

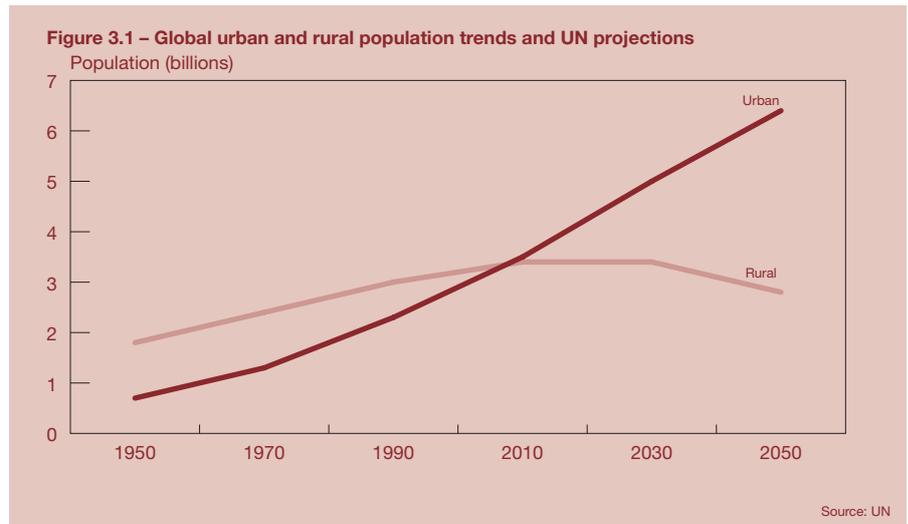
# III – Which are the largest city economies in the world and how might this change by 2025?

This article updates an article published in our March 2007 *UK Economic Outlook*<sup>1</sup> giving estimates for 2005 and projections to 2020 of the size of the largest 100 city economies in the world. The updated analysis and illustrative projections of GDP for different cities show how the GDP rankings of cities might change by 2025 taking into account the impact of the current economic downturn and the impact of a potential de-globalisation scenario.

Rankings of global cities by population are common, but while population statistics are important, they are only part of the story: leading cities such as London, New York, Paris and Tokyo are major economies in their own right, of a size greater than medium-sized national economies such as Sweden and Switzerland. Cities are also centres of innovation, creativity and culture, as well as focal points for government, finance, business services and corporate headquarters in their respective countries (and sometimes also their regions in the case of financial centres like London in Europe, or political centres like Brussels in the EU). However, data are much less readily available on the overall size of city economies in terms of their total output, particularly outside the OECD countries<sup>2</sup>.

This analysis fills this gap and provides a significantly different picture from rankings by population, with the advanced economy cities ranking much higher by GDP than by population due to their higher average income levels. Our analysis also allows us to consider how far fast-growing cities in emerging market economies like China, India and Brazil could challenge the dominance of current leading global cities such as New York, Tokyo, Paris and London by 2025.

The discussion below is organised as follows:



- Section III.1 provides a long-term historic perspective on population trends for the largest global cities
- Section III.2 introduces our approach and methodology;
- Section III.3 presents and discusses our estimates of the largest city economies in 2008;
- Section III.4 presents and discusses our illustrative projections for how these rankings might change between 2008 and 2025, with a particular focus on the rise of emerging economy cities;
- Section III.5 highlights the uncertainties surrounding our projections and discusses some of the key factors underlying the relative growth rates of city economies;
- Section III.6 considers the potential impact of an alternative de-globalisation scenario on the growth rates of city economies; and
- Section III.7 summarises and draws conclusions from the analysis.

A more detailed description of the data and methodology used in the analysis to estimate the size of city economies as measured by GDP is provided in Annex A. This is followed by a full listing of our rankings of the

largest city economies by GDP in 2008 and 2025 in Annex B.

## III.1 Long-term historic trends in city populations

Urbanisation has been one of the major global themes of the past century and all the indications are that major cities will provide an increasing focus for global economic activity over the course of this century. In 1900, there were only 16 cities in the world with more than 1 million inhabitants, mostly in the advanced economies; now there are over 400 such cities according to United Nations (UN) estimates, around three-quarters of which are in low and middle-income countries. In 1950, the rural population of the world was around twice the urban population, but by 2010 the UN estimates that the urban population will be greater and by 2030 it projects a total global urban population of around 5 billion compared to just over 3 billion in rural areas (see Figure 3.1).

Systematic rankings of urban agglomeration populations have been produced by the UN for the period since 1950. Table 3.1 shows the **top 30 urban agglomerations by population** in 1950, 1990, 2007 and 2025 to illustrate how these rankings have evolved over time and how they are projected to change by 2025. Notable points are that:

<sup>1</sup> The present article was written by John Hawksworth, Thomas Hoehn and Anmol Tiwari. It forms part of PricewaterhouseCoopers' wider research and consultancy programme on city economies.

<sup>2</sup> Some data are available for selected OECD and non-OECD cities on relative wages and costs of living, but no systematic global data source is readily available for GDP per capita at a city level as far as we are aware.

- Tokyo and New York remained the two largest urban agglomerations between 1950 and 2007 (although swapping places after around 1965), although Mexico City and Mumbai had caught up with New York by 2007. By 2025 New York is expected to be in 7th place on a par with Kolkata;
- London was still the third largest city in 1950, but has slid down the rankings progressively since then to only 26th in 2007 (with its population remaining broadly unchanged between these dates); Manchester and Birmingham were in the top 30 cities in 1950 but would not rank in the top 100 by population now<sup>3</sup>;
- Other leading European cities seeing sharp declines in their population rankings between 1950 and 2007 include Paris (5th to 20th), Moscow (6th to 18th) and Berlin (from 13th to well outside the top 30), a trend that will continue to 2025 when Paris is expected to rank 27th and Moscow 23rd;
- Conversely, major risers between 1950 and 2007 include Mumbai (18th to 4th), Sao Paulo (24th to 5th) and 'new entrants' like Jakarta (23rd in 2007), Dhaka (9th), Karachi (12th) and Lagos (22nd), all of which were well outside the top 30 in 1950;

- Notably, however, the major Chinese cities have not seen such rapid population rises as those in other leading emerging markets; both Shanghai (4th to 7th) and Beijing (10th to 16th), while increasing their populations significantly in absolute terms, have slid down the rankings between 1950 and 2007, particularly in recent decades due to China's one child policy. Shanghai is expected to continue to slide, dropping to 9th, but Beijing should climb back to 15th;
- Overall, the aggregate population of the top 30 cities is expected to rise from 308 million in 2007 to 391 million in 2025 (+27%).

Population, however, is only one of the factors determining the size of city economies as measured by GDP: the other being average income per capita.

**Table 3.1 – Trends in top 30 urban agglomerations by population: 1950-2025**

Ranking in 1950	Pop. (m) 1950	Ranking in 1990	Pop. (m) 1990	Ranking in 2007	Pop. (m) 2007	Projected Ranking in 2025	Projected Pop. (m) 2025
1. New York	12.3	Tokyo	32.5	Tokyo	35.7	Tokyo	36.4
2. Tokyo	11.3	New York	16.1	New York	19.0	Mumbai	26.4
3. London	8.4	Mexico City	15.3	Mexico City	19.0	Delhi	22.5
4. Shanghai	6.1	Sao Paulo	14.8	Mumbai	19.0	Dhaka	22.0
5. Paris	5.4	Mumbai	12.3	São Paulo	18.8	São Paulo	21.4
6. Moscow	5.4	Osaka-Kobe	11.0	Delhi	15.9	Mexico City	21.0
7. Buenos Aires	5.1	Kolkata	10.9	Shanghai	15.0	New York	20.6
8. Chicago	5.0	Los Angeles	10.9	Kolkata	14.8	Kolkata	20.6
9. Kolkata	4.5	Seoul	10.5	Dhaka	13.5	Shanghai	19.4
10. Beijing	4.3	Buenos Aires	10.5	Buenos Aires	12.8	Karachi	19.1
11. Osaka/Kobe	4.1	Rio de Janeiro	9.6	Los Angeles	12.5	Kinshasa	16.8
12. Los Angeles	4.0	Paris	9.3	Karachi	12.1	Lagos	15.8
13. Berlin	3.3	Cairo	9.1	Cairo	11.9	Cairo	15.6
14. Philadelphia	3.1	Moscow	9.1	Rio de Janeiro	11.7	Manila	14.8
15. Rio de Janeiro	3.0	Delhi	8.2	Osaka-Kobe	11.3	Beijing	14.5
16. St Petersburg	2.9	Shanghai	8.2	Beijing	11.1	Buenos Aires	13.8
17. Mexico City	2.9	Manila	8.0	Manila	11.1	Los Angeles	13.7
18. Mumbai	2.9	London	7.7	Moscow	10.5	Rio de Janeiro	13.4
19. Detroit	2.8	Jakarta	7.7	Istanbul	10.1	Jakarta	12.4
20. Boston	2.6	Chicago	7.4	Paris	9.9	Istanbul	12.1
21. Cairo	2.5	Beijing	7.4	Seoul	9.8	Guangzhou	11.8
22. Manchester	2.4	Karachi	7.1	Lagos	9.5	Osaka-Kobe	11.4
23. Tianjin	2.4	Istanbul	6.6	Jakarta	9.1	Moscow	10.5
24. Sao Paulo	2.3	Dhaka	6.5	Chicago	9.0	Lahore	10.5
25. Birmingham	2.2	Tehran	6.4	Guangzhou	8.8	Shenzhen	10.2
26. Shenyang	2.1	Bangkok	5.9	London	8.6	Chennai	10.1
27. Rome	1.9	Lima	5.8	Lima	8.0	Paris	10.0
28. Milan	1.9	Tianjin	5.8	Tehran	7.9	Chicago	9.9
29. San Francisco	1.9	Hong Kong	5.7	Kinshasa	7.8	Tehran	9.8
30. Barcelona	1.8	Chennai	5.3	Bogotá	7.8	Seoul	9.7

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Urbanization Prospects: The 2007 Revision*.

**Table 3.2 – Data sources for city GDP estimates and projections**

Variable	Sources for 2008 estimates	Sources for 2025 projections
Urban area population	Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, <i>World Urbanization Prospects: The 2007 Revision</i> ; extrapolated from 2007 to 2008 using 2005 – 2010 average annual growth rate	UN projections to 2025
GDP per capita for OECD urban areas	OECD Competitive Cities report (2006) estimates for 2002, extrapolated forward to 2008 using OECD data for 1995-2002 and IMF for 2005-2008, plus data on the city-national differential where available from individual national statistical offices	National projections for GDP per capita growth from PwC World in 2050 model to 2025, with adjustments to reflect historic differentials between city and national growth where OECD data available (for 44 countries in 1995-2002 period). Further adjustments made to short term growth rates due to recent global economic downturn
GDP per capita for non-OECD countries	Direct estimates from national statistical offices where available (e.g. China, Brazil) or adjusted World Bank national data to reflect typical ratios of GDP per capita in major cities relative to national averages based on comparators with similar characteristics (e.g. cities of similar population in countries with similar income levels). Asian Development Bank data used for some Asian cities	National projections for GDP per capita growth from PwC World in 2050 model to 2025 for countries where available, with other countries being based on closest available comparators, with some judgemental adjustments to reflect particular national characteristics where appropriate. City GDP per capita growth assumed to be in line with national average for non-OECD countries due to lack of city-level data. Further adjustments made to short term growth rates due to recent global economic downturn

<sup>3</sup> Although, as shown in Annex B, Manchester and Birmingham still rank in the top 100 cities by GDP in 2008.

### III.2 Data and methodology used to derive city GDP estimates and projections

Our primary estimates of 2008 city output are based on combining UN population estimates for 2008 with estimates of income per capita, as summarised in Table 3.2<sup>4</sup>. For cities from OECD countries, we were able to base our city-level GDP per capita estimates on 2002 data from the OECD's Competitive Cities report (2006) and then projected these forward to 2008. For non-OECD cities, data are not readily available from a single source. In some cases GDP per capita estimates at city level were available from national sources, but in many cases we were only able to make approximate estimates based on plausible ratios of city to national GDP per capita. As such, the 2008 urban agglomeration GDP estimates should only be taken as broadly indicative of relative economic size for the non-OECD countries. Nonetheless, they provide a much better indication of relative economic size than just looking at population data.

As Table 3.2 also shows, our illustrative projections for city GDP in 2025 combine UN population projections<sup>5</sup> with our own estimates of national income per capita growth trends from our previous *World in 2050* report<sup>6</sup>. We have incorporated the short term and long term impacts of the recent global economic downturn on the income per capita growth rates (this has a particularly large downward effect in 2009-10). As illustrated for selected countries in Figure 3.2, these projections show consistently higher income per capita growth in the emerging economies, particularly China and India.

### III.3 Urban economy rankings in 2008 (and changes since 2005)

We have used the methodology described above to produce GDP estimates for our 151 candidate urban agglomerations in 2008<sup>7</sup>. As noted above, it should be recognised that these estimates are reliant on the definitions adopted by the UN, and the GDP per capita estimates are subject to significant margins of error for the non-OECD cities. They should, however, be at least broadly accurate in

Figure 3.2 – Projected real GDP per capita growth by country: 2010-25

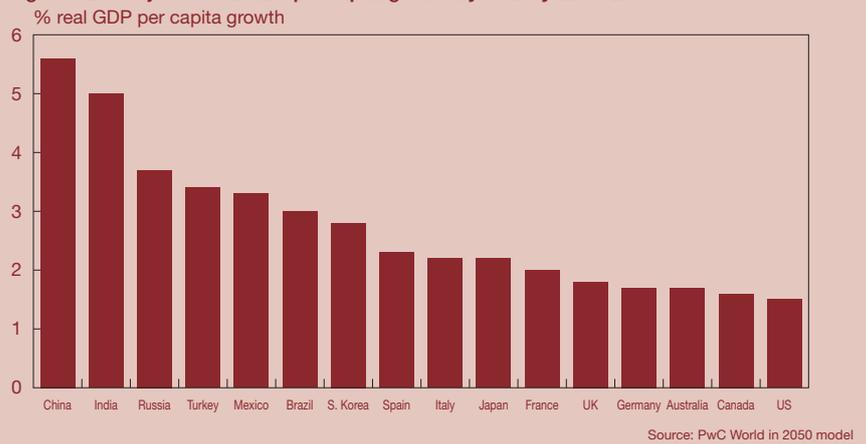


Table 3.3 – Top 30 urban agglomerations by estimated GDP in 2008 using UN population estimates and definitions

GDP rank in 2008 (with 2005 rank in brackets)	City	Estimated GDP in 2008 (\$bn at PPPs)*	Components of estimated GDP	
			Population (millions)	GDP per capita (\$k at PPPs)
1 (1)	Tokyo	1479	35.83	41.3
2 (2)	New York	1406	19.18	73.3
3 (3)	Los Angeles	792	12.59	62.9
4 (4)	Chicago	574	9.07	63.3
5 (6)	London	565	8.59	65.8
6 (5)	Paris	564	9.92	56.9
7 (7)	Osaka/Kobe	417	11.31	36.9
8 (8)	Mexico City	390	19.18	20.4
9 (9)	Philadelphia	388	5.54	70.1
10 (19)	Sao Paulo**	388	19.09	20.3
11 (10)	Washington DC	375	4.38	85.5
12 (11)	Boston	363	4.51	80.5
13 (13)	Buenos Aires	362	12.90	28.0
14 (12)	Dallas/Fort Worth	338	4.86	69.5
15 (25)	Moscow***	321	10.47	30.7
16 (14)	Hong Kong	320	7.28	44.0
17 (16)	Atlanta	304	4.58	66.4
18 (15)	San Francisco/Oakland	301	3.48	86.5
19 (17)	Houston	297	4.52	65.8
20 (18)	Miami	292	5.65	51.6
21 (20)	Seoul	291	9.78	29.7
22 (21)	Toronto	253	5.29	47.7
23 (22)	Detroit	253	4.13	61.1
24 (24)	Seattle	235	3.11	75.5
25 (32)	Shanghai	233	15.24	15.3
26 (23)	Madrid	230	5.64	40.8
27 (36)	Singapore	215	4.49	47.9
28 (26)	Sydney	213	4.36	48.9
29 (37)	Mumbai (Bombay)****	209	19.35	10.8
30 (30)	Rio de Janeiro**	201	11.89	16.9

\*2008 population estimates were calculated by taking the average annual population growth rate between 2005 and 2010 and applying it to the UN's 2007 population estimates.

\*\* New data found from national data sources on GDP per capita in all major Brazilian Cities including Sao Paulo and Rio de Janeiro.

\*\*\* New data found from World Bank on GDP per capita in Moscow (and St. Petersburg in full rankings).

\*\*\*\* New data found from national data sources on GDP per capita in Mumbai (as well as Delhi, Bangalore and Kolkata in full rankings).

Source: UN for population estimates; PricewaterhouseCoopers GDP estimates drawing on data from UN, World Bank, OECD and national sources. Notes above indicate where GDP per capita estimates were revised significantly since our 2007 study due to new and better data sources being used.

<sup>4</sup> A more detailed explanation of our methodology can be found in Annex A.

<sup>5</sup> Earlier UN city population projections were criticised, with good reason as events turned out, by Paul Biroch ('Employment and large cities: problems and outlook', International Labour Review, vol 121, No. 5, Sept-Oct 1982).

<sup>6</sup> However, the UN's projection methodology has been revised and updated since then, notably to account for the tendency of the largest cities to grow more slowly than smaller cities as diseconomies of scale set in for mega-cities.

<sup>7</sup> J. Hawksworth & G. Cookson. The World in 2050: Beyond the BRICs: A broader look at emerging market growth prospects? PricewaterhouseCoopers, March 2008. Available to download from [http://www.pwc.com/en\\_GX/world-2050/pdf/world\\_2050\\_brics.pdf](http://www.pwc.com/en_GX/world-2050/pdf/world_2050_brics.pdf)

<sup>7</sup> A full listing of GDP estimates for the 151 cities covered by our analysis is provided in Annex B.

order of magnitude terms and, as noted above, taking account of income per capita certainly produces a much better indication of the relative size of urban economies than just looking at population data.

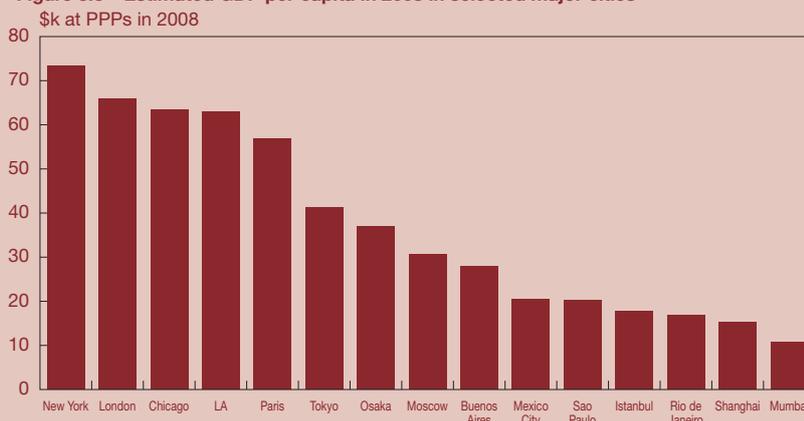
Subject to these caveats, Table 3.3 shows our estimates of the size of the top 30 urban agglomerations (on UN definitions) in 2008, ranked by GDP at Purchasing Power Parity (PPP) exchange rates using the methodology described above and in Annex A. The reason for using PPPs rather than market exchange rates is to correct for the currently significant differences in price levels between emerging market and advanced economies, reflecting the relatively low cost of non-traded goods and services in emerging economies (this is expected to be less of an issue by 2025).

It is interesting to note that, in total, our estimates suggest that the largest 100 cities accounted for around 30% of global GDP at PPPs in 2008, with the top 30 cities alone accounting for around 18% of world GDP in that year. This emphasises the concentration of global economic activity in the world's largest cities.

The most striking point to note is that, while 22 of the top 30 urban areas by population in 2008 were from emerging/developing economies (see Table 3.1 above), only 7 of these emerging economy cities (Mexico City, Sao Paulo, Buenos Aires, Moscow, Shanghai, Mumbai and Rio de Janeiro) were in the top 30 according to our GDP estimates<sup>8</sup>. This reflects the much higher GDP per capita levels in the major developed economy cities than in the major emerging market cities, as illustrated for a selection of cases in Figure 3.3. Indeed, based on OECD and IMF estimates, 23 of the top 30 cities ranked by GDP per capita at PPPs in 2008 were from the US.

Looking at the top of the 2008 GDP rankings in Table 3.3, Tokyo has retained the top ranking we found for 2005 and is narrowly ahead of New York, with both having economies worth nearly \$1.5 trillion in 2008 (broadly similar to national economies such as Spain and Mexico). Los Angeles is still in clear third place with Chicago, London and Paris vying for the next three places (each of which has an

**Figure 3.3 – Estimated GDP per capita in 2008 in selected major cities**



Source: PwC estimates based on OECD, World Bank and national data sources

**Table 3.4 – Comparison of estimated GDP of largest urban agglomerations with GDP of selected national economies in 2008**

Country/Urban Agglomeration	Estimated GDP in 2008 (\$bn at PPPs)
Russia	2288
UK	2176
Mexico	1542
<b>Tokyo</b>	<b>1479</b>
Spain	1456
<b>New York</b>	<b>1406</b>
Canada	1214
<b>Los Angeles</b>	<b>792</b>
Australia	763
Poland	672
<b>Chicago</b>	<b>574</b>
<b>London</b>	<b>565</b>
<b>Paris</b>	<b>564</b>
South Africa	492
<b>Osaka/Kobe</b>	<b>417</b>
Colombia	396
<b>Mexico City</b>	<b>390</b>
<b>Philadelphia</b>	<b>388</b>
<b>Sao Paulo</b>	<b>388</b>
Belgium	369
Sweden	345
Switzerland	325

Source: World Bank for national GDP estimates; PwC for urban agglomeration GDP estimates using UN definitions (as in Table 3.3 above). These estimates are from different sources and so will not be fully consistent, but should be broadly comparable in order of magnitude terms

estimated GDP significantly higher than national economies such as South Africa, Belgium, Sweden and Switzerland as illustrated in Table 3.4). The most significant changes in top 10 rankings since 2005 have been London climbing ahead of Paris to 5th place and Sao Paulo jumping into 10th place<sup>9</sup>. The latter is due to new data being found on income per capita for all Brazilian cities. Aside from London and Paris, only two other European cities (Madrid and Moscow) make the top 30.

Mexico City and Sao Paulo are the only emerging economy cities in the top 10 when ranked by GDP but Buenos Aires is not far behind in 13th place and Moscow in 15th. Shanghai and Mumbai have jumped into the top 30 with their strong growth between 2005 and 2008. Moscow has significantly jumped from 25th to 15th since 2005 due to new data being available from the World Bank on the percentage share of Moscow in total Russian GDP. The full list in Annex B shows that there are also a number

<sup>8</sup> This is despite using PPP rather than market exchange rates in order to avoid underestimating the scale of the outputs of the emerging economy cities.

<sup>9</sup> New data for GDP per capita of Brazilian cities was taken from the following source: <http://www.ibge.gov.br/home/estatistica/economia/pibmunicipios/2006/tab01.pdf>

of fast-growing emerging economy cities just outside the top 30, including Istanbul (34th), Beijing (38th), Manila (40th), Cairo (42nd), Guangzhou (44th), and Santiago (53rd).

Table 3.5 shows the top 5 cities in 2008 in their respective country income brackets, using the World Bank's classification<sup>10</sup> of countries by income. We can see that Mexico City tops the list of cities in the group of Upper-Middle Income Countries followed closely by Sao Paulo. Shanghai tops the list of cities in Lower-Middle Income Countries followed by Mumbai. Dhaka tops the Low Income Country category followed by Ho Chi Min City. In the next section, we consider how far these and other emerging economy cities might rise up the rankings by 2025.

### III.4 Projected urban economy growth rates and GDP rankings in 2025

#### Rankings by economic size in 2025

Table 3.6 shows our projections of the top 30 urban economies in 2025 measured by GDP at PPPs (in 2008 US dollars), with the rankings in 2008 shown in the first column for comparison. The full GDP rankings for both years are given in Table 3.10 in Annex B. These are based on UN definitions and population projections.

The largest five urban economies (on UN definitions) remain the same as in 2008, although London overtakes Chicago to move into 4th place. As might be expected, however, the dominant trend is for emerging economy cities to rise up the rankings: Sao Paulo climbs from 10th to 6th, Mexico City rises from 8th to 7th and Buenos Aires from 13th to 10th. The largest climbers within the top 30 are Shanghai (leaping into the top 10 from 25th to 9th) and Mumbai (racing from 29th to 11th). Istanbul (34th to 28th), Beijing (38th to 17th), Delhi (37th to 19th), Guangzhou (44th to 21st) and Cairo (42nd to 30th) are all notable 'new entries' in the top 30.

Lower down the list (see Annex), notable 'climbers' between 2008 and 2025 include Manila (40th to 33rd), Kolkata (61st to 37th), Bangkok (54th to 44th), Jakarta

**Table 3.5 – Top 5 urban agglomerations in different country income brackets by estimated GDP in 2008 (using UN population estimates and definitions)**

Top 5 Cities in Upper-Middle Income Countries		
Rank	City	GDP in 2008 (\$bn at PPPs)
1	Mexico City	390
2	Sao Paulo	388
3	Buenos Aires	362
4	Moscow	321
5	Rio de Janeiro	201
Top 5 Cities in Lower-Middle Income Countries		
Rank	City	GDP in 2008 (\$bn at PPPs)
1	Shanghai	233
2	Mumbai	209
3	Delhi	167
4	Beijing	166
5	Manila	149
Top 5 Cities in Low Income Countries		
Rank	City	GDP in 2008 (\$bn at PPPs)
1	Dhaka	78
2	Ho Chi Min City	58
3	Hanoi	42
4	Yangon	24
5	Chittagong	24

Source: PricewaterhouseCoopers GDP estimates drawing on data from UN, World Bank, OECD and national sources

**Table 3.6 – Top 30 urban agglomerations by estimated GDP in 2025 using UN population definitions and projections**

2025 GDP rank (2008 in brackets)	City	Estimated GDP in 2025 (\$bn at 2008 PPPs)	Population in 2025 (millions)	Average real GDP growth (% pa: 2008-2025)
1 (1)	Tokyo	1981	36.40	1.7%
2 (2)	New York	1915	20.63	1.8%
3 (3)	Los Angeles	1036	13.67	1.6%
4 (5)	London	821	8.62	2.2%
5 (4)	Chicago	817	9.93	2.1%
<b>6 (10)</b>	<b>Sao Paulo ▲</b>	<b>782</b>	<b>21.43</b>	<b>4.2%</b>
7 (8)	Mexico City	745	21.01	3.9%
8 (6)	Paris	741	10.04	1.6%
<b>9 (25)</b>	<b>Shanghai ▲</b>	<b>692</b>	<b>19.41</b>	<b>6.6%</b>
10 (13)	Buenos Aires	651	13.77	3.5%
<b>11 (29)</b>	<b>Mumbai (Bombay) ▲</b>	<b>594</b>	<b>26.39</b>	<b>6.3%</b>
12 (15)	Moscow	546	10.53	3.2%
13 (9)	Philadelphia	518	6.13	1.7%
14 (16)	Hong Kong	506	8.31	2.7%
15 (11)	Washington DC	504	4.89	1.8%
16 (7)	Osaka/Kobe	500	11.37	1.1%
<b>17 (38)</b>	<b>Beijing ▲</b>	<b>499</b>	<b>14.55</b>	<b>6.7%</b>
18 (12)	Boston	488	5.03	1.8%
<b>19 (37)</b>	<b>Delhi ▲</b>	<b>482</b>	<b>22.50</b>	<b>6.4%</b>
20 (14)	Dallas/Fort Worth	454	5.42	1.8%
<b>21 (44)</b>	<b>Guangzhou ▲</b>	<b>438</b>	<b>11.84</b>	<b>6.8%</b>
22 (21)	Seoul	431	9.74	2.3%
23 (17)	Atlanta	412	5.15	1.8%
<b>24 (30)</b>	<b>Rio de Janeiro ▲</b>	<b>407</b>	<b>13.41</b>	<b>4.2%</b>
25 (18)	San Francisco/Oakland	406	3.90	1.8%
26 (19)	Houston	400	5.05	1.8%
27 (20)	Miami	390	6.27	1.7%
<b>28 (34)</b>	<b>Istanbul ▲</b>	<b>367</b>	<b>12.10</b>	<b>4.2%</b>
29 (22)	Toronto	352	5.95	2.0%
<b>30 (42)</b>	<b>Cairo ▲</b>	<b>330</b>	<b>15.56</b>	<b>5.0%</b>

▲ Rising by more than 3 places  
Source: PricewaterhouseCoopers projections

<sup>10</sup> For the purpose of this calculation, cities are classified as emerging market cities by the countries in which they are based and how the countries are classified by the World Bank according to income levels (see <http://go.worldbank.org/D7SN0B8YU0> for further information)

(70th to 45th), Tianjin (80th to 47th), Dhaka (77th to 48th), Bangalore (84th to 55th), and Bogota (64th to 58th).

Perhaps equally predictably, the main 'fallers' within the top 100 are the cities of 'old Europe' like Rome (43rd to 53rd), Milan (46th to 65th), Vienna (50th to 67th) and Berlin (69th to 86th). Within the UK, Birmingham (72nd to 88th) and Manchester (74th to 92nd) slip down the rankings but remain in the top 100, while Leeds is projected to fall from 92nd to 119th. This is not because these cities are stagnating – all three are expected to see their economies grow by around 1.4 - 2% per annum in real terms over this period; but they cannot hope to keep pace with the fast-growing city economies of the emerging world.

The theme of the rise of emerging markets also comes out from an analysis of the number of cities in the top 50/100 by country in 2008 and 2025, as set out in Table 3.7. We can see that, although there is not that much turnover in the rankings (with just 6 new entries in the top 50 and 9 in the top 100), the emerging economies are the clear gainers. India in particular has 3 of its cities projected to rise into the top 100 between 2008 and 2025, while China has 2 new entries in the top 100 (the other four are from Egypt, Vietnam, Pakistan and Nigeria). European cities are again the main losers here: as well as Leeds, those projected to fall out of the top 100 include Hamburg, Stockholm, Lyon, Turin, Munich and Helsinki.

Another way to illustrate this point is to note that the total estimated GDP of the 80 emerging market cities we considered account for around 30% of the total GDP in 2008 of all the 151 cities. By 2025, however, the projected share of these same 80 cities rises to around 40% of the total (although it should be noted that some of these 80 cities will have risen out of the emerging markets category in terms of their income levels by 2025).

## Rankings by economic growth in 2008-25

An even clearer way to see the shifts in global economic weight towards the emerging markets is to look at rankings

**Table 3.7 – Number of cities in global top 50/100 by country (GDP rankings using UN population definitions and projections)**

Countries	Number of cities in 2008 in:		Number of cities in 2025 in:	
	Global top 50	Global top 100	Global top 50	Global top 100
US	20	23	17	23
Japan	2	3	2	3
Germany	0	3	0	1
UK	1	4	1	3
France	1	2	1	1
Italy	2	3	0	2
Canada	2	3	1	3
<b>Total: G7</b>	<b>28</b>	<b>41</b>	<b>22</b>	<b>36</b>
Other advanced economies	8	20	8	16
<b>Total: advanced</b>	<b>36</b>	<b>61</b>	<b>30</b>	<b>52</b>
China	3	5	4	8
India	2	6	3	9
Brazil	2	5	2	5
Russia	1	2	1	2
Mexico	1	3	1	3
Indonesia	0	1	1	1
Turkey	1	2	1	2
<b>Total: E7</b>	<b>10</b>	<b>24</b>	<b>13</b>	<b>30</b>
Other emerging economies	4	15	7	18
<b>Total: emerging economies</b>	<b>14</b>	<b>39</b>	<b>20</b>	<b>48</b>
All countries	50	100	50	100

Source: PricewaterhouseCoopers estimates and projections (see Annex B for full listings)

by projected economic growth between 2008 and 2025. As Table 3.8 shows, there are no advanced economies represented in the top 30 fastest growing cities, as compared to 2 from Vietnam (with Hanoi and Ho Chi Min City topping the table), 12 from India (with Surat in 7th), and 9 from China (including Changchun and Guangzhou coming 3rd and 4th respectively).

Indeed, the highest advanced economy cities in the full growth rankings are Dublin in 77th, Hong Kong in 81st place and Singapore in 95th. Auckland (85th), Prague (86th), Lisbon (87th) and Seoul (91st) also score relatively well in the developed economy city growth league. London (94th) also just makes the top 100 and, as shown in Figure 3.4, it ranks higher on growth than the other advanced economy mega-cities such as Los Angeles (141st), New York (118th), Tokyo (131st) and Paris (138th). Manchester, Leeds and Birmingham are further down the list than London, however, reflecting the relatively stronger performance of

London since the mid-1990s, which we assume to persist (albeit to a lesser degree) in the future. Although the recent global financial crisis severely impacted London's financial sector in the short run, we believe that London will continue to benefit in the long run from its status as one of the leading global business and financial service centres.

Figure 3.4 provides some further insight on key trends by comparing projected cumulative economic growth rates over the period 2008-25 for the eight largest emerging economy cities and the eight largest advanced economy cities (ranked by estimated GDP in 2008 in each case). Shanghai (197%), Mumbai (185%) and Rio de Janeiro (103%) are projected to achieve particularly impressive economic growth here relative to their fellow 'mega-cities', but the other five emerging economy cities are also projected to rack up cumulative GDP growth of around 70-100%, compared to an average of only around 35% for the eight advanced economy mega-cities.

### III.5 Key uncertainties and factors underlying relative city growth rates

It should be recognised, however, that even though we believe that our general conclusion on the rise of the emerging market economies and cities should be robust, any such growth rankings can only be illustrative for individual cities. Given the objective of providing a comprehensive global ranking, our analysis is necessarily somewhat mechanical and relies both on the UN population projections, which are subject to widening margins of error over time as with any such long-term projections<sup>11</sup>, and on the assumption that our earlier work on national GDP per capita projections provides a good basis for city-level projections. We also need to acknowledge that economic size as measured by GDP may not fully reflect the level of well-being in a city given it ignores other relevant socio-economic factors (including income inequality, the value of home production, the quality and quantity of leisure time and environmental indicators such as air and water pollution).<sup>12</sup>

In practice, some cities may do significantly better than their national economies and some may lag behind. Equally, not all of the emerging economies may fulfil the potential identified in our *World in 2050* report, whether due to political and/or macroeconomic instability, infrastructure constraints, energy supply problems or environmental crises. Avoiding these pitfalls, both at national and local level, will be critical to the long-term economic success of these cities.

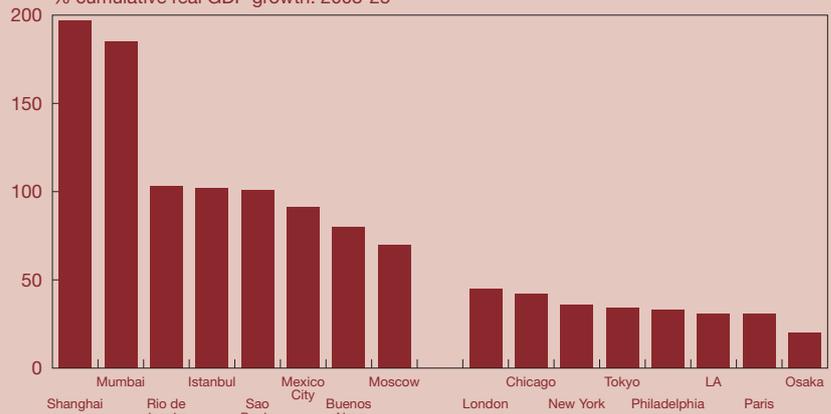
Climate change, for example, may pose significant long-term challenge, particularly to coastal cities in developing economies that may be relatively exposed to more frequent and intense severe weather events such as typhoons and hurricanes, as well as a potential long-term rise in sea levels due to global warming. Some preliminary analysis we have carried out suggests that emerging market coastal cities like Dhaka, Cairo, Karachi, Lagos, Tianjin and Porto Alegre could be particularly exposed to any early adverse effects from climate change. There are huge uncertainties here as to the scale and timing of any such effects and the extent to which mitigating action could be taking in time to avoid serious consequences.

Table 3.8 – Top 30 urban agglomerations by projected average real GDP growth in 2008-25 (using UN population definitions and projections)

Growth rank	City	Country	Average real GDP growth in 2008-25 (% per annum)
1	Hanoi	Vietnam	7.0%
2	Ho Chi Min City	Vietnam	7.0%
3	Changchun	China	6.9%
4	Guangzhou	China	6.8%
5	Addis Ababa	Ethiopia	6.8%
6	Xian	China	6.7%
7	Surat	India	6.7%
8	Beijing	China	6.7%
9	Jaipur	India	6.7%
10	Lucknow	India	6.6%
11	Chengdu	China	6.6%
12	Shenyang	China	6.6%
13	Kanpur	India	6.6%
14	Shanghai	China	6.6%
15	Tianjin	China	6.6%
16	Pune	India	6.6%
17	Chongqing	China	6.6%
18	Ahmedabad	India	6.5%
19	Kabul	Afghanistan	6.5%
20	Bangalore	India	6.5%
21	Hyderabad	India	6.5%
22	Dar es Salaam	Tanzania	6.5%
23	Chennai (Madras)	India	6.5%
24	Delhi	India	6.4%
25	Lagos	Nigeria	6.4%
26	Nairobi	Kenya	6.4%
27	Kolkata (Calcutta)	India	6.4%
28	Mumbai (Bombay)	India	6.3%
29	Chittagong	Bangladesh	6.3%
30	Kinshasha	Democratic Republic of Congo	6.3%

Source: PricewaterhouseCoopers projections using UN population definitions

Figure 3.4 – Cumulative projected GDP growth to 2025 for mega-cities  
% cumulative real GDP growth: 2008-25



Top 8 emerging economy and Top 8 advanced economy cities

Source: PwC analysis

It should also be noted that economic size, although significant, is not a panacea. As noted by Joel Kotkin<sup>13</sup>, Singapore has established itself as a global financial centre to a greater extent

than larger Asian cities like Bangkok, Manila and Jakarta. Similarly, Dubai has been more successful than Cairo. The same author notes that Mexico City, the largest emerging economy city in the

<sup>11</sup> In addition to the earlier research by Bairoch (1982) cited above, this point is also explored in some detail in a more recent paper by Barry Cohen ('Urban Growth in Developing Countries: A Review of Current Trends and a Caution Regarding Existing Forecasts', World Development, vol 32, no 1, pp 23-51, 2004).

<sup>12</sup> See [http://www.stiglitz-sen-fitoussi.fr/documents/rapport\\_anglais.pdf](http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf)

<sup>13</sup> J. Kotkin, The City: A Global History (Phoenix: London, 2005). Similar arguments on the potential disbenefits of greater city size beyond some threshold were set out by Bairoch (1982, op. cit).

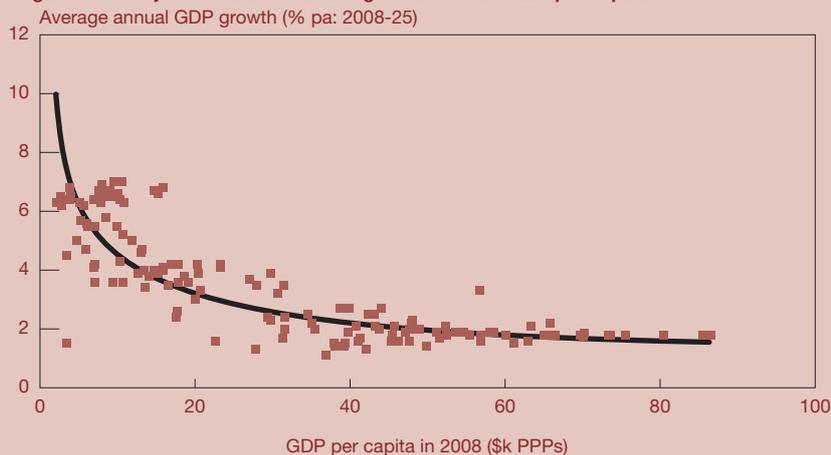
world based on our analysis, is burdened by problems of crime, congestion and pollution that make smaller but faster-growing cities like Monterrey and Guadalajara more attractive to entrepreneurs and ambitious workers.

Within the developed world, it seems clear that the most successful cities will be those that have comparative advantages in intangible business, financial and consumer services that are not so easily emulated by the rising stars of China, India or Brazil. Prominent examples include the continued pre-eminence of London, New York and Tokyo in global financial services, or of Los Angeles in the media and entertainment sector, but it also applies to smaller but possibly faster growing cities that specialise in new technologies where distance is not an issue and the most talented individuals are looking for a better quality of life than the mega-cities can offer. The comparatively rapid projected growth rates (by developed country standards) of cities such as Atlanta, Dublin, Stockholm and Seattle reflect these kinds of more qualitative factors.

More formally, our projections show a negative correlation between initial economic size (GDP) and subsequent projected growth, but this is very much driven by lower initial GDP per capita in emerging economies (see Figure 3.5, which shows a significant but non-linear relationship). After correcting for differences in initial GDP per capita, regression analysis does not indicate any statistically significant relationship between initial population levels and subsequent projected GDP growth<sup>14</sup>. These are only projections, of course, so this is a feature of our analysis that may or may not be borne out by actual experience. Without time series of historic GDP for a sufficient range of cities we are unfortunately not able to test these relationships using actual data.

It is also important to note that, while cities may compete for inward investment in some respects, they are also important trading partners for each other to the extent that they specialise in different areas of economic activity. A larger global market can still be of great potential benefit to those 'old Europe' cities even if the latter are likely to slide down the relative GDP rankings.

**Figure 3.5 – Projected urban area GDP growth vs initial GDP per capita**



Source: PwC analysis

**Table 3.9 – Impact of de-globalisation scenario on projected GDP rankings of selected cities in 2025 (using UN definitions and population estimates)**

City	De-globalisation scenario results		
	New 2025 rank	Change in rank*	Percentage change in projected 2025 GDP
Shanghai	9	–	-9.2%
Mumbai (Bombay)	11	–	-9.2%
Rio de Janeiro	27	-3	-4.7%
Manila	36	-3	-9.2%
Cairo	34	-4	-9.2%
Guangzhou	25	-4	-9.2%
Bangkok	45	-1	-9.3%
Jakarta	47	-2	-9.2%
Dhaka	57	-9	-13.6%
Karachi	64	-7	-9.3%
Tianjin	52	-5	-9.2%
Chennai (Madras)	66	-6	-9.2%
Porto Alegre	88	-3	-4.7%
Ho Chi Min City	69	-5	-13.4%
Ahmedabad	81	-4	-9.2%
Alexandria	95	-2	-9.2%
Hanoi	86	-4	-13.4%
Lahore	101	-4	-9.3%
Surat	96	-1	-9.2%
Lagos	104	-5	-9.2%
Chengdu	106	-6	-9.2%
Casablanca	129	-4	-9.3%
Changchun	120	-7	-9.2%
Chittagong	134	-8	-13.6%
Lucknow	133	-5	-9.2%

\*Relative to baseline projections for 2025

Source: Illustrative PwC projection

### III.6 Possible impact of de-globalisation scenario on city growth rates

To explore further the uncertainties surrounding our projections, we have considered one particular alternative scenario which could impact the growth of some cities significantly: de-globalisation.

In this scenario an assumed rise in global protectionism, notably by the US and the EU, leads to generally slower world economic growth with particularly severe adverse effects on emerging economies, which typically rely heavily on cross-border trade and investment flows to realise their growth potential (as shown by the experience of the Asian tigers

<sup>14</sup> In fact, cities with larger populations have, after allowing for differences in initial GDP per capita levels, slightly higher projected growth rates in our model, but not to a statistically significant degree (t-statistic = 1.1).

since 1970, China since 1980 or India since the early 1990s). In this setting, the growths of emerging economy cities will be affected by not only their income group classification but also how heavily they rely on trade for growth in the future.

In order to determine how this de-globalisation scenario might affect specific cities, we first categorised the cities using the World Bank's classification of their countries by income. We then applied a de-globalisation growth factor from 2015 onwards. If a city fell under the low income bracket, its growth rates were assumed to be reduced to a larger extent compared to a city in the high income bracket that could rely more on mature domestic markets to sustain a reasonable level of growth (although still lower than in our baseline projections). These income-related growth adjustments are necessarily judgemental, but are broadly in line with what would be expected based on the academic literature on the effect of cross-border trade and investment on economic growth, at least in directional terms.

The results of this scenario are summarised in Table 3.9 for 25 selected cities. The biggest drop in rankings was by Dhaka from 48th to 57th; its projected GDP in 2025 fell by almost 14% relative to our baseline scenario. Growth in Dhaka has been especially strong in the finance, manufacturing, telecommunications and tourism sectors, all of which would be potentially vulnerable in a de-globalisation scenario (e.g. due to less outsourcing of factories and call centres to low cost locations such as Dhaka).

Many other emerging economy cities would also be likely to be relatively badly hit in a de-globalisation scenario. Shanghai and Mumbai, for example, could see their projected GDP in 2025 reduced by just under 10%. Karachi could fall in the rankings from 57th to 64th place, with its projected GDP in 2025 also decreasing by close to 10% compared to our baseline projections. Ho Chi Min City and Hanoi could both see their projected GDP in 2025 fall by more than 13%. Other notable

cities that might fall in the rankings in our de-globalisation scenario could include Guangzhou (21st to 25th), Cairo (30th to 34th), Tianjin (47th to 52nd), Chennai (60th to 66th) and Ahmedabad (77th to 81st).

Of course, these results are only illustrative, but they do indicate the importance of maintaining free flows of trade and investment if emerging economy cities are to realise their full potential. Nonetheless, even in our de-globalisation scenario, there is still a tendency for emerging economy cities to rise up our GDP rankings between 2008 and 2025, even if not to the same extent as in our baseline projections.

### III.7 Summary and conclusions

Cities tend to be ranked in size according to their populations, but to assess the relative size of their economies we also need to take account of their average income per capita levels. Doing this in a consistent and comprehensive way at a global level is challenging, but we have pieced together data from a number of reputable sources (e.g. the OECD, the UN and the World Bank as well as national statistical agencies) to produce a ranking by GDP at Purchasing Power Parity (PPP) exchange rates of the largest 100 urban economies in the world in 2008 (updating our earlier estimates from 2005). The precise rankings are dependent on the definitions and data sources adopted, but looking at GDP gives a much better indication of relative economic size than just looking at population.

Our analysis re-emphasises the economic significance of the world's largest cities. The top 30 such cities ranked by GDP accounted, according to our estimates, for around 18% of world GDP in 2008 and this share rises to around 30% for the top 100 cities.

At present, the mega-cities of the major developed economies continue to lead the global GDP rankings, with the top six in

2008 being Tokyo, New York, Los Angeles, Chicago, London and Paris (using UN definitions). Only seven emerging economy cities are currently in the top 30 (Mexico City, Sao Paulo, Buenos Aires, Moscow, Shanghai, Mumbai and Rio de Janeiro), but our illustrative projections suggest that they will all move up the GDP rankings by 2025 and be joined in the top 30 by fast-growing cities such as Istanbul, Beijing, Guangzhou and Cairo. Tellingly, we expect the largest emerging market cities to grow at a faster rate (between 6%-7% pa) than the cities in advanced economies (ca 2%) leading to cumulative growth of up to almost 200% for the period under investigation 2008-2025. This is in contrast to advanced economy cities whose cumulative growth will be only around 35%.

According to our illustrative projections, London is projected to grow somewhat faster than leading rivals such as Tokyo, New York, and Chicago, moving up from 5th place in 2008 to 4th place by 2025. However, other 'old Europe' cities like Milan, Madrid and Rome seem likely to slide down the rankings as the emerging mega-city economies of Asia and Latin America rise. Smaller UK cities such as Birmingham, Manchester and Leeds, while continuing to grow at reasonable rates in absolute terms, will also tend to fall down the relative GDP rankings.

Our projections for individual cities are subject to many uncertainties, but our conclusion that the emerging economy cities as a group should increase their relative weight in the global economy seems likely to be robust even in our de-globalisation scenario. But the cities of the established developed economies should see this as more of an opportunity than a threat as it gives opportunities for them to specialise further in those areas (e.g. business and financial services, entertainment and media, fashion, cultural tourism) where they have potential comparative advantages in fast-growing global markets. Competition between cities, as between nations, should not be seen as a zero sum game.

# Annex A: Data and methodology used to derive city GDP estimates and projections

We describe below how we have gone about producing GDP estimates and projections for the leading cities in the world.

The first question to be addressed in any study of this kind is: **how should you define a city?** While national boundaries are clear and change relatively rarely, city definitions differ significantly across countries and evolve over time as the city expands and absorbs surrounding neighbourhoods. For the purposes of this study we have generally adopted UN definitions<sup>15</sup> of ‘urban agglomerations’ (for short, these are sometimes also referred to below as ‘urban economies’ or just as ‘cities’ where the context makes this appropriate), but it should be recognised that the UN population estimates rely on information provided by national statistical agencies and are therefore not based on fully standardised definitions across countries.

To explore the effect of adopting alternative definitions, we also considered the impact on our 2008 GDP estimates of using an alternative set of urban agglomeration population estimates compiled by Professor Thomas Brinkhoff (see his website at [www.citypopulation.de](http://www.citypopulation.de) for details) that also provide global coverage and have been used in a number of previous studies<sup>16</sup>. However, 27 of the top 30 cities were the same using the Brinkhoff data as in our analysis using the UN urban population data (from its 2007 *World Urbanization Prospects* report). Given these broadly comparable results, the UN data were selected as our primary source because they have the advantage of providing both a time series of historic data by city/urban area back to 1950 and population projections to 2025 for individual cities/urban areas. We also used UN national population projections in deriving our national GDP per capita projections, so it was more consistent to use UN data here than the Brinkhoff estimates, which include some historic estimates back to 1970 but not forward projections. In the majority of cases where they differ,

it appears that the UN adopts narrower definitions than Brinkhoff, which tends to make the UN estimates correspond more closely to what might generally be considered to be a city, as opposed to a cluster of closely-related cities or towns. But there is no ‘right’ answer here, so it is important to recognise that our GDP rankings are sensitive to the particular definitions used.

To establish our list of **candidate urban agglomerations** to be ranked in the global top 100 by economic size in either 2008 or 2025, we first included all urban agglomerations (using UN definitions) with a population of more than 3 million in 2008 (115 areas in total). We then added:

- Other urban agglomerations projected to be in the top 100 by population in 2025 using UN projections; and
- Other OECD urban agglomerations with populations over 1 million, as covered by the OECD report on *Competitive Cities* (2006).

**This procedure gave a total of 151 candidate urban agglomerations for further analysis.** Based on a review of our results, we are confident that this should cover all urban agglomerations (on UN definitions) likely to rank in the top 100 by GDP in 2008, and probably also in 2025 (although the latter is obviously subject to more uncertainty). Table 3.10 in Annex B shows results for all of the cities, although it should be noted that we cannot be sure that these are the largest 151 city economies given that our aim was just to identify the top 100.

**We chose to use GDP at Purchasing Power Parity (PPP) exchange rates as our measure of economic size.** The reason for using PPPs rather than market exchange rates is to correct for differences in price levels between economies, which are due in particular to the relatively low cost of non-traded goods and services in emerging economies. By using PPPs, we can compare the volume of goods

and services produced in each urban agglomeration more accurately. Using current market exchange rates instead would tend to understate the scale of the outputs of goods and services produced by emerging economy cities, particularly estimates of City GDP in 2008. By 2025 we can expect the increase in productivity in emerging markets to raise both GDP per capita and the real exchange rate, thus closing at least partially the gap between GDP estimates based on PPP exchange rates and market exchange rates.

As outlined in Section III.2 above, **our primary estimates of city output are based on combining UN population estimates for 2008 with estimates of income per capita.** The population estimates for 2008 are interpolated by using the 2007 UN population estimates and applying the average annual population growth rate between 2007 and 2010. For the OECD countries, we began with the city-level GDP per capita estimates for 2002 in the OECD’s *Competitive Cities* report (2006) and then projected these forward to 2008 based on national GDP per capita growth over this period plus an adjustment to reflect the observed city-national GDP per capita growth differential in 1995-2002 for OECD cities for which these historic data were available (in other cases, unadjusted national growth data were used). The 2005 estimates were further extrapolated to 2008 using national income per capita growth rates from the IMF World Economic Outlook database.

For non-OECD cities, data are not readily available from a single source. In some cases (e.g. China, Brazil) GDP per capita estimates at city level were available from national sources, but in many cases we were only able to make approximate estimates based on plausible ratios of city to national GDP per capita (the latter sourced from the World Bank) based on comparisons with cities at similar income levels for which direct income per capita estimates were available<sup>17</sup>. As such, the 2008 urban agglomeration GDP estimates should only be taken as

<sup>15</sup> The UN defines an urban agglomeration’s population as follows: ‘The de facto population contained within the contours of a contiguous territory inhabited at urban density levels without regard to administrative boundaries. It usually incorporates the population in a city or town plus that in the sub-urban areas lying outside of but being adjacent to the city boundaries’ (<http://esa.un.org/unup/index.asp?panel=6>)

<sup>16</sup> The other alternative we considered was to use the OECD definition of metropolitan areas from their recent report on ‘Competitive Cities’ (2006). But, unlike the UN data and the Brinkhoff estimates, this would not have covered non-OECD countries and also did not provide historic and projected population estimates on a consistent basis.

<sup>17</sup> Typically, these ratios are in the range from 1.5 to 3, with higher values tending to be observed in the lowest income countries where urban-rural income differentials are particularly large.

broadly indicative of relative economic size for the non-OECD countries. Nonetheless, they provide a much better indication of relative economic size than just looking at population data. For most of the non-OECD cities, we extrapolated the 2005 GDP per capita estimates to 2008 using national income per capita growth rates from IMF. However, for some cities such as Bogota, Moscow, Mumbai and Sao Paulo, new data were found on income per capita and used to calculate 2008 GDP city estimates.

As Table 3.2 in the main text shows, our illustrative projections for city GDP in 2025 combine UN population projections with our own estimates of national income per capita growth trends from our previous *World in 2050* report (see earlier footnote 6 for reference). We then incorporated the short term and long term impacts of the recent global economic downturn on

the income per capita growth rates (this has a particularly large downward effect in 2009-10). As illustrated for selected countries in Figure 3.2 above, these projections show consistently higher income per capita growth in the emerging economies, particularly China and India. It is notable here that US GDP per capita growth is projected to be slower than that in the other major economies. This is due to the assumption in our model that other countries will tend to catch up gradually with initially higher economy-wide labour productivity levels in the US. It should be noted, however, that after taking account of its higher projected population growth (including immigration), overall US GDP growth is nonetheless projected to be higher than in any of the other G6 countries.

For the OECD urban agglomerations where historic income growth trends

were available, we assumed that differences between national and urban GDP per capita growth rates in 2008-25 were half those in 1995-2002. This was based on the assumption that historic growth differentials would be gradually eroded over time, since otherwise there would be implausibly rapid or slow growth of the major cities relative to their economies as a whole. For all the other urban agglomerations, including non-OECD cities, we assumed (in the absence of other data) that their income per capita growth would be in line with national average projections. This is, in fact, in line with the average historic trend for the OECD cities for which data are available<sup>18</sup>. In practice, of course, income per capita growth rates will vary more than this at city level, but we have no readily available data on which to predict such variations.

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<sup>18</sup> It should be noted here that, particularly for smaller economies, the largest cities may play a dominant role in their overall national economies, so one would not expect a large divergence between income growth in these cities and the average for their economies as a whole.

## Annex B: Full City GDP rankings for 2008 and 2025

Table 3.10 below sets out in full our urban agglomeration GDP rankings and estimates/projections for 2008 and 2025 (using UN population estimates and urban agglomeration definitions). The table includes all 151 candidate cities that we have considered, although it should be noted that we are not

claiming that these are the largest 151 city economies in the world, just that these should encompass the top 100 ranked by GDP in both 2008 and 2025, which was our primary focus here.

The final two columns show projected average real GDP growth

rates between 2008 and 2025 and a ranking by these growth rates. Both of these latter two columns refer to the cities ranked by projected GDP in 2025 rather than in 2008 (i.e. the list of cities in the fifth column rather than the second column in Table 3.10).

**Table 3.10 – Full listing of urban agglomeration GDP rankings in 2008 and illustrative projection to 2025 (using UN definitions and population estimates)**

2008 Rank	Cities ranked by estimated 2008 GDP at PPPs	Est. GDP in 2008 (\$bn at PPPs)	2025 Rank	Cities ranked by projected 2025 GDP at PPPs	Est. GDP in 2025 (\$bn at 2005 PPPs)	Real GDP growth rate (% pa: 2008-25)	GDP growth ranking (out of 151)
1	Tokyo	1479	1	Tokyo	1981	1.7%	131
2	New York	1406	2	New York	1915	1.8%	118
3	Los Angeles	792	3	Los Angeles	1036	1.6%	141
4	Chicago	574	4	London	821	2.2%	94
5	London	565	5	Chicago	817	2.1%	97
6	Paris	564	6	Sao Paulo	782	4.2%	51
7	Osaka/Kobe	417	7	Mexico City	745	3.9%	62
8	Mexico City	390	8	Paris	741	1.6%	138
9	Philadelphia	388	9	Shanghai	692	6.6%	14
10	Sao Paulo	388	10	Buenos Aires	651	3.5%	74
11	Washington DC	375	11	Mumbai (Bombay)	594	6.3%	28
12	Boston	363	12	Moscow	546	3.2%	79
13	Buenos Aires	362	13	Philadelphia	518	1.7%	133
14	Dallas/Fort Worth	338	14	Hong Kong	506	2.7%	81
15	Moscow	321	15	Washington DC	504	1.8%	126
16	Hong Kong	320	16	Osaka/Kobe	500	1.1%	151
17	Atlanta	304	17	Beijing	499	6.7%	8
18	San Francisco/Oakland	301	18	Boston	488	1.8%	129
19	Houston	297	19	Delhi	482	6.4%	24
20	Miami	292	20	Dallas/Fort Worth	454	1.8%	127
21	Seoul	291	21	Guangzhou	438	6.8%	4
22	Toronto	253	22	Seoul	431	2.3%	91
23	Detroit	253	23	Atlanta	412	1.8%	123
24	Seattle	235	24	Rio de Janeiro	407	4.2%	48
25	Shanghai	233	25	San Francisco/Oakland	406	1.8%	124
26	Madrid	230	26	Houston	400	1.8%	125
27	Singapore	215	27	Miami	390	1.7%	132
28	Sydney	213	28	Istanbul	367	4.2%	50
29	Mumbai (Bombay)	209	29	Toronto	352	2.0%	106
30	Rio de Janeiro	201	30	Cairo	330	5.0%	42
31	Phoenix	200	31	Detroit	327	1.5%	143
32	Minneapolis	194	32	Madrid	325	2.1%	99
33	San Diego	191	33	Metro Manila	325	4.7%	43
34	Istanbul	182	34	Seattle	319	1.8%	121

**Table 3.10 – Full listing of urban agglomeration GDP rankings in 2005 and illustrative projection to 2025 (using UN definitions and population estimates)**

2008 Rank	Cities ranked by estimated 2008 GDP at PPPs	Est. GDP in 2008 (\$bn at PPPs)	2025 Rank	Cities ranked by projected 2025 GDP at PPPs	Est. GDP in 2025 (\$bn at 2005 PPPs)	Real GDP growth rate (% pa: 2008-25)	GDP growth ranking (out of 151)
35	Barcelona	177	35	Singapore	312	2.2%	95
36	Melbourne	172	36	Sydney	298	2.0%	103
37	Delhi	167	37	Kolkata (Calcutta)	298	6.4%	27
38	Beijing	166	38	Phoenix	271	1.8%	120
39	Denver	165	39	Minneapolis	265	1.8%	119
40	Metro Manila	149	40	San Diego	260	1.8%	122
41	Montreal	148	41	Tehran	252	4.1%	55
42	Cairo	145	42	Barcelona	248	2.0%	102
43	Rome	144	43	Melbourne	245	2.1%	98
44	Guangzhou	143	44	Bangkok	241	4.2%	49
45	Baltimore	137	45	Jakarta	231	5.5%	37
46	Milan	136	46	Denver	226	1.9%	113
47	Tehran	127	47	Tianjin	218	6.6%	15
48	St Louis	126	48	Dhaka	215	6.2%	33
49	Tampa/St Petersburg	123	49	Riyadh	214	4.2%	53
50	Vienna	122	50	Lima	213	4.0%	57
51	Tel Aviv-Jaffa	122	51	Brasilia	210	3.9%	63
52	Busan	121	52	Santiago	207	3.3%	78
53	Santiago	120	53	Rome	203	2.1%	100
54	Bangkok	119	54	Montreal	203	1.9%	110
55	Cleveland	112	55	Bangalore	203	6.5%	20
56	Brasilia	110	56	Johannesburg	198	3.5%	73
57	Portland	110	57	Karachi	193	5.5%	38
58	Johannesburg	110	58	Bogota	192	3.9%	60
59	Lima	109	59	Tel Aviv-Jaffa	191	2.7%	83
60	Riyadh	107	60	Chennai (Madras)	191	6.5%	23
61	Kolkata (Calcutta)	104	61	Monterrey	188	3.7%	66
62	Cape Town	103	62	Baltimore	187	1.8%	116
63	Monterrey	102	63	Cape Town	183	3.5%	75
64	Bogota	100	64	Ho Chi Min City	181	7.0%	2
65	Pittsburgh	99	65	Milan	178	1.6%	139
66	Lisbon	98	66	Busan	177	2.2%	93
67	Athens	96	67	Vienna	175	2.1%	96
68	Vancouver	95	68	St Louis	172	1.8%	117
69	Berlin	95	69	Hyderabad	170	6.5%	21
70	Jakarta	92	70	Chongqing	170	6.6%	17
71	St Petersburg	91	71	Tampa/St Petersburg	168	1.8%	115
72	Birmingham	90	72	Cleveland	153	1.9%	114
73	Fukuoka	88	73	Portland	152	1.9%	109
74	Manchester	85	74	Guadalajara	150	3.6%	68
75	Brussels	83	75	St Petersburg	149	3.0%	80
76	Guadalajara	81	76	Lisbon	149	2.5%	87
77	Dhaka	78	77	Ahmedabad	145	6.5%	18
78	Karachi	78	78	Jiddah	143	4.1%	54
79	Hamburg	74	79	Athens	142	2.4%	90

**Table 3.10 – Full listing of urban agglomeration GDP rankings in 2005 and illustrative projection to 2025 (using UN definitions and population estimates)**

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80	Tianjin	74	80	Pune	142	6.6%	16
81	Jiddah	72	81	Pittsburgh	136	1.9%	112
82	Stockholm	70	82	Hanoi	134	7.0%	1
83	Lyon	69	83	Vancouver	133	2.0%	105
84	Bangalore	69	84	Shenyang	132	6.6%	12
85	Warsaw	68	85	Porto Alegre	118	3.5%	72
86	Turin	68	86	Berlin	117	1.3%	150
87	Chennai (Madras)	66	87	Fukuoka	117	1.7%	134
88	Porto Alegre	66	88	Birmingham	114	1.4%	147
89	Munich	64	89	Belo Horizonte	112	3.6%	69
90	Belo Horizonte	61	90	Ankara	111	3.9%	61
91	Dublin	61	91	Brussels	109	1.6%	137
92	Leeds	60	92	Manchester	108	1.4%	146
93	Hyderabad	58	93	Alexandria	108	5.2%	40
94	Ankara	58	94	Warsaw	107	2.7%	82
95	Ho Chi Min City	58	95	Surat	107	6.7%	7
96	Helsinki	58	96	Dublin	106	3.3%	77
97	Chongqing	57	97	Lahore	102	5.6%	36
98	Auckland	55	98	Wuhan	102	4.1%	56
99	East Rand	54	99	Lagos	101	6.4%	25
100	Budapest	53	100	Chengdu	100	6.6%	11
101	Zurich	52	101	East Rand	98	3.6%	71
102	Wuhan	52	102	Lyon	97	2.0%	104
103	Naples	51	103	Medellin	97	4.0%	58
104	Medellin	50	104	Algiers	96	4.6%	45
105	Ahmedabad	49	105	Stockholm	95	1.9%	111
106	Prague	49	106	Xian	93	6.7%	6
107	Copenhagen	49	107	Luanda	93	6.3%	31
108	Pune	48	108	Hamburg	93	1.3%	149
109	Amsterdam	47	109	Turin	89	1.6%	140
110	Rotterdam	46	110	Khartoum	86	5.5%	39
111	Alexandria	46	111	Auckland	84	2.5%	85
112	Algiers	45	112	Curitiba	83	3.8%	64
113	Curitiba	44	113	Changchun	81	6.9%	3
114	Shenyang	44	114	Izmir	81	4.0%	59
115	Daegu	43	115	Munich	81	1.4%	148
116	Hanoi	42	116	Budapest	80	2.4%	88
117	Izmir	42	117	Helsinki	79	1.9%	108
118	Puebla	42	118	Puebla	78	3.8%	65
119	Caracas	41	119	Leeds	78	1.5%	144
120	Oslo	40	120	Kanpur	76	6.6%	13
121	Lahore	40	121	Prague	75	2.5%	86
122	Cologne-Bonn	39	122	Zurich	73	1.9%	107
123	Surat	36	123	Caracas	72	3.4%	76
124	Lagos	35	124	Jaipur	71	6.7%	9

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125	Recife	35	125	Casablanca	68	4.3%	47
126	Khartoum	35	126	Chittagong	67	6.3%	29
127	Chengdu	33	127	Naples	67	1.6%	136
128	Lille	33	128	Lucknow	66	6.6%	10
129	Casablanca	33	129	Copenhagen	65	1.6%	135
130	Luanda	33	130	Daegu	64	2.4%	89
131	Xian	31	131	Amsterdam	63	1.8%	128
132	Changchun	26	132	Recife	63	3.6%	70
133	Kanpur	26	133	Rotterdam	61	1.7%	130
134	Fortaleza	25	134	Oslo	60	2.3%	92
135	Yangon	24	135	Baghdad	56	5.0%	41
136	Baghdad	24	136	Bandung	54	5.8%	34
137	Jaipur	24	137	Yangon	53	4.7%	44
138	Chittagong	24	138	Cologne-Bonn	49	1.5%	145
139	Lucknow	22	139	Kinshasha	48	6.3%	30
140	Bandung	21	140	Lille	47	2.0%	101
141	Kinshasha	17	141	Fortaleza	46	3.6%	67
142	Faisalabad	14	142	Kabul	41	6.5%	19
143	Kabul	14	143	Faisalabad	37	5.7%	35
144	Krakow	13	144	Addis Ababa	37	6.8%	5
145	Abidjan	13	145	Nairobi	33	6.4%	26
146	Addis Ababa	12	146	Abidjan	28	4.5%	46
147	Nairobi	12	147	Kano	25	6.2%	32
148	Pyongyang	11	148	Dar es Salaam	24	6.5%	22
149	Salvador	10	149	Salvador	21	4.2%	52
150	Kano	9	150	Krakow	21	2.6%	84
151	Dar es Salaam	8	151	Pyongyang	14	1.5%	142

Source: PricewaterhouseCoopers estimates and projections using UN urban agglomerations definitions and population estimates.