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## Spatial analysis of factors acting upon housing prices in Istanbul

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**Spatial analysis of factors acting upon housing prices in Istanbul**

**Abstract**

Istanbul is a rapidly growing world city. Situated in an important strategic position on the Bosphorus Strait straddling two continents, Europe and Asia, it has served as the capital of the Roman, Byzantine and Ottoman empires. Istanbul holds a highly rich culture and history. As for today, Istanbul is the most important trade, culture and tourism center of Turkey. Following the rural urban migration of mid 20th. century, housing prices increased rapidly. Lower income groups failed to catch up with this increase and squatter “gecekondu” housing emerged. Hence, the city went through a process of growth without sufficient physical and social infrastructure. Lack of identity happened to be an important indication of the process. The historical neighborhoods also had their share of the negative impacts through this process. While the prices in the squatter housing areas were lower, modern housing areas proliferated with their new images and much higher prices, accordingly. New subcenters, augmented with the building of new bridges, new circular roads and their accompanying transportation facilities, caused the prices go even higher. Due to these reasons, cost of housing in Istanbul presents a wide variety according to locale and housing characteristics. This paper aims to analyze the factors acting upon housing prices according to location and find out guidelines that may direct investors for more efficient housing investments.

**Keywords:** Istanbul, housing prices, factors, location

**1.Introduction**

For the last 2,000 years Istanbul has been a world city. Situated in an important strategic position on the Bosphorus Strait straddling two continents, Europe and Asia, it has served as the capital of the Roman, Byzantine and Ottoman empires. Today it may no longer be the government seat of Turkey, but it remains Turkey’s largest city and very much its cultural and commercial capital, with over 13.5 million inhabitants. Istanbul is a megacity and the 21st. largest city in the world. After 1950s, due to rural urban migration, Istanbul went through a period of rapid growth, during which enough housing supply was not provided, parallel with the increasing population. A rapid increase in housing prices emerged with which lower

income population could not catch up. Squatter housing “gecekondu” emerged as a result of this phenomena. The city grew in size without the necessary infrastructure and social amenities. Squatters proliferated without any concern for urban identity on the one hand while historical neighborhoods were dilapidated by rapid migration on the other hand. Squatter areas and historical neighborhoods were relatively cheaper compared to new developing urban neighborhoods which happened to have a modernistic urban image. Demand for the new urban neighborhoods was high and so was the housing prices. With the growth of the city new subcenters emerged, with the Bosphorus bridges and their circular roads urban transportation patterns changed, which brought along a major effect on housing prices. Therefore, housing prices in Istanbul display a wide variety depending on the district and the properties of the housing itself. This paper aims at analyzing the factors acting upon housing prices in an effort to reach basic trends that may help investors.

In order to have a stable housing market in a city, the districts should have environmental and social equalities. This is not the case in Istanbul. Income inequalities is also an important factor. General characteristics of the housing, changing socio-economic structure are factors acting upon spatial preferences. Deterioration of the housing is another impact on moving to other districts. Intercity mobility causes some districts to lose population while others’ popularity raises. All of these factors act upon housing prices.

There is a sizable literature on housing prices, including how the properties, environmental qualities and transportation possibilities of housing effect the prices. Kain and Quigley (1970) studied the factors acting upon housing prices in St. Louis. In their study, they observed that housing qualities differed as the distance from the center increased. As the distance to the center increased, so the qualities of the housing. This erased the negative impacts of the distance. The conclusion was, what dictated the price of the housing was the quality. Rosen’s theoretical work (1979) on hedonic housing prices, shed light on housing market and presented a detailed model for relevant work. In 1978 study of Boukhov, Ginsberg and Werczberger, characteristics of the house itself, the building in which it existed, neighboring buildings, neighborhood and the locale in the urban area were considered. According to the conclusions, maintenance of the building, the number of houses in the building, number of houses in the neighborhood were found significant as having the highest impact on housing prices. In 1993, Curto, Bravi and Fregonara studied the housing prices in Italian cities, both in the central and the peripheral urban areas. As a conclusion, they found out that restored housing in the central areas, easy transport in the peripheral areas were significant in housing prices.

As well documented by the voluminous literature on third world urbanisation, it was through populist urban regimes, based on the commodification of land and the partial application of property and zoning rules, that these cities expanded geographically and demographically (Fernandez and Varley, 1998; Gilbert and Gugler, 1982). In the absence of a formal social housing policy, the informal market became the only mechanism through which growing urban populations could be absorbed. This particular solution to the “housing problem” was also extensively used in Istanbul, where housing provision to low income groups relied on

land appropriation and city squatting (Senyapılı, 2000; Keyder, 2000; Bugra, 1998; Erder, 1996).

In Istanbul, the transition to a neo liberal urban regime started after 1980, which also marks the beginning of economic liberalization of Turkey. Under the mayorship of Bedrettin Dalan (1984-1989), turning Istanbul into a “world city” became the main goal of the newly empowered metropolitan municipality, with massive infrastructural investments and development projects (Keyder and Oncu, 1994; Bezmez, 2008; Ekinci, 1994). Big capital rapidly entered the real estate sector, leading to the proliferation of high rise office buildings, mass housing projects, malls, gated communities, luxury hotels and new transport networks (Genis, 2007; Oncu, 1998).

This study investigates the impact of housing quality and the environmental quality on housing prices both in central and peripheral districts of Istanbul. Statistical model involved in the study is Multiple Regression. Hypothesis and Methodology is explained in Section 2, while Regression Analysis and Conclusions are discussed in Section 3. Section 4 is devoted to discussion and proposals for further research. Figure 1. shows the major districts and the factors significant for those districts.



**Figure 1.** Istanbul showing the locations of districts

## 2.Hypothesis and Methodology

Literature review and the study of housing cases in Turkey indicated that an important group of variables acting upon housing prices were the physical qualities of the housing and the immediate environment of the housing. This was taken as the hypothesis: “The physical

properties of the housing that indicate the quality and the environmental quality act upon the prices”.

A questionnaire was administered to citizens from districts within the metropolitan area of Istanbul in order to get their subjective evaluations. The planned, legal areas within the scope of real estate market were taken. The districts taken as sample were picked according to their socio-economic structure. The central districts and their neighboring districts and the districts that have pattern of population increase were considered. If the district consisted of different socio-economic subgroups, only the ones consistent with other districts were included. This was done in collaboration with real estate marketing offices.

In 15 districts of Istanbul, around 1500 samples were taken. Besides socio-economic homogeneity of the sample areas, the housing chosen were supposed to have no major differences. Listed historical houses, single family houses, housing with maximum and minimum values, housing with least frequency were excluded from the samples. A total of 52 questions existed in the questionnaire. The questions categorized in 4 groups and were about the house and its environment. The first group of questions were about the location of the housing, the second group included questions about the building in which the house existed. The third group of questions were about transport and environmental amenities. The fourth group of questions were about the total area, number of rooms and balconies including the materials used all over the house. The study was based on field work conducted in the mentioned districts of Istanbul between 2007-2008.

### 3. Regression Analysis

Housing price was taken as the dependant variable while all the other 51 variables as independant. Due to a large number of variables taken in the study, the variables were grouped by Factor Analysis, in order to obtain less number of variables to work with. So Regression Analysis was done with 7 variables. Variables were grouped according to **1.quality, 2.total area, 3.number of rooms, 4.number of houses in the building, 5.age of the building, 6.view, 7.availability of parking**

SPSS 11 was used for statistical analysis. Analysis is done for overall Istanbul and for the districts seperately. As for the part where overall Istanbul was studied, average housing quality was graded as 5.02 over 10, which is an indication of a **medium** quality. As for the frequencies according to **variable 1. quality**, frequency is very little as far as high quality housing is concerned. Higher frequencies were observed in medium and low quality buildings. As for the **variable 5. age of the building**, the average is found to be 18.7 years and the majority belonged to 0-25 years of age group. This is an indication of the rapid growth of the city and an undergoing renewal process. As for the **variable 2. total area of the house**, an average of 118.6 sq. meters, as for **variable 3. number of rooms**, an average of 2.8 rooms and an average of 32.0 sq. meters living room area is found.

As for the average price for housing, it is found to be 80.728\$ and unit price per sq. meter is found to be 528\$.

Regression Analysis is done considering the unit price per sq. meter as the dependent variable. Quality of the building, total area of the house, number of rooms, living room area, age of the building, view and availability of parking are all taken as the independent variables.

As for the data on number of houses in a building is considered, it was not available for all districts. So it was not included in the overall Istanbul analysis. All the variables included in Regression Analysis are found to be significant on the housing price, quality of the building and the total area of the house led in significance. Age of the building and availability of parking area followed in significance.

According to Regression Analysis in districts, it is found out that, in older districts like Beyoglu and Fatih and in squatter districts like Umraniye and Gaziosmanpasa, the factors acting upon housing prices were fewer in number and  $R^2$  value is low.

In Besiktas, which happens to be a central waterfront neighborhood, quality of the building, total area of the house, availability of parking area turned out to be most significant factors respectively.

In Kadikoy, which is a higher income district, number of houses in the building and availability of parking are found to be most significant in housing prices.

In Sisli, a central older district, the overall area of the house, availability of parking area and age of the building are found to be significant factors acting upon housing prices.

In Uskudar, a traditional historical waterfront neighborhood, quality of the building, availability of parking area, age of the building and view are found as being significant factors. Number of houses in the same building is found to have a negative impact on the housing price. Inadequacy of parking area seems to increase the significance of parking variable. As far as the location of this district is concerned, it faces the Historical Peninsula and the Topkapi Palace. Having one of the best panoramas in the city increases the impact of the view factor.

In Bakirkoy, a Marmara Sea waterfront district, quality of the building, availability of parking area, view and number of houses in the building are found to be significant on housing prices. Number of houses in the building have a negative impact on the price. Being a higher income district and a waterfront location increases the impact of view and availability of parking area factors.

In two districts facing each other on the Bosphorus waterfront, Sarıyer and Beykoz, quality of the building and view are the most important factors acting upon the price.

Although Kartal, Maltepe and Pendik are three Marmara Sea waterfront districts, view factor is not found to be equally significant. View is more effective on the housing price in Maltepe and Pendik. Quality of the building is equally significant in the three districts. Availability of

parking area is most significant in Maltepe, apparently due to having more shopping facilities. In Pendik, number of rooms in a house is found to be significant.

As for Kucukcekmece, which is a rather peripheral waterfront district, quality of the building, view and total area of the house are found to be significant, respectively.

To sum up, total area of the house, availability of parking and view are the most significant variables acting upon housing prices in the majority of the districts included in the study.

#### 4. Conclusions

The mounting of infrastructural and socio-economic problems caused by Istanbul's unplanned and unregulated growth makes significant interventions into the built environment, in the form of housing prices. According to the results obtained from this study, housing prices in Istanbul commonly depend on the environmental characteristics of the districts and the building qualities. Similar studies can have an impact on the reshaping of the city and in land use decisions. As for the real estate sector, similar studies can help in decision making and criteria arrangements of housing prices. Also for providing scientific data base for the investors and the buyers/ citizens alike, the study is sure to provide better estimates of real estate prices.

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