

# Global Residential Real Estate Affordability Index

*2011 Update to Derayah Real Estate Study*

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## Introduction

*Top 15 most affordable cities (based on the AAI Metric) have outperformed the overall average for 46 cities included in the original evaluation by over 20% during the period 2009 to Q2 2011*

In our July 2010 report (entitled: Where to Buy your second home), we proposed a new metric to compare global residential properties: **Area Afforded by Average Income of Inhabitants (AAI)**, which compares the average price per square meter in each city to the average income of the population of that city, after adjusting for tourist inflows. Our belief was that this metric, which is based fundamentally on affordability, is a good indicator of value especially for residential real estate, and is expected to provide investors with relevant pointers when selecting investment destinations for residential real estate from a global sample of large cities.

Based on this metric last year, Mumbai, Moscow and Hong Kong had the lowest AAI and were therefore considered the least affordable, while Zurich, Cairo and Dammam had the highest AAI and were therefore considered the most affordable. More notably, we received significant criticism for our conclusion at the time that based on this metric, Saudi residential real estate was considered to be attractively priced.

As such, we updated our analysis for 2011 to see how things have changed in the year since our original report. Here's what we came out with:

## 2011 Update

*Mumbai continues to be the costliest city on AAI, whereas most major Saudi cities have dropped in affordability due to price rise, whereas cities like Dubai has become more affordable.*

Though Real Estate (especially Commercial) markets have been under continued pressure, residential real estate prices have continued to stabilize post 2009 and even rise in many parts of the world. However, strong divergences that we had noted in our earlier study continue to take their course.

At the end of Q2 2011, some European cities like Dublin, Moscow and Budapest registered sharp drops in residential property price as compared to their 2009 level, whereas others like Amsterdam, Milan and Lisbon had registered higher prices. Larger markets like London and Rome were stable over the said period. Foreclosures in the US continued to grow, reflected in the 10% drop in average prices in New York City. In Asia, Hong Kong, Singapore and Mumbai continued their upward trajectory. The Middle East saw similar divergences, with residential prices in Riyadh, Saudi Arabia witnessing a 16% increase, compared to falling prices in places like Doha.

## Results

Mumbai still continues to be the least affordable (and hence the worst investment destination, though it has registered a price rise of 40% between 2009 and 2011). On the other hand, Zurich is still considered the most affordable city based on the study methodology. In terms of the region, most cities in the region retain their slots as some of the most affordable (and therefore best value). This is mainly due to the increase in income levels over the past year that has been higher than any price increase. As a result, many cities in the GCC actually performed better in this year's ranking compared with the previous study. However, it is worth noting that many of the income gains in the region were one-time (i.e. attributable to grants this year to government employees). It remains to be seen what the sustained effect of this would be in subsequent years.

### Top 15 most affordable cities

City	AAI 2011 (sq.m./person/annum)	2011 Rank	AAI 2009 (sq.m./person/annum)	2009 Rank	Change in Rank
Zurich	15.91	1	15.03	1	-
Abu Dhabi	14.16	2	9.05	9	+7
Dammam	11.64	3	10.77	4	+1
Muscat	10.77	4	3.65	30	+26
Montreal	10.40	5	9.61	7	+2
Brussels	9.86	6	10.48	6	-
Copenhagen	8.83	7	10.92	3	-4
Dublin	8.75	8	4.99	24	+16
Riyadh	8.74	9	8.08	13	+4
Kuwait City	8.52	10	9.22	8	-2
Dubai	8.07	11	8.57	12	+1
Cairo	8.05	12	12.36	2	-10
Bogota	7.95	13	6.71	18	+5
Sydney	7.39	14	6.55	20	+6
Jeddah	7.09	15	7.18	17	+2

### Top 15 least Affordable cities

City	AAI 2011 (sq.m./person/annum)	2011 Rank	AAI 2009 (sq.m./person/annum)	2009 Rank	Change in Rank
Mumbai	0.36	46	0.40	46	-
Hong Kong	1.06	45	1.30	44	-1
Singapore	1.21	44	1.74	42	-2
Moscow	1.35	43	0.68	45	+2
Shanghai	1.48	42	3.15	36	-6
Beijing	1.64	41	3.40	33	-8
London	1.84	40	1.61	43	+3
Paris	1.91	39	2.72	39	-
Milan	2.22	38	6.04	21	-17
Rome	2.43	37	2.55	40	+3
Athens	2.73	36	3.05	37	+1
Tokyo	2.86	35	2.03	41	+6
Prague	3.07	34	3.50	32	-2
Bangkok	3.26	33	4.78	25	-8
New York City	3.26	32	2.96	38	+6

## Investment Performance

The most affordable cities (based on the AAI Metric) identified in the July 2010 study registered an increase of 29.03% over their average 2009 price (per sq. m.).

In contrast, the least affordable cities saw a price rise of 15.63% over their 2009 average price (per sq. m.).

The average price rise (per sq. m.) for the 46 cities included in the July 2010 study was 12.92%.

## Complete List of Cities:

City	AAI 2011	Avg. Apt. Price 2011	Effective per capita Income 2011	2011 Rank	AAI 2009	Avg. Apt. Price 2009	Effective per capita Income 2009	2009 Rank	Change in period
Zurich	15.91	2,769	44,045	1	15.03	2,441	36,401	1	-
Abu Dhabi	14.16	3,431	48,586	2	9.05	3,692	4,209	9	+7
Dammam	11.64	700	8,148	3	10.77	600	29,196	4	+1
Muscat	10.77	1,632	17,573	4	3.65	1,750	6,463	30	+26
Montreal	10.4	2,636	27,408	5	9.61	2,264	22,711	7	+2
Brussels	9.86	2,620	25,849	6	10.48	2,303	23,973	6	-
Copenhagen	8.83	3,526	31,119	7	10.92	2,689	21,639	3	-4
Dublin	8.7	3,515	30,764	8	4.99	6,393	22,120	24	+16
Riyadh	8.74	932	8,148	9	8.08	800	33,256	13	+4
Kuwait City	8.52	2,420	20,619	10	9.22	2,400	7,980	8	-2
Dubai	8.07	2,505	20,214	11	8.57	2,163	17,611	12	+1
Cairo	8.05	550	4,430	12	12.36	345	18,320	2	-10
Bogota	7.95	976	7,756	13	6.71	843	6,463	18	+5
Sydney	7.39	4,907	36,274	14	6.55	3,521	22,003	20	+6
Jeddah	7.09	1,150	8,148	15	7.18	900	23,927	17	+2
Berlin	6.89	3,526	24,283	16	10.67	2,136	5,312	5	-11
Lisbon	6.45	2,761	17,812	17	8.77	2,038	6,463	11	-6
Toronto	6.30	4,356	27,439	18	7.85	2,825	5,641	14	-4
Manama	6.14	1,877	11,520	19	4.24	2,652	24,543	29	+10
Munich	6.10	4,274	26,078	20	6.66	3,705	23,011	19	-1
Santiago	5.95	1,127	6,709	21	7.26	734	19,590	16	-5
Amsterdam	5.67	4,279	24,252	22	7.40	3,278	7,640	15	-7
Madrid	5.48	3,829	20,973	23	5.06	3,999	20,119	23	-
Doha	5.32	2,040	10,861	24	3.63	3,150	31,315	31	-7
Rio	5.22	2,219	11,574	25	5.24	1,467	6,297	22	-3
Budapest	4.97	1,566	7,785	26	3.25	2,022	6,426	34	+8
Barcelona	4.96	4,306	21,341	27	4.59	4,599	20,839	27	-
Helsinki	4.83	5,801	28,033	28	4.44	5,925	26,173	28	-
BuenosAires	4.16	1,577	6,560	29	4.71	1,378	11,167	26	-3
Istanbul	3.37	2,840	9,568	30	8.84	910	6,376	10	-20
Warsaw	3.35	2,822	9,466	31	3.21	2,585	11,248	35	+4
NYC	3.26	9,466	30,891	32	2.96	10,503	11,045	38	+6
Bangkok	3.26	1,983	6,470	33	4.78	1,345	4,794	25	-8
Prague	3.07	3,846	11,788	34	3.50	3,214	6,459	32	-2
Tokyo	2.86	9,767	27,962	35	2.03	12,688	8,174	41	+6
Athens	2.73	5,929	16,171	36	3.05	5,540	5,491	37	+1
Rome	2.43	6,866	16,700	37	2.55	6,462	16,649	40	+3
Milan	2.22	9,155	20,366	38	6.04	3,260	30,951	21	-17
Paris	1.91	12,736	24,313	39	2.72	8,546	23,025	39	-
London	1.84	14,455	26,567	40	1.61	14,632	16,289	43	+3
Beijing	1.64	3,278	5,381	41	3.40	1,419	25,684	33	-8
Shanghai	1.48	4,166	6,180	42	3.15	1,754	11,721	36	-6
Moscow	1.35	9,806	13,204	43	0.68	14,701	23,431	45	+2
Singapore	1.21	11,792	14,220	44	1.74	6,839	14,628	42	-2
Hong Kong	1.06	13,622	14,374	45	1.30	11,368	9,972	44	-1
Mumbai	0.36	7,760	2,808	46	0.40	5,506	2,167	46	-

## Appendix

### Steps involved in calculating AAI

#### Step 1: Average price (per sq. m.) for prime residential real estate

We began by finding out the average unit price for a 120 square meter apartment<sup>1</sup> in each of these major cities. This was available through GlobalPropertyGuide.com (apartments in the prime city center). Since prime residential real estate commands a premium over average RE prices, we tried to scale this down to an average apartment price.

#### Step 2: Computing price of average real estate from prime real estate

We thus divided the cities in the sample into two classes – Developed and Emerging. We identified five cities in each class (as a representative for the entire population), and researched for ‘average apartment unit price’ through various sources including GlobalPropertyGuide.com and CBRE. We then calculated the scale-down factor for each of these cities by comparing their average prices to prime-location prices. We then averaged this scale down factor for all five cities to reach to a common scale-down factor for the class (Developed and Emerging).

- Developed markets’ scaling factor: **70.5%**
- Emerging markets’ scaling factor: **60.1%**.

We then applied this scaling down process to the initial list of prime area residential rates to reach to average residential unit prices. For some cities which were not included in the initial prime-rates report, we found out the average unit prices through other available resources.

#### Step 3: Computing per capita income for city residents

We also needed to find out average net per capita earnings for city residents. We referred to a UBS report titled ‘Prices and Earnings’ (details provided in Appendix), which indexed the net per capita earnings after taxes and social security for various cities in the world against that of New York. In order to find the dollar value for the average net per capita earning for a resident of New York, we referred to US census (2008E).

For some of the GCC cities that were not part of the UBS survey, we computed their country’s Gross National Incomes for year 2008 (source: UN data), removed earning through exports of oil & gas

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<sup>1</sup> Average apartment sizes vary depending upon the selected city, we used a standard adopted in the GlobalPropertyGuide report



(with the rationale that this money does not go the public directly), and then divided by country population (source: IMF) to reach per capita income net of natural resources. This was taken to be same for the city as for the country.

Since we have three Saudi cities in the list, the per capita net incomes for all three were taken to be the same. We then used the per capita net of natural resources of Manama (Bahrain), which was part of the UBS Survey, to reach to proportionate numbers of net per capita income for these other cities.

#### **Step 4: Adjusting for tourist inflows**

To account for tourist inflow into the city, following assumptions were made:

- International tourists are being considered for all cities (except for Saudi where we assumed that all tourists are domestic)
- All international tourists are flying from OECD countries
- On an average, two tourists would live in a city for one month, and then leave the place – so the effective annual demand of residential units was 1 per '24' international tourists

Data for number of tourists by cities (2007) was available from EuroMonitor, which was extrapolated to reach to 2009 figures.

In order to incorporate the tourist-effect, the revised effective per capita net income of city was calculated by:

- Calculating the total net earnings for city by multiplying per capita numbers by city population
- Calculating effective number of local person-equivalents from number of tourists by dividing by 24
- Calculating the total net income brought in by these local person-equivalent tourist numbers (by multiplying the number with average OECD per capita net disposable income – exception was Saudi where all tourists were considered domestic, and thus multiplying factor was Saudi net per capita income)
- Adding the two total incomes to reach gross income for city
- Adding the local person-equivalent tourist numbers to city population to reach to total people creating demand annually
- Dividing the total incomes by total effective demand creating population for the city – the tourist-adjusted effective per capita net income for the city

## **Step 5: Final Computation**

Finally, the **'average residential apartment's unit price per square meter'** was divided by the **'effective per capita net income'** to reach to our defined ratio **'Area Afforded by Average Income of Inhabitants (AAI)'**.

Our process thus normalizes for difference in earnings for various cities, their taxes and social security payments, and demand created by incoming tourists.

## Sources

*Globalpropertyguide.com*

*OECD.org*

*Data.un.org*

*IMF.org*



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