# HOUSING PRICE INDEX

Consistent Upward Trajectory in House prices

The overall house price changes during the third quarter of 2016 represented sustenance of the upward trajectory. The Kenya Bankers Association – Housing Price Index (KBA-HPI) indicates a 2.2 percent rise in house prices from those of the previous quarter **(Figure 1).**

Notably, the third quarter price changes represents a faster movement compared

Figure 1: Overall Price Change (%)
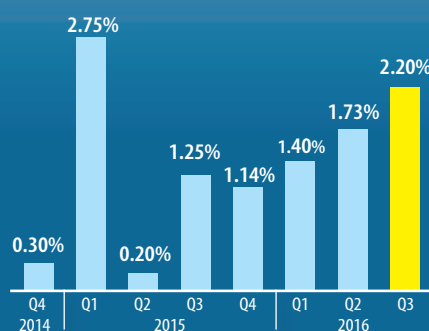
to the previous five quarters where they were consistently been below 2 percent and therefore signalling a sense of broad stability. Even then, the relatively stronger surge in the third quarter does not undermine the overall gradual rise, with the overall house prices having risen by 13.05 percent since the KBA-HPI base period of the first quarter of 2013.

Highlights

1 The third quarter of 2016 saw a 2.2 percent rise compare to the previous quarter's 1.73 percent This was the fastest rise in the KBA-HPI since the second quarter of 2015, and represented an 13.05 percent increase since the first quarter of 2013.

2 There has been a sense of taste consistency amongst home buyers. The price movements during the quarter represented a sustainance of the refererence characteristics that have been driving price movements since the beginning of the year.

3 Like the overall index, the sub-regional indices were a reflection of the market alignments in pursuit of affordability (effective demand) and the fact that home owners seem to be focusing more on attributes such as gated community, amenities such as recreational facilities, and shopping mall, among other attributes.

Table 1: Price Movement Series

Period	Index with a fixed base*	Index with a moving base
Q1_2015	102.97	104.99
Q2_2015	103.88	105.01
Q3_2015	107.34	106.27
Q4_2015	108.19	107.48
Q1_2016	109.08	108.99
Q2_2016	111.28	110.87
Q3_2016	113.05	113.31

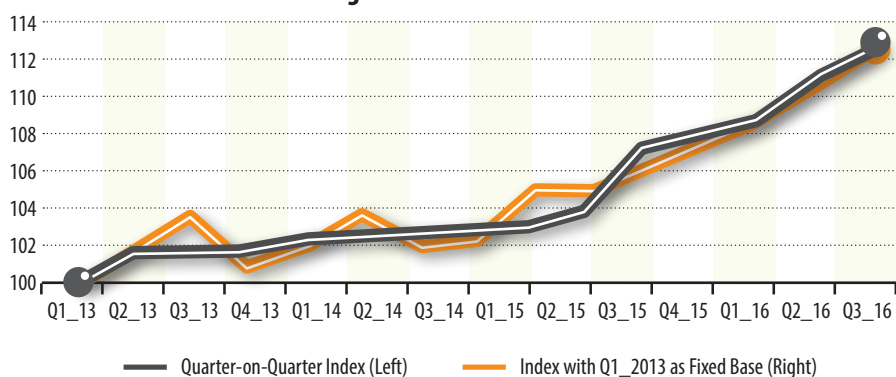* Based on Base period Q1_2013

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Even with a relatively faster growth in house prices during the third quarter of 2016, the demand and supply market dynamics have not been subject to significant changes over the period. The supply of housing units has been in response to the broad demand characteristics in the market as reflected in two factors.

- One, the new units being put up in the market are mainly targeting the middle end of the market, with the lower end experiencing supply constraints arising mainly from the tendency of developers inclining more towards renting than selling. This has been evident even in the opening up of new geographical areas for housing development in response to physical infrastructure expansion, especially transport.

- Two, the support of the financial sector generally and the banking industry in particular towards home acquisition has been enabled by a generally stable macroeconomic environment.

The recent trend of the KBA–HPI as well as its historical evolution is shown in **Table 1** and **Figure 2.**

Technical Note

The index follows a Laspeyers index method. In this method, the index is computed by getting the ratio the estimated current quarter price from the hedonic method multiplied the weights of the preceding quarter to the price of the preceding quarter multiplied by the respective weights of that quarter.

The weights of the quantitative variables are obtained by getting their respective mean values. For the dummy variables however, their weights are computed as the proportions of the number of houses possessing a certain attribute to the total number of houses. Thus the index is computed by the formular:

$$Index = \sum_{i=1}^{n} w_i \frac{\hat{P}_1}{\hat{P}_0} = \frac{\sum_{i=1}^{n} w_0 \hat{P}_1}{\sum_{i=1}^{n} w_0 \hat{P}_0}$$

Where; $\hat{P}_1$ is the shadow price from the estimated hedonic function for the current quarter;

$\hat{P}_0$ is the shadow prices from the estimated hedonic function for the preceding quarter;

and w_0 are the weights of the respective variables for the preceding quarter.

Figure 2: KBA–HPI Evolution

Legend: Quarter-on-Quarter Index (Left) — Index with Q1_2013 as Fixed Base (Right)

Home Buyers' Tastes Remain Consistent in Q3

Like the first and second quarters, there has been a sense of taste consistency amongst home buyers. The price movements during the quarter continued with a limited change in preference characteristics during the third quarter of 2016 was reflected in the influencers of price movements remaining to be the size of the house (as measured by plinth area, number of bedroom, bathroom, and presence of detached staff quarters).

The search for secure neighbourhoods with adequate amenities influenced the price movement dynamics during the quarter. Thus, houses in gated

Factors influencing the SALE PRICES

- Number of bedrooms
- Number of bathrooms
- Type of the house
- Number of floors
- Location of the house
- Presence of DSq
- Swimming pool
- Age of the house
- Presence of garage

- Proximity to a mall
- Presence of parking bay(s)
- Presence of a balcony(s)
- Presence of a gymnasium
- Master ensuite
- Presence of a borehole
- Presence of a fire place
- Presence of a garden/ backyard
- Presence of a separate dining

communities – often highly priced given the superior ambience associated with controlled development, security, privacy and scenic value – were key influencers of the overall price movements. Similarly, proximity to social amenities such as shopping malls, tarmacked roads, schools, hospitals and presence of parking lot among others significantly contributed to price rise in the quarter

The taste consistency is confirmed by comparing the estimates of the hedonic function in Quarter 3 of 2016 (**Table 2**) and the estimates of Quarter 2 of 2016 (**Table 3**) and Quarter 1 of 2016 (**Table 4**).

House Market takes an Upward Trend across all Sub-Regions

Evidently, the price of houses during the third quarter of 2016 represented a relatively faster rise across all types of houses and regions. In relative terms though, the prices of maisonettes seemed to have made the highest movement across all the regions as compared to the prices of apartments and bungalows. Noteworthy, the price of maisonettes in region 3 had the highest movement in prices relative to region one and region two (**Table 5; 6**).

In terms of market activity by house type, apartments accounted for the largest share of the total sale transaction at 58.56% with maisonettes and bungalows accounting for 24.31% and 17.13% of the total sales respectively. The market however seems skewed in terms of the regions and the type of the house with apartments' transactions being more on the lower and middle market end. Maisonettes and bungalows on the other hand seem to be concentrated in the upper end market. This speaks

Juja South Estate: Apartments accounted for the largest share of the total sales transacted.

to the developers' appetite on the type of the houses they put up in specific regions as being influenced by affordability as well as the type of the clientele in the region. The rising middle class in Kenya, can

be deemed to have more preference for apartment which are likely to be more affordable as compared to maisonettes and bungalows in the meantime.

Table 2: Housing Price Index Drivers for Quarter 3_2016

Source	SS	df	MS
Model	123.998514	25	5.16660473
Residual	143.391518	402	0.150034062

Prob > F = 0.0000
observations = 427
R-squared = 0.6728
Adj R-squared = 0.6728

LN VALUE	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Plinth area	0.1790	0.0367	4.87	0.000	.1067819	.2511197
No. of Bedrooms	0.1662	0.0330	5.03	0.000	.1011995	.2311017
No. of Bathrooms	0.3147	0.0466	6.76	0.000	.2231484	.4061828
House type	0.2037	0.0531	3.83	0.000	-0.3081246	-0.0992523
Age	0.0376	0.0091	4.11	0.014	.019622	.0554893
Time dummy Q3-16	0.2110	0.1870	1.13	0.060	-.1566147	.5785724
Locational Dummy	0.0112	0.0057	1.98	0.049	.0000576	.0222844
Number of floors	-0.1086	0.0069	-15.64	0.000	-0.1222016	-0.0949174
Backyard	0.0318	0.1000	0.32	0.750	.1647508	.2284135
Balcony	0.6475	0.1217	5.32	0.000	.4082317	.8867309
DSQ	0.0990	0.1018	0.97	0.032	-.10117	.2990911
Gymn	0.0164	0.1232	0.13	0.894	-.2258687	.2586648
Swimming pool	0.5768	0.1186	4.86	0.000	.3435938	.8100548
Social amenities	0.0578	0.1676	0.35	0.030	.3873087	.2716305
Master ensuite	0.1530	0.0757	2.02	0.044	.0041293	.3018952
Garage/parking	1.0055	0.2148	4.60	0.000	.5833139	1.42771
Separate dining	0.4016	0.0894	4.49	0.000	.2259418	.5772986
Gated community	0.0056	0.0871	0.06	0.049	-.1655814	.1767184
borehole	0.2899	0.0844	3.43	0.001	.1238876	.4558723
Guestroom	0.0358	0.1649	0.22	0.828	-.2883562	.3599067
Jaccuzi	0.6903	0.1848	3.74	0.000	.3270037	1.053522
Gyser Closet	0.7403	0.2371	3.12	0.002	.2741214	1.206412
Elevator	0.1508	0.1891	0.80	0.426	-.5225579	.2209798
Backup - generator	0.7126	0.1216	5.86	0.000	0.4736028	0.9516206
Wooden floor	0.4708	0.1919	2.45	0.015	.0935822	.8480636
Constant	14.0523	0.3287	42.75	0.000	13.406	14.69852

Housing Price Index
Quarter 3, 2016 **+113.31**

Table 3: Housing Price Index Drivers for Quarter 2_2016

Source	SS	df	MS
Model	3977.44707	25	159.097883
Residual	143.391518	523	0.27417116

Prob > F = 0.0000
observations = 549
R-squared = 0.9652
Adj R-squared = 0.9635

LN VALUE	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Plinth area	0.0016	0.0001	25.09	0.000	.0014834	.0017349
No. of Bedrooms	0.1808	0.0128	14.17	0.000	.1557451	.205765
No. of Bathrooms	0.2387	0.0145	16.42	0.000	.2101692	.267172
House type	0.1218	0.0149	8.20	0.000	.0926383	.1508815
Age	0.0376	0.0091	4.11	0.000	.019622	.0554893
Time dummy Q2-16	0.0537	0.0502	1.07	0.285	-.0447664	.1522044
Locational Dummy	0.0121	0.0010	11.79	0.000	-.0140872	-.0100702
No. of floors	-0.0582	0.0088	0.01	0.000	-.0753557	-.0409572
Backyard	0.3761	0.0494	7.61	0.000	.2792465	.4729431
Balcony	0.0792	0.0444	1.78	0.075	.0079997	.1663023
DSQ	0.2939	0.0314	9.34	0.000	.2321804	.3555229
Gymn	0.4203	0.0763	5.51	0.000	.2708086	.5698887
Swimming pool	0.6035	0.0491	12.28	0.000	.5071876	.6998671
Social amenities	0.0034	0.0337	0.10	0.920	.0627787	.0695739
Master ensuite	-0.1974	0.0508	-3.88	0.000	-.2971243	-.0977321
Garage/parking	0.0866	0.0367	2.36	0.018	.0147192	.158578
Separate dining	0.4541	0.0713	6.37	0.000	.314344	.5939015
Gated community	0.1002	0.0327	3.06	0.002	.036022	.1644364
borehole	0.1662	0.0444	3.74	0.000	0.0791001	.2533072
Guestroom	2.0136	0.3570	5.64	0.000	1.313543	2.713663
Jaccuzi	-0.1124	0.0787	-1.43	0.153	-.2666759	.0418034
Elevator	-2.4008	0.1811	-13.26	0.000	-2.755859	-2.04579
Backup - generator	1.6111	0.0809	19.9	0.000	1.452338	1.769786
wooden floor	0.1493	0.1494	1	0.318	-.1436166	.4423094
Constant	14.7388	0.0523	281.63	0.000	14.63619	14.84143

Housing Price Index
Quarter 2, 2016 **+110.87**

Table 4: Housing Price Index Drivers for Quarter 1_2016

Source	SS	df	MS
Model	110.5976	24	4.6082
Residual	50.5408	2440	0.0207

Prob > F = 0.0000
observations = 2465
R-squared = 0.6833
Adj R-squared = 0.6864

LN VALUE	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Plinth area	0.0016	0.0001	25.09	0.000	.0014834	.0017349
No. of Bedrooms	0.1808	0.0128	14.17	0.000	.1557451	.205765
No. of Bathrooms	0.2387	0.0145	16.42	0.000	.2101692	.267172
House type	0.1218	0.0149	8.20	0.000	.0926383	.1508815
Age	0.0376	0.0091	4.11	0.000	.019622	.0554893
Time dummy Q1-16	0.0537	0.0502	1.07	0.285	-.0447664	.1522044
Locational Dummy	0.0121	0.0010	11.79	0.000	-.0140872	-.0100702
No. of floors	-0.0582	0.0088	0.01	0.000	-.0753557	-.0409572
Backyard	0.3761	0.0494	7.61	0.000	.2792465	.4729431
Balcony	0.0792	0.0444	1.78	0.075	.0079997	.1663023
DSQ	0.2939	0.0314	9.34	0.000	.2321804	.3555229
Gymn	0.4203	0.0763	5.51	0.000	.2708086	.5698887
Swimming pool	0.6035	0.0491	12.28	0.000	.5071876	.6998671
Social amenities	0.0034	0.0337	0.10	0.920	.0627787	.0695739
Master ensuite	-0.1974	0.0508	-3.88	0.000	-.2971243	-.0977321
Garage/parking	0.0866	0.0367	2.36	0.018	.0147192	.158578
Separate dining	0.4541	0.0713	6.37	0.000	.314344	.5939015
Gated community	0.1002	0.0327	3.06	0.002	.036022	.1644364
borehole	0.1662	0.0444	3.74	0.000	0.0791001	.2533072
Guestroom	2.0136	0.3570	5.64	0.000	1.313543	2.713663
Jaccuzi	-0.1124	0.0787	-1.43	0.153	-.2666759	.0418034
Elevator	-2.4008	0.1811	-13.26	0.000	-2.755859	-2.04579
Backup - generator	1.6111	0.0809	19.9	0.000	1.452338	1.769786
wooden floor	0.1493	0.1494	1	0.318	-.1436166	.4423094
Constant	14.7388	0.0523	281.63	0.000	14.63619	14.84143

Housing Price Index
Quarter 1, 2016 **+108.99**

Table 5: Inter quarter Sub-regional indices (Moving base): 2013 - 2016

	Region 1			Region 2			Region 3		
	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes
Q1-2013	100	100	100	100	100	100	100	100	100
Q2-2013	100.063	100.04	100.60	100.05	100.61	100.10	100.01	100.93	100.03
Q3-2013	99.67	100.40	99.40	102.44	100.99	100.49	98.56	105.20	102.09
Q4-2013	100.74	102.82	99.38	101.80	100.82	98.81	103.75	103.95	100.32
Q1-2014	100.45	99.38	99.67	101.63	100.91	100.91	97.70	102.58	102.58
Q2-2014	100.50	99.67	99.54	100.75	101.75	101.27	96.70	102.74	103.32
Q3-2014	99.41	100.31	100.33	100.63	101.27	99.91	98.90	102.98	100.56
Q4-2014	97.48	99.29	105.21	97.82	101.98	99.61	104.54	104.36	100.62
Q1-2015	95.20	101.54	100.95	98.67	102.01	100.25	104.67	104.92	100.71
Q2-2015	102.92	102.78	100.53	101.11	102.05	100.77	105.23	104.91	102.51
Q3-2015	103.54	103.04	101.02	104.81	102.99	101.51	105.54	105.43	104.08
Q4-2015	105.23	104.57	104.66	104.84	103.47	102.43	106.25	105.37	105.26
Q1-2016	105.56	106.49	104.87	104.22	103.30	102.58	107.05	105.96	105.37
Q2-2016	103.48	104.08	102.96	100.19	100.30	100.93	101.23	100.96	100.27
Q3-2016	104.81	104.92	104.02	103.62	101.51	102.62	103.07	102.59	104.29

Table 6: Inter quarter Sub-regional indices (Fixed base): 2013 - 2016

	Region 1			Region 2			Region 3		
	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes
Q1-2013	100	100	100	100	100	100	100	100	100
Q2-2013	100.06	100.04	100.60	100.05	100.61	100.11	100.01	100.93	100.03
Q3-2013	99.02	99.67	99.67	100.09	102.44	102.44	99.65	104.13	98.10
Q4-2013	99.86	100.74	100.74	98.88	101.53	101.80	100.32	103.45	103.45
Q1-2014	99.57	100.55	100.55	99.41	101.46	101.01	100.24	102.20	100.11
Q2-2014	99.62	100.34	97.76	100.98	102.07	101.39	100.82	102.18	101.47
Q3-2014	99.94	100.04	97.88	100.51	101.06	104.15	99.19	102.29	99.74
Q4-2014	99.74	100.52	98.93	100.48	100.19	102.15	100.07	104.09	99.41
Q1-2015	95.39	101.32	100.19	100.13	100.741	101.67	100.05	104.52	99.50
Q2-2015	99.41	102.95	101.41	101.90	100.81	100.01	103.23	104.70	100.95
Q3-2015	100.74	102.77	101.30	103.37	101.65	103.03	105.21	106.76	104.87
Q4-2015	100.92	103.01	103.09	105.75	101.98	102.62	109.31	110.61	105.32
Q1-2016	101.85	104.88	103.06	106.29	101.18	104.99	109.99	110.90	105.97
Q2-2016	102.11	105.85	104.21	106.69	101.38	105.12	112.57	110.97	106.82
Q3-2016	103.01	106.21	104.97	105.61	102.6	106.31	114.41	112.06	108.49

THE DEFINITION OF THE SUB-REGIONS

REGION 1

Athi River, Mlolongo, Mavoko, Nakuru, Ngong, Ruaka, Syokimau, Embakasi, Kahawa Wendani, Thika, Mtwapa, Utange, Kitengela, Kiembeni, Nyeri, Likoni, Eldoret, Ruiru, Kilifi,Thika road (Kasarani, Roysambu, Ruaraka), Meru, Bungoma.

REGION 2

Thindigua (Kiambu Road), Kiambu, South B, South C, Kabete, Komarock, Imara Daima, Membley, Buruburu, Rongai, Waiyaki Way (Uthiru, Regen, Kinoo, Kikuyu), Mbagathi road, Ngong Road, Langata.

REGION 3

Kileleshwa, Kilimani, Lavington, Westlands, Spring Valley, Riverside, Milimani (Kisumu), Milimani (Nakuru), Runda, Karen, Garden Estate, Parklands, Ridgeways, Muthaiga, Loresho, Kitisuru, Adams Arcade, Nyali, Mountain View, Nyari.

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