THE HOUSING MARKET IN ALBANIA: HEDONIC REGRESSION

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Abstract

Housing market is one of the most important sectors in Albania. During the last 20 years there has been a boom of construction in this sector, mainly in big cities. The crisis that swept the world, including Albania, was reflected in this sector as being associated with sensitive decrease on housing sales. A phenomenon seen in the country is that despite the declining on purchasing power, constructors do not decrease their housing prices. The main objective of this article is to apply the Hedonic Regression Method as an alternative valuation method for forecasting housing prices in Tirana. The empirical results show that most of the independent variables on housing features are highly significant and economically consistent with the pricing theory. This article contributes to the literature by applying a standard evaluation methodology on a market with unique features as there are very few studies that employ the hedonic regression on the housing prices in Albania.

KEY WORDS:

Albania; Housing market; House prices; Hedonic Price Method

1. INTRODUCTION

Housing sector/market is a very significant part of national economy and is closely associated with other sectors of the economy that together determine the level of development. Housing market's importance is seen in its causal relationship with other sectors of the economy because a demand for housing represents both an investment and a consumption decision. Housing being as the fulfilment of a basic need influences other needs such as food, clothing, water, sanitation and health. Housing market creates complementary sectors and markets such as construction of water, electrical services, shopping complexes and other community services which in turn generate more employment and income. Likewise, housing as a capital asset, like all other investments, provides and helps in the development of business enterprises, provides stable long term rental income and may act as a credit collateral for business endeavours.

Since housing market is an important sector of the economy and it has very significant impact on other sectors of the economy, the research for modelling the housing prices becomes a very important issue. The main objective of this article is to apply the Hedonic regression (price) Method as an alternative valuation method for housing in Tirana. Next section provides an overview of the Albanian housing market particularly its capital Tirana. Section three, provides literature review explaining the theory behind the HPM and the main empirical studies pertaining to the issue. Section four gives a detailed explanation of the data and the methodology used and provides the main empirical findings. The final section is reserved for the conclusions and provides specific explanations for certain phenomena acquired from the results.

2. OVERVIEW OF THE ALBANIAN HOUSING MARKET

During the last two decades, Albania has experienced a significant boom of construction sector, mainly in housing market. Transition period was accompanied by changes in the demographic, economic and social factors, which in turn have increased demand for new construction. Housing market represents an important element not only for Albanian economy but also from the Albanian culture. They consider the proprietorship of a house as one of the primary and initial needs. In this regard, internal (from rural to urban) and external migration and the change in the attitude of living separated from parents has played a very important role in the shape and trend of housing demand. More specifically, emigration has played a major role in the demand for houses in urban areas, especially Tirana, as a consequence of the improvement in living conditions and higher disposable income of Albanian emigrants and their families at home.

Important issues that require specific attention about the Albanian housing market are:

- The ownership rights not clearly defined between "old" owners deprived from the communist regime and the new ones currently occupying the property
- Legalization issue of the constructed buildings without proper local authorities permission
- Mortgage registration, mortgage lending and mortgage execution process which are particularly related also with the banking practice and legal framework in the country.

Based on the results of Population and Housing Census 2011 (INSTAT, 2012) (INSTAT, 2012), the usual resident population in Albania was 2,821,977 and 25.25% of which are residing in Tirana. The total number of dwellings is 1,012,400, from which, according to classification by type, 99.6% were conventional dwellings and 0.4% of them were non-conventional ones. Tirana had the largest percentage of dwellings (26%) and the largest number of building permits (28% in 2017).

**Table 1: Population and housing growth, Census 1989, 2001, 2011**

	Census 1989	Census 2001	Census 2011	Census2001/ Census 1989	Census2011/ Census 2001	Census2011/ Census 1989
Residential Population	3,182,417	3,069,275	2,821,977	-3.6	-8.8	-12.8
Buildings	385,769	512,387	598,267	32.8	16.8	55.1

Source: INSTAT

Buildings' features in 2011 in Albania do not vary drastically from 2001 in terms of type of building, number of floors, number of dwellings per building etc. (INSTAT, 2014) (INSTAT, 2014), as shown in Figure 1.

The number of individual buildings still prevails, while apartment buildings constitute only 3.7% in 2011, very close to 3.3% in 2001. The type of buildings and the related period of construction show that the number of apartment buildings constructed during 2001-2011 has more than doubled compared to the previous decade and it accounts for 23.4% of the total stock of that type of building in Albania. Figure 1 shows a boom in construction during 2001-2011compared to 1991-2000.

Figure 1: Number of apartment buildings by period of construction, Census 2011 (in %)
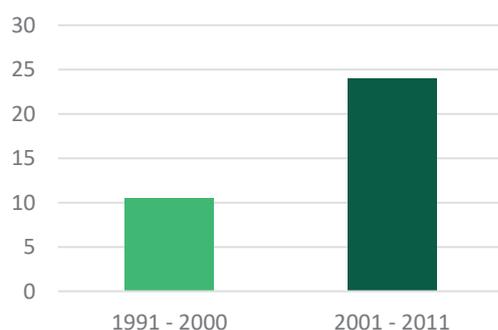
Source: INSTAT: Albania dwelling and living conditions 2014

3. LITERATURE REVIEW

Evaluation of the house prices has attracted a significant interest in economic literature and consequently there is plenty of research work. Hedonic demand theory also known as hedonic regression or as hedonic price method estimates the value of the characteristics of a commodity that indirectly affects its market price. The basic idea of hedonic price method is that it breaks down the house value or its price into its constituent characteristics or properties and then adds up all of the estimated contributory values of each characteristic to create the final value of the house. Simply put, these pricing method measures the weight or the impact of certain feature like location of the house, number of bathrooms, or the presence of other features in the total price of the house.

This theory of pricing method is widely used in consumer and market research. From a consumer perspective hedonic theory originates from Lancaster's consumer theory (Lancaster, 1966). Each good is considered as a member of group of goods where all the group's goods are used in combination with one another. Thus, the price of the product is not dependent on the amount of characteristics attached to the product but rather on the combination of goods that the buyer decides to buy. From a market perspective, Rosen generalized the approach to include the housing market and integrated it to the general theory. Rosen's model argues that there is a nonlinear relationship between the price of goods and their inherent characteristics. The implicit price is a function of the characteristics associated with the good (Rosen, 1974).

Hedonic Price method's application is mainly based on four key assumptions. First assumption pertains to the homogeneity in the housing market. This assumption is arguable since housing products can differ from one another in terms of locational, structural, neighbourhood or any other attribute and criteria. Second assumption is that the housing market operates under perfect competition. This

is a justifiable assumption since there are many buyers and seller that have freedom to enter and exit the market and consequently no buyer or seller can affect the market. Third assumption pertains to the fact that buyers and sellers have perfect information related to the housing product. Though difficult to achieve, in reality this assumption seems reasonable since buying a house requires a significant amount of capital, the process of buying a house involves collection of a lot of online and offline information before making a purchase. The fourth and final assumption is the assumption of market equilibrium. This assumption is arguable for it is idealistic to assume that the price vector will adjust instantaneously to changes in demand or supply at any point in time thus it does not take into account the relationships between the implicit prices of attributes or characteristics.

HPM has been applied in housing market research (Ball, 1973); (Chau,et al. , 2001); (Freeman, 1979); (Leggett, C. G. & Bockstael, N. E., 2000). HPM was applied in estimation of housing prices in Hong Kong (Chen, 2009). According to this study there is a difference between harbour and mountain view while pricing the houses, namely harbour view, may increase the price while mountain view may decrease it. Keng T.Y (2000) also used HPM to analyze the factors that impact the house price in Malaysia.

The findings are consistent with the hypothesis that house prices are determined by the economic and financial factors identified as relevant for the demand and supply of housing units in this country.

The usual housing characteristics/attributes that are used by HPM are: Structural attributes; location attributes and/or neighbourhood attributes (Herath, 2010). These attributes include both the qualitative and quantitative characteristics.

3.1 STRUCTURAL ATTRIBUTES

Structural attributes have significant effect and relation on the prices of properties. While some studies argue that preferences for structural attitudes may change according to client and may vary over time and between nations (Kohlhase, 1991) (Kohlhase, 1991), other argue that the comparative desirable attributes of a house are valued and reflected in the prices (Ball, 1973) (Ball, 1973). The main attributes that are equally important across nations and are positively related to the price of a house are: the number of rooms and bedrooms (Garrod, 1992)(Garrod, 1992), floor size (Carroll, T. M., Clauretie, T. M. & Jensen, J., 1996) (Rodriguez, M. & Sirmans, C. F., 1994) (Carroll, T. M., Clauretie,

T. M. & Jensen, J., 1996)(Rodriguez, M. & Sirmans, C. F., 1994), number of bathrooms, balconies, garage etc., research has also showed that the age of the building is negatively related to the property price due to higher maintenance and repair cost (Clapp, 1998) (Clapp, 1998). On the other hand, attributes like structural quality, heating system, thermal isolation, and basement and so on are difficult and change across nations depending on the traditional values and climate.

4. METHODOLOGY

The location and the surrounding of the property/ house is a very important attribute that has a significant effect on the buying decision. It defines the distance of the house to the city Centre, shopping complexes, job place, school and other related attributes. The main location attributes that have been employed by the studies are the pollution level, the socioeconomic class of the inhabitants, the racial composition, transport modes, the view of the property and the floor level. The main neighbourhood attitudes employed are traffic noise, distance to shopping complexes and the size of shopping complexes, pleasant landscape, pollution, and distance to sport and other recreational facilities.

From the above listed structural and location and neighbourhood attributes due to the lack of available data and difficulty in creations of certain attitudes this study employs only available attitudes for the apartments in Tirana. More precisely, from a structural attributes we use number of rooms, number of bedrooms, number of toilets, size of the apartment in m^2, the existence of balcony and, the existence of elevator. Whereas from a location attributes we use the floor level and location by using 11 mini-districts and the rest as 12th mini-district.

The application of the hedonic method is known for quite some time; it was only in recent years that hedonics has been used in a more extensive way in current statistical production and different analyses. Hedonic pricing methodologies build upon the idea those different characteristics of a good or service impact differently on their evaluation by consumers. Thus, the first stage of this methodology consists of specifying a hedonic price function, i.e. a function relating transaction prices to the relevant characteristics of the good or service.

$$P_{it} = f(c_{1n}, c_{2n}, ..., c_{mnt})$$

Where: p is price of goods or services, c1nt, c2nt... cmnt are the characteristics of them.

In hedonic analyses of the housing market, those characteristics typically correspond to individual dwelling and location-related features. Using regression techniques, it is then possible to estimate the parameters in the hedonic price function, which may be interpreted as the implicit marginal prices for each characteristic. Based on the estimated marginal prices, housing prices can be straightforwardly adjusted in order to remove the idiosyncratic influence of those sources of heterogeneity. The particular adjustment carried out depends on the form of the hedonic price function (e.g. linear, log-linear).

The first step to obtain a hedonic index is the specification of a hedonic price function, which is typically linear:

$$P_{it} = x_i + u_i$$

Or log-linear

$$\ln(P_{it}) = x_i\, \beta_t^* + u_i^*$$

Where x_{it} are the k characteristics (or functions of the characteristics) of house i at period t, $\beta t(\beta^* t)$ is a (K+1)-vector of parameters (implicit prices) to be estimated, and it ($u^* it$) is the error term, standing for the non-explained part of the price[1].
This method is based on the assumption that people value the characteristics of a good, or the services it provides, rather than the good itself. Thus, prices will reflect the value of a set of characteristics, including environmental characteristics that people consider important when purchasing the good.

We analyzed only Tirana, capital city of Albania, because the volume of construction of dwellings is higher compare with the other cities, the demand for them is increased year by year. So, Tirana is a representative for the whole country. Based on the characteristics of Albanian housing market we have studied and analysed only the market for apartments. The method used for estimation is the Ordinary Least Squares (OLS) method.

The variables that are included in our model are: age (new or old), number of rooms, number of bedrooms, number of toilets, size in m^2, floor, elevator (dummy variable), balcony (dummy variable), location, mini-districts (administrative

separation of Tirana), price per m^2 (the offered price), total price (the offer priced). The numbers of observations are 148; the data are collected for year 2017-2018 from Real Estates agencies in Tirana.

Based on hedonic function our model has this form:

Lnprice=β_0 + β_1 size + β_2 rooms + β_3 bedroom+ β_4 toilet + β_5 elevator + β_6 balcony +β_7 minidistricts + β_8 age + β_9 floor

Where: the sign of the parameters of each variables (features) shows the impact of each of them in price.

5. EMPIRICAL RESULTS

The main empirical results of the employed HPM are shown in Table 2.

From the independent variables measured and tested in the regression analysis the signs of all coefficient results as expected. More specifically, the variables that have expected sign and are statistically significant are: Size in m2, number of bedrooms, age of the building or year of construction, and most of the district variables. The independent variables that indicate positive effect on the price of the house are: size, bedroom, elevator, toilet, age, and district 5 (the most famous and expensive district of Tirana). In addition, the variables that indicate negative effect on the price are: floor level, balcony, and most of the districts except district five. Lastly, the R2 which indicates the coefficient of determination of the model is 74% which shows that the chosen independent variables explain 74.1 percent of the prices of houses in Tirana.

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[1] http://ec.europa.eu/eurostat/documents/272892/272983/
Detailed_Technical_Manual_on_Owner-Occupied_
Housing-v2.pdf/4ccf3133-2309-4316-b7fc-db3b89011b76

Table 1: Population and housing growth, Census 1989, 2001, 2011

Model	β	t	Sig.
(Constant)	11.037145	23.138	0.000
Size	0.008	3.272	0.001
bedroom	0.156	3.210	0.002
floor	-0.039	-0.075	0.931
Elevator	0.009	0.017	0.975
toilet	0.007	0.011	0.555
age	0.103	2.205	0.003
balcony	-0.087	-1.446	0.015
minidistrict3	-0.621	-7.813	0.000
minidistrict13	-0.474	-6.543	0.000
minidistrict6	-0.478	-6.125	0.000
minidistrict11	-0.314	-2.928	0.004
minidistrict4	-0.267	-2.611	0.010
minidistrict5	0.136	2.062	0.041
R²	74.1%		
F-statistics	47.046		

6. CONCLUSION

This study empirically examined the predictive power of HPM which determines the intrinsic value of each attribute or characteristic and is also valuable tool for all the different agents that form the real estate market: buyers and sellers, owners and investors, builders and resellers, and banks and fiscal authorities.

It may be the first study that employs HPM for Tirana. The coefficients show that most of the independent variables are highly significant and indicate an expected correct relation with the price. However, some variables though they exerts expected sign they do not seem to be significant.

More specifically, floor level does not seem significant and shows that Albanian household prefers to buy apartments in the lower levels of the building. Similarly, the variable balcony is not significant because it indicates that Albanian household seems to be more rational and ask for more space inside the apartment rather than balconies.

The main limitation of this study which at the same time may also, be a suggestion for future research is the unavailability of data and inability of creation of other location and neighbourhood attributes and variables for Albania in general and capital Tirana in specific.

BIBLIOGRAPHY

BBall, M. (1973). Recent empirical work of the determinants of relative house. Urban Studies, vol. 10.

Carroll, T. M., Clauretie, T. M. & Jensen, J. (1996). Living next to godliness: Residential property values and churches. Journal of Real Estate Finance and Economics, vol. 12,, 319-330.

Chau,et al. . (2001). The pricing of "luckiness" in the apartment market. Journal of Real Estate Literature vo. 9. no 1., 1- 22.

Chen, C. J. (2009). Value of scenic views: Hedonic assessment of private housing in Hong Kong. Landscape and Urban Planning, volume 91, 226-234.

Clapp, J. M. (1998). Residential hedonic models: A rational expectations approach to age effects. Journal of Urban Economics, vol. 44, 415-437.

Freeman, A. M. (1979). Hedonic prices, property values and measuring environmental benefits: A survey of the issues. Scandinavian Journal of Economics vol. 81, 154-171.
Garrod, G. a. (1992). Valuing Goods' Characteristics: An Application of the Hedonic Price Method to Environmental Attributes. Journal of Environmental Management, 34, 59-76.

Herath, S. a. (2010). The hedonic price method in real estate and housing market research. A review of the literature. SRE - Discussion Papers, WU Vienna, University of Economics and Business, Vienna.

INSTAT. (2012). Population and Housing Census 2011. Tirana: INSTAT.

INSTAT. (2014). Albania dwelling and living conditions.Tirana: INSTAT.

Kohlhase, J. E. (1991). The impact of toxic waste sites on housing values. Journal of urban Economics, vol.30, 1-26.

Lancaster, K. J. (1966). A new approach to consumer theory. Journal of Political Economy, 74(1), 132-157.

Leggett, C. G. & Bockstael, N. E. (2000). Evidence of the effects of water quality on residential land prices. Journal of Economics and Management, vol. 39,, 125-141.
Rodriguez, M. & Sirmans, C. F. (1994). Quantifying the value of a view in single-family. Appraisal Journal vol. 62,, 600-603.

Rosen, S. (1974). Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. Journal of Political Economy, Vol. 82, Jan./Feb., 34-55.