

REAL ESTATE MARKET ANALYSIS

08

HEDONIC REAL ESTATE INDEX, DECEMBER 2020

In December 2020, the CBCG conducted its regular survey on the real estate price trends in Podgorica. Questions in the survey referred to the qualitative features of housing units (heating, internet connection, number of rooms, number of balconies, etc.) and aimed at determining the relative influence that these qualitative features have on the housing unit value. A subjective value of an apartment unit was assessed with the following question: “What is the price that an apartment owner would not go below at the moment of the survey?” The collected data were used for receiving the Hedonic index of real estate prices, which measures the effect of such qualitative characteristics on the value of a housing unit.

The calculation of an average price per square meter in December 2021 was based on a sample of 58,296 housing units in the locations Podgorica 1, Podgorica 2 and Podgorica 3. The survey included a random sample of 2,248 owners of housing units of which 402 questionnaires were successfully completed. This means that the total response rate was 17.9%.

The results of the December survey showed that the average price of a square meter of real estate units in Podgorica amounted to 1,004 euros, which is a 5.7% decrease y-o-y. This is the first drop in subjective prices since December 2018 and it is a consequence of the COVID-19 pandemic. Given that the price of real estate did not fall last year, it can be concluded that the real estate market reacted to the negative economic shocks after a certain period.

Table 8.1

Summary statistics of an average value of housing unit per square meter in Podgorica on quarterly basis, in the period September 2007 - December 2020			
Period	Price in euros	Chain index	Base index
September 2007	1,697.6	100.0	100.0
March 2008	1,738.3	102.4	102.4
September 2008	1,525.5	87.8	89.9
March 2009	1,402.1	91.9	82.6
September 2009	1,223.1	87.2	72.1
March 2010	1,128.3	92.2	66.5
June 2010	1,191.5	105.6	70.2
September 2010	1,177.1	98.8	69.3
December 2010	1,185.2	100.7	69.8
March 2011	1,171.2	98.8	69.0
June 2011	1,163.0	99.3	68.5
September 2011	1,174.0	100.9	69.2
December 2011	1,151.2	98.1	67.8
January 2012	1,168.3	101.5	69.0
June 2012	1,179.6	102.5	69.5
September 2012	1,172.3	99.4	69.1
December 2012	1,171.6	99.9	69.0
March 2013	1,169.4	99.9	68.88
June 2013	1,069.8	91.48	63.10
March 2014	971.4	90.80	57.22
September 2014	950	97.8	55.96
March 2015	920.8	96.9	54.24
September 2015	939	101.97	55.31
March 2016	965	102.77	56.84
June 2016	1,019.9	105.69	60.08
September 2016	915.6	89.77	53.93
December 2016	919	100.35	54.12
March 2017	901	98.11	53.10
June 2017	950	105.4	55.96
September 2017	920	96.8	54.2
December 2017	939.7	102.2	55.35
June 2018	1,052.7	112	62
December 2018	988.1	93.86	58.21
June 2019	1,033.2	104.6	60.9
December 2019	1,045.2	101.4	61.74
July 2020	1,064.2	101.5	62.69
December 2020	1,004	94.3	59.1

Source: CBCG calculations

The average price of an apartment is the highest in the first zone and amounts to 1,120.9 euros. In the second and third zone, the price per square meter is lower and amounts to 1,033.6 euros and 931.7 euros, respectively.

Table 8.2

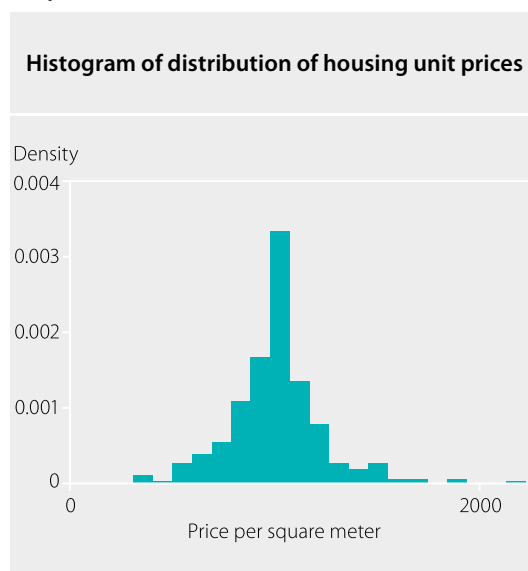
Summary statistics of average values; standard deviation; minimum and maximum prices by housing category in Podgorica in December 2020, in euros					
Variable	No. of observations	Medium Value	Standard Deviation	Minimum Price	Maximum Price
Average Housing Price per square meter	402	1,004	227.4	307.7	2,222.22
Average Housing Price per square meter - apartment	256	1,069.9	193.4	600	2,222.2
Average Housing Price per square meter - house	146	890.5	238.1	307.7	1,875

Source: CBCG calculations

The majority of housing units are apartments (63.7%), and a smaller part belongs to houses (36.3%). The price of individual housing units ranged between 2,000 euros/m² at high-end city locations to 300 euros/m² at locations further away from the city centre (Zagorič, Konik, Masline, Tološi, and the like). Compared to the previous survey, a significant drop in the maximum real estate prices is noticeable.

According to available data, the econometric hedonic model which assesses the effect of qualitative and quantitative characteristics of housing unit to the price of object was made. Graph 8.1 shows the distribution of housing unit prices, which is also a dependent variable in the model.

Graph 8.1



Source: CBCG calculations

In order to achieve a normal distribution of values of standard errors necessary when applying the econometric method of ordinary least squares (OLS) and interpretation of results in the form of percentage changes, prices per square meter are logarithmic. Also, in order to achieve the correct functional form, properties of extremely high/low values are excluded, as well as poor quality data (eg. observed errors in entering the qualitative characteristics of the housing unit). This reduced the sample to 398 observations for modelling purposes. Qualitative characteristics related to the type of housing unit (apartment or house), square footage, age, location, as well as type of heating, number of balconies, number of rooms, internet connection, telephone connection, and garage space were used as independent variables.

Table 8.3 shows the empirical results of using the average housing unit price model, based on data for December 2020. The diagnostic tests showed that the model had been specified very well; there were problems neither with its multicollinearity (extremely low values of the variance inflation factor - VIF) nor with the functional form (*Ramsey Reset test*). The heteroscedasticity problem was corrected using robust standard errors.

Empirical results of using the model of average housing unit price indicate that, measured by the level of statistical significance, the price of a housing unit is affected by a number of factors, namely: location, type of building (apartment or house), number of rooms, age, and garage ownership. Objects in the first and second zone are more expensive than objects in the third zone. On average and by controlling other factors, it is concluded that a square meter of an apartment is more expensive than a square meter of a house. Buildings aged five to ten years are more expensive than older buildings. However, there is no statistically significant difference between new buildings (up to five years old) and the older ones (over ten years old). One- and two-bedroom housing units cost less than multi-bedroom units. Owning a garage also significantly increases the price per square meter. Other characteristics (type of heating, number of balconies, possession of internet connection, square meters) do not have a significant impact on the price per square meter.

Table 8.3

Empirical results of average housing unit price model in Podgorica, December 2020			
Variables	Ratio	Standard Error	P>t
Dependent variable: ln (price msqr)			
Ln (square meters)	-0.041	0.063	0.513
Podgorica 1	0.141**	0.025	0.000
Podgorica 2	0.118***	0.023	0.000
Apartment	0.197**	0.035	0.000
Up to 65 msqr	-0.054	0.066	0.418
Under 65 msqr	-0.004	0.031	0.908
Up to do 5yrs old	0.091	0.065	0.164
5-10 years	0.080***	0.030	0.008
Balcony 0	-0.072	0.075	0.335
Balcony 1	-0.039	0.050	0.435
Balcony 2	-0.051	0.043	0.238
Room 0	-0.115	0.082	0.162
Room 1	-0.081*	0.047	0.085
Room 2	-0.079**	0.032	0.012
Heating with firewood	0.020	0.029	0.503
Garage available	0.161*	0.098	0.099
Internet	0.034	0.036	0.341
Constant	6.923***	0.306	0.000
Number of observations	398	Diagnostics: VIF=2.28; Ramsey RESET test: Prob > F = 0.171	
R_squared	0.31		

Note: *** significance at 1%, ** significance at 5%, * significance at 10%

ln - natural logarithm, msqr - square meters

Source: CBCG calculations

Table 8.4 shows the real estate prices trends in selected countries according to the *Global Property Report*. As the table shows, there were divergent trends in real estate prices in Q1 2020: the highest annual growth was recorded in Turkey (13.96%) and Vietnam (13.83%) while the most significant decline was recorded in Egypt (-22.31%).

Table 8.4

Real estate prices in selected countries (as per annual growth in Q3 2020)				
Country	Annual change, Q3 2019, in %	Trend assessment	Annual change, Q3 2020, in %	Quarterly change, Q3 2020, in %
Turkey	-2.19	↑	13.96	2.66
Vietnam (HCMC)	21.37	↓	13.83	-6.72
New Zealand	5.82	↑	13.77	7.11
Germany	9.46	↑	12.14	4.55
Slovak Republic	6.67	↑	10.10	3.47
Puerto Rico	12.90	↓	9.07	6.93
Austria (Vienna)	1.26	↑	7.68	3.27
The Netherlands	3.48	↑	6.90	1.51
Taiwan	2.86	↑	6.73	2.65
Qatar	-6.86	↑	6.30	-0.12
Canada	-1.19	↑	6.17	2.25
Portugal	11.25	↓	5.96	1.77
Russian Federation	3.63	↑	5.86	2.70
Sweden	1.96	↑	5.67	1.93
Thailand	3.32	↑	5.01	-0.91
Poland - Warsaw	8.86	↓	4.89	0.04
South Korea	0.83	↑	4.73	1.57
Estonia	6.35	↓	4.71	-3.08
Iceland	0.32	↑	4.10	0.94
Japan-Tokyo	4.46	←	3.97	4.37
Lithuania (5 cities)	4.05	←	3.42	0.64
Norway	0.69	↑	2.89	0.62
Malta	3.41	←	2.77	5.92
Sri Lanka	1.34	↑	2.76	1.05
China (Beijing)	-4.04	↑	2.70	-0.18
Hong Kong	-5.15	↑	2.63	1.31
Denmark	1.93	→	2.63	1.32
UK	-1.44	↑	2.62	1.54
Finland	-0.89	↑	2.26	1.50
Ukraine -Kiev	-5.88	↑	1.89	0.51
Mexico	4.96	↓	1.08	-0.60
Republic of North Macedonia	3.61	↓	1.08	-1.28
Israel	-1.12	↑	0.86	-0.72
Singapore	1.67	↓	0.70	0.18
Switzerland	-2.25	↑	0.64	0.34
Macao	-3.66	↑	0.55	1.85
Chile	5.81	↓	0.55	0.80
Romania	0.72	←	0.45	-1.95
Ireland	0.23	→	0.36	1.14
Indonesia	-1.68	↑	0.30	0.43
Brazil – Sao Paulo	-0.88	↑	0.21	-0.04
South African Republic	-0.33	→	-0.31	0.58
Philippines - Makati CBD	-3.52	↑	-0.52	-6.92
Latvia - Riga	0.46	↓	-1.34	-0.99
Colombia (Bogota)	-4.62	↑	-2.40	-1.38
Pakistan	-8.13	↑	-2.42	-0.50
India	-2.80	→	-2.55	-1.10
Morocco	0.18	↓	-2.58	1.78
Saudi Arabia	-2.13	↓	-3.51	-6.09
UAE –Dubai	-4.52	←	-4.88	-1.36
Egypt	-9.58	↓	-22.31	-6.92

NOTE:

↑ = increase in real estates' prices by more than 1 pp.

→ = increase in real estates' prices by less than 1 pp.

↓ = decline in real estates' prices by more than 1 pp.

← = decline in real estates' prices compared to y-o-y price change by less than 1 pp.

Source: Global Property Guide, Q3 2020