



HOUSING PRICE INDEX

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House Prices Reverse the Decline Rate of Increase, but Hardly Race Ahead

The Kenya Bankers Association – Housing Price Index (KBA-HPI) for the fourth quarter of 2018 rose marginally, reversing from the downward trend in price

increases seen during the previous three quarters. This mirrors the pattern experienced in 2017 but signals the sustenance of the historical slow increase in house

prices. House prices rose by 1.49 percent in quarter 4 of 2018 representing a 0.14 percent quarter-on-quarter rise after it's growth of 1.35 percent in the previous quarter (Figure 1).



The modest rise, though a respite of the downward trend in the first half of the year, is a reflection of the general house-price stability and is attributed to the interplay between the supply and demand dynamics.

On the supply side, the market appears to be tilting towards few additional units coming into the market. This is partly attributed to constrained credit to developers.

Limited credit is equally binding on the demand side. In addition, the market has been characterised by homeowners' preferences for new buildings, a factor that has influenced the selling price. At the core of the overall cost of houses is the price of land whose share of the total cost has been increasing over time.

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Highlights

1 In quarter 4 of 2018, a modest increase in house prices was observed and the recovery in house prices is cyclical.

2 Buyers show a distinct preference for units in the upper-income segments, but with an observed preference for new units.

3 Supply and demand dynamics, both influenced by credit constraints, saw homeowners' preferences tilt in favour of apartments, which accounted for over three quarters of the sales in quarter four.

Technical Note

The index follows a Laspeyres index method. In this method, the index is computed by getting the ratio of 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 formula:

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

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.



House Prices Reverse the Decline Rate of Increase

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Therefore, the credit constraints that affect the supply and demand side of the housing market has greatly influenced the price evolution.

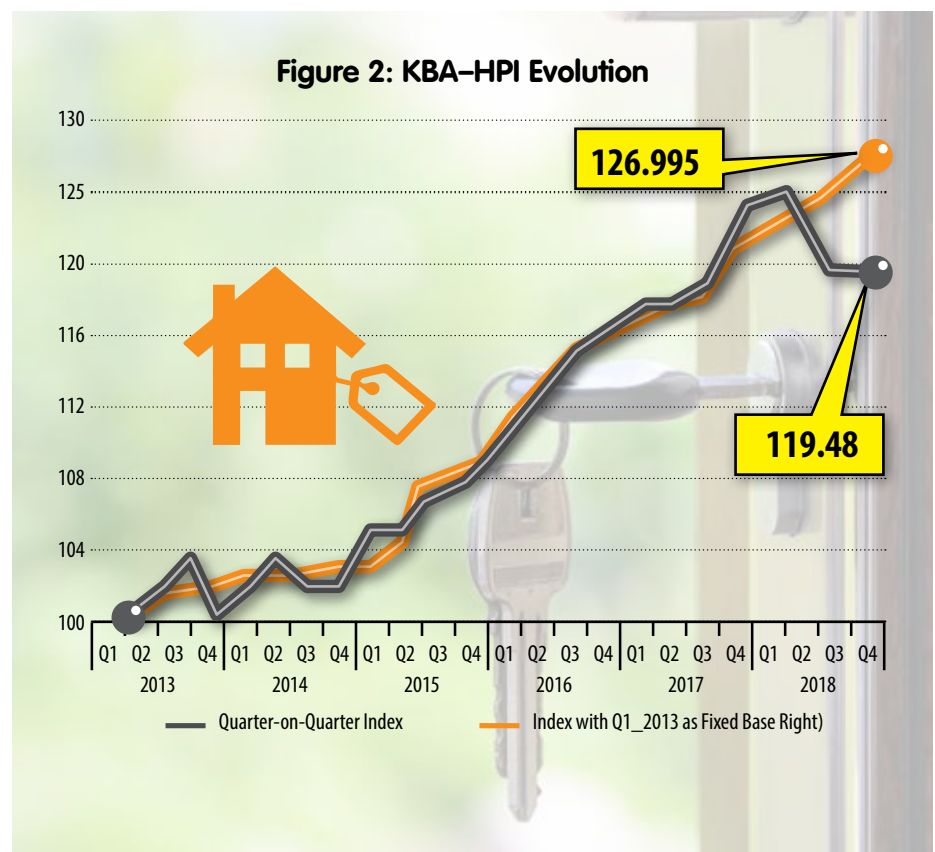
The alluded general stable prices has been a market characteristic even though the various segments targeting different income brackets have different price experiences. Based on the Laspeyres Index methodology (See **Technical Note**), the evolution of the KBA Housing Price Index (KBA-HPI) has risen by 27.00 (i.e 26.995) per cent as at the end of the fourth quarter of 2018 since 2013 based on the moving base as is shown in **Table 1** and **Figure 2**.

Table 1: Price Movement Series

Period	Index with a fixed base	Index with a moving base
Q4_2016	114.91	115.10
Q1_2017	115.92	116.37
Q2_2017	116.67	117.52
Q3_2017	117.59	118.01
Q4_2017	119.19	118.81
Q1_2018	123.83	121.29
Q2_2018	124.78	123.42
Q3_2018	119.38	125.10
Q4_2018	119.48	126.995

* Based on Base period Q1_2013

Figure 2: KBA-HPI Evolution



Size, Age, House Type and Proximity to Social Amenities and Location Continue to Exert Pressure on House Prices

The determination of the qualitative and quantitative parameters that drive the house price changes is based on the estimation of a hedonic function. The estimates for the fourth quarter of 2018 are given in **Table 2** while for comparison purposes those for the third, second and first quarter of 2018 are given in **Tables 3, 4 and 5** respectively.

The hedonic regression estimates reveal several aspects. First, buyers exhibit a strong preference for more plinth area as the elasticity of plinth area on prices is positive. This provides an intuition and in line with our previous reports that developers can benefit from increased plinth area by opting for higher-density developments, however, this is not without a cost as the number of floors a building has is established to have a negative impact which can be attributed to the fact that the more

floors a housing unit possess the more congested it is considered. In addition, whereas the plinth area exerts positive pressure on prices, the number of bedrooms has a higher elasticity than that of the plinth area an indication that on average homeowners valued the number of rooms rather than the plinth area. Similarly, the number of bathrooms also exerts a significant impact on prices.

Second, housing prices to a great extent are also influenced by the location. A revelation that people are not indifferent between different locations – all else being equal, they show a distinct preference to be in upper market (**Region 3**) and middle income (**Region 2**) segments compared to lower income segments (**Region 1**) of the housing market. Interestingly, the elasticity on the upper market segment is established to be

positive and higher compared to units in other segments. Further, our analysis reveals that house type – Apartments, Bungalows and Maisonettes also predicts the dispersion in house prices. Finally, our analysis further suggests that the presence of backyard, Detached Servant Quarter (DSQ), Swimming Pool, parking/garage, balcony, Elevator, and the proximity to social amenities also influences house prices upwards. This suggests that enabling increased housing supply in desirable locations will result in improved amenity relative to supplying new housing in less desirable locations. However, the presence of Gym, Master En-suite and wooded floor do not appear to have an impact on prices. While the coefficient on these attributes is negative, they are not statistically significant. In other words, the value of the presence of Gym, Master En-suite and wooded floor may be quite marginal.

Buyer Preference Tilts Towards Apartments in Quarter Three

Whereas the KBA-HPI index shows a 1.49 per cent rise in house prices, the interaction of supply and demand dynamics saw homeowners' preferences significantly tilt. During the quarter a reversal of preferences saw apartments account for 76.27 per cent of the total number of units sold in Q4 of 2018 followed by bungalows and maisonettes at 12.12 and 11.62 per cent respectively unlike in the third quarter of 2018, bungalows accounted for 37.84 per cent, maisonettes accounted for 35.14 per cent and apartments accounted for 27.03 percent of the total market transactions.

The extent of dynamism in homeowners' preferences with respect to house types reveals the rapid shifts in preferences among homeowners and the rise in demand for apartments should be seen in light of its affordability to home buyers given the lower cost of construction per unit on the developers' side and more likely the increase in the supply of units as they are often in middle and the lower segment given the availability and affordability of land compared to the upper market segment.

Figure 3: Total units offered

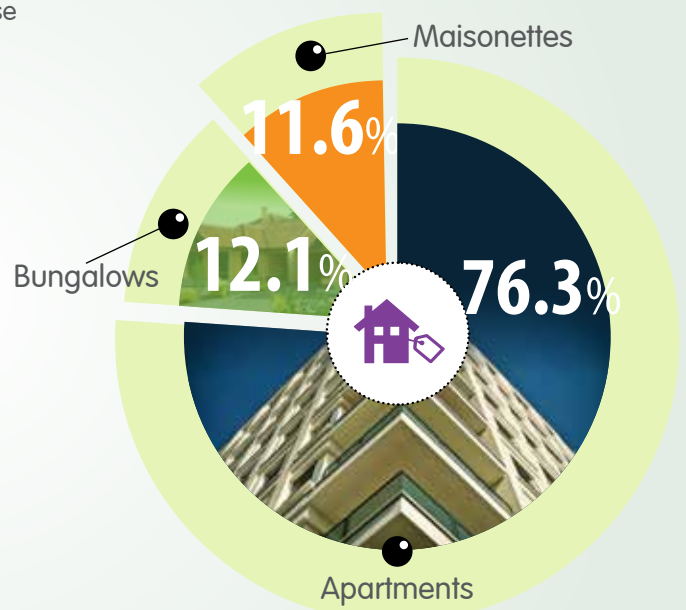


Table 2: Housing Price Index Drivers for Quarter 4_2018

Source	SS	df	MS
Model	141.512	18	7.862
Residual	22.877	179	0.128
Total	164.389	197	0.834

observations = 198
 F (18, 179) = 61.51
 Prob > F = 0.00
 R-squared = 0.861
 Adj R-squared = 0.849
 Root MSE = 0.358

LN VALUE	Coef	Std. Err.	t - stats	P> t	[95% Conf. Interval]	
Plinth area	0.17	0.09	1.94	0.05	0.35	0.00
No. of Bedrooms	0.66	0.05	13.85	0.00	0.57	0.75
Number of floors	-0.14	0.12	-1.18	0.24	-0.37	0.09
No. of Bathrooms	0.22	0.11	2.11	0.04	0.01	0.43
Age of House	-0.01	0.03	-0.01	0.99	-0.05	0.05
Locational Dummy						
Region 2	0.30	0.10	2.84	0.01	0.09	0.50
Region 3	1.23	0.20	6.05	0.00	0.83	1.63
House type						
Bungalow	-0.44	0.15	-2.97	0.00	-0.73	-0.15
Apartments	-0.73	0.38	-1.91	0.06	-1.48	0.03
Maisonette	-0.49	0.18	-2.65	0.01	-0.85	-0.12
Other Drivers						
Presence of backyard	0.58	1.90	0.31	0.76	-3.16	4.32
Presence of DSQ	1.75	0.78	2.25	0.03	0.22	3.28
Presence of Gymn	-1.74	1.52	-1.14	0.26	-4.75	1.27
Swimming Pool	0.07	0.42	0.17	0.87	-0.76	0.90
Prox to social amenities	1.22	0.39	3.10	0.00	1.99	0.44
Parking/garage	0.83	0.25	3.25	0.00	0.32	1.33
Presence of balcony	0.37	0.28	1.31	0.19	-0.19	0.94
Master Ensuite	-0.02	0.31	-0.06	0.95	-0.63	0.59
Separate dining	-0.06	0.34	-0.16	0.87	-0.73	0.62
Elevator/ Lift	1.86	1.31	1.42	0.16	-0.72	4.44
Wooden floor	-0.81	1.46	-0.56	0.58	-3.69	2.07
Constant	14.33	0.41	34.83	0.00	13.52	15.14

Housing Price Index  **126.995**
 Quarter 4, 2018

Table 3: Housing Price Index Drivers for Quarter 3_2018

Source	SS	df	MS
Model	12.6014	14	0.9001
Residual	1.1612	22	0.0528

Prob > F = 17.05
 # observations = 36
 R-squared = 0.9156
 Adj R-squared = 0.8619

LN VALUE	Coef	Std. Err.	t - stats	P> t	[95% Conf. Interval]	
Ln Plinth Area	0.087	0.133	0.66	0.519	-0.189	0.364
Number of Bedrooms	0.172	0.080	2.15	0.043	0.006	0.339
Number of Floors	-0.142	0.063	-2.26	0.034	-0.272	-0.012
Number of Bathrooms	0.231	0.102	2.27	0.034	0.020	0.443
Age of House	-0.051	0.025	-2.05	0.053	-0.103	0.001
House Type	0.041	0.091	0.45	0.659	-0.148	0.230
Presence of Backyard	0.966	0.348	2.78	0.011	0.245	1.688
Presence of Balcony	-0.011	0.177	-0.06	0.949	-0.379	0.356
Presence of Gym	-0.137	0.313	-0.44	0.666	-0.785	0.512
Master-Ensuite	0.485	0.226	2.14	0.043	0.016	0.954
Separate Dining Area	0.268	0.203	1.32	0.201	-0.154	0.690
Within Gated Community	0.199	0.252	0.79	0.438	-0.323	0.720
Presence of Wooden Floor	-0.602	0.345	-1.74	0.095	-1.317	0.114
Location Dummy	0.191	0.098	1.95	0.064	-0.012	0.394
Constant	13.900	0.804	17.29	0.000	12.233	15.567



Housing Price Index **125.10**
 Quarter 3, 2018

Table 4: Housing Price Index Drivers for Quarter 2_2018

Source	SS	df	MS
Model	412.7318	18	22.9296
Residual	0.0298	407	12.1156

Prob > F = 770.27
observations = 426
R-squared = 0.9715
Adj R-squared = 0.9702

LN VALUE	Coef	Std. Err.	t - stats	P> t	[95% Conf. Interval]	
Plinth area	0.8227	0.0519	15.85	0.000	0.7206555	0.9247546
Number of Bedrooms	-0.0327	0.0305	-1.07	0.283	-0.0925902	0.0271577
Number of Bathrooms	0.0958	0.0281	3.41	0.001	0.0405794	0.1510979
House type	0.8766	0.0717	12.23	0.000	0.7356745	1.01752
Locational Dummy	-0.0008	0.0033	-0.25	0.806	-0.0072477	0.0056356
Number of floors	0.1782	0.0534	3.34	0.001	0.073147	0.2831537
Presence of Backyard	0.8857	0.0964	9.19	0.000	0.6962634	1.075204
Presence of Balcony	0.3809	0.0770	4.95	0.000	0.2294663	0.5322862
Presence of DSQ	-0.3834	0.2491	-1.54	0.124	-0.8730004	0.1062068
Presence of Gym	0.2888	0.0930	3.11	0.002	0.1060066	0.4716663
Swimming pool	-0.5119	0.1236	-4.14	0.000	-0.7548346	-0.2690207
Garage/parking	1.6248	0.2475	0.57	0.000	-2.111349	1.138297
Master en suite	1.6963	0.2118	8.01	0.000	1.279843	2.112751
Separate dining	-0.3465	0.1795	-1.93	0.054	-0.6993735	0.0064055
Gated community	-0.0253	0.0258	-0.98	0.327	-0.0760263	0.025374
Presence of borehole	0.2787	0.0584	4.77	0.000	-0.3935313	-0.1639539
Presence of geyser closet	-1.1303	0.2968	-3.81	0.000	-1.71367	-0.5468541
Presence of Elevator	0.0436	0.0934	0.47	0.641	-0.1400402	0.2271589
Constant	8.6755	0.3871	22.41	0.000	7.914595	9.436404
Presence of Guestroom	-0.2369	0.2552	-0.93	0.354	-0.7383697	0.2645607
Presence of Elevator	-0.3491	0.2314	-1.51	0.132	-0.8037293	0.1055392
Backup - generator	-0.8324	0.4576	-1.82	0.769	-1.731368	0.0666132
Constant	10.2103	0.5476	18.65	0.000	9.134414	11.28626

Housing Price Index
Quarter 2, 2018

 **123.42**

Table 5: Housing Price Index Drivers for Quarter 1_2018

Source	SS	df	MS	Prob > F = 0.000		
Model	410.3842	23	22.7991	# observations = 511		
Residual	13.3508	209	0.0271	R-squared = 0.9685		
				Adj R-squared = 0.9673		

LN VALUE	Coef	Std. Err.	t - stats	P> t	[95% Conf. Interval]	
Plinth area	0.6463	0.0469	13.78	0.000	0.5541608	0.7384159
Number of Bedrooms	0.0160	0.0319	0.50	0.016	-0.0466906	0.0787731
Number of Bathrooms	0.1911	0.0322	5.93	0.000	0.1278157	0.2544234
House type	0.2892	0.0512	5.65	0.000	0.1886779	0.3897655
Age	0.0376	0.0091	4.11	0.000	0.019622	0.0554893
Time dummy (Q1_2018)	0.3341	0.1761	1.90	0.058	-0.6800308	0.011841
Locational Dummy	0.0193	0.0032	-5.94	0.000	0.0129003	0.0256415
Number of floors	0.1365	0.0362	3.77	0.000	0.0654071	0.2076382
Presence of Backyard	0.8655	0.4237	2.04	0.042	0.0330108	1.697952
Presence of Balcony	0.1908	0.4497	0.42	0.672	-0.6928538	1.074409
Presence of DSQ	-0.1263	0.0865	-1.46	0.145	-0.2962409	0.0435569
Presence of Gym	1.5367	0.1983	7.75	0.000	1.147131	1.92624
Swimming pool	0.1041	0.2494	0.42	0.677	-0.385942	0.5941626
Prox. to Social amenities	0.0034	0.0337	0.10	0.920	0.0627787	0.0695739
Master en suite	0.2939	0.0314	9.34	0.000	0.2321804	0.3555229
Garage/parking	0.0121	0.0010	11.79	0.000	0.0100702	0.0140872
Separate dining	-0.1622	0.1716	-0.95	0.345	-0.4993236	0.174943
Gated community	0.1399	0.1709	0.82	0.414	0.1959449	0.4757226
Presence of Borehole	0.0106	0.0268	0.40	0.692	0.0420165	0.0632237
Presence of Guestroom	-0.2369	0.2552	-0.93	0.354	-0.7383697	0.2645607
Presence of Elevator	-0.3491	0.2314	-1.51	0.132	-0.8037293	0.1055392
Backup - generator	-0.8324	0.4576	-1.82	0.769	-1.731368	0.0666132
Constant	10.2103	0.5476	18.65	0.000	9.134414	11.28626

Housing Price Index
Quarter 1, 2018 **+ 121.29**

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, Membedley, 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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