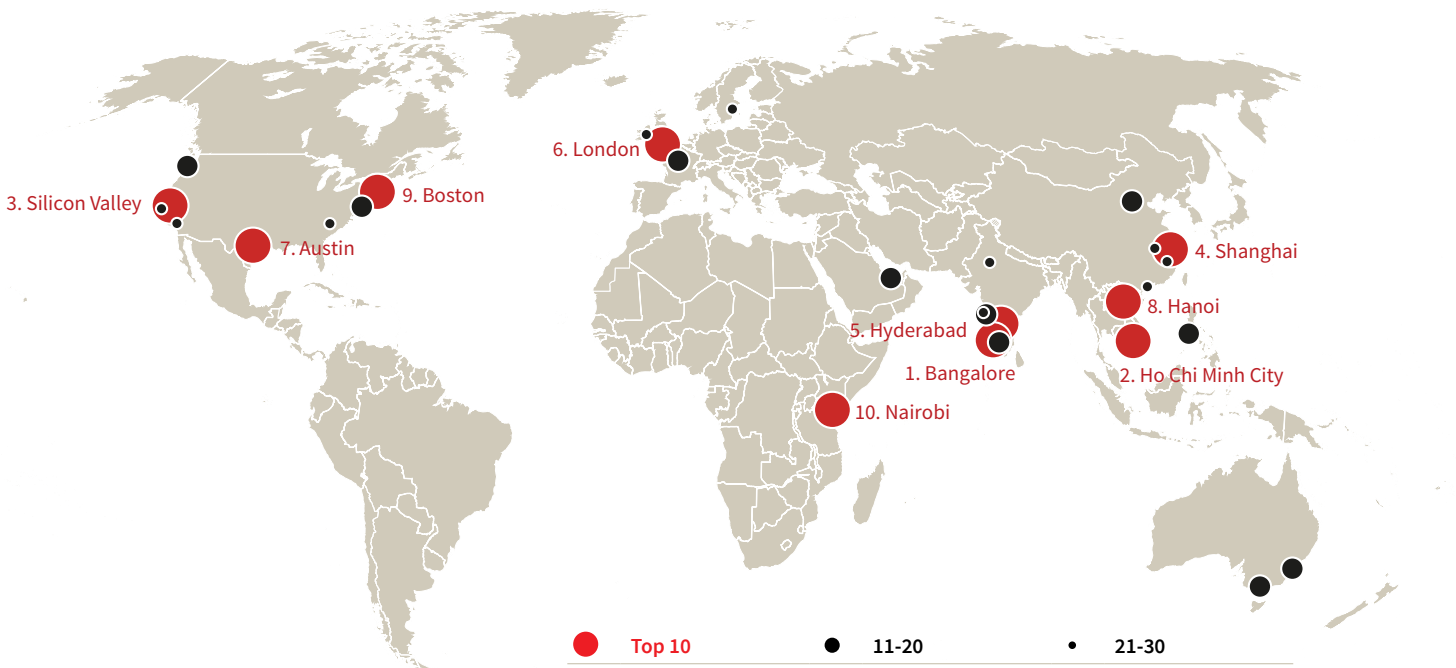
A world of heightened risk

The world has become a riskier place since JLL last published its City Momentum Index (CMI) in January 2016. Various political upheavals are threatening the global status quo, creating economic uncertainty and testing the resilience of the world’s major cities. These disruptions are happening just as our cities are undergoing major structural change as the effects of globalisation, technological breakthroughs and rapid urbanisation combine to challenge the very fabric of our urban spaces.

Cities taking the lead

Yet despite the multiplicity of challenges the 2017 edition of JLL’s City Momentum Index highlights remarkable dynamism in our major cities, many of which are consistently outperforming their national economies. As the risk of nation-states edging towards insularity and protectionism continues, so cities are taking up the mantle of globalisation and reaching out internationally to create new networks of cities. The world’s most robust, agile and open cities are generating considerable momentum and energy, and are taking the lead in shaping our future landscape.

Mapping the City Momentum Index 2017: Global Top 30



● Top 10	● 11-20	● 21-30
1 Bangalore	11 Dubai	21 San Francisco
2 Ho Chi Minh City	12 Melbourne	22 Shenzhen
3 Silicon Valley	13 Pune	23 Delhi
4 Shanghai	14 New York	24 Raleigh-Durham
5 Hyderabad	15 Beijing	25 Mumbai
6 London	16 Sydney	26 Hangzhou
7 Austin	17 Paris	27 Los Angeles
8 Hanoi	18 Chennai	28 Dublin
9 Boston	19 Manila	29 Nanjing
10 Nairobi	20 Seattle	30 Stockholm

Source: JLL

10 takeaways

from the City Momentum Index 2017

- 1 India's Ascendancy:** India has taken over from China as home to the world's most dynamic cities. Six Indian cities feature in the CMI Global Top 30, with the country's primary technology hub, **Bangalore**, moving into the top spot for the first time.
- 2 The Ubiquity of Technology:** Technology and innovation underpin the positions of many top cities in the CMI, from **Silicon Valley** to **Nairobi** (Silicon Savannah). Strong technology credentials support the presence in the Global Top 30 of several medium-sized U.S. cities such as **Austin**, **Boston**, **Seattle**, **San Francisco** and **Raleigh-Durham**.
- 3 The Rise of Agile Emerging World Cities:** The Global Top 30 now includes a number of the most agile 'Emerging World Cities' that are successfully transitioning to higher-value activities. The best-in-class examples are **Shanghai**, **Shenzhen**, **Dubai**, **Bangalore** and **Hyderabad**.
- 4 London's Resilience:** **London** has been knocked off the top position which it has held for the past two years. Nonetheless, the city has shown impressive resilience following the EU referendum and its inherent strengths in technology, innovation and education continue to support a Top 10 ranking.
- 5 Vietnamese Cities – the Hotspots for FDI:** Vietnam has two representatives in the Top 10 – **Ho Chi Minh City** and **Hanoi**. These cities have become a focus for foreign direct investment.
- 6 China's Dynamic City Clusters:** Clusters of dynamic cities are evolving in China as intra-regional connectivity improves. This is evidenced by the appearance in the Global Top 30 of the Yangtze River Delta cities of **Shanghai**, **Hangzhou** and **Nanjing**.
- 7 Australia's Tier I Cities Outperform:** Australia is represented by **Melbourne** and **Sydney**, whose office markets are expected to be among the top global performers in 2017.
- 8 Future-Proofing of Northern European Cities:** While European cities are largely absent from the Global Top 30, several have the attributes to support longer-term momentum, combining specialised knowledge industries, strong educational institutions and supportive living conditions. Northern European cities dominate the top ranks for future-proofing – including **Stockholm**, **Berlin**, **Munich** and **Amsterdam**.
- 9 Environmental Constraints:** Environmental issues are becoming more urgent. For example, while **Delhi** and **Beijing** feature in the Global Top 30, their positions are compromised by poor environmental scores.
- 10 Affordability Compromising Momentum:** Affordability and space constraints are hindering momentum in some cities. For example, **San Francisco** has fallen out of the Top 20 for the first time, while the absence of **Hong Kong** in the Global Top 30 can be partly ascribed to supply constraints stifling momentum.

Unpicking the City Momentum Index

The Asia Pacific Century

The Asia Pacific region is shown in the CMI 2017 to be home to more than half of the world's 30 most dynamic cities and real estate markets, testament to the rise of the region's cities as major hubs of commerce and innovation.

There has, however, been a realignment within Asia Pacific, with India supplanting China as home to the region's most dynamic cities:

- **Bangalore** tops the CMI 2017 for the first time; its status as one of the world's premier technology hubs is supporting robust real estate demand. The Indian Tier II cities of **Hyderabad** and **Pune** are not so far behind Bangalore in 5th and 13th positions respectively. India's Tier I megacities of **Chennai** (18th), **Delhi** (23rd) and **Mumbai** (25th) also feature in the Global Top 30, although their rankings are compromised by poor scores on environmental sustainability.
- While China no longer dominates the top ranks, it is nonetheless still well represented in the Global Top 30 with three Tier I cities featuring – **Shanghai** (4th), **Beijing** (15th) and **Shenzhen** (23rd), as well as the Yangtze River Delta cities of **Hangzhou** (26th) and **Nanjing** (29th). These five cities have been among the most successful in transitioning to higher-value activities. Shanghai is fast-tracking to maturity and is set to join the top table of global gateway cities within the next few years. Shenzhen is cementing its position as a global hub for hardware manufacturing as well as a regional financial centre.
- Vietnam's two major commercial hubs, **Ho Chi Minh City** (2nd) and **Hanoi** (8th), have made rapid progress and now sit in the Global Top 10. Their success has been underpinned by favourable demographics and significant FDI as they take concrete steps to liberalise their business environments.
- **Melbourne** (12th) and **Sydney** (16th) represent Australia in the Global Top 30. Both cities are likely to be among the leading global performers for office rental growth in 2017, and longer-term momentum is bolstered by their strengths in education, innovation and liveability.
- **Manila** (19th) appears in the Global Top 30 for the first time, with a particularly dynamic office market supported by a growing and globally competitive BPO sector.



Technology drives momentum, notably in the U.S.

Technology and innovation continue to be a major driver of momentum, from **Silicon Valley** to **Nairobi's** Silicon Savannah. Technology largely explains the substantial presence of U.S. cities in the Global Top 30.

Economic growth in the U.S. has become more broadly based over the past year, but the technology sector is still providing significant impetus to the economy and real estate markets, with all eight U.S. cities that feature in the Global Top 30 possessing robust technology credentials:

- Tech-rich New World Cities - **Silicon Valley** (3rd), **Austin** (7th), **Boston** (9th), **Seattle** (20th), **San Francisco** (21st) and **Raleigh-Durham** (24th) have among the world's highest concentrations of technology companies.
- Meanwhile, the dynamism of the more diversified global gateways of **New York** (14th) and **Los Angeles** (27th) is also underpinned by robust technology sectors; and each ranks among the global Top 10 on 'future-proofing'. Both cities are attracting a large volume of real estate investment.

Europe's cities offering longer-term sustainable momentum

As in previous editions of the CMI, European cities are not well represented among the Global Top 30, a reflection of their maturity and the nature of their dynamics. Their strength lies in their longer-term sustainable momentum which appeals to investors and corporate occupiers.

Four European cities sit in the Global Top 30:

- **London** has fallen from the top spot (a position it has held for the past two years). Nonetheless, it holds a respectable 6th position globally, testimony to its resilience following the 'Brexit' vote and its strengths on the longer-term indicators relating to education, innovation and technology.
- **Paris** appears in the top group for the first time in 17th position, due to its long-term attributes as well as a notable improvement in real estate momentum. Paris is currently implementing one of the most ambitious infrastructure programmes in the world – the 'Grand Paris' project – while the new 'Metropole du Grand Paris' body is creating greater alignment of city-regional decision-making.
- **Dublin** (28th) and **Stockholm** (30th) round off the Global Top 30 representation from Europe. Dublin's relatively high position is supported by strong FDI, population growth and good technology credentials. Stockholm's technology sector underpins one of the world's most dynamic commercial real estate markets.

Crucially, European cities do far better on longer-term momentum (covering education, innovation and sustainability) with 10 of the Global Top 30 for 'future-proofing' found in the region. European cities that rank particularly well on long-term indicators include **London, Paris** and **Amsterdam**, the Nordic capitals of **Stockholm, Helsinki** and **Copenhagen**, and the German cities of **Berlin, Munich** and **Stuttgart**.

City Momentum Index 2017: Top Cities for Future-Proofing



*Metropolitan areas over 1 million population
Source: JLL

Dubai and Nairobi – the urban stars of the Middle East and Africa

Middle Eastern and African cities have struggled to maintain momentum, with many hit by the slump in energy and commodity prices. The notable exception is **Dubai** (11th) which has reappeared in the Global Top 30, having fallen outside the leading group in the last couple of years. **Nairobi** (10th) is the star performer in Africa by a significant margin – making its second consecutive appearance in the Global Top 30.

The missing World Cities from the CMI Global Top 30

- **Tokyo** and **Seoul**, which were in the Top 20 in the CMI 2016, have fallen out of the top positions, ranking in the mid-30s. While both cities finish in the top 10 on long-term momentum, they have disappointed on short-term economic and real estate momentum during 2016.
- Even though **Singapore** and **Hong Kong** are among the world's most competitive cities, neither city has made this year's Global Top 30 in terms of momentum:
 - **Singapore** has failed to make the top cut due to a continuing correction in office and retail rents, and sluggish net absorption. Meanwhile, its long-term strengths are in part offset by a slowdown in labour force growth.
 - **Hong Kong** continues to lack positive real estate momentum with office rents set to enter negative territory from 2017, although premium rents in core areas are likely to hold up longer given limited supply.

How to interpret the City Momentum Index?



In producing this Index, JLL's intention is to alert the market to signals of change and to highlight the defining features which are enabling cities to successfully compete in a new economic landscape.

It does not necessarily hold that the CMI's leading cities will outperform cities not featured in the top tier, or that they will provide the most immediately attractive real estate investment environments, but rather that they are the cities where change is occurring most rapidly and are the ones to be closely monitored.

Strong momentum can pose challenges as well as opportunities. Rapid growth can lead to difficult-to-address issues which impact on quality of life and make it difficult to maintain momentum, including widening inequality and affordability issues, strains on infrastructure and local amenities, and environmental degradation. In order to retain their competitive edge, cities will need to focus increasingly on liveability, affordability, social and spatial inequalities, environmental quality and community transparency.

City Momentum Index – Global Top 30



Global top 10

The Drivers of Momentum

- 1. Bangalore**

India's leading IT hub has attracted a range of the world's leading technology firms, as well as nurturing successful start-ups. This is driving strong real estate demand which, backed by exceptional levels of growth, has propelled Bangalore to the top of the Index. However, the city faces challenges to maintain its momentum that include infrastructure deficits, lack of planning oversight and environmental degradation.
- 2. Ho Chi Minh City**

Ho Chi Minh City is one of the world's most dynamic urban economies with low costs, rapid consumer market expansion and a transition towards higher-value activities driving significant levels of FDI and the construction of office, retail and hotel stock to meet demand. This transition is at an early stage, however, and congestion remains a serious impediment to the quality of life and productivity levels which are needed to ensure future momentum.
- 3. Silicon Valley**

The world's foremost innovation ecosystem continues to attract talent, business and capital from across the globe. The area includes two of the United States' leading tech submarkets (Sunnyvale and Santa Clara) and commercial development is continuing at a rapid rate. However, high costs and the possibility of waning tech sector momentum may start to present challenges in 2017 and 2018.
- 4. Shanghai**

Shanghai is sustaining its rapid move towards global city status. It has strong ambitions to become a hub for financial services and innovation, and is still investing heavily in order to achieve this. Infrastructure improvement, better intra-regional connectivity, deregulation, SOE reforms and expanding domestic firms are pushing the city forward. Congestion, housing affordability and air quality are key issues that will need to be addressed to maintain this trajectory.
- 5. Hyderabad**

Hyderabad has attracted major investments from the likes of Microsoft, Apple and Uber as a national technology centre. The city's leadership has been instrumental in enabling Hyderabad to keep pace with Bangalore – helping to set up India's largest incubator, focusing on specific niche industries (such as gaming and animation) and building business attractiveness. Ensuring that infrastructure keeps pace with the city's rapid development will remain a priority, with the delayed Hyderabad Metro system set to open in 2018.

- 6. London**

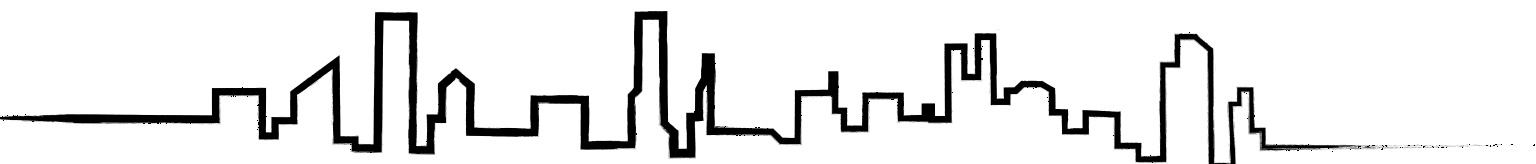
London has fallen from the top spot (a position it has held for the past two years). Nonetheless, it remains in a respectable 6th position globally, testimony to its resilience following the EU vote and its strengths on the longer-term indicators relating to education, innovation and technology. The final outcome of the ‘Brexit’ negotiations presents some uncertainty, and housing affordability and infrastructure capacity are also constraints to future momentum.
- 7. Austin**

Austin is the only city to make the top 30 cities in each of the three sub-categories. The city combines high quality of life with a low cost of living, while also possessing a robust education and innovation ecosystem, which has attracted talent and tech firms. Increased access to venture capital funding will be an important step to ensuring continued growth in the tech sector, while Austin also faces a shortage of real estate supply to cope with current vigorous demand.
- 8. Hanoi**

Hanoi, Vietnam’s capital, is seeing vigorous economic growth, with strong increases in population and incomes driving its retail and residential sectors. The office sector is also experiencing high levels of development, and real estate investment into the city reached exceptional levels in 2016 buoyed by a nearly US\$400 million office deal. A lack of world-class higher-education institutions and technology skills may slow the transition towards higher-value activities.
- 9. Boston**

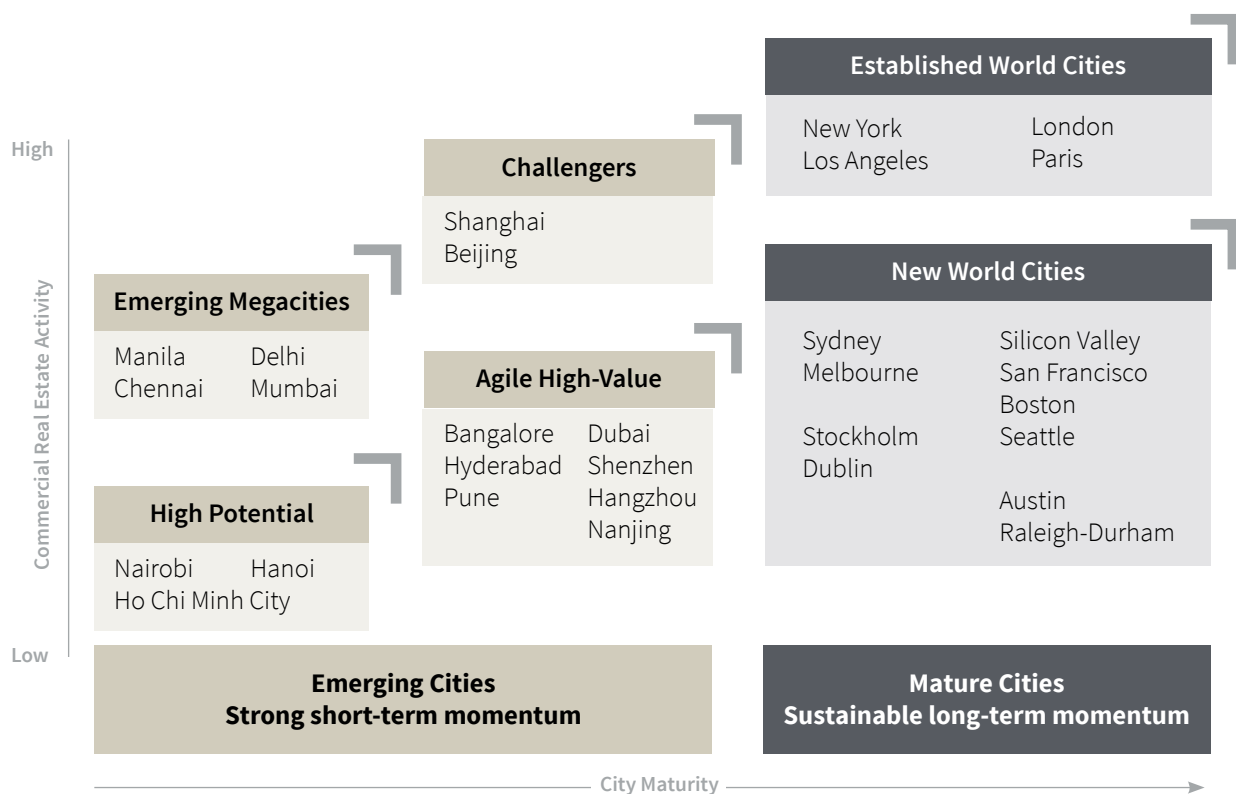
Home to some of the world’s most respected universities, Boston is a global leader in innovation, research, technology and life sciences thanks to the concentration of human capital and density of research institutions. The city has also seen its centre rejuvenated, with the regenerating Seaport District having attracted the global headquarters of General Electric. Boston’s popularity means that affordability of housing is becoming an increasingly important issue.
- 10. Nairobi**

Nairobi is firmly established as a key gateway to East Africa, less dependent on oil and commodities and more diverse than other regional peers. A development boom is in progress due to the strength of the economy and attractiveness of the city. Recently, it has emerged as a regional tech hub – home to Africa’s most successful tech incubator and a leader in mobile payment technologies. However, Nairobi faces challenges related to poverty, a lack of quality infrastructure, and housing affordability and sprawl.



Dissecting City Momentum

Top 30 Most Dynamic Cities: Emerging vs Mature



Source: JLL

Index rankings provide only one perspective on city dynamics. By positioning the Global Top 30 cities on a 'City Evolution Curve' we can identify clusters of cities that share similar assets and momentum drivers:

Established World Cities: The 'Established World Cities' of **London, New York, Paris** and **Los Angeles** are adapting to the new innovation economy, combining their traditional strengths of global reach and settled concentrations of companies, capital and talent with the elements necessary to sustain momentum over the longer term.

New World Cities: 'New World Cities' are mid-sized cities which typically excel in high-tech and high-value sectors supported by robust infrastructure, a favourable quality of life and transparent business practices, that combine to boost momentum and real estate market activity. This group includes the dynamic technology-rich cities of **Silicon Valley, Austin, Boston, Seattle, Raleigh-Durham** and **San Francisco** in the U.S.; **Melbourne** and **Sydney** in Australia; and **Dublin** and **Stockholm** in Europe.

Challengers: While several emerging cities feature in the Global Top 30, it is **Shanghai** and **Beijing** that stand apart in showing fast-track momentum, supported by massive infrastructure investment, increasing global connectivity, improving transparency and a shift into high-value activities. Direct commercial real estate investment volumes in Shanghai, for example, grew from just US\$1.4 billion to US\$14 billion between 2006 and 2015 – a tenfold increase.

Agile High-Value Emerging Cities: A small number of ‘Emerging World Cities’ have become technology hubs in their own right and/or are successfully transitioning to higher-value activities. The best examples are **Bangalore** and **Shenzhen**, followed by **Hyderabad** and **Pune**. **Hangzhou**, home to Alibaba.com (the online market place company), and **Nanjing** are benefitting from improving connectivity within the Yangtze River Delta and the growth of private enterprises. Meanwhile **Dubai**, which arguably defies classification, has cemented its position as a global trade, transport and tourism hub.

Emerging Megacities: The Emerging Megacities of **Delhi**, **Mumbai**, **Chennai** and **Manila** are leveraging their dynamic labour markets to drive momentum. Growth in domestic corporations and FDI into areas such as business process outsourcing (BPO) is helping to fuel among the fastest economic growth out of all the CMI cities. However, this group faces significant infrastructure and quality of life issues, with high levels of inequality, congestion and pollution hindered by weak city governance.

High Potential Cities: **Ho Chi Minh City** and **Hanoi** in Vietnam are exhibiting among the most robust demographic and economic growth in the CMI. Low costs, rapid consumer market expansion and economies transitioning towards higher-value activities are driving significant levels of FDI and the construction of office, retail and hotel stock to meet demand. **Nairobi** in Kenya is also one of the world’s fastest-expanding cities, which together with its status as a gateway to East Africa and regional technology hub, as well as rebounding tourism volumes, is leading to a development boom across all its commercial sectors.



Short-Term versus Long-Term Momentum

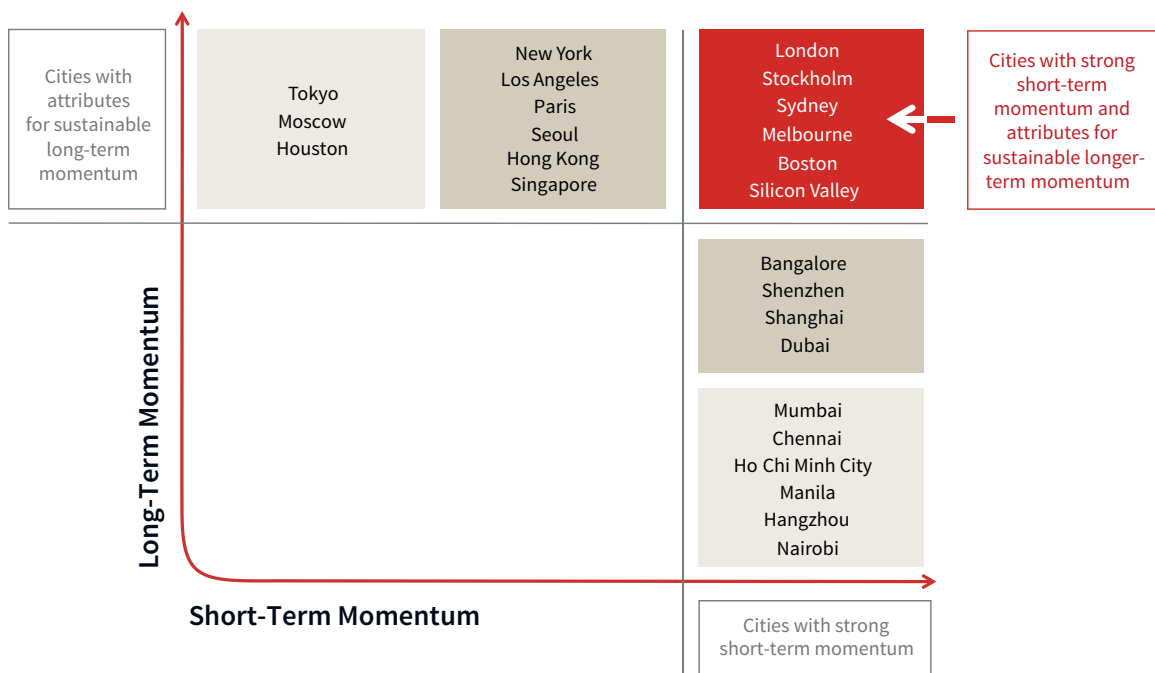
The components of the City Momentum Index enable cities to be clustered according to levels of short-term economic and real estate momentum, compared with the degree to which a city has the high-value incubators necessary for longer-term success – factors such as a world-class higher education infrastructure, a robust innovation economy, high levels of technology business start-ups and patent applications, and high air quality.

The CMI Matrix reveals those cities that meld both strong short-term momentum with a deep innovation economy. They include U.S tech-rich cities such as **Silicon Valley** and **Boston**; the Tier 1 Australian cities of **Melbourne** and **Sydney**; and the Northern European capitals of **London** and **Stockholm**.

The analysis also draws attention to several high-energy cities, such as **Ho Chi Minh City**, **Nairobi**, **Manila** and **Chennai**, which are riding the wave of robust short-term economic and real estate momentum. Raw demographic and economic energy will continue to propel these cities forward, but to ensure longer-term success they will need to adapt to the new economy in terms of innovation and infrastructure.

The CMI Matrix identifies metropolitan areas that have recently underperformed but which possess the attributes conducive to longer-term success, potentially offering strategic opportunities for investors; such as **Tokyo**, which, despite lacklustre economic growth and demographic constraints hindering its short-term momentum, has a combination of commercial concentration and innovation that positions it well for long-term performance. Strong university and commercial research centres means that Tokyo ranks in the top five for patent applications globally.

City Momentum Index Matrix: Short Term versus Long Term



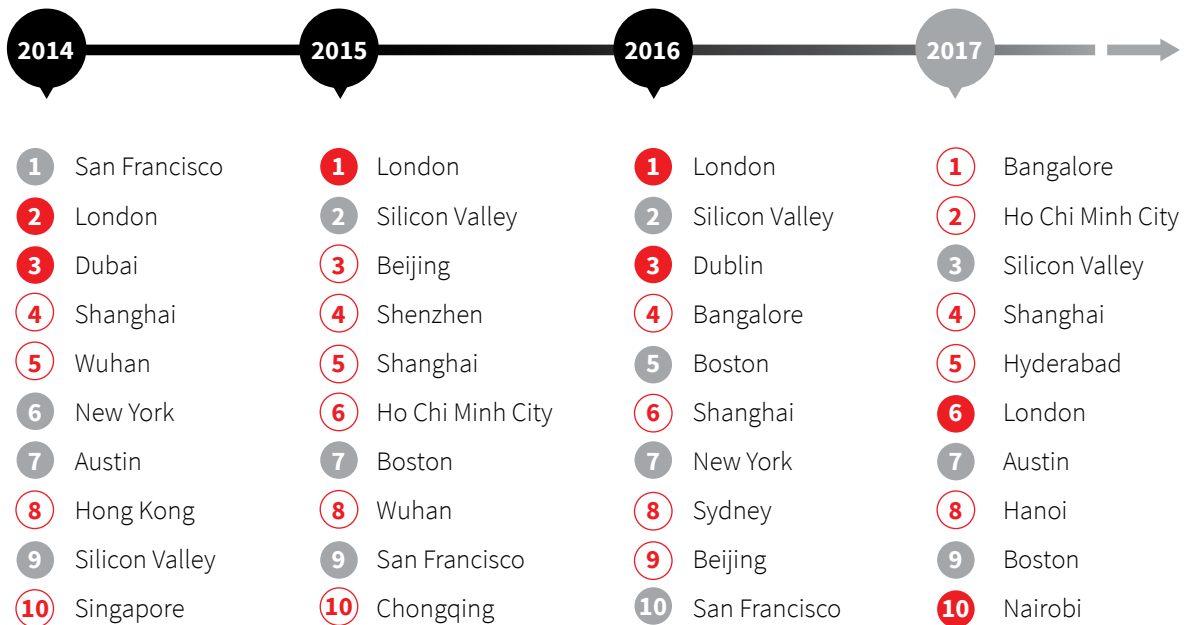
Illustrative examples
Source: JLL

A Short History of the City Momentum Index

JLL created the City Momentum Index in 2014. It has since been updated annually and coverage has been extended from 111 cities in 2014 to 134 cities in the 2017 edition. There has been a high level of change in the CMI rankings as momentum has ebbed and flowed across the globe. For example, in 2014 and 2015 the top ranks were dominated by cities in Greater China, whereas more recently, cities in India and Vietnam have come to the fore. Only three cities - **London, Shanghai, Silicon Valley** - have appeared in the Global Top 10 in all four editions, while **San Francisco** and **Boston** have featured in three editions.

City Momentum Index, 2014-2017

Global top 10



Source: JLL

● Americas ● EMEA ○ Asia Pacific

The City Momentum Index

Five trends to watch



Cities becoming more powerful and influential



City mayors & governors expanding their roles



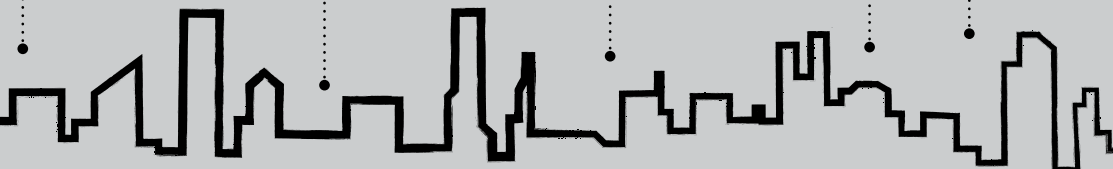
Political upheavals threatening globally connected cities



Cities taking the lead in tackling environmental concerns



Technology having deep impacts on city dynamics



Urban Futures

With the world's urban population expected to double over the first 50 years of this 'metropolitan century', a new cycle of urbanisation is underway which is throwing up challenges and opportunities for cities and their built environment in equal measure.

Five trends to watch

The rise of city power and influence: There are growing calls by city governments for more autonomy and new forms of collaboration. Cities are increasingly working together on common challenges, establishing global networks through which city governments can share expertise, set goals and act together independently of national governments. These networks range from broad groups such as United Cities and Local Governments (UCLG), which represents over 175 local and regional governance associations, to issue-specific networks such as the C40 cities, which work to address sustainability issues.

Expanding roles of city mayors: This interconnectedness of urban governance has been matched by the rise in the influence of city mayors, both at the national level and globally as they look to work together to advance common interests. The Compact of Mayors brings together over 600 city mayors to address climate issues, while the Global Parliament of Mayors held its inaugural meeting in 2016. The movement towards an expanded international role for cities was recognised at the recent Habitat III conference on urbanisation.

Technology changing city dynamics: Technology, innovation and digitisation are creating major shifts in the global economic landscape. The rise of four new economies: the digital economy, the sharing economy, the experience economy and the circular economy will fundamentally change city momentum and city footprints. These new forms of activity will thrive in dense cities with highly-skilled workforces that provide fertile environments for innovation.

Cities take the lead in tackling environmental concerns: Cities are critical to any serious plan to address climate change, with cities accounting for a large proportion of global energy-related CO₂ emissions. They are also at the frontline of climate change as most urban areas are located on coasts and floodplains. While there are opportunities to retrofit buildings and infrastructure, the real difference will come in emerging cities with the smart design of new buildings and infrastructure.

Threat to globalisation and global cities: Globalisation has empowered cities, with the largest global gateways – like London, New York and Hong Kong – riding a wave of increasing global connectivity and influence. However, increasing inequalities between metropolitan areas and their rural hinterlands, combined with the rise in nationalist sentiment and protectionism presents a threat to globalisation and the future momentum in those cities that have been its greatest beneficiary.

The City Momentum Index

Technical Note

The 2017 edition of the City Momentum Index has been expanded to cover the hospitality sector for the first time, as well as incorporating new variables on the retail sector. New indicators in the CMI 2017 include the presence of international retailers, retail sales growth, hotel rooms under construction and in the pipeline, as well as home-sharing listings.

The City Momentum Index presents a weighted overall score for the sub-scores of 42 variables. For each variable the model calculates a score based on the city's performance relative to the distribution of all 134 city regions, scaled from zero to one. Thus the top-scoring city for each variable has a value of one, while the lowest-scoring city receives a value of zero. The variables used in the model are summarised in the chart on the following page, combining variables of short-term socio-economic and commercial real estate momentum with variables measuring longer-term potential – the 'high-value incubators'.

Socio-economic momentum (accounting for 40% of the model) includes variables relating to the recent percentage changes in city GDP, population, air passengers and corporate headquarter presence; projected percentage changes in GDP, population and retail sales; and recent levels of and changes in foreign direct investment (as a proportion of a city's economy).

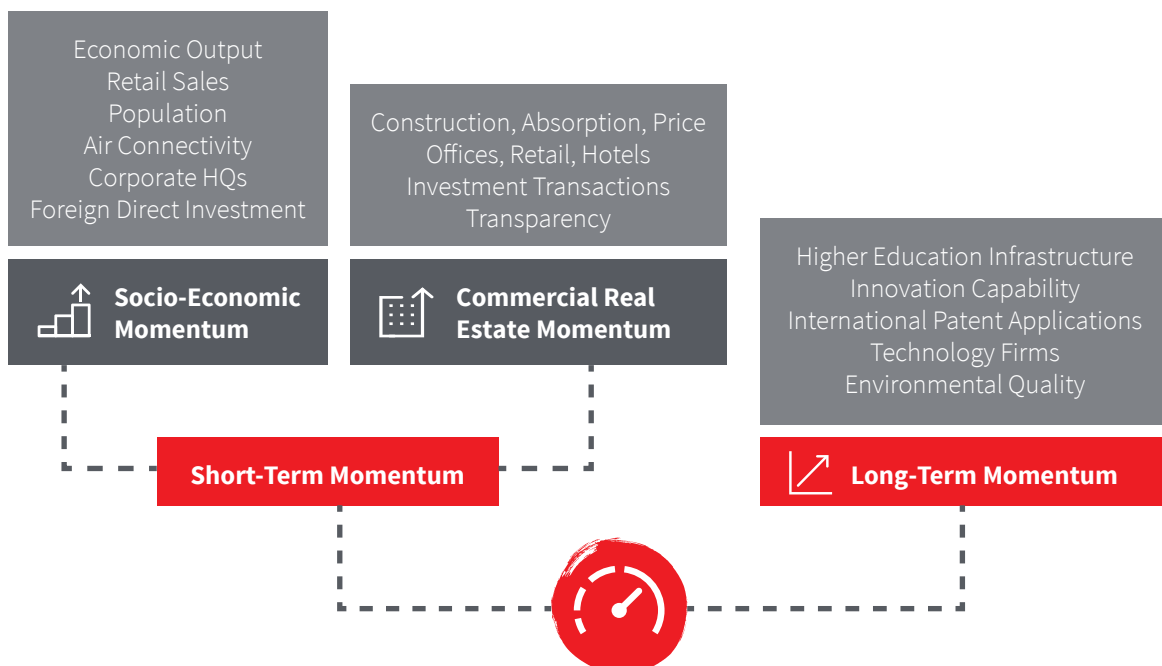
Commercial real estate momentum (accounting for 30% of the model) includes variables relating to recent and projected percentage changes in office net absorption, office construction, office rents, shopping mall construction, retail rents and hotel rooms. This sub-index also includes international retailer presence, home-sharing listings, and recent changes in direct commercial real estate investment volumes and real estate transparency.

High-value incubators (accounting for 30% of the model) have been included, as future economic strength and real estate momentum over the longer term are likely to be partially determined by the quality of a city's education infrastructure, its innovation capability, environmental sustainability and the strength of its technology sector. This sub-index includes a weighted score of the presence of the world's top universities, international patent applications, air quality, third-party indices of the innovation economy, and the presence of technology firms.

Data sources: All real estate data for the City Momentum Index is sourced to JLL. The non-real estate data is drawn from a wide range of sources that includes Oxford Economics, United Nations, ACI, OECD, WHO, GaWC, fDi Markets, QS, 2thinknow and AngelList. The Index also sources data from many national statistical offices.

Data comparability and accuracy: The CMI model is based upon data which we believe to be reliable. While every effort has been made to ensure the accuracy and completeness of the data used, we cannot offer any warranty that factual errors may not occur. For the vast majority of cities and variables, data relating to the city region has been used, but in a few cases, particularly in emerging markets, we have had to rely on national data.

The City Momentum Index Model



City Coverage

The 134 cities covered by the City Momentum Index have been shortlisted on the basis of a combination of a weighted index of population, GDP, corporate presence, air connectivity, real estate investment activity and commercial real estate stock. Each city is defined as its metropolitan region as delineated by national statistical offices or by international organisations (e.g. United Nations).

North America 35



Atlanta
Austin
Baltimore
Boston
Calgary
Charlotte
Chicago
Columbus
Dallas
Denver
Detroit
Houston
Kansas City
Las Vegas
Los Angeles
Miami
Minneapolis
Montreal
New York
Orlando
Philadelphia
Phoenix
Pittsburgh
Portland, OR
Raleigh-Durham
Salt Lake City
San Diego
San Francisco
Seattle
Silicon Valley
St Louis
Tampa
Toronto
Vancouver
Washington DC

Europe 40



Amsterdam
Antwerp
Athens
Barcelona
Berlin
Birmingham
Brussels
Bucharest
Cologne
Copenhagen
Dublin
Dusseldorf
Edinburgh
Frankfurt
Geneva
Glasgow
Hamburg
Helsinki
Istanbul
Kiev
Lisbon
London
Luxembourg
Lyon
Madrid
Manchester
Milan
Moscow
Munich
Oslo
Paris
Prague
Rome
St Petersburg
Stockholm
Stuttgart
Vienna
Warsaw
Zurich

Asia Pacific 39



Adelaide
Auckland
Bangalore
Bangkok
Beijing
Brisbane
Chengdu
Chennai
Chongqing
Delhi
Fukuoka
Guangzhou
Hangzhou
Hanoi
Ho Chi Minh City
Hong Kong
Hyderabad
Jakarta
Kolkata
Kuala Lumpur
Manila
Melbourne
Mumbai
Nagoya
Nanjing
Osaka
Perth
Pune
Seoul
Shanghai
Shenyang
Shenzhen
Singapore
Sydney
Taipei
Tianjin
Tokyo
Wuhan
Xian

Latin America 8

Bogota
Buenos Aires
Lima
Mexico City
Monterrey
Rio de Janeiro
Santiago
Sao Paulo

Middle East & Africa 12

Abu Dhabi
Cairo
Cape Town
Casablanca
Doha
Dubai
Jeddah
Johannesburg
Lagos
Nairobi
Riyadh
Tel Aviv



*Achieve
Ambitions*

JLL Regional Headquarters

Chicago

200 East Randolph Drive
Chicago IL 60601
USA
+1 312 782 5800

London

30 Warwick Street
London W1B 5NH
United Kingdom
+44 20 7493 4933

Singapore

9 Raffles Place
#39-00 Republic Plaza
Singapore 048619
+65 6220 3888

Authors

Jeremy Kelly

jeremy.kelly@eu.jll.com

Lee Fong

lee.fong@ap.jll.com

Rosemary Feenan

rosemary.feenan@eu.jll.com

Josh Gelormini

josh.gelormini@am.jll.com

Matthew McAuley

matthew.mcauley@eu.jll.com

Shetal Patel

shetal.patel@eu.jll.com

William McBryde

william.mcbryde@eu.jll.com

Craig Plumb

craig.plumb@eu.jll.com

To learn more about cities and real estate, visit our website
www.jll.com/cities-research

COPYRIGHT © JONES LANG LASALLE IP, INC. 2017.

This report has been prepared solely for information purposes and does not necessarily purport to be a complete analysis of the topics discussed, which are inherently unpredictable. It has been based on sources we believe to be reliable, but we have not independently verified those sources and we do not guarantee that the information in the report is accurate or complete. Any views expressed in the report reflect our judgment at this date and are subject to change without notice. Statements that are forward-looking involve known and unknown risks and uncertainties that may cause future realities to be materially different from those implied by such forward-looking statements. Advice we give to clients in particular situations may differ from the views expressed in this report. No investment or other business decisions should be made based solely on the views expressed in this report.