CHANGING ECONOMIES OF SCALE IN HOUSING PRODUCTION AS RELATED TO SUPPLY AND DEMAND FACTORS

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ABSTRACT

CHANGING ECONOMIES OF SCALE IN HOUSING PRODUCTION AS RELATED TO SUPPLY AND DEMAND FACTORS

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Studies investigating housing production tendencies in cities report that, due to the increase in car ownership and growing concern for healthy living environment, conventional apartment building, built on single parcels has become inadequate to meet households' housing preferences. As a result, demand for living in housing estates, which provide preferred amenities has increased. There are indications that income elasticity of housing demand has increased, implying that such housing is considered as luxury goods at which willingness to pay is expected to rise with the changing demand.

This dissertation is based on the observation that there is an increasing trend in the production of large scale housing estates endowed with prestigious attributes at the outskirts of the cities where land prices are low in Turkey. Thus, the hypotheses of the thesis were defined as house builders can be expected exploiting cost advantages by expanding their scale of housing production; households' increasing willingness to pay for such housing estates is triggered by Veblen and Bandwagon effects and the housing developments endowed with prestigious

attributes that require land at the outer regions of the city would have lower floor area ratios.

The methods that are used in the empirical analysis of this thesis are hedonic and logistic regression analyses. The results of the empirical studies point out that, households are searching for distinctive living areas endowed with prestigious attributes that are no longer provided in inner cities. Increasing demand for such housing estates results in increase in prices which lead house builders to produce more. Thus, house builders are producing more dwelling units, by managing to raise floor area ratios for their plots, in order to increase their revenue and profit rather than to achieve scale economies.

Key words: Housing Production, Scale Economies, Supply, Demand, Housing Attributes

ÖZ

ARZ VE TALEP FAKTÖRLERİ ALTINDA KONUT ÜRETİMİNDE DEĞİŞEN ÖLÇEK EKONOMİLERİ

Nurel, Semin

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Şehirlerdeki konut üretim eğilimlerini inceleyen çalışmalar, artan araba sahipliği ve sağlıklı bir ortamda yaşamaya yönelik artan endişenin sonucu olarak; geleneksel şekilde tek parsel üzerinde yapılan konut üretiminin, kişilerin konut tercihleri karşısında yetersiz kaldığını ifade etmektedir. Bununla birlikte, en çok tercih edilen konfor unsurlarına sahip sitelerde yaşama talebi gün geçtikçe artmaktadır. Bütün bunlar sonucunda gelir esnekliğinin arttığına ve konutun artık lüks tüketim malı olarak algılandığına dair belirtiler oluşmaya başlamıştır. Buna bağlı olarak artan talep ile birlikte hanehalklarının bu tür konutlara yönelik ödeme isteklerinde de artış beklenmektedir.

Bu tez, son yıllarda arazi fiyatlarının düşük olduğu şehrin çeperlerinde artan farklı özellikler ile donatılmış büyük ölçekli konut üretimine yönelik gözleme dayandırılmaktadır. Bu sebeple çalışmanın hipotezleri, büyük ölçekli üretim yapılması konut üreticilerine maliyet avantajı sağladığı, şehrin çeperlerinde daha düşük emsalere sahip konut sitelerinin alan gerektiren prestijli özellikler ile donatılmış olduğu ve hanehalklarının da bu tip konut sitelerine yönelik artan istekleri talep eğrilerini bozmaktadır.

Tez de ampirik model olarak hedonik ve lojistik regresyon analizi kullanılmıştır. Modellerin sonucunda hanehalklarının kent içinde sağlanamayan prestijli özelliklere sahip farklı yaşam alanlarında yaşama isteği ortaya çıkmaktadır. Bu tip konut sitelerine yönelik talebin artması fiyatların yükselmesine sebep olmakta, bu da konut üreticilerini daha çok üretmeye teşvik etmektedir. Bu sebeple konut üreticileri emsal değerlerini yükseltmeyi başararak, ölçek ekonomilerine ulaşmak yerine artan fiyatlardan elde edilen yüksek kardan daha çok yararlanmak amacı ile çok konut üretimi yapmaktadırlar.

Anahtar Kelimeler: Konut Üretimi, Ölçek Ekonomileri, Arz, Talep, Konut Nitelikleri

To my family and parents

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AP	: The average product
ATC	: Average Total Cost
AVC	: Average Variable Cost
CRS	: Constant returns to scale
D	: Demand
EVDS	: Electronic Data Delivery System
FAR	: Floor Area Ratio
FC	: Fixed cost
GDP	: Gross domestic product
GNP	: Gross national product
HU	: Housing Unit
ICESCR	: International Covenant on Economic, Social, and Cultural Rights
K	: Capital
Konut-Der	: Konut Geliştiricileri ve Yatırımcıları Derneği
L	: Land
LR	: Long-run
LRAC	: Long-run Average Cost Curves
MC	: Marginal Cost
MES	: Minimum efficient scale
MP	: Marginal product
SR	: Short-run
SRAC	: Short-run Average Cost Curves
TCMB	: Turkish Central Bank
TOKİ	: Housing Development Administration of Turkey
TP	: Total product
TUİK	: Turkish Statistical Institute
TVC	: Total variable costs
VAT	: Value Added Tax

CHAPTER 1

INTRODUCTION

1.1 Aim and The Subject of The Study

Housing, which is a home, shelter and a physical place for moral values that keeps family together, is one of the basic needs of human beings. It is such an important concept that, in the Universal Declaration of Human Rights in 1948, Article 25; it is emphasized as;

> ...everyone has the right to a standard of living adequate for the health and well-being of himself and of his family including food, clothing, housing, and medical care and necessary social services and the right to security in the event of unemployment, sickness and disability...

Also, International Covenant on Economic, Social and Cultural Rights (ICESCR); identifies right to housing under the right to adequate standard of living in Article 11. It is stressed that adequate housing requires, security, privacy, space, and basic infrastructure. It fulfills not only physical needs by providing security and shelter but also psychological needs by providing privacy. It reflects the households' tastes and preferences both in psychological and spatial terms. Thus, it represents concrete and abstract concepts in its structure.

Due to its multi-functional structure; housing has been subject to various studies in many dimensions, such as social, cultural, and economic conditions. Economic dimension of housing sector and the analysis of supply and demand conditions are the focal points of this study.

Housing has been considered as one of the most important goods in an urban economy because it is one of the basic economic indicators in the determination of the level of economic activity in an urban area. It has not only been analyzed

according to its structure and built-in facilities like amount of space, design and quality but also outdoor features such as estate characteristics, neighborhood quality and location. On the account its multi-level definitions and functions, it involves many disciplines and actors in the production process. Therefore; the studies regarding to housing market covers many discipline within.

Being both consumption and an investment good, housing have different meaning and understanding for both house builder and households. Considering the fact that housing market displays the classical features of microeconomic supply and demand principles; in the context of production of housing, house builders try to minimize their costs in order to increase their profits and households try to maximize their utilities by choosing the options which satisfy their needs the most.

In simple terms; the house builders should have enough capital accumulation and institutional capacity. With the increasing population in cities and technological developments in construction industry, house builders tends to produce large amounts by which they are able to reduce their costs and reach economies of scale. To do so, house builders can use their technical capacity, they can concentrate on the division of labor, they may use their marketing power, or they can use financial instruments. However, these can only be achieved by the firms which have enough capital accumulation, institutional capacity, and competitiveness. Thus, the size of the firm becomes important in achieving scale economies and designing customer oriented production strategies.

In addition, household's demand for housing is defined according to their priorities, tastes, and preferences. However, defining it as a place to live, valuing it and putting a price is not simple because it has not only structural and locational amenities that affect the price but also behavioral sides for households. Recent studies point out that, households may not always behave rationally in their decision making process. In fact it is said that utility function of an individual also

covers other goods which are consumed by other individuals. Households may act under the influence of other people in order to gain more prestige and to be part of an elite group. So demand becomes non-functional which is constructed under Bandwagon, Snob, and Veblen effects. Thus, housing consumption decision is determined according to not only structural amenities or budget constraints but also other households' consumption behavior in the market.

In the global world order the relation between the supply and demand conditions have become more complicated in the context of housing. Citizens who shift their tastes and preferences according to the needs of contemporary urban life focus on searching for better living areas and better urban housing that creates a new spatial order. This new spatial order requires not only higher quality physical environment but also areas of social, cultural, and economic facilities which directly affect production style and marketing strategy of house builders.

Considering the new production approaches of house builders and the priorities and the needs of the households, requirements for the new housing developments can be provided in a limited extent in inner cities. Furthermore, households' desire to escape from overcrowded and overregulated cities supports the suburban growth and somehow defines the development strategies of house builders.

In the case of Turkey, demand and supply conditions in the housing sector have been transformed not only because of the needs, economic conditions, tastes, and preferences of the consumers but also of the production and investment power of the construction companies.

Previously, Turkish cities faced a rapid urbanization process in a very short period of time due to the increase in population depending on migration from rural to urban areas. Related to that, the production of urban land and housing provision became very important issues in the urban planning discipline. Especially in the

1980s, some large cities which had the highest share in the rural-urban migration, dealt with the problem of uneven and unqualified spatial growth in Turkey.

Regarding, housing production mainly based on demand driven sector and supply was dominated by small capital house builders. At that time, even unauthorized housing was evaluated as a form of housing provision. Nevertheless, the construction sector was not ready for considerable investments; thus the housing production refers to the production of single apartment buildings on small parcels in the city.

With the effect of the globalization, like any other cities in the world Turkish cities have experienced not only social and economic transformations but also spatial renovations. Increasing concerns for the healthy living environment in the cities have redefined the tastes and preferences of the households. Households have begun to search for new attributes and features in their living environments. Thus, built in single parcels has become inadequate to meet housing preferences of households.

However, with the growth of metropolitan cities and urban regions towards the fringe areas, large parcels have been created, which stimulated emerging large-capital construction companies to invest on such plots to produce housing estates aiming to meet the demand, which is shaped according to the new tastes and preferences of the households. The tendency of moving towards outer areas of cities where land prices are lower simultaneously accelerated the production of large size plots and attracted many construction companies to invest there. The intensive construction investments at outer areas of cities began to affect the direction of the urban development not only in physical but also in social terms in cities.

This has gone beyond satisfying housing demand by creating its own supply structure that has also led consumer preferences change in the same direction.

Households' willingness to pay for such housing has increased. Some large capital construction companies presently have the opportunity of producing large number of housing, with extra and luxurious amenities such as parking areas, security systems, sports grounds, and swimming pools. Such amenities make people choose whether to live in the city with less comfort or out of the city under more preferable conditions. In other words, housing provision has been endowed with newly characterized attributes.

Considering all these developments, involvement of many large-capital construction companies in housing production with new marketing strategies based on large scale production of housing geared up with new attribute endowments.

Especially in the last ten years, general trend in housing production has shifted to produce large scale estates designed in multi-story buildings in Turkey. The house building industry in Turkey is concentrating on producing housing in large estates that also contributes to the rise in housing production. Studies have shown that as the households' income and welfare levels increased; their desire for better quality living conditions increased as well.

Households' search for improving living conditions resulted in high income elasticities for housing of upper income households who have high preferences for such housing, endowed with high priced attributes. It can be said that such housing has become luxury good in the housing market. This approach of households reflected on the built environment as the production of new types of housing, designed as large scale housing estates with high quality structures that directly affect production style and marketing strategies of house builders in the housing market. Thus, there has been a transformation in the provision of housing from standard units to luxury estates, particularly for the upper income groups.

In that sense, this thesis evaluates the reasons of producing luxurious attribute endowed housing estates in large scales. Investigation of scale economies that is expected to be created by producing large number of housing is the initial aim of this thesis. In addition to that, the effects of the shifts in households' preferences, new approaches of construction companies for housing production, the effects of their new strategies on consumer orientation in urban development will be investigated in this study. Thus, the hypotheses of the thesis were defined as house builders can be expected exploiting cost advantages by expanding their scale of housing production, households' increasing willingness to pay for such housing estates is triggered by Veblen and Bandwagon effects and the housing developments would have lower floor area ratio and endowed with prestigious attributes that require land at the outer regions of the city.

In this context, the study begins with the theoretical review of housing economics by examining related literature. The literature review part covers the study of published documents from past to the present regarding to housing supply and demand and the related theories of urban economics. In that sense, the aim of the literature review is to form a basis for the understanding of general structure of housing economics, to define the process of housing production from both consumer's and producer's sides, considering the scale economies within the selected issues, to analyze the availability and the possible effects of scale economies in the housing market. This section not only covers detailed literature review for both housing demand and housing supply in the traditional sense but also contains analysis of behavioral economics in order to evaluate possible psychological effects and human behavior in the context of non-functional demand in the housing market.

In the next section large scale housing production approaches in the world is analyzed in order to provide a comparative statement. That section puts great emphasis on the fundamental reasons for large scale residential investments by underlying various approaches of large scale house building in the world. In order

to understand the overall situation of the large scale developments in the world, the subject focuses on the effects of the size of construction firms and product differentiation on the production level and the relation between the households' preferences and satisfaction level in the housing market.

The following section gives information about general structure of the housing market by putting more emphasis on the large scale housing production in Turkey in the last ten years. The section analyses the relation between the housing policy applications and the housing production level and types in Turkey. It also puts emphasis on the historical development and the triggering effects on the emergence of the large scale production types in Turkey by giving case examples of the cases İstanbul and Ankara. In addition to that, the thesis covers general analysis regarding to the housing production tendencies in Turkey in order to define the meaning of large scale production and puts out general structures of large scale house builders in Turkey.

The last chapter before the conclusion chapter is on the field study of the thesis. The first part of this chapter covers a detailed examination of the studied housing estates in the Yaşamkent District. In this section, firstly a descriptive analysis regarding to housing estate, housing and dwelling unit attributes have been carried out in order to form a basis for the empirical part of the study and then a cross-tab analysis has been performed in order to examine the relations within the sampled housing estates. In the second part of the chapter, a hedonic regression analysis and binary logistic analysis take place in order to examine the price structure and housing attribute relation.

In the last chapter analysis and investigations made throughout the thesis are summarized. That chapter also finalizes the investigation of the research question of the thesis which is "*Why does house builder produce in large amounts?; in order to reach scale economies by reducing costs or to benefit from rising market prices to increase revenue and profit*?"

1.2 Methodology of the Study

Housing is an economic good which has unique characteristics and complex in nature, not only has it consisted of built-in equipment such as space, heating, sanity and such, it also includes outdoor facilities such as neighborhood quality, transportation facilities, recreational advances and all other economic and social activities that improve living quality (Ajide and Kareen, 2010). Regarding, it is inevitable that, it requires a comprehensive and detailed investigation.

Related to that, this study is constructed under four main steps. Firstly, a review of related literature has been made. Secondly, the approaches in the world and Turkey regarding to the large scale housing production and the households' behavior have been analyzed. Next, a detailed field survey has been executed in the case study area. And finally, thesis has been finalized, with statistical analyses of all the samples.

Yaşamkent District is selected as the case study area because it is one of the most rapidly growing residential areas of Ankara, which is located on the south-western development corridor of the city along the Eskişehir Highway, approximately 20 km. from the city center. The population of Yaşamkent almost tripled in the last ten years pointing out the rapid development in the area. The construction permits of the housing estates in the area shows that, residential developments in Yaşamkent have begun in the year 2000 and have significantly accelerated since the mid-2000s. The main reason of the rapid development is the availability of large tracks of land on which construction companies can develop large scale projects. Related to that, not only are there different types of housing developments; large-scale housing estates including low-rise ones, but also different types of house builders applying various construction methods. The availability of various types of housing developments makes it possible collecting wide range of data in the area.

The database employed in this study is generated by two methods. The first one is from the survey of construction permits, issued by Yenimahalle Municipality which covers date of permit, information on the construction firm that will undertake the construction, the land owner, number of buildings to be built on the plot, number of floors, number of dwelling units, size of the structure, construction materials, and indoor and outdoor attributes. Second one is on-site inspection in the research area. However, due to the dissimilarities of the permits and the misinformation regarding to the studied housing estates, the data was completed by on-site inspection by visiting each housing estate in the area. Descriptive statistics are expected to provide a quantitative way of evaluation of the site of the housing estate and physical structures that exist as well as preferences of both consumers and producers in that part of the housing market, which is crucial in this thesis.

The data set contains 38 housing estates which are sampled on the basis of having minimum 50 housing units across Yaşamkent. All of the sampled housing estates have been built between 2000 and 2015 for middle and high income families. Sampled housing estates vary in size and quality having between 50-620 housing units. Built-in and outdoor attributes also vary in the sampled housing estates. There are 5406 housing units and subsamples are defined according to the three sets of criteria; dwelling unit attributes, housing attributes and housing estate attributes. In addition, by analyzing 5460 housing units among 38 housing estates, 8 different types of housing units are defined according to the number of rooms. According to this classification, 66 different types of housing units are identified among all 5406 housing units.

Data regarding to typologies, types of housing units, number of rooms, square meters, price, landscape, daycare, garage, lot, number of elevators, security, alarm, commercial facilities, generation, pool, tennis court, fitness center, sport facilities, inset cupboard, number of bathrooms, jacuzzi, dress room, water tank

and types of heating, vestry, number of WC and types of kitchen are collected for each housing estate and each housing unit.

Considering the fact that, being one of the basic needs of human nature housing supply is suggested to be inelastic but this issue is not much studied in Turkey. In order to identify the effects of the housing attributes on housing prices hedonic pricing model is used. The theoretical foundations of the hedonic pricing model were introduced by Rosen (1974), who said that a commodity is sold with its many attributes. He defined the slope of the hedonic price function is inferred as the implicit price of its characteristics or attributes. The contribution of Rosen (1974), has led the way for empirical studies that target estimating the effects of various attributes on the price of housing. For example, Lancester (1966) used it for modeling heterogeneity of agents in terms of MRS between attributes of housing. Similar study was undertaken by Gabszewicz and Thisse (1979) for vertical differentiation. Moreover, Türel (1981) investigated the spatial differentiation of housing prices in Ankara by using the hedonic price index method. In addition to that, Boyle and Kiel (2001) and Simon and Saginer (2006), used hedonic pricing model for evaluating neighborhood amenities in order to find marginal willingness to pay.

In that sense, this thesis attempts to apply two different techniques to investigate the level of influence of housing attributes on house prices. Firstly, log-linear hedonic model is defined to estimate the influence of estate, housing, and dwelling unit attributes on price levels. Secondly, a binary logistic regression is employed to investigate the factors underlying the likelihood of pricing structure of the 38 housing estates.

The models used in this thesis based on the assumptions that the market contains heterogeneous housing supply and heterogeneous consumers. Housing stock differs according to dwelling unit and housing estate attributes. In addition, households differ due to economic conditions and behavioral characteristics.

Under these assumptions, firstly in order to find out the effects of the endowed attributes and the scale of the sampled housing estates on price; log-linear hedonic price function was formed, in which price is the dependent variable. The model was run for four times; for 5406 housing units, for 66 different housing unit types as well as, for the sampled housing estates which have above 200 housing units and for the housing estates which have above 100 housing units. Every housing unit is described by fifteen specific attributes.

Secondly, a binary logistic regression is used to analyze the relationship between tests the marginal effects of housing attributes on the probability of housing being priced above average price level for 5406 housing unit in the study area.

Although the significances of the variables differed in the models, the findings of the hedonic regression and the binary logistic regression supported each other.

CHAPTER 2

THEORETICAL FRAMEWORK OF HOUSING ECONOMICS

2.1 Introduction

Housing is a complex commodity which has to be examined in a different perspective. It has certain characteristics that distinguish it from any other economic goods. Firstly, housing is a durable commodity that can last for decades. It cannot be consumed in a single usage. It provides higher reliability on non-durable goods. It acts as a financial security element. Secondly, it is heterogeneous. It can be differentiated in terms of its location, physical structure, price and etc. Finally, housing is immobile. The spatial fixity of housing means that consumers come to the commodity rather than commodity goes to the consumer. Once it is built, it will stay still. Thus, if the location choice of the consumer changes in time, consumer will have to search houses at different location as it is impossible to move their housing. The durability, heterogeneity, and special fixity of housing indicates "a collection of closely related, but segmented markets for particular packages of underlying commodities differentiated by size, physical arrangement, quality and location" (Quigley, 1979).

These different characteristics of the housing load different functions on it. Housing is an adequate shelter that guarantees the necessary living conditions for people which reflects status of a family. It fulfills not only physical needs by providing security and shelter but also psychological needs by providing privacy. Also, it is an economic good that acts as a security element for the future. Housing can be bought for attaining a return or for using it. Therefore, it is both an investment and consumption good.

The unique characteristics and functions of housing are important economic indicators in an urban market. Thus, housing and residential construction are vital in the determination of the level of economic activity in an urban area. It affects the level and the shape of urban development and consumers' budget expenditures in a city (Quigley, 1979). As housing is one of the most valuable assets owned by the individuals, the share of income spent on housing corresponds to large fraction of total expenditure. In that sense, economics of housing mainly relates to the behavior and the resource allocation in the housing market (O'Sullivan and Gibb, 2003).

Housing markets can be studied both in macro and micro terms. The macro behavior of housing market mainly concerns the relationship between aggregate demand and supply. On the other hand, micro aspects of housing market put emphasis on spatial dimension depending on some assumptions (Robinson, 1979). In the housing market, it is assumed that consumers maximize utility and producers maximize profit. The market is perfectly competitive where housing is a single commodity that is produced by services of capital and land (McDonald, 1979). The operations in the housing market steer the allocation of the capital stock in the cities which results in the determination of the level of investment and the spatial distributions of suppliers and demanders (Muth 1969).

Although they have quite in common, housing markets are different from the markets of other heterogonous goods in some manners. Firstly, by its nature, they are spatial. Houses involve various types of lands and locations which are important amenities in the determination of the price level. Secondly, housing market involves both new and old houses. Housing market allows people to substitute between the new and the old housing estates which maximize their utility (Sheppard, 1999).

These perspectives of the housing market receive attention in terms of determinants of the demand by consumers and supply by house builders in the

urban areas and they indicate that housing market should be evaluated differently from any other competitive market.

The aim of this section is to observe the traditional and contemporary theories of housing supply and housing demand in order to evaluate the conditions of housing market in both households' and house builders' side. The first part of the section analyses the concept of housing supply by giving detailed review of related literature. This part discusses the economic behavior of firm in the market and investigates cost structures, business strategy and product design relation. The second part of the section puts emphasis on the housing demand by examining the different approaches of estimation of demand and consumer behavior in the market. The last part covers the hypothesis of the thesis.

2.2 The Economic Theory of Housing Supply and Demand

Supply and demand are the basic concepts of the economics. In microeconomic theory, supply represents how much the market can offer and demand refers to how much of a product is desired by consumers. Supply and demand relations constitute an economic model of price determination in a market. The price of a commodity is a reflection of supply and demand behavior.

Housing market displays quite similar classical features of microeconomic supply and demand principles. This section briefly discusses concepts of housing supply and housing demand that shape and determine the price levels in the housing market in urban economics.

2.2.1 Housing Supply

The basic law of supply can be defined as;

> the higher the price the greater the quantity offered for sale, the lower the price the smaller the quantity offered for sale all the other things being constant (Myers, 2004, p.66)

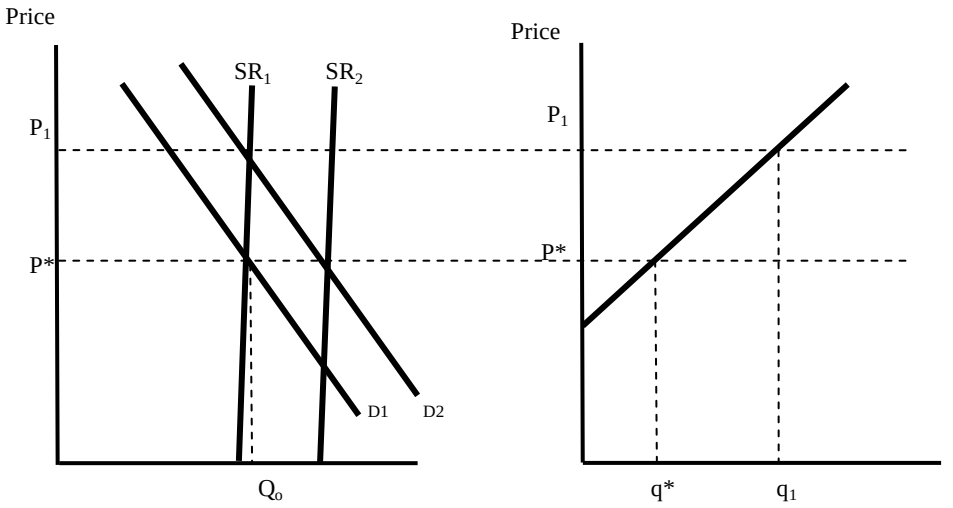
In other words, in a market economy, a supply of a produced commodity is expected to increase when relative prices rise or decrease when they fall (Cooke, 1996).

There are many studies about housing supply. Each study takes the issue from different perspective. Ball et *al* (2010) says that the variety of housing supply can be explained by both spatial and non-spatial reasons. They emphasized the fact that supply is changeable for international, national, local and company data. Glaeser and Gyourko (2003) compare housing prices among US cities and find that there is a strong correlation between prices and locational choices. Goodman (2005) considers locational impact on supply and finds that supply of housing is more responsive in city center with respect to suburbs. Price (2003) concentrates on the effects of market distortions caused by state intervention on housing supply.

Despite the fact that, housing supply displays classical features of microeconomic supply principles, due to the special characteristics of housing, it acts differently in the short and the long-run. Housing is such a durable commodity that, in a short period of time supply of housing is mainly determined by the stock of existing housing. The size of the stock can expand slowly even there is a high rate of new construction. Thus, the supply of housing responds slowly to the changes in demand conditions (Robinson, 1979). In other words, in the short-run, housing supply mainly refers to the stock of existing housing and demand plays the major role in the determination of housing prices and rents (Mills and Hamilton, 1993).

In Figure 2.1 (*i*) SR_1 indicates short-run stock of supply of housing. It is almost fixed with a small elasticity indicating the possibility of additions and withdrawals from the available supply. The small elasticity of SR supply curve is the result of

long period of time that housing production requires. Because of that reason, housing supply responds slowly to the changes in the price. Second part of the diagram (*ii*) indicates the short-run supply schedule for new housing, assuming that the rate of new construction is a function of current house prices. This specifies that the net change in the stock between the periods will be the difference between the new constructions and loses. Figure 1 shows that, SR market price for housing is at the point of the intersection between D_1 and SR_1. At the equilibrium price level (P*) the new construction is sufficient to maintain a constant stock which may described as long-run equilibrium (Robinson, 1979).



(*i*) SR Stock of housing

(*ii*) New Construction
(dwelling stock-net changes)

Source: Robinson, 1979, p.22

Figure 2.1 Short-Run Housing Supply

On the other hand, in the long run; housing supply refers to the new additions to the housing market. Housing prices are mainly set by construction and land costs or development costs (Mills and Hamilton, 1993). In the long run housing supply function can be written as;

$$s_t^* = \alpha_o + \alpha_1\, ph_t + \alpha_2\, cost_t + \alpha_3\, R_t + \varepsilon_t \qquad (1)$$

Where

s_t^* : housing construction

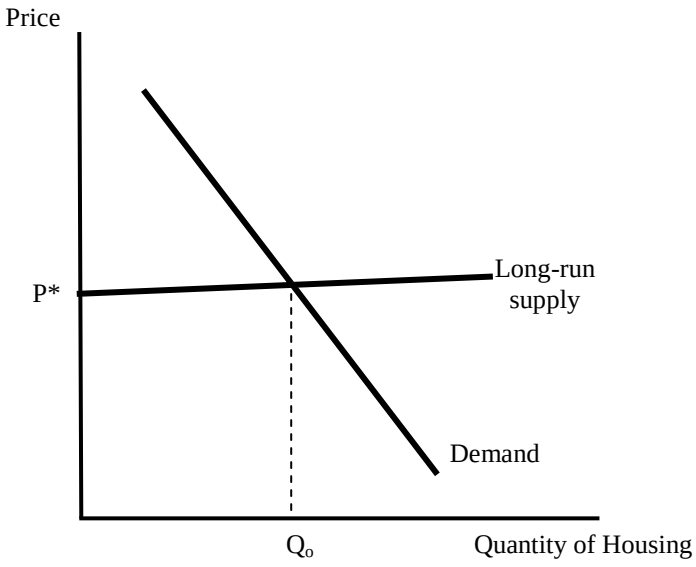
ph : index of housing prices

Cost : index of construction cost

R : short term nominal interest rate

* : LR equilibrium model

This equation provides an estimate for the long run price elasticity of supply. In a longer period, both capital and land can be expanded by increasing investment expenditures by new firms. Even there are no additions to the housing stock; the existing stock can be expanded by repairment, renovation, or improvement of existing stock. Related to that, elasticity of housing supply in the long-run is expected to be quite high (Bramley et *al*, 1995) (Figure 2.2).



Source: Pozdena, 1988, p.37

Figure 2.2 Long-Run Housing Supply

In housing markets housing supply is less understandable than housing demand, considering elasticity. Ball et *al* (2010) indicate that; house prices, construction

cost, credit cost, credit availability, topology, land use registration, uncertainty, impact fees, time on market, whether spatial spill-overs may be used for the estimation of supply elasticity. Thus, there are many inputs that are used in housing supply with different supply characteristics, which cause wide range of estimates of elasticity of supply; zero to infinity. It is expected to be zero in declining cities and +1 in growing city (Goodman, 2005). Low elasticity implies upward trend in house prices, whereas high elasticity suggests price is stationary.

In addition, the variation in the estimation results may also be due to the application of different approaches (Ball et *al*. 2010). They emphasizes the fact that, early studies on elasticity take house prices as dependent variable in reduced form approach at which elasticity of supply can be analyzed under assumptions about demand elasticities. However, recent studies cover more direct approaches where housing supply is connected to a set of price and cost indicators. Related to that, supply equations are constructed as a part of a system on the stock adjustment approach that allows estimation of price elasticity as well. The stock adjustment approach has an equation system which can be expandable for new construction, property transactions and construction cost (Andrew and Meen, 2003). Furthermore, Meen (2005) strongly emphasize the fact that variety in housing price elasticity is related with the application of different approaches to the system. By using different forms of reduced and flow form may result in different levels of elasticity. He shows that large construction activities in Britain would be necessary in order to reduce price trends to the EU average.

Besides, methodology used to estimate elasticity is important since elasticity of the existing stock and new construction is different. The model constructed by Grimes and Aitken (2010) shows that there is a link between house prices with house supply elasticity considering the land price dynamics and new construction. The model shows that housing supply will be more responsive to demand shocks where land is elastically supplied. Suppliers learn from their clients and they build houses that meet consumer preferences. By this way each unit of housing added

the stock tends to reflect both market preferences and construction technology. In LR consumer preferences and willingness to pay play the major role that defines the type and the configuration of housing. Di'Pasquale (1999) focuses on price elasticity as; new supply is price elastic, a higher income household is likely to move rather than to improve current housing unit as repair and renovation expenditures are known to be inelastic.

2.2.1.1 Actors in Housing Production Process

Housing supply considers not only construction of new housing but also redevelopment and repair, upgrade and change in the use of existing stock in a city. Related to that, housing supply is the outcome of complicated decision making by many actors and actions (Di'Pasquale, 1999). Not only house builders, existing house owners, planning authorities and designers but also market conditions and construction activities can affect the level of supply. Although the stages in production of housing are defined in a sequential manner, the determination of supply level relates to many stages and actors (Table 2.1) (Short et *al*, 1986).

Although the level of supply can be altered by many actors and stages defined in the production process, the structure of housing supply mainly depends on the nature of the construction industry. Stone (1979) identifies three main sectors within the industry. These are the ones responsible for;

- Planning, design and related work,
- Production of building materials,
- Production of actual building.

The production of housing involves activities within and between these sectors. During the production many firms with different characteristics may contribute to

the process causing market supply curve is made up of aggregating individual supply curves of each firm. Therefore, understanding the nature of the construction firm gives clues about the supply structure in the market.

Table 2.1 Stages and Agents in Residential Development

Stages	Agents
Land search and assembly	Landowners Estate Agencies Financial Agencies Planning Agencies
Development design and planning permission	Architects Planning Agencies Planning Authorities
Housing production	Architects Subcontractors Financial Agencies Public Agencies Construction materials' producers and sellers
Marketing and selling	Estate Agencies Building Societies/Banks Advertising Agencies Consumers

Source: Short et al, 1986, p.39

Construction firms can be classified in many terms such as, physical structure, size of capital. Although these classifications are important, they give little explanations about the general structure of the industry. Ball (1988) defines the term "social relations of production" for explaining the economic forces that defines the nature of the construction industry. There are two criteria to be mentioned. The first one is the economic organization of the firm. It indicates whether the firm is capitalist or not. Capitalist firms mainly focus on the profit making conditions. Their main goal is to expand earnings and investments. On the other hand, non-capitalist firms are small ones, which work with no profit. They

are mostly goal oriented without money considerations. The production takes place on a small scale with few workers. These firms mainly governmental based.

Second characteristic relates to the type of market structure in which the firm builds either speculatively or by contracting. Speculative builders own the realty improvement projects. Acquisition of land is part of the construction process. They build with the intention of selling finished product. Therefore, time to build is short. On the other hand; contracting includes construction, remodeling, repairs, and demolition of a real property. Contractor build project for clients. Land acquisition is not their responsibility.

Barlow (1999) emphasizes the fact that house building industry has to redefine itself in order to meet the demographic and social demands of the consumers. However, it is not an easy task because it means lowering the initial and life cycle cost of housing. This new approach to housing supply relates not only meeting customer needs but also providing greater adaptability for new needs. He says that there are two major challenges for house builders. For short term, they have to lower the construction cost while improving quality and functionality. For the long term, they have to increase the attractiveness of new housing to consumers.

The first challenge relates improving technical and organizational efficiency which is unlikely to be achieved under traditional approaches. Second challenge on the other hand relates to redesigning the existing housing types in order to make them more attractive. He says that improving customer focus on housing building process cause integrating market intelligence with design so that customer preferences are directly merged into the production process. He also suggests that in order to meet the requirements of the consumers there is a need for innovation in institutional structures.

2.2.1.2 Economic Behavior of The Construction Firm

In general terms;

> A firm is an organization that brings together different factors of production, such as labor, land, and capital to produce a product or service which it is hoped can be sold for a profit. (Myers, 2004)

In a market economy, main goal of a firm is to produce output by maximizing profit and minimizing cost. Typically production function is;

$$Q = f\,(land, labour, capital, \mathbf{X_1}, \mathbf{X_2}, \ldots . \mathbf{X_N}, R) \qquad (2)$$

where Q denotes maximum output in a given period of time, f "means a function of," land, labor, and capital, which are the factors of production, X_1, X_2, ….X_N implies any other inputs and R is the returns to scale parameter (Cooke,1996). The analyses of production function vary in short and long run. In the short run analysis it is assumed that capital is fixed and the amount of land is invariable. So the only variable factor is labor. However, in the long run, it is assumed that all factors of production can be varied. The assumptions regarding to the short and long run are important for the determination of the cost structure of the firms.

2.2.1.2.1 Short-Run Costs and Production Function

Considering the fact that, the only variable factor is labor in the short run, output can only be increased by changing the level of work force. The Figure 2.3 illustrates relationship between total, average, and marginal products by different labor levels. The shape of the production function indicates the possible amount of physical output while adding one unit of labor holding other inputs constant. It shows that output increases as one more labor is added but without a constant rate. Total product (TP) of variable factor (labor) identifies what output levels are

possible to produce. The average product (AP) is the total production divided by the number of variable inputs employed. Marginal product (MP) is the extra output that can be produced by using one more unit of the input.

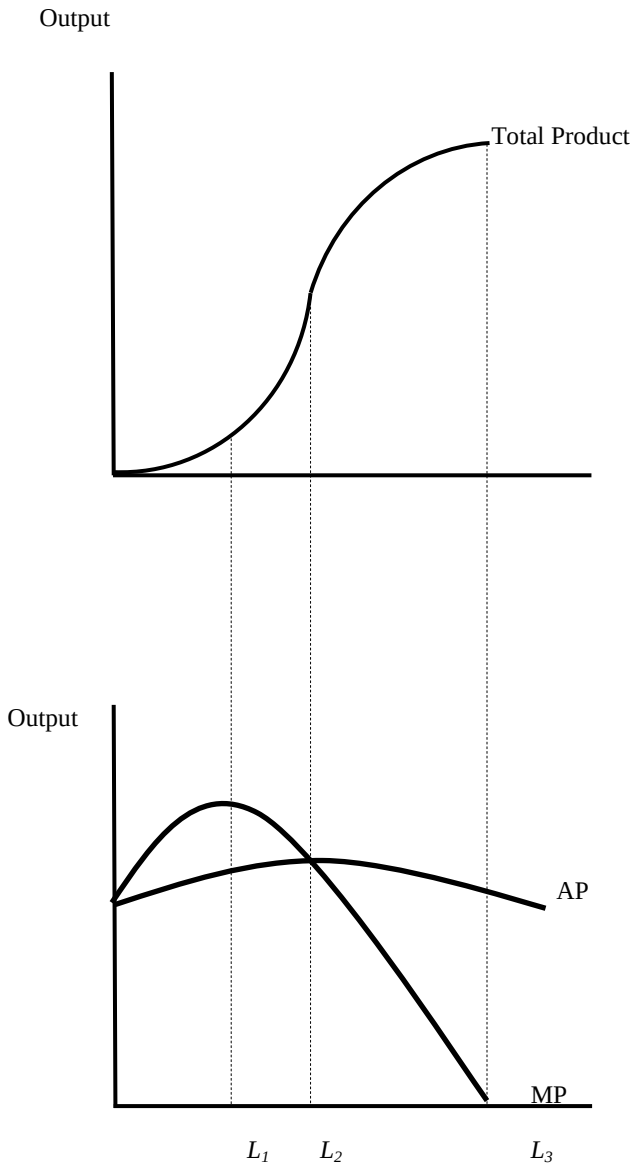


Figure 2.3 Total, Average (AP) and Marginal Product (MP)

When MP curve is greater than AP curve, AP is increasing. The point of intersection between MP and AP curves is also the maximum point of AP curve. When MP curve is below AP curve, MP declines. The relationship between

average and the marginal product is strongly related with *Law of Diminishing Returns*. In formal terms;"

> As the proportion of one factor in combination of factors is increased, after a point, the marginal product of that factor will diminish. (Myers, 2004, p.96)

In other words, diminishing return emphasizes the fact that, output does not increase in the same proportion with the increase in inputs. Short-run costs of a firm are reflection of the law of diminishing marginal returns.

A firm's total cost of production is the summation of fixed cost (FC) and total variable costs (TVC) (Equ. 3). Thus, firms' supply costs are determined through fixities and increasing factor prices (Briscoe, 1988). Costs which do not depend on the rate of production are fixed costs. In contrast with fixed costs, variable costs are highly sensitive to the production rate of a firm. The amount of variable costs rises by the increase of the output.

$$TC = TFC + TVC \tag{3}$$

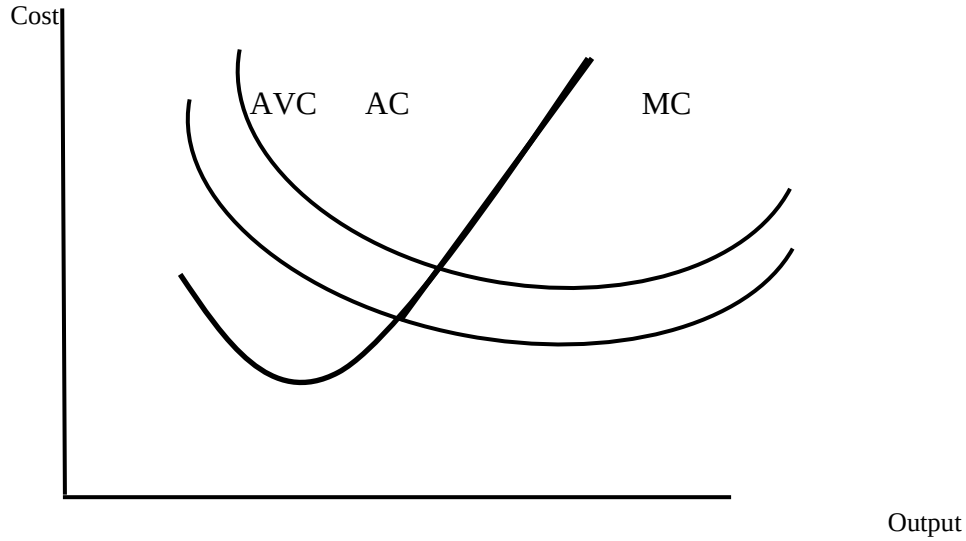
Table 2.2 Typical Construction Costs

Type of Cost	**Examples**
Variable Costs	Labor used on site Materials used on site Equipment used on site Site management Tendering for future contracts Cost of equipment
Fixed Costs	Head office bills for energy, water and rates Wages of permanent head office staff Bank interests and leasing costs A sufficient level of return to keep the entrepreneur in the industry

Source: Myers, 2004, p.99

Table 2.2 identifies typical construction costs in the short run. Fixed costs of a construction firm tend to be time related; for example, salaries and rents paid every month. Variable cost on the other hand, changes parallel to the level of quantity produced, so it is volume related.

In the short run, the firm may face a fixed cost even if it produces no output. If a firm produces no output it makes a loss equal to fixed cost. The firm's optimal decision is to produce no output if the price is less than the minimum of the firm's average variable cost. For this reason, firm's short-run supply function is the increasing part of its short run marginal cost curve above the minimum of its average variable cost (Figure 2.4) (Katz and Rosen, 1998).



Source: Katz and Rosen, 1998, p.306

Figure 2.4 Firm's Short-Run Average Fixed Cost (AC), Average Variable Cost (AVC), Average Total Cost (ATC), and Marginal Cost (MC) of Production

2.2.1.2.2 Long-Run Cost Functions

In the long-run, all factors of production are variable. Although a firm may develop many short run cost curves there will be only one for the long run. LR average cost curve will be obtained by enveloping all SR average cost curves. As illustrated in Figure 2.5; similar to SR cost curve LR cost curve is also *U* shaped. U shape for SR is the result of law of diminishing returns. However, as all the factors of production are variable in the LR, this law cannot be applicable. The *U* shape for the LR cost curve is explained through the scale economies.

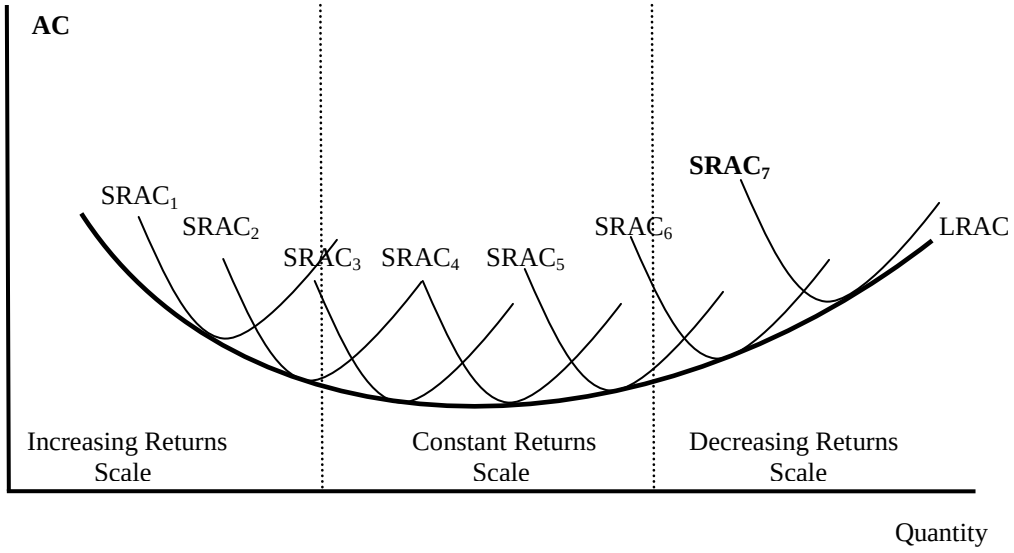


Figure 2.5 Short and Long-Run Average Cost Curves

The term returns to scale refers to changes in output with a proportional change in all inputs. There are three possible outcomes. If output increases more than that proportional change, there are increasing returns to scale. If output increases with the same proportional change then there are constant returns to scale (CRS). If output increases less than proportional change, there are decreasing returns to scale.

In the long-run perfectly competitive environment, when the long run average costs are minimized then minimum efficient scale (MES) is reached where excess profit of the firm is equal to zero.

2.2.1.2.3 The Effect of Scale Economies in The Construction Sector

Major statistics on population have reached the conclusion that by 2025 more than 80 % of the global population will be living in cities (Thorns, 2006). This condition puts emphasis on the urban land use, type of built environment and the economic behavior of construction firms.

Inevitably, increasing population in cities will bring about shelter problem and the question of how the housing will be produced to meet the growing demand. The importance of this question is to determine whether to regenerate the existing stock or to produce new housing in order to solve shelter problem of the inhabitants. Regeneration of existing stock, considering new tastes and preferences of contemporary households is limited due to many constraints such as open space, built quality and etc. Although, existing housing is perfect substitute for new construction, it is inevitable that the need of increasing population for housing in cities will be satisfied through production of new housing in large numbers. However, housing production in large numbers has its own limitations due to economic and financial conditions of the construction firms and restricted supply of new land for development.

In order to produce in large numbers of housing, firms have to consider all economic aspects in order to reach the economies of scale as a part of market conditions. Bon (1999) indicates the fact; building is designed and constructed with their continual change. Previously building economics mainly concerns discounting principles, capital budgeting, cost-benefit analysis and other similar basic economic inputs. However, presently, construction of a building is no longer

considers only physical works and basic economics but also real estate management. Thus, economic profit does not only cover the numbers of construction facilities but also other inputs that stimulate sells as well.

Construction firms are forced to make new housing preferable in different ways as opposed to existing housing stock. Related to that, in such a competitive industry, firms have to be highly innovative in production. However, in the construction industry, it is very unlikely to be innovative due to slim and static profits that allow little opportunity to finance research in the long-run. Related to that, Myers (2002) points out, construction sector has to be redefined according to the contemporary concerns such as social progress, environmental protection and efficiently used resources that enable sustainability. Cooke's (1996) analysis shows that the construction firms act different from any other manufacturing firms and the conditions for economies of scale have to be redefined specifically for the sector. Due to the limited supply of new land and the special dynamics of housing, achieving scale economies in housing sector has been a struggle.

Regarding the conditions of housing sector, Myers (2004) defines five categories of scale economies in which construction firms can specialize;

1. *Technical Economies of Scale*; relate to the firms' capacity to have and use machinery as they become larger. It occurs when a firm invests new technology to increase production in order to reduce unit production cost. The main idea is to extend fixed cost over output.

2. *Managerial Economies of Scale*; relate to the specialization and division of labor. It occurs when large firms use specialists; accountants, marketing, lawyers, human resources and etc. in order to boast production by splitting production process. The aim of specialization is to enable workforce to produce more output efficiently. Employing specialists to supervise

production systems results in better management that improve productivity and reduce cost.

3. *Commercial Economies of Scale*; relate to marketing budget and advertising. It occurs when firms buy goods in bulk and benefit from discount. A large firm can extend its advertising and marketing budget over large output which enables it to negotiate discounted prices. Considering the prices of advertisement are the same for all firms, large firms are able to afford advertising cost without much difference in profits.

4. *Financial Economies of Scale*; relate to the access to various financial instruments. It occurs when firms become larger; they get more credit-worthy due to their valuable assets and lower risk conditions, which enable them to negotiate cheaper finance deals.

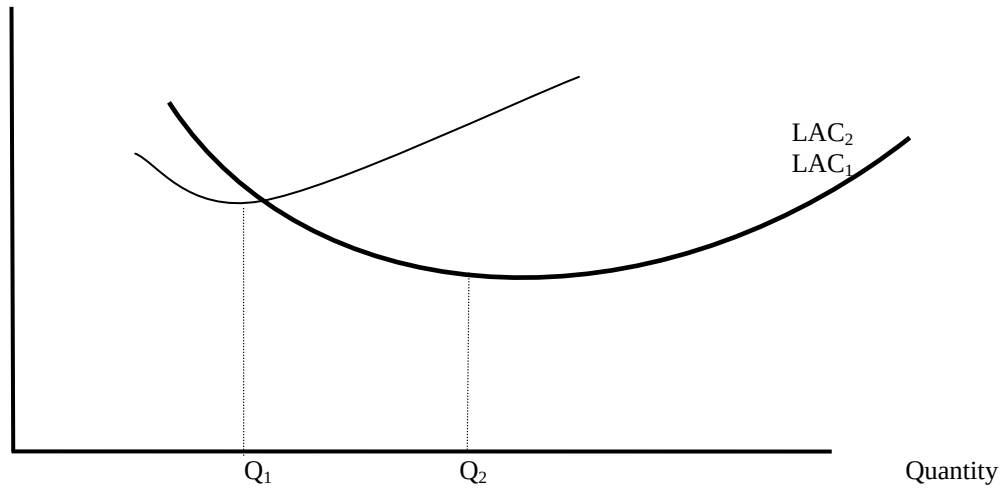
5. *Risk Bearing Economies of Scale*; relate to the firms' ability to bear loses. Business risks are less likely to affect large firms due to their economic power. Large firms are willing and able to undertake necessary investments which are risky with respect to small ones.

All these categories points out the importance of the size of the firm and standardization for achieving economies of scale. However, firms vary sharply in the construction industry according to the types of work they do, types of capital stock they use and etc. which make hard to make standardization and to define a general cost function. In addition to that, construction industry mainly differs from other sectors in their structure of the firm. Unlike any other manufacturing sector, the firms in housing are very fragmented. Mainly, there are few large companies but many medium sized firms (Douglas and Ransom, 2007). Thus, small firms act as price takers. This results in a limited level of cross information and feedback which causes fewer economies of scale. Resulting, the unique nature

of construction firms, and hardly predictable nature of the demand in the sector cause that even large construction firms may not achieve economies of scale.

Regarding, large firms suggest that there are limited economies of scale in the production of housing. Mainly scale economies can be reached lowering the unit cost of producing of housing unit by producing larger volumes (Pozdena, 1988).

In fact, studies show that number of housing units produced by the same firm from 50 to 300 units, decreases the cost per unit about 12 % . However, only a small number of construction firms can actually engage in such large scale production. This condition strongly relates to the time and place opportunities. For large tracts of land development areas, opportunities to exploit scale economies exist, however in developed areas opportunities for building large size housing estates are limited consequently achieving economies of scale could be less likely. Related to that, Myers (2004) defines economies of scale conditions in the construction sector as in the following figure.



Source: Katz and Rosen, 1998, p.306

Figure 2.6 Economies of Scale Conditions in the Construction Sectors

In the Figure 2.6 LAC_1 represents long run average cost of production of a typical manufacturing firm that achieves economies of scale. Its Minimum Efficient Scale (MES) point is Q_2. Whereas, LAC_2 represents long run average cost of production of a construction firm specialized on projects with lower level of standardization. Its LAC is positioned left side of the manufacturing firm. The construction firm can only achieve economies of scale when production exceeds Q_1, which is less than Q_2; MES point of the other firm.

As the figure illustrates reaching economies of scale in construction sector is a struggle, leading construction firms to specialize in specific types of scale economies. This condition brings about the question of whether construction firms are really seeking for scale economies in housing production in large numbers or there are other forces that they put more emphasis on housing production.

2.2.1.2.4 Relationship between Production Scale of Firm, Business Strategy, and Product Design

With the effect of global economy, the traditional relation between customer and the producer have changed. Introduction of new communication techniques, and global trading regimes have resulted in more transparent supply systems. Related to that, firms are forced to be more customer-centric in their product designs and business strategies. This new environment not only imposes firms to consider how to address customer preferences but also to define original and variety of products. Thus, product design and multi-product production have become important ingredients of the scale of production capacity of the firm. The production capacity of firms has begun to be defined by their power to differentiate the products they produce (Teece, 2010).

Related to that, the production scale and the capacity of the firm are highly affected by the product design and applications of multi-product production

systems. Thus, well-defined business strategy becomes the key component on the production scale and the profitability of the firm. It mainly guides the firm to profitable operations which may pursue to achieve its long term goals. Business strategy mainly defines the decisions regarding what to produce and what to abandon (Dell, 2008). Rajaratnam and Chonko (2001) said that business strategies of a firm have a strong impact on product domain in the market. In addition to that various business strategies affect performance of the firms and the market operations.

There are two types of business strategies. The first one is the generic strategies which originates growth, globalization, and retrenchment. Business strategies focus on growth that indicates the development of new products and introduction of new product designs. By adding new products to their supply chain and extending their product range in the market operations, firms tend to increase their sales rate.

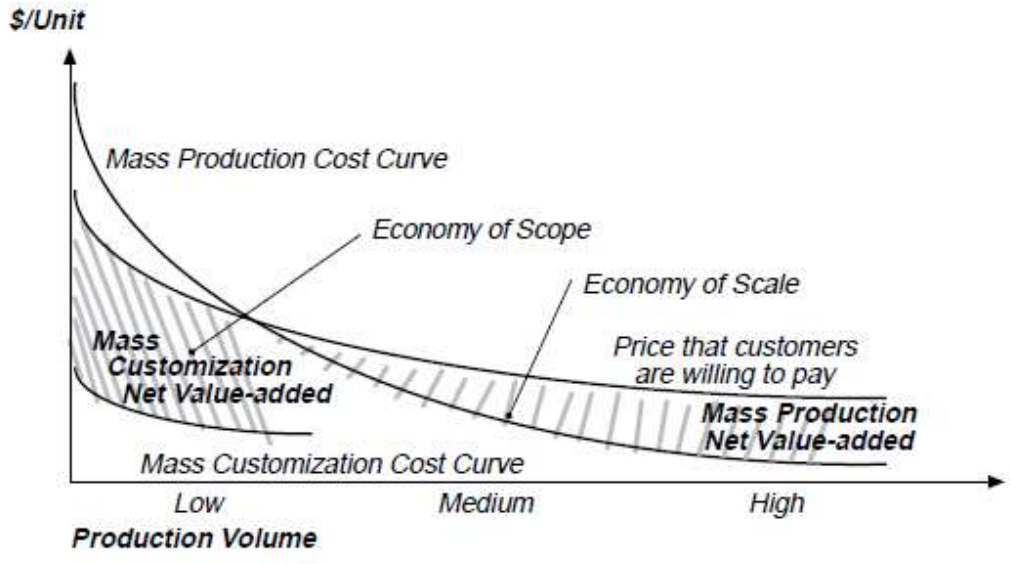
In addition, globalization specifies introduction of new countries to the business mergers and operations. And finally retrenchment involves concentrating on what you do best. This type of business strategies directs firms to produce their most successful product in order to increase the profitability. Second type of business strategy considers competitive advantage which addresses price advantages and product differentiation (Teece, 2010).

Business strategy emphasizes the fact that, consumers make their purchase decisions according to price, quality and design of the product, indicating how firms production behavior are shaped. Result of that, product design becomes the key element of business strategy which defines profitability of firms in the long terms.

2.2.1.2.5 The Effect of Product Design on Consumers' Decision in Housing Market

Globalization and the increase in the awareness in the consumer demand result in growing desire for alternatives of variety of products which have forced firms to redefine their production strategy from mass production to more customized production. Firms are expected to differentiate their products in order to increase their compatibility and profitability in the market (Nepal, Monplaisir, and Famuyiwa, 2012).

Considering profitability as the sum of productivity and the price recovery, the level of productivity and the price determination becomes the most important ingredients in the firm's business strategy. Productivity; as a measure of the efficiency in the production process, has been strongly affected by the introduction of new products into the market. Tseng and Jiao (1998), showed the economic implications of production capacity in Figure 2.7



Source: Tseng and Jiao, 1998, p.11

Figure 2.7 Economic Implications of Production Levels

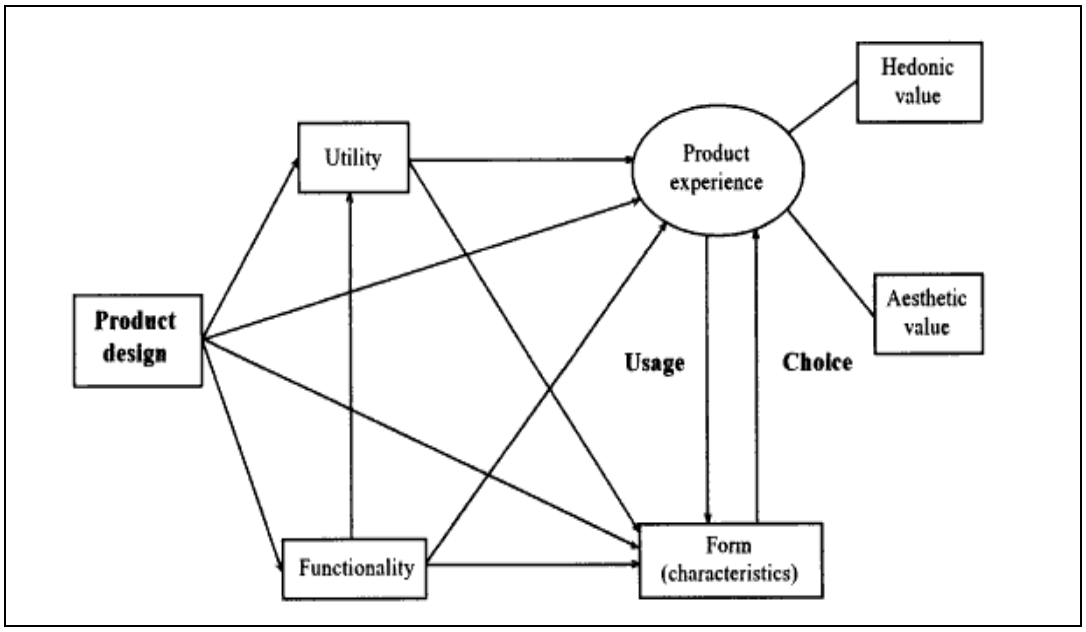
High capacity production shows advantage because of defraying the cost of investment. However, when the capacity of the production decreases to medium and low levels, quantity of production cannot justify the investment level, customers' willingness to pay increases as their special needs and preferences are satisfied.

The production of a regular firm is assumed to exhibit economies of scope which refers to lowering the average cost for a firm in producing more products (Figure 2.7). Economies of scope are linked to the benefits gained by producing wide range of products by utilizing the same operations. It enables firms to reach extreme flexibility in product design and proliferation. Thus, product differentiation, proliferation, and variation are the key terms for the determination of the level of firm profitability (Shao, 2015).

Desai et al. (2001) said that product differentiation and proliferation have both supply and demand implications. They said that product design not only substantially affect revenue and the cost of the firm, but also consumers' satisfaction level. Thus, design of a product emerges by the mutual interaction of consumers and producers in the market Producers tend to evaluate the needs and preferences of the consumers in their production process (Nepal, Monplaisir, and Famuyiwa, 2012).

Related to that, Horvath and Bauer (2002, p.389) analyzed the effect of the product design on the consumers' decision making process. They evaluated how the consumers' responses change by the characteristics of design. Their study showed that the design of the product has the most important impact on the consumer judgments, regardless of the price. They stated that various aspects of the design of the product, such as functionality, expensiveness and the form have a strong bond with the consumer decisions. In addition to that, aesthetic and hedonic value of the product is in a close relationship and they constitute product experience for the consumer (Figure 2.8)

Relating to that, in a housing market, house builders tend to differentiate their products by adding various attributes -indoor and outdoor- that enable them to distinguish their housing units form any other projects in order to increase their sales rates. Regarding to the conceptual model illustrated above, house builders are inclined to analyze consumer judgment systems in defining their housing projects that reflect consumers' priorities, preferences, and tastes.



Source: Horvath and Bauer , 2002, p.389

Figure 2.8 Conceptual Model of Consumers' Evaluation of Product Design

In order to achieve positive relationship between the consumer judgments and the product design all firms are expected to make organizational innovation to generate differentiated products (Wang and Wang, 2008). Product differentiation can be achieved by vertically or horizontally or by changing production styles.

2.2.1.2.5.1 Vertical and Horizontal Differentiation in Production

In economics, product differentiation is a strategy that firms use to distinguish a product from others in order to make it more attractive for the selected target group in the market. The root of product differentiation related with the studies of Hotelling (1929), which describe product and price competition in oligopolistic industries.

The concepts of vertical and horizontal differentiation have been subjected to many studies in different perspectives. Thisse et *al*. (2014) combined the two dimensional set up and create verti-zonal differentiation in export markets. Gabzsewicz and Wauthy (2012), studied vertical and horizontal differentiation as a function of the distribution of the tastes of consumers. Khandelwal (2010); Fajgelbaum, Grossman and Helpman, (2011) used discrete choice models in order to analyze the effects of vertical and horizontal differentiation in trade.

In simple terms; horizontal differentiation reveals tastes of consumers which affect the scale of the sales of the firms in each variety of products. On the other hand, variety of the products is vertically differentiated when quality of the products is the main determinant of the price in the market.

In the production process, products are endowed with various attributes which can be grouped into horizontal and vertical dimensions. Horizontal differentiation occurs when products are differentiated that cannot be ordered, such as color, style, in shapes, flavors, tastes and in any other marketing categories. Horizontal differentiation considers the same products with different costs for different firms (Zhou, 2013). Horizontal differentiation in housing means that different consumers have different preferences for the same housing unit. Maslianska¨ıa-Pautrel (2013) tested a hedonic model in two different conditions for the housing market. In the first case, he differentiated only the environmental quality of housing but consumers have same preferences in any other housing attributes. In

the second case, consumers had various preferences for all housing attributes. The study showed that, results of the cases were different. He showed that horizontal differentiation can lead to consumer demand for housing attributes by partial sorting at hedonic equilibrium and horizontal differentiation can lead to changes of welfare assessment related to changes in environmental quality.

On the other hand vertical differentiation when products can be ordered such as quality or performance from highest to lowest. The models of Gabszewicz and Thisse (1980) and Shaked and Sutton (1980) said that, the products differ in quality if they are offered in the same price and consumers tend to choose the higher quality alternative. Vertical differentiation let firms to increase profits by offering different types of products that appeal to various customers. Thus, perceived difference in quality by various customers play critical role in the purchase decision. Generally high quality products have higher price due to the higher production costs. Thus, the quality and the price relationship is upward sloped indicating that customers prefer to pay higher price for better quality goods (Zhou, 2013). Baudry and Maslianska¨ıa-Pautrel (2012), studied a hedonic model with vertically differentiated housing. They reached the conclusion that such model leads to segmentation of the hedonic price function.

2.2.1.2.5.2 Mass Market versus Niche Market

Mass market operations and the niche market operations are the two different market strategies for different business strategies. In mass market operations, firms do not recognize any considerable difference between consumers and mainly offers generic marketing approach. Firms' main business strategy is to utilize mass distribution and mass promotion (Brassington and Pettitt, 2003).

In a mass market; customers' tastes and preferences are concentrated on general items. Minority groups and their specific needs are ignored. Regarding, firms are

associated with higher production output, trying to reach economies of scale. In order to do so, they are engaged with low cost operations and widespread distribution of market leading brands. In the case of housing, the projects are standardized with typical housing units which are not endowed with extra attributes.

On the other hand, in niche market, customers have specific needs and preferences. Porter (1980) said that niche market focuses on specific needs of the part of the market rather than the whole market. Harrigan (1985) pointed out that demand for a niche product indicates unique willingness to pay for certain attributes such as quality, customized designed which cannot be served by all producers. Dalgic and Leeuw (1994) said that companies operating on niche market exhibit the above characteristics. These markets are small and profitable, especially ignored and neglected by the others. The study of Varadarajan and Jayachandran (1999) showed that, firms offer a highly qualified product at a higher price in a small market.

Toften and Hammervoll (2013, p.280) described niche market as "a *narrow part of the market that displays differentiated needs*." They defined market strategy as offering a valued product to narrow part of the market. Such market is claimed to be characterized by higher profits, higher prices, higher shares, higher competitiveness, and higher growth. Thus, niche market strategy focuses on the customer groups with more differentiated needs. Related to that, niche market mainly relates to differentiation and distinctiveness. So the concepts of specificity and relativity become important.

Schaefers (2013) emphasized that; firm aims for highly specific a position which indicates differentiated needs. Niche market based on specificity put no constraints on market size and growth potential. So niche products offer higher degree of specificity than corresponding to mass market alternatives. The concept of relativity means that niche market cannot exist in its own but in relation to

other markets. He defined niche market as the segment of market with products possessing a higher degree of relative specificity than corresponding mass market products. Thus niche product targets more narrowly defined group of customers. Related to that, as the niche product satisfies the needs of specific groups better than what the mass market offers, the customers are expected to have higher willingness to pay higher prices. However, due to the higher unit cost that arises from operating at low production volumes, firms in niche market are less likely to reach economies of scale.

2.2.1.3 Land Value and Housing Supply Relation in the Long-run

The development process of the city is strongly affected by the location decisions in the housing production. These decisions make cities differ in size and economic structure (O'Sullivan and Gibb, 2003). In the long-run, housing prices are set by construction and land cost. Considering the fact that the cost of land has an important share in the supply cost of a firm, the value of land plays an important role in the number of new additions to the supply of housing.

In traditional model growing population, higher income and cheaper transportation result in increase in demand at which people choose greater distances from work (Goodman, 2005). The economic value of land is mainly determined through its locational features or amenities. Under the assumptions of perfect market condition and rational decision making, the price of land decreases as the distance from the city center increases (Alonso, 1964). Thus, lower cost of land allows firms decrease their supply cost resulting in rise in productivity. Figure 2.9 illustrates the inverse relation between the price level and the distance from the city center.

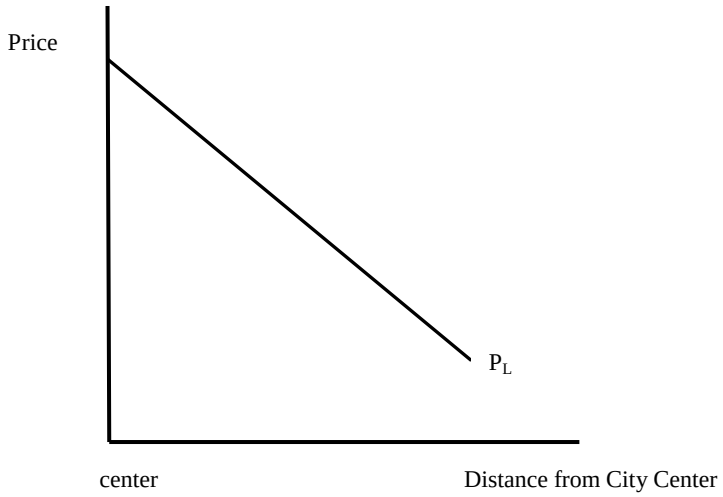


Figure 2.9 Urban Land Price and Distance Relation

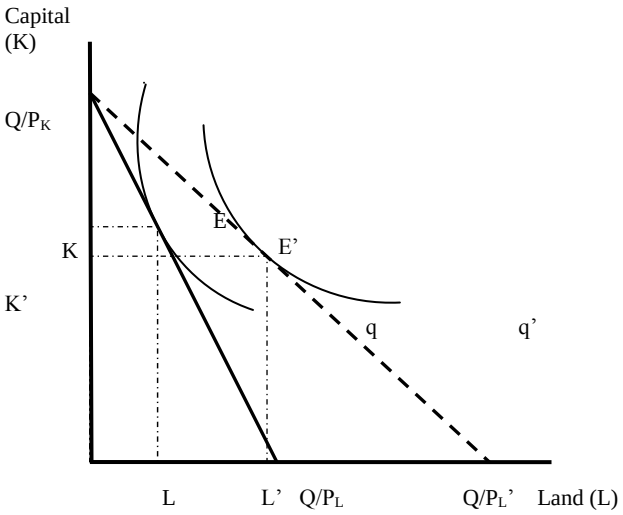
Consider in the production function of a profit maximizing construction firm, consisting of capital (K) and land (L). The production function of the firm is:

$$Q = P_{K.} \cdot K + P_L \cdot L \tag{4}$$

The profit maximization can only be achieved by the optimal use of both capital and land. As the value of land differs according to location in an urban area, firms tend to choose the land with lower prices in order to maximize their profit**.**

Figure 2.10 shows the general structure of production function of a construction firm with respect to capital and land. Let's say that, the construction firm employs L units of land and K units of capital. So, when no capital is used, Q/P_L amount of land and when no land is used, Q/P_K amount of capital is employed (Equ. 4). According to the inverse relation between the price and the distance from the city center, when land is chosen from the outer parts of the city where the land prices are low, the more land become available to firm and the slope of budget line decreases. So, the capital used decreases from K to K' whereas the land will increase to L' (Katz and Rosen, 1998). This relation indicates the fact that, with a

determined budget, when the construction firm chooses land at the outer parts of the city, it would produce more housing by using more land.



Source: Katz and Rosen, 1998, p.411

Figure 2.10 Production Function of Construction Firm With Respect to Land (L) and Capital (K)

To sum up, the price of land decreases as moving away from the city center because parcel sizes increase with distance and increased parcel sizes would be associated with lower unit prices[1].

2.2.2 Housing Demand

In economics, demand is simply defined as the desire to own anything. It implies the ability or willingness to buy a commodity in a particular period of time. Purchasing of a desired commodity generates utility. Commodities with more utility are more valuable for the consumers who are ready to pay more. In that

[1] Assuming that land price function is concave.

sense, demand curves are determined by utility curves of the consumers, indicating the fact that, demand price is determined by the marginal utility obtained from product. In other words, when marginal utility of consuming one more unit of the product is equal to the opportunity cost, consumers tend to buy given quantity of output with a given price. In more formal terms; "at higher prices a lower quantity will be demanded than at lower prices other things being equal" (Myers,2004, p.54)

Housing displays the similar features of microeconomic demand principles. The house is considered one of the fundamentals of the self. It is expected to satisfy the needs associated with daily living of the consumers: sleeping, eating, bodily wastes and etc. Thus, people try to choose houses that match their identity and maximize their utility (Sirgy et *al*, 2005).

However, determination of housing demand is complicated. Although housing demand has been subject of many studies, it is still ambiguous. The ambiguity mainly lies in the multi-dimensional structure of the concept itself. Because it can be evaluated in many ways. Antanasio et *al*. (2012) expressed that, demand for housing is a complex issue that may vary due to the changes in the current and the future expected income, tastes and house prices, socio-economic conditions of consumers and locational and structural characteristics. Rosen (1974) takes the issue from the side of structural characteristics and tries to explain demand through physical amenities of housing unit, whereas Zabel (2004) evaluates the demand structure by combining structural and locational advances. On the other hand, Ioannides and Zabel (2003) estimate the demand by including social interactions and neighborhood choice.

Although it has many sides, general form of housing demand can be defined as,

$$Q_h^d = f\left(P_h, P_{h-1}, Y, G, \ldots\right) \quad (5)$$

where;

Q_h^d : quantity demanded of housing

P_h : price of housing

P_{h-1} : price of other goods

Y : income

G : government policy

i : mortgage interest rate

Due to the unique characteristic of the housing, demand for housing acts differently in the long and short run. Short-term housing demand is the reflection of income expectation and the financial availability. It mainly represents demand for stock, which implies the demand for the ownership of existing housing; whereas long term demand is related to the structure of population, distribution of income and relative price of housing. This type indicates the demand for the ownership of new housing which regards to the construction operations in the long terms (Hirsch, 1973).

The demand analysis is important in such a way that, it does not only give ideas about the number of dwellings that will be required in the future but also it helps to calculate required investment for the land development, infrastructure, services and etc. that determines city macroform in the future

2.2.2.1. Estimation of Demand and Value of Housing

What exactly the value of housing indicates is a critical question. On one side, it has been tried to be explained through both structural and neighborhood amenities. On the other side, there is a strong tendency to include social context in the economic behavior of a consumer.

Chay and Greenstone (2005) show that some neighborhood characteristics such as level of crime, tax, traffic have negative impact on the price of housing. Fierro et

al. (2002) explained the value of housing by combining structural and neighborhood amenities. Their study shows that structural amenities have stronger impact then the neighborhood amenities on the determination of the value of housing. In addition to that, Can (1992) explains the value through neighborhood characteristics and he shows that housing attributes vary with the neighborhood quality. Studies related to estimation of demand and value of housing can be grouped under three main approaches (Waddell, 2000).

2.2.2.1.1 Bidding Approach

Bidding approach is mainly developed by Alonso, Mills, and Muth focusing on the problem of predicting residential location as a function of transportation and housing cost. In this approach consumers are assumed to be perfectly informed and rational who are assumed to make bids on all properties and the property owner auction the property to the highest bidder. The process continues until allocating all property to the highest bidder (Waddell, 2000). When there is a disruption to the equilibrium households are expected to change the residence instantly. Regards, rational household aims to maximize his satisfaction by allocation his income through his needs in the most efficient way. Mills (1972) defines the budget constraint of household as;

$$Y = P_h h + P_z z + T(d) \quad (6)$$

$$\underbrace{Y - T(d)}_{M} = P_h h + P_z z \quad (6')$$

where;

Y : income

P_h : price of housing

h : quantity of housing

P_z : price of all other goods

z : quantity of all other goods

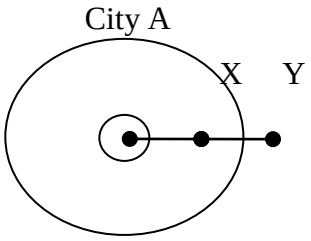
d : distance from city center

T(d) : transportation cost

M : net income

The importance of the Equ. (6) is that it defines a transportation cost depending on distance and in this way it includes the distance to the city center to the budget constraint of the household. So the distance has the direct effect on the utility level of the consumer.

Consider two locations in the city A; X and Y; where X is closer to the city center and Y is far from city center.



When a household decides to move from X to Y, the money spend on transportation increases, so his net income decreases. However, he can consume more housing on Y due to the lower housing prices.

The locational change affects the household's utility as in Figure 2.11. Moving from X to Y has significant effect on income distribution and the utility level of the consumer. Locational change from X to Y causes a decrease from z_X to z_Y whereas an increase h_X to h_Y.

Since the transportation cost is higher at Y housing there becomes cheaper. Related to that, indifference curve of the consumer shifts outward from U_X to U_Y

and equilibrium point e_X to e_Y indicating the increasing level of the utility of the household.

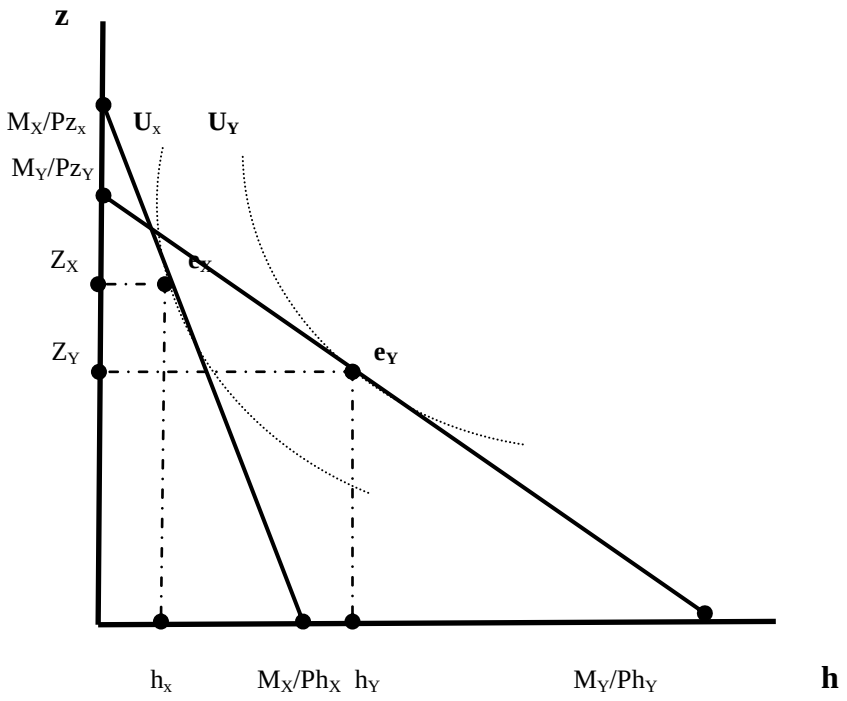


Figure 2.11 Income Distributions and Utility Level of the Consumer for Different Residential Locations

In addition, the model of Alonso (1964) focuses on the idea that the amount of land and location depend on the tradeoff between cheaper rents and longer work trips. The closer that a household locates to the city center the higher the rent that must be paid. There is a distance-decay relationship away from the city center in the value of land. Thus, he formulated the model as utility maximization problem of the household, housing consumption and residential location are defined as in follows:

$$Max\ u:\ U(z, q, t)$$

$$sbj\ to; \quad Y = P_z.z + P_q\ (t).q + P_t.(t) \tag{7}$$

where;

z: all other goods,

q: housing,

Y: income,

Pz: price of all goods,

Pq(t): price of housing at distance t to work,

t: distance from residence to work,

Pt(t): price of a trip at distance t,

The first order conditions (FOC) of the maximization problem indicate that;

$$\frac{U_z}{U_q} = \frac{P_z}{P_q\ (t)} \tag{9}$$

marginal rate of substitution (MRS) of all other goods for travel time equals to the ratio of the prices for more z or shorter work trip (equ.8). MRS of z and q must be equal to the ratios of the prices (Equ 9). According to the FOC, the model generally emphasizes the fact that when there is an increase in land prices or transportation cost –under convexity assumptions- the consumption of land reduces which leads household to locate closer to the city center.

The focus of the Alonso Model lies in the fact that location has different priorities that indicates unique indifference curve. At the center, accessibility is the main priority so the transportation cost is at minimum. Thus, Alonso defines bid-rent curves for all individuals according to their priorities for rent and transportation cost (Figure 2.12).

He suggests that; individuals consider residential locations at increasing distances from the city centre, where the price of land will be low that would allow

households to buy enough land and other goods to provide as much utility as possible. So households' bid rent functions are derived from budget and taste considerations.

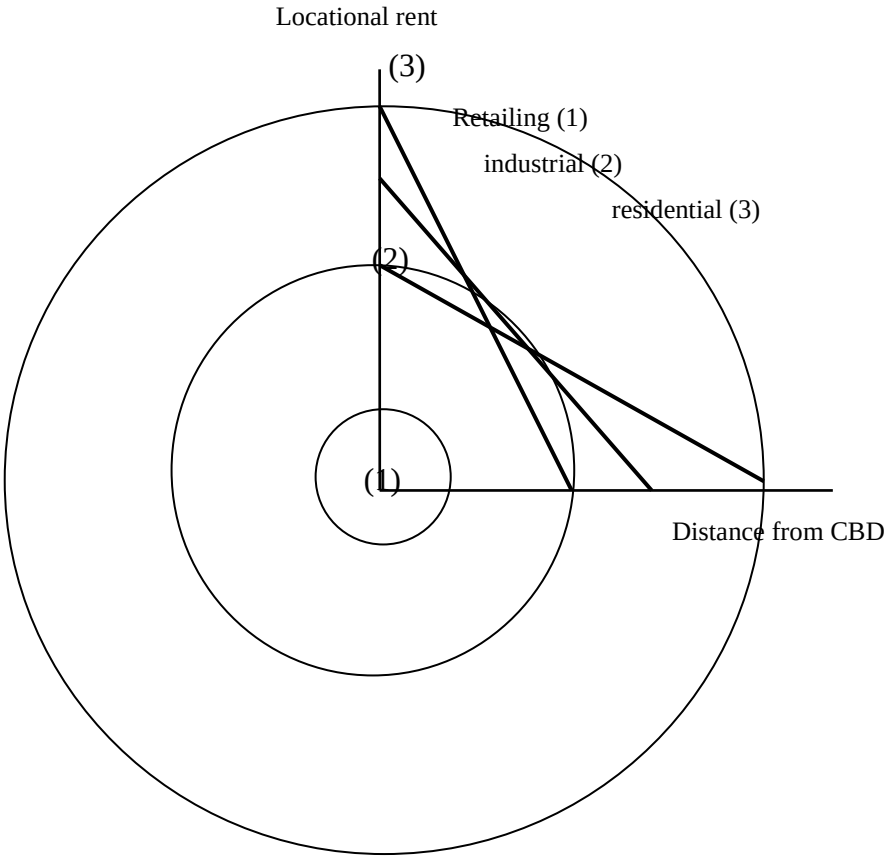


Figure 2.12 Bid Rent Curves for Retailing, Industrial, and Residential Land-Use

Muth takes Alonso's argument a step further. He explains the residential location problem through income and formulated the household maximization problem as follows;

$$Max\ u:\ U(z,q)$$

$$sbj\ to; \quad Y = P_z.z + P_q\ (t).q + P_t.(t) \tag{10}$$

where;

z: all other goods,

q: housing,

Y: income,

P_z: price of all goods,

$P_q(t)$: price of housing at distance t to work,

t: distance from residence to work,

$P_t(t)$: price of a trip at distance t,

In this model distance t is left out of the utility function resulting in the FOC as;

$$q.\frac{\partial P_q\ (t)}{\partial t} = -\frac{\partial P_t\ (t)}{\partial t} \tag{11}$$

The FOC of Muth's model (1969) implies that, a change in the work trip *t* leads to the adjustment of costs by an equal amount to the associated change in housing expenditures. This equation implies the fact that, city center has its unique opportunities, such as accessibility and purchasing occasions, which increase the value of land and with the distance from the city center price of housing for any quality should decline. So by using the equation (11), for any given residential location, the equilibrium must hold;

$$-\left({}^{p_t}/_{p}\right) = \left({}^{T_t}/_{p.q}\right) \tag{12}$$

where

p : unit price of housing,

p_t : change in housing price per unit change in distance (t),

q : quantity of housing,

T_t : change in transportation cost per unit change in distance,

Positive T_t implies that housing prices get smaller with the distance from the city center. The fall in housing prices also indicates that the value of land decrease with distance.

These models and their extensions construct their studies on the idea that all employment is located at central business district and the problem of residential location is explained through the transportation and housing cost.

2.2.2.1.2 Housing Attributes Approach

Although a house can be defined as an adequate shelter, it may also represent isolation, lack of comfort when a minimum degree of physical needs are not provided. Thus, for better standards of living the attributes are injected into the house which determines its market value. Thus, it is logical to see demand for housing as a demand for collection of attributes (Alonso, 2002).

Does housing attributes affect housing preferences of people? Although consumer behavior has been focus of many studies, the answer of this question is still critical. Simon et *al* (1987) says that the behavior of a consumer is mainly determined by objectives and values. People define their objectives according to their values that create suitable solutions. Then they evaluate all the solutions and they make a choice. This is also the case for the choice of a house.

In this approach, studies mainly concentrate on Lancaster's (1966) theory of consumer behavior in which consumer's utility maximization problem is explained through a function of attributes of housing including locational characteristics. He brought a new dimension to the traditional consumer theory

that "*consumption is an activity in which goods, singly or in combination, are inputs and in which the output is a collection of characteristics*" (Lancaster, 1966). This is mainly called hedonic price method. Main idea behind this method is to define house price as a function of various property and location specifics. As a step further, Rosen's (1974) model assumes several dimensions on which buyers and sellers locate. Both buyers and sellers are assumed to choose their location and make quantity decisions on maximizing behavior. According to that, Rosen showed that equilibrium of all consumers are defined by a group of value functions and producer equilibrium is characterized by a group of offer functions. Equilibrium price is determined according to the quantities of commodities offered by the producers and demanded by consumers. Thus, the implicit prices; $P(Z) = (Z_1, Z_2, Z_3, \ldots\ldots Z_n)$, are determined through the collision of the value functions on the demand side and the offer functions on the supply side. He indicates that each product has a market price with a set of characteristics. He defines the hedonic equation as;

$$P(Z) = \alpha_0 + \sum_{i=1}^{n} \alpha_i \, Z_i + \varepsilon \qquad (13)$$

where;

α_i : regression coefficient

ε : error term

P(Z) : price of property

Z : vector of n characteristics that price depends

This equation mainly implies that how the market price of a commodity changes as the characteristic vary. In the housing context, the equation shows that as the attributes of housing vary then the price of the housing changes as well

Housing attributes which have significant effect on households' demand have two sides: structural amenities of housing unit and the building with its inner and outer features that affect the price of dwelling units. Structural amenities mainly represent comfort of housing (ex. size, no. of rooms. no. of baths, quality of construction.) (Hoffman et *al*, 2006).

Structural amenities mainly relate to design of housing. The design quality determines the luxury level of housing unit. In the case of housing design there are five dimensions that households have in mind (Hoffman et *al*, 2006). First one is the technical systems. This dimension considers technical issues such as type of heating systems number of switches. Second one is interior finish which means interior design of housing such as type of kitchen, floors. Third is floor plan, relates to the positions of the rooms. House volume, the fourth one is the size of the house. The final one is the environment which represents, parking lots, pavements and etc. These five dimensions include structural amenities which in total they define a value for housing. The priorities of these structural amenities are changeable according to the tastes and preferences of the households. Lindberg et *al* (1987) expresses the fact that people evaluate the attributes of housing according to their beliefs and values. They link everyday activities defined by their beliefs with housing attributes.

Coolen and Hoekstra (2001) state that housing attributes are used by the consumers in order to reach their goals which are defined by daily lives by producing desired consequences and minimize undesired consequences. However, determination of housing value through housing attribute is not easy since the implicit prices of housing attributes are not constant over time. Thus, main concern is the stability of the implicit prices (Meese and Wallace, 2003).

As for the neighborhood characteristics, there may have positive and negative influences on the decision to households housing consumption. The importance of this behavior lies in the fact that neighborhood can be expressed as the extension

of the house which has significant effect on selling and buying price. Regarding, factors generally positively and negatively affecting the price of housing can be listed as in Table 2.3 (McDonald, 1997).

In addition to that, Rosen (2002) indicates that, in the valuation of neighborhood the character of household is important. For example if a household is living in less secure area presently households first priority would be crime rates so his evaluation of neighborhood will be different from the ones who live in more secure areas. Neisheim (2002) takes the issue from the side of education opportunities. He showed that individuals with higher willingness to pay for education are willing to pay more for neighborhoods with higher education.

Table 2.3 General Effects for the Housing Price Decisions

Generally Positive Effects	Generally Negative effects
Neighborhood income	Crime rate in the area
Quality of houses	Air pollution
Size of houses	Noise
Quality of schools	Proximity to contaminate/power plants
Physical environment	Distance to employment
Quality of transportation	Distance to shopping centers
Distance to public transportation	Distance to public transportation
Employment location	

Source: McDonald, 1997, p. 212

Ioannides and Zabel (2007) developed a model in which housing demand and neighborhood choice is a joint decision. In the model they combine structure demand and neighborhood demand. The structure demand mainly represents that flow of housing services in which the price of housing is the price for a unit of services. Neighborhood demand is a demand for a specific location for locational amenities. They may be complements or substitutes. The study focuses on the idea

that neighborhood choice is not random thus the choice of households for neighborhood has a strong impact on demand.

2.2.2.1.3 Socio-Economic Approach

There is a strong tendency to include social context in the economic behavior of a consumer. Related to that, there are many studies that focus on estimating housing demand with neighborhood effects and neighborhood choice from social side (Ioannides et al, 2008).

Understanding the consumer behavior and the human decision making process is the most important thing in the project development process. Presently, the most important indicator for the project developers is the people's way of thinking in the decision making process by assuming people to be rational and utility maximizer. However, there is always the possibility of irrationality of human decision making. Thus; the validity of the assumption of utility and profit maximization of the people's behavior of traditional economics become questionable.

With the emergence of the questions regarding to the possibility of irrational behavior of people, in order to eliminate the defaults of the general assumptions of the traditional economics, economist try to include human behavior and mental processing into their models. Related to that, the concept of behavioral economics is emerged which is placed at the interaction of economics and psychology. Behavioral economics mainly explores the reasons behind the irrational decisions of people they sometimes make and the failure of the prediction of economic models.

The main aim of this section is to analyze the concept of behavioral economics and to evaluate the households' behavior in the housing market in that point of view.

2.2.2.1.3.1 Emergence of Behavioral Economics

Neo classical theory depends on the idea that individuals make decision according to the choices which maximize their utility based on complete information. Known as rational choice theory; individuals are expected to behave in the most beneficial ones. It assumes that people are perfectly rational; they know objectively what makes them happy and which choices maximize their utility. It is also assumed that people have well organized and stable system of preferences and an exceptional ability to compute for the available alternatives (Simon, 1955).

However, there appeared doubts about the existence of such rational human being. Therefore, studies addressed to the criticism of traditional economy defines three unrealistic human behavior in traditional economic model as; unbounded rationality, unbounded willpower and unbounded selfishness (Mullainathan and Thaler, 2000).

At the point of criticism, the concept of behavioral economics is introduced which explains economic behavior of people in the market by adding psychological, social, cognitive, and emotional factors on the economic decisions. It concentrates on the idea that people cannot make good decisions every time. People are physiologically biased so their decisions may not maximize their utility.

Behavior economics is large and growing field. The studies on behavioral economics starts with the idea of Adam Smith when he defines that human psychology is imperfect which can affect their economic decisions. Smith said that;

> How many people ruin them by laying out money on trinkets of frivolous utility? What pleases those lovers of toys is not so much the utility, as the aptness of the machines which are fitted to promote it. All their packets are stuffed with little conveniences …. Of which the whole utility is certainly not worth the fatigue of bearing the burden (Smith, 1759, p.161)

Herbert Simon (1955) introduced the term "bounded rationality" to describe the human's lack of infinite decision making capabilities. He said that;

> The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world.... or even for a reason‐ able approximation to such objective rationality. (Simon, 1957, p. 198)

He described the decision making as a process of searching affected by aspiration levels. An aspiration level is defined as a goal variable surpassed by an alternative decision. In the context of the theory of firm, these good variables may be considered as profit and market value. The searching process continues until a satisfactory alternative is found. Selten (1999), defines Simon's view of unbounded rationality in three features as; search for alternatives, satisficing and aspiration adaptation.

Regarding to the new approaches to the consumer decision making process many studies concentrated on this subject. Allias (1953) and Ellesberg (1961) put emphasis on irregular implications of expected utility. Kahneman and Tversky (1979) analyzed the ways of how people plan their economic outcomes as gains and losses and how their planning approaches affect their future choices and economic decisions. They emphasized in their "Prospect Theory" that preferences of the consumers depend on a reference point and the probabilities of the preferences are non-linear. Thaler (1980) defined a new model of consumer behavior indicating the ways of how people's choices diverge from the predictions of rational choice theory.

Watkins and McMaster (2011) expressed the failures of the conventional economic models for explaining the effects of choices on house price changes. Stiglitz (2010) put emphasis on the need for economic modeling reform for putting more emphasis on non-conformity on human actions.

Graham et. al (2009) summarizes seven concepts within behavioral economics that contravene the neo-classical paradigm.

- *Inconsistent temporal framing*: consumer are disposed to have higher discount rates on purchase decisions relative to saving decisions indicating lower value on future costs relative to specific purchase,
- *Status quo bias*: consumers are less open to changes,
- *Loss aversion*: consumers tend to have greater desire for gains than losses,
- *Decision making heuristics*: consumers tend to choose the option perceived as a compromise,
- *Salience effect*: consumers value a disproportionate weight to observable factors,
- *Prosocial behavior*: consumers are likely to be affected by the choices of others regardless of costs and benefits,
- *Permanent income* paralysis hypothesis: although consumers may be fully acknowledged by the long term economic behavior of a decision but there is not guarantee for long term security.

Studies regarding to the behavioral economics put out the misbehaving structure of human being clearly. Since the recent publication of popular books such as Thaler and Sunstein's (2009) *Nudge*, and Kahneman's (2013) *Thinking, Fast and Slow* behavioral economics have been widely acknowledged in the economy.

2.2.2.1.3.2 Behavioral Economics and Non-Functional Demand

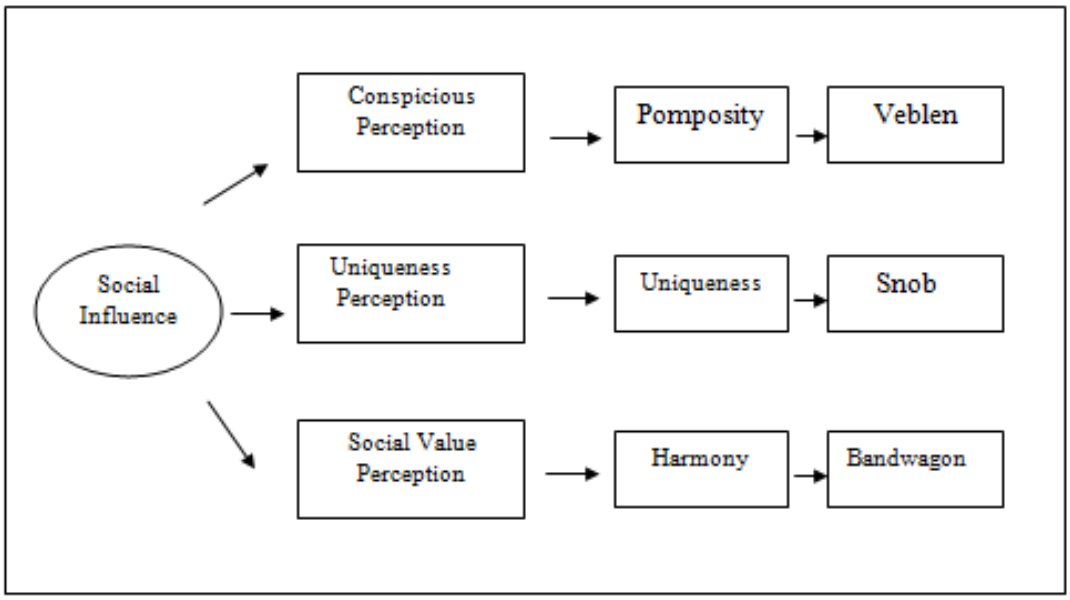
Standard consumer choice theory assumes that, individuals maximize their utility subject to their budget constraints. In an environment when tastes and preferences are given, individuals make their decisions according to the attributes of the various products such as price and quality.

However, studies show that, all decisions of individuals are not made rationally. Leibenstein (1950) introduced the approach to the consumer theory, indicating the fact that utility function of an individual also covers the qualities of goods which are consumed by the other individuals. So, he defines non-functional demand as "*that portion of the demand for consumers' good which is due to the factors other than qualities inherent in the commodity*"(p.189). In other words, non-functional demand is defined by external factors like speculative attitudes, status considerations, or irrational purchases. The most important element in the non-functional demand is socially motivated status and taste positioning. So external effects on utility are keys to non-functional demand. This external utility is originated by the purchase or consuming the same commodity or the price level of the commodity. Consumption of luxury goods is at the center of this approach.

There are three different forms of non-functional demand in luxury good consumption; Bandwagon effect, Snob effect and Veblen effect. Vigneron and Johnson (1999) say that, Veblen, Snob and Bandwagon effects mainly relates to the price of the goods since higher price indicates higher prestige levels for the consumers. So in those three effects, price is the most important factor for the consumers. They summarize the formation of the three effects as in the following Figure 2.13.

Figure 2.13 indicates that, social values have significant effect on Veblen, Snob, and Bandwagon consumers. These consumers try to emphasize their social status by their consumption behavior. They absorb specific type of social behavior in the

way of determining their consumption types. Uzgören and Güney (2012) indicate that, the effect of the structures and the general characteristics which defines the price level is significant in luxury good consumption. They say that all three types of consumers are seeking for prestige by applying different types of social behavior.



Source: Vigneron and Johnson, 1999, p.7

Figure 2.13 Social Influences in Luxury Consumption

It would be useful to analyze three types of effect in details in order to understand consumer behavior under non-functional demand conditions.

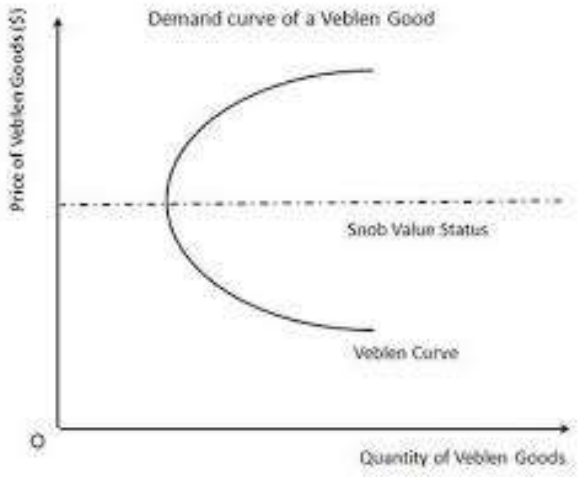
2.2.2.1.3.2.1 The Veblen Effect (perceived conspicuous value)

According to Veblen (1899), a rise in the price of luxury goods might lead consumers to increase in their consumption, rather than reduce it. The purchase of such higher priced goods would discuss status on the purchaser which Veblen called conspicuous consumption. He suggested that conspicuous consumption was used to signal wealth, power, and status. Utility of prestige products may be used

to show wealth and power. Thus, the main aim of the Veblen consumer is to impress others. So they take price as the indicator of prestige. In that case quantity demanded increases as the price of the product increases.

Erickson and Johanson (1995) showed that price of products have positive role in determining the perception of quality. So high prices are positive indicators of prestige and quality. In summary, Veblen effect is observed when a consumer shows willingness to pay a higher price for an equivalent good.

Therefore, Veblen goods contradict with basic law of demand. As can be seen in Figure 2.14 Veblen goods may have normal demand curve at low prices, but above a definite price start to have 'snob value' so demand curve starts sloping the other way.



Source: Economics Discussion, 2014

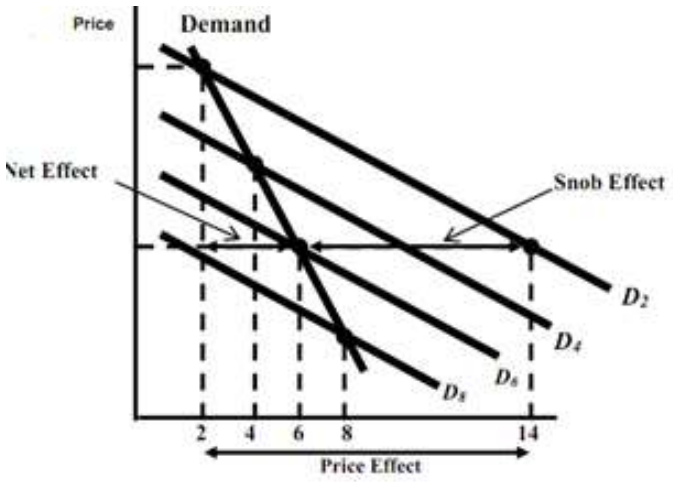
Figure 2.14 Demand curve of Veblen Good

2.2.2.1.3.2.2 The Snob Effect (perceived unique value)

Snob effect takes into consideration personal desires when purchasing a commodity and also other individual's behavior. According to Vigneron and

Johnson (1999), snob effect occurs in two cases. Firstly, when a new prestige product is launched, snob consumers will be first to consume and secondly, when a product is consumed by general mass of people snob consumer will be rejecting to consume.

So snob consumers are searching for exclusivity and avoid standardization and popular type of commodities (Nevins, 2008). The price is an indicator of privilege for the snob consumers. They need for uniqueness. Figure 2.15 show that, as a result of snob effect, the quantity demanded of the good decreases as more people are believed to purchase it. Thus, snob effect makes the demand curve less elastic.



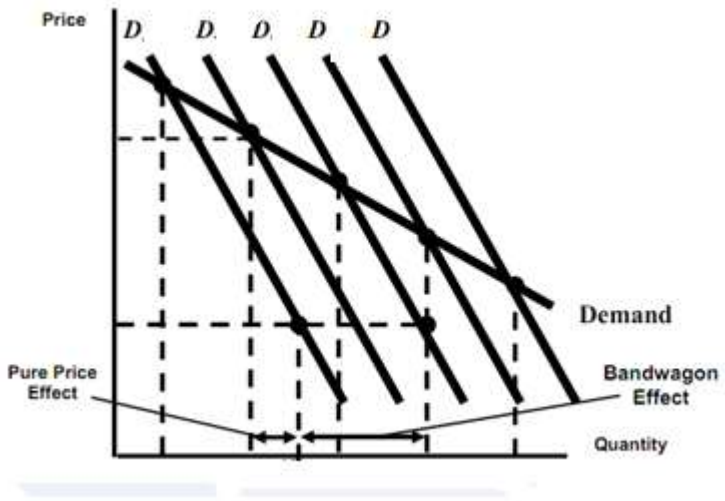
Source: Economics Discussion, 2014

Figure 2.15 Snob Effect

2.2.2.1.3.2.3 The Bandwagon Effect (perceived social value)

Bandwagon effect puts more emphasis on the effect they make on the others while consuming specific commodity. In other words, as demand for good increases by one's pear group, individual demand increases as well. Bandwagon effects are positive externalities in which commodity becomes more valuable as the consumption of other increases (Vigneron and Johnson, 1999).

Figure 2.16 illustrates the bandwagon effect. The Figure shows that when a definite amount people have purchased a good, this increases the attractiveness of the good for those people. As a result, they want to buy more in order to keep the style which lead to the increase in demand which causes a rightward shift of demand curve. As the number of the people that purchase the good increases, attractiveness of the good also increases. This is bandwagon effect. So, the quantity demanded of good increases in response to the rise in the other individuals' consumptions.



Source: Economics Discussion, 2014

Figure 2.16 Bandwagon Effect

2.2.2.1.3.3 Behavioral Economics and Price of Housing

House price dynamics is tried to be understood through economic conditions, risks, supply constraints, interest rates, and inflation. However, it is widely accepted that psychology has an important role in the housing market. Recent studies try to combine the fundamental models of economics with the behavioral factors.

Heterogeneity of the housing market makes it difficult to categorize considering the interior and the exterior features of the property. Related to that, determination of the price in the housing market is very difficult because of the diversity of the attributes that define housing (Cho, 1996).

Whittle et *al.* (2014), defines three types of cognitive biases that may affect house price decisions. The first type is “herd behavior” implying the fact that a person’s behavior may be affected by the group which they are member of. Second one is "overconfidence" indicating the difference between the amateurs and the experts. The last type is "loss aversion" and endowment bias addressing the sellers’ no necessity to sell and societal and cultural pressures on buyers to purchase in the market.

Mayer and Sinai (2007), examined the roles of economic fundamentals and market psychology in US house price dynamics. They estimated a standard cost model with long term interest rate and added proxies for behavioral explanations including backward looking and inflation illusions. They concluded that beside the fundamentals, behavioral analysis by backward looking has an important role in US volatility.

Considering behavioral analysis, house price, and low demand, the main reason behind rising house prices leading to a rise in demand is that, where people buy because prices are rising and therefore they expect price will keep rising, this may be defined as a bandwagon effect.

2.3 Housing Market Equilibrium and Urban Growth Relation

In economics, market equilibrium is the point at which quantity demanded is equal to the quantity supplied. It refers to a market price which is established through competition between customers and producers such that the amount of

goods or services required by customers is equal to the amount of goods or services produced by producers. The equilibrium point may change due to the changes in demand and supply. When there is a positive or negative shock in the market new price level will be determined through adjustment process.

In the process of market adjustment, key assumption of supply and demand theory is that, both consumers and producers have perfect knowledge of costs and benefits of their action. However in the real life this is almost impossible. This is because, economic theory does not pay much attention to the characteristics, and variety of product and the influences of these characteristics have on market operations. In the case of housing industry, it is unlikely to have perfect information about housing because consumers have limited experience of living in different types of dwellings with different locations. Thus, technical characteristics and material of a product should be taken into consideration in both consumers' and producers' decision making (Lovell, 2005).

Adjustment process of the housing market has strong impacts on urban economy, as the construction of houses not only generates qualified living environment but also creates employment opportunities, value added and tax revenues. As in any other markets, the aim of both firms and households is to maximize their profit/satisfaction in the housing market. The long-run equilibrium can be reached only if both households and firms reach the equilibrium. However, how the equilibrium point is characterized in aggregate is the main concern since there are variety of inputs defined in the housing market, such as macro-economic variables, spatial differences, neighborhood, and environmental characteristics.

In general terms, economic supply and demand theory suggests that house builders would increase supply if there was significant consumer demand for a new housing product. This is mainly because the price of the product would increase after recognition of the product and thus producers have the incentive to

respond. However, housing market is slow to respond to the changing consumer preferences.

Lovell (2005) argues that a typical product- housing: is durable, expansive and has fixed location. It has to be reanalyzed due to material and technical characteristics. She says that material and technical characteristics of housing have strong impact on production and consumption patterns of housing. She suggests that determination of price level of housing is not easy because housing is not purchased in isolation but within a geographical space and all the attributes within. In other words, housing purchase does not only consider the quality of housing product but also social and material characteristics of surrounding locale. Related to that, determination of the level of the price is a complex issue. Most important study was held by Ball (1973) emphasizing that housing as a collection of attributes which can be locational or structural. He explained the price of the housing through the expenditures on these attributes. Thus, the price of the housing is defined as;

$$Pi = a_1 A_{i1} + a_2 A_{i2} + \ldots\ldots\ldots + a_n A_{in} \qquad (14)$$

where;

Pi : price of housing

A_{i1}, ...A_{in} : quantities of attributes possessed by i^{th} dwelling

a_1, a_2.....a_n : implicit unit prices of A_i

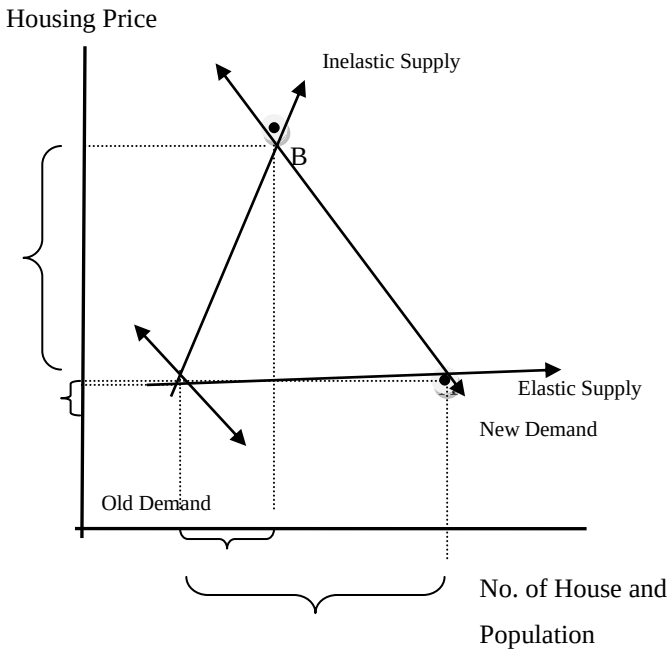
Supply of these attributes and demand for them sets the attribute prices. Hence, provision, structure and the level of the attributes become important on the determination of the price level which is volatile. Although volatility of housing prices can be explained by the changes in the fundamentals of housing market but that would be inadequate information. Xu (2008) says that housing price has strong relationship with physical attribute, location, and household profile. In his

model he added household profile into the hedonic price model in order to analyze the house price model. In addition to that, Glaeser et *al* (2008) emphasized the fact that it is necessary to consider bubbles and the optimism/pessimism in the economy and their impact on housing economics. They expressed that when housing supply is inelastic housing prices should increase during the bubbles.

In the urban development context, market equilibrium and price level have great importance since volatility of housing price has a significant effect on the rate of housing construction and indirectly affect migration decision and redistribution of wealth (Glaeser et *al*, 2008). In addition to that, market price is simply determined by the number of new housing units and the level of housing stock, which have key role in the determination of the city shape.

Considering the urban macroform through housing production, the elasticity of supply plays the key role. Glaeser and Gyourko (2005) say that urban housing supply is asymmetric which is highly elastic due to durable housing stock. In that case a positive demand shock result in more housing with a small housing price increase whereas a negative demand shock cause a fall in prices and a small change in housing stock. The elasticity of housing supply indicates whether an increase in supply creates bigger cities or more expensive houses (Glaeser et *al.*, 2005).

For example; if a city's housing supply is elastic, the supply curve is flatter. When there is an increase in population there will be an outward shift in demand. Due to the flat supply curve, the increase in housing price will be small (Figure 2.17, point A). However, if the supply is inelastic -indicating steeper line- then a positive shock will result in a rise in housing prices where the number of housing does not increase significantly (point B). In such a case, positive shock to the urban productivity will have little impact on new construction and population.



Source: Glaeser et al., 2005, p. 72

Figure 2.17 Nature of Housing Supply and Impacts of Demand Shocks

Determination of market equilibrium and price level in housing market relates to many issues in volatile housing prices. Hence application of general demand and supply relations to the housing market may not be suitable for the determination of the price level and analysis of the market forces.

2.4 Concluding Remarks

Housing has been considered as a complex economic good because of its unique characteristics and nature. It has not only analyzed according to its structure and built-in facilities like amount of space, design and quality but also outdoor features such as estate characteristics, neighborhood quality and location. Considering the fact that, housing is one of the basic needs of human being along with food and clothing, and its multidimensional nature, it not only takes considerable attention but also provides significant data for the researchers. It

employs many actors in the production process from land developer to estate agencies, architects to house builders. It is in the center of many disciplines. Thus, there is an important amount of research and studies that focus on the functioning of housing market, yet there are still some areas that need to be studied and addressed.

This chapter analyses the traditional and contemporary theories of housing supply and housing demand by putting emphasis on large scale production in the housing market in order to form a basis for the hypothesis of the thesis. For that reason, this chapter aims to evaluate the understanding and the results of large scale housing production by analyzing housing market dynamics from both households and house builders' sides.

The analysis show that, housing market shows classical features of microeconomic supply and demand principles. However, different from any other commodity due to its durability, heterogeneity, and spatial fixity, it acts differently in the short and the long-run for both households and house builders in an economy.

It is a known fact that, producers try to reduce their costs in order to increase their profit. In the context of housing production, increasing population in cities lead house builders to produce large amounts by which they are able to reduce their costs and reach economies of scale. To do so, house builders can use their technical capacity, they can concentrate on division of labor, they may use their marketing power, or they can use financial instruments. However, these can only be achieved by the firms which have enough capital accumulation, institutional capacity, and competitiveness. Thus, the size of the firm becomes important in achieving scale economies and designing customer oriented production strategies. The need for customer oriented business strategies direct house builders to concentrate on product differentiation in order to cope with the shifts in demand.

They try to sub-divide the market by providing specific types of good that serves a narrow part of the society with different needs.

On the household side, it is simply said that customers try to maximize their utility by choosing the options which satisfy their needs the most. So household's demand for housing is defined according to their priorities, tastes, and preferences. However, defining it as a place to live, valuing it and putting a price is not simple. Because it has not only structural and locational amenities that affect the price but also behavioral sides of households. Recent studies point out that, households may not always behave rationally in their decision making process. In fact it is said that utility function of an individual covers other goods which are consumed by other individuals.

Households may act under the influence of other people in order to gain more prestige and to be part of an elite group. So demand becomes non-functional which is constructed under Bandwagon, Snob, and Veblen effects. Thus, housing consumption decision is determined according to not only structural amenities or budget constraints but also other households' consumption behavior in the market.

In summary, the new production advancements on the producers' side that focus on benefitting from large scale production and product differentiation and the contemporary housing purchasing approaches of households that combine structural, budget and social issues, create new dynamics in the housing market. Result of this mutual interaction between the households and the house builders; housing market has begun to show a tendency to act differently from classical theories.

The following chapter studies the theories discussed in here in order to evaluate large scale house building in the world by reviewing existing literature, focusing on implications of large scale housing production both from the sides of households and house builders under the context of scale economies.

2.5 Hypothesis

With the rising income and welfare levels, households have begun to desire more living space per person and better quality of living and their tastes and preferences have shifted according to the priorities of contemporary urban life. Due to the increase in car ownership and growing concern for healthy living environment, conventional apartment building, built on single parcels has become inadequate to meet housing preferences of households in Turkey. The changing priorities and needs of households result in making an investment decision of house builders whether building at an inner neighborhood or at the outer regions of cities. The latter one, which is investigated in this thesis, is the development of new large scale residential areas away from city center with parking, fitness services, recreational areas, security services as well as with special indoor housing attributes, which are expected to increase attractiveness for consumers of those housing estates. Currently, because of the difficulty of assembling large tracks of land to build housing estates, the supply of housing reflecting contemporary tastes and preferences of households are yet insufficient with respect to increasing demand for such housing estates. Consequently, market prices tend to rise due to insufficient supply with respect to demand. Within this context, the three hypotheses that are developed and investigated in this thesis are written below.

As the demand for living in large scale housing estates that provide most of the preferred amenities has increased, production units that a firm produces have also increased. The rising size should provide a better chance to decrease the unit cost. House builders can be expected exploiting cost advantages by expanding their scale of housing production. Therefore, economies of scale should be an important factor in the rise of the size of housing estate projects.

There are indications that income elasticity of housing demand has increased, indicating the fact that, such housing is considered a luxury good. Regarding to that, willingness to pay for such housing estates is expected to rise with the

changing demand. This condition brings about the concept of non-functional demand in which Veblen, Snob, and Bandwagon effects exist that mainly relate the price of goods to its prestige level for consumers in the luxury good consumption. These effects have an impact on consumption level as; the Veblen effect occurs when a rise in the price of a luxury good might lead consumers to increase their consumption, the Snob effect relates to uniqueness, implying the quantity demanded decreases as more people are believed to purchase it and lastly, the Bandwagon effect stresses that commodity becomes more valued as the consumption of the others increases. In that sense, it is expected to find out that households' increasing willingness to pay in the housing market has violated the consumer demand which may be explained by the Veblen and Bandwagon effects together in Turkey.

According to the differential land rent theory, the price of land decreases as the distance from the city center increases. It is expected to have housing developments with lower floor area ratio and endowed with the attributes that require large land at the fringes of cities where land prices are lower than the inner locations.

CHAPTER 3

DEVELOPMENT OF THE LARGE SCALE HOUSING PRODUCTION UNDER THE CONTEXT OF SCALE ECONOMIES

3.1 Introduction: Fundamental Reasons for Large Scale Residential Investments

The issue of globalization can be related to liberalization of world economies which are free from institutional control that support free market mechanism. This results in the open market competition and specialization on the production of goods and services in the global context. Considering cities as the focal place where economic activities take place, it is inevitable for cities to experience major social, cultural, and economic transformation.

Transformation of the cities in all terms resulted in the overlapping functions and activities in the urban area. Regarding to the variety of economic activities in the cities, they have attracted people even more. Recently, more than half of the world's population lives in urban areas and it is projected to be 80% by 2025 (Thorns, 2006).

However, rapid growth in population and ever expanding responsibilities in urban area caught cities unprepared. This resulted in the emergence of the need for regeneration of the city centers and the exploitation of the new residential areas out of the city.

Related to that, new citizens who have been part of the transformation along with the spatial developments have experienced shifting their tastes and preferences according to the needs of contemporary urban life. The emergence of these preferences and the tastes of the citizens defined in urban life have caused the development of new living spaces as a world-wide concern. Especially for the last

quarter of the century, social and economic forces make people focus on providing better urban housing, designed according the needs of the contemporary city life.

Relating, the understanding of housing consumption has altered. With the rising income and welfare levels, households have begun to desire for more living space per person and better quality living. Ball (2013) defines this situation as positive income elasticity of housing. Studies express the fact that the income elasticity of housing demand for many countries in the world is positive implying the fact that the demand for housing grows when real incomes are rising (Ball, 1983; Di'Pasquale and Wheaton, 1994; Malpezzi and Maclennan, 2001).

Considering the fact that income elasticity of demand varies across different types of property and luxury properties have the highest income elasticity ($\epsilon>1$), the increase in the income elasticity of housing demand means that currently housing is not considered as a normal but a luxury good. As can be seen in Figure 3.1, when income rises from Y to Y1, quantity demanded for normal goods increases Q to Q1 and for luxury goods from Q to Q2. In other words, as the standards of living rise household seeks for better housing.

Related to the households' search for better living areas, residential areas have begun to be measured not only for their physical environments but also areas of social, cultural, and economic facilities. Moreover, rising individualism and growing social and economic polarization create an environment encouraging living in more secure areas. This approach reflected on built environment as a new spatial order which is seen as guarded housing in the context of residential development (Csefalvay and Webster, 2010).

This new spatial order has required redefinition of the production of housing developments which has directly affected the production style and marketing strategy of house builders. Housebuilding firms are forced to make strategic

decisions in order to deal with poor customer satisfaction and poor product innovation (Payne, 2013). They are expected to communicate with households and to reflect the view of them in their houses. Related to that, Myers (2002) indicates the fact that, house building industry has to be redefined in contemporary economic conditions in all terms of efficiency using resources, environmental protection, and social progress.

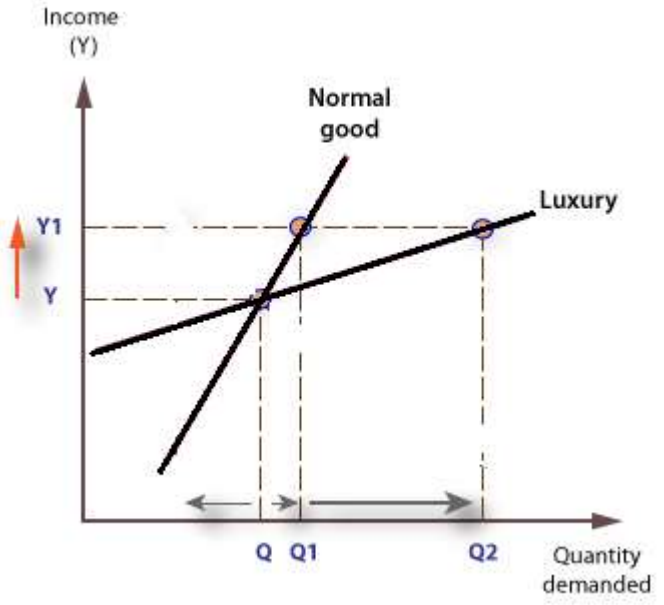


Figure 3.1 Income Elasticity of Normal and Luxury Goods

In addition to that, Bon (1999) indicates the fact that, presently buildings would be designed and constructed with their continual change. Construction of a building is no longer considered only as physical works but also as real estate management. Thus, economic profit does not only cover the number of construction facilities but also existence of other inputs as well.

However with the rising living standards and increasing expectations of households from living environment; adaptation of house building industry would not be fast enough to meet the new demand; thus there expected to be housing shortage, which keeps prices high.

Considering the new production approaches of house builders and the priorities and the needs of the households, requirements for the new housing developments can only be provided in a limited extent in inner cities. This results in the making an investment decision whether on an inner location or at the periphery. House builders choose investing between regeneration projects in the city centers and new housing projects at city fringes where new land development opportunities occur. Households' desire to escape from overcrowded and overregulated cities support the suburban growth and somehow define the development strategies in the cities (Csefalvay and Webster, 2010)

Table 3.1 Push and Pull Factors

Urban Push Factors	**%**	**Suburban Pull Factors**	**%**
Traffic Problem/lack of safety	39	Attractiveness of development	57
Busy crowded nature of context	23	Quiet secluded area	46
Level of crime	20	Good environment for children	30
Poor environment for children	17	Safety from traffic	29
Lack of adequate gardens	17	Good local schools	26
Poor parking facilities	15	Green open environment	21
Lack of privacy	13	Proximity to other families	20
Noisy troublesome neighbors	12	Clean unpolluted environment	19
High levels of pollution	12	Good views of countryside	15
Street disturbances	12	Good privacy	15
Poor standards of school	8	Secure environment from crime	10

Source: Carmona, 2003, p.52

Related to that, Carmona (2003) summarizes push and pull factors behind the behavior of the house builders and the households in Table 3.1. The percentages illustrate the shares of the people’s preferences in the survey.

The titles in the Table 3.1 mainly concentrate on the spatial and the environmental advantages or disadvantages of the city center and the suburbia. According to the percentages, lack of security and problems related to car use are the main reasons for the disfavor of the city center. Researchers emphasize the fact that there is a strong linkage between fear of crime and segregation of the people. Csefalvay and Webster (2012, p.294) say that; "Residential developments are said to have been built hard-wired security measures such as walls, gates and guards because of the fear of crime."

In addition, percentage distribution shows that households prefer to live in more secure neighborhoods endowed with attractive housing developments. These housing developments are expected to have some unique features that allow the residents satisfy their needs and priorities (Carmona, 2003).

Therefore, house builders have the tendency to search for large areas at the outer regions of the cities in order to meet the requirements of new housing developments with specific attributes. Csefalvay and Webster (2012, p.295) say that;

> Developers want to produce high density dwellings to make profit and this is done by offering dwellings in a package with commonly owned and used goods and services which may be thought of as substitutes for land. Local governments want to attract affluent tax payers without the need for local infrastructure expenditure, and homeowners want to live in a safe environment with a wide range of amenities and exclusive access.

Availability of large tracks of land at the outer regions of the cities let large capital construction firm to concentrate on big projects that contain large number of housing units with various indoor and outdoor attributes. Related to that, the roles of large capital construction firms have become important in the structural development of the cities.

This chapter aims to identify the basis of large scale house building in the world by reviewing existing literature that contains various country examples. This section mainly concentrates on the meaning of large scale house building across the world, dynamics of house builders and households, and the steps of the production process considering household satisfaction under the context of scale economies.

3.2 The Definition of Large Scale Housebuilding

Housebuilding exhibits different features across the world. This is mainly because of the economic conditions in international and national markets, legislative constraints defined specifically for each country, production characteristics of the firms and different amounts and the size of land supply in each country has to offer (Ball, 2003). Thus, the definition of production levels in housing market varies from country to country.

Production level of a house building firm has been affected by many inputs in a country. Ball (2003) says that not only land-use planning process but also national laws for property and labor market that defines the production cost have significant effect on the structure of the production. Buzelli and Harris (2006) and Watkins (2012) say that, due to the land constraints, geographical features have an important impact on the production level. The availability of the land that is suitable for house building activities has a direct effect on the production scale of the house builder. Ambrose and Peek (2008) focus on the financial advances of the firms. They say that firms with better access to capital markets and finance resources tend to produce more with different features and extent their production scope.

Considering all these inputs in the process of production, it is said that house building is shaped by various firms with different sizes. Cho (2011) expresses the

ways to categorize the size of a firm in housing. Some of them are based on the number of employees, some on completions per annum, housing turnover (revenue), or profit. It is a common knowledge that, house building is carried on by large number of small firms and a few large firms. The scale of the production level of each firm differs, however, the most common conclusion that the studies reached related to house building industry is that they would impressively benefit from producing more that is from the economies of scale.

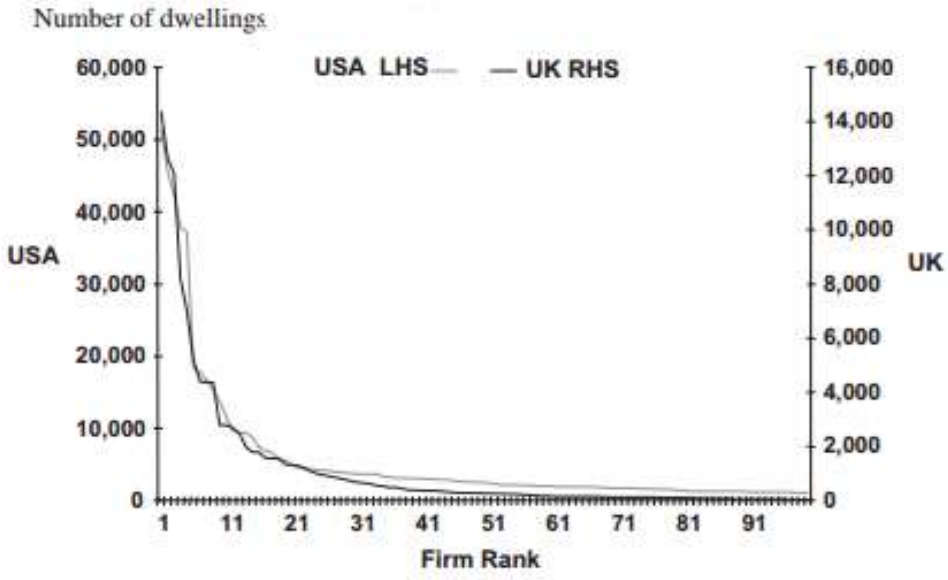
However, defining the concept of scale in house building industry is a critical point. Due to the housing supply data constraints, in many studies scale mainly refers to the total output produced by the firms in a year (Di'Pasquale, 1999; Ball, 1996, Ball, 2012).

Ball (2013) tries to analyze large scale production of house builders of different countries in order to observe the main reasons behind the large scale residential investments and different features of large scale house building across the world. In this study, the scale of house building is analyzed through the size of the firms in Australia, UK, and USA. The firms observed in the study are ranked according to the total output they produce.

In this study, Ball (2013) reaches some conclusions regarding to the larger house builders. Firstly he identifies that larger house builders in all three countries focus on producing private housing. They prefer to produce various type of housing in large amounts. They have the ability to use and spread their experience and resources in all their projects. They have benefitted from spatial diversification which increases the scope of the housing market. Such diversification both spatially and in production help firms to maintain scale benefits by utilizing continuous techniques in production, purchasing inputs and in marketing (Nicol and Hooper, 1999).

Their capability of producing in large amount indicates capital accumulation that allows them to invest in various areas at the same time. They have the power to manage many projects at the same time both in economic and institutional terms. They are publicly listed on the stock market. They are financially secure and transparent which help them to supply lands that ensure continuous project investment and asset utilization.

Related to that, Ball (2013) identifies that these firms have important shares in the market. Among the three countries, largest firm which has the highest output has the market share of 3% in Australia, 8% in UK and 3% in USA. When ten largest firms are considered the shares turns into 14% in Australia, 44% in UK and 15% in USA.



Source: Ball, 2013, p. 193

Figure 3.2 Rank Sizes of Firms in UK and USA

As can be seen in Figure 3.2 the level of output decreases rapidly from that of the largest producers. This indicates the L-shaped distribution in house building

meaning a few large producers and lots of small firms producing similar levels of output (Ball, 2013).

Related to that, the scale in the housing production copes with serious fluctuations in output levels because the structure of the house builders varies from country to country both economic and institutional terms. They face with different legislative and land constraints which have direct impact on output levels. However, studies show that regardless of all these constraints mentioned, large scale builders are defined through their output levels, market shares, employment levels, their institutional capacity, and capital accumulation levels. Cho (2011, p.3) expresses the fact that, the general structure of house builders has changed from "…medium sized regionally based from … to multi regional specialist home builders of large conglomerates."

Studies (e.g. Ball, 2013; Cho, 2011; Naguchi, 2003; Veenstra et al., 2006, Archer and Cole, 2014) show that large house builders across the world are expected to have power in both economic and political terms that can invest in multi-regional levels with their experience, employ important levels of people in order to guide and shape spatial developments of cities with their spectacular residential investments.

Correspondingly, to express a general definition for the concept of large scale house building is difficult since studies show that, numerical indicator of each input mentioned above points out that the large scale house building in a housing market can be defined differently for each country according to national economic conditions, housing policies, legislative constraints, the production level in the country and spatial development of the cities. The production level which is considered as large scale is determined according to the socio-economic conditions in a country. However, it is a common idea that, the size of the firm which is defined according to the unit completions in a year is the basic source for the analysis regarding to the large scale house building in a market.

3.3 Importance of the Size of Construction Firms in Housing Production

The nature of the construction sector is dynamic due to various operating environmental, structural and product characteristics. However, performance scope of the industry is very extensive (Dansoh, 2005). The performance of the industry mainly relates to the level of capital invested and the innovative capacity of the firms. Firms with capital availability for well-defined innovation strategy would be able to provide high performance in the market (Guan et al. 2009).

Considering housing sector, unlike any other manufacturing sector, it is very fragmented. In most economies; there are few large construction companies and many medium and small sized firms in the housing sector. This results in limited level of cross-information and feedbacks which make fewer economies of scale (Douglas and Ransom, 2007).

Because of the large number of the firms in the market, construction industry is likely to be highly competitive. There are many competing actors with different economic powers and production capacity in the housing market. In the market, there are two different types of competition between the house builders. The first one is between the house builders which have similar production techniques and capacity. The second competition takes place between the different types of house builders with different production levels, technology, and marketing systems. In other words, conventional house builders do not only compete with each other but also with self-builders or large capital construction firms (Ball, 2012).

House builders' capacity to compete in cost/price and quality is determined by in-use technology, on-site productivity, economic conditions and capital power and capacity to realize economies of scale in production and marketing (ISR, 2013). Thus competitiveness in the market is mainly defined by the size of capital accumulation and productivity of the firm.

In such an environment, firms' compatibility increases as long as they increase their production with their innovative systems which directly relates with the capital accumulation of the firms. As the firms become more innovative, the projects become more unique, developed, and large sized. However, in the housing sector only large capital firms can be innovative whereas the others are less likely due to the slim and static profits that allow little application to the finance research in the long run. Thus, there is a strong relationship between the capital accumulation of the construction firm and the scale of the projects they produce (ISR, 2013).

Related to that, large capital construction firms are likely to produce more and enjoy scale economies and they are more advantageous in many terms in the market (Cho, 2011).

Firstly, large capital construction firms which build more housing units in bigger construction sites are likely to reduce costs by purchasing inputs at lower prices. Due to their production level, they acquire every construction supplies in large quantities and they enjoy the advantage of price cuts in their quantity purchases. These cost reductions supports firms to reach economies of scale (Archer and Cole, 2014).

In addition, due to their economic power, large capital construction firms tend to access finance resources more cheaply and easily and they have stronger positions in financial negotiations, such as in interest rates. In this way, they act more freely in their investment decisions.

Moreover, there is a strong argument in the literature that larger firms benefit more from the planning constraints. Ball (2008) says that larger firms perform better in general in terms of unit completions and the related financial outcomes such as profit. Related to that, large capital construction firms not only act as an economic actor but also political terms. They have more effect on land

development decisions with their lobbying relations and they can affect political bodies in order to direct their plan decisions on firms' owned land, which will ease their investment plans. They also have power to affect the supply land (Ball, 1986, 2003 and 2012). Larger firms employ strategies to influence local land markets through their land banks. As Ball (2003, p. 909) notes:

> …larger enterprises have employee skill-bases, capital-bases and land banks that enable them to spread risks, lower financing costs, improve negotiating positions with land-owners and facilitate strategic actions...

Finally, large capital construction firms have enough capital accumulation to buy advertisement services and able to put more resources in housing design and differentiation (ISR, 2013). Studies show that, regardless of the scale of the production, large capital firms tend to produce various housing types and design in an innovative fashion with specific and original features. Not only in production diversification, has Ball (2012) brought about the fact that larger firms are able to benefit from spatial diversification as well. Working at different locations increases economies of scope in the housing market

After realizing the contributions of large capital construction firms not only in economic conditions of the country but also in the spatial development of cities and in living qualities of citizens, housing industry in developed countries has experienced important transformations in the production process. For example, in the UK, housing production was characterized by a large number of small firms in until late 1970s (Ball, 1983). Studies indicate the fact that, (e.g. Ball, 1996; Gillen, 1997; Nichol and Hooper, 1999) the house building industry has been transformed substantially in structural sense in the last few decades. Design of housing developments has become an economic good as well as a commercial and an industrial good.

Projects have begun to be evaluated as a total element, not only for the building structure and the housing unit features but also for external attributes of the project (Hooper and Nichol, 1999). Especially after the 90s, in the UK 80% of the housing production has been held by large capital firms. In 2010, one large capital construction firm in the UK produced 23% of total housing completions (Payne, 2013).

The study of Buzelli (2001) shows that although the housing sector in North America has experienced similar structural transformations, large capital firms are distinctly not concentrated on producing high levels of output as seen in the UK. Large capital construction firms in North America tend to use their financial resources to shift between alternative market opportunities and innovative activities.

The firm structure and the production strategies differ from country to country across the world. However, studies show that large house building firms are more advantageous in the housing market with respect to the small and medium ones; as long as they use their innovative power and capital accumulation in a productive way.

In simple terms large capital house builders benefit from scale economies by producing more, which give them cost advantage. And as long as they produce more, their compatibility in the market increases, which result in the increase in investment opportunities in the new development areas.

3.4 Relationship between Economies of Scale, Scope, and Product Differentiation in Housebuilding

Increase in the competition in the housing market and rising demand for variety of housing result in the fact that house building firms consider to produce new

products with unique designs. Firms shape their business plans for growing individualization of demand that means offering variety of products to the market (Halman and Hofman, 2006).

Presently, firm's ability to produce single product is not enough to stay competitive in the market. Related to that, house builders aim to produce according to the demand of the customers, which are shaped by their tastes and preferences. This condition forces firms to maintain a balance between producing standardized goods and variation in products (Veenstra et al, 2006).

In the early 70s, house building industry concentrated on mass production of housing in developed countries. However, this is no longer acceptable by the households who are only satisfied with differentiated goods in terms of quality of design and endowments (Naguchi, 2003). Related to that, house builders are searching new methods to affect customers with the design of houses that they produce.

In many countries across the world, house builders try to maintain customer oriented business plans in their production strategies. Thus, the general structures of the housing production differ from country to country. Kendall (1999) emphasizes that in Japan and in the USA house builders are customer oriented concentrating on light structures which are more preferred in the housing market. In Germany, high quality structures, which are more luxuries than conventional ones are preferred in the housing market (DTI, 2004).

In addition to that, in the UK, the effect of customer preferences has become the main concern of many studies (Ball, 2003, Barlow et al, 2003; Craig and Roy, 2004). These studies indicate that most of the households in the UK prefer to live in housing estates that have unique attributes and customized in design (Halman and Hofman, 2006).

The business strategy focusing on customer orientation brings about the product differentiation in the industry. Product differentiation in the housing market is an important determinant in the price level of housing (Goodman and Thibodeau, 2007). Considering the fact that, housing is a very heterogonous good; the market value of housing is a function of structural, neighborhood, and locational characteristics of the property. Under these circumstances only a few large capital firms are able to add variety of products in their portfolios.

Large construction firms try to produce various types of housing in order to compensate the short-term shifts in demand. However, they are also expected to be rational about their product portfolio in order to obtain the advantages of any scale economies in production. Ball (1983) explained that standardization in house building is an inherent feature of the large scale production and he said "private house building stands in stark contrast to the rest of the construction industry in the extent to which its product is standardized."

Standardization of housing unit can refer to the size of the dwelling unit or the design of the project. Ball (1996) indicates that large scale production creates economies of scale if only it produces standardized products. He suggests that replications in the housing production are the major factor in the cost reduction. Using standard design appears to be cost advantageous for large capital construction firms. Scale economies can be reached by lowering the unit cost of production of a housing unit by producing larger volumes.

In fact, studies show that number of housing units produced by the same firm from 50 to 300 decreases the cost per unit by about 12%. However, only a small fraction of construction firms are actually engaged in such a large scale production (Ball, 1996).

However, the determination of what range of output to produce is critical for business decisions of construction firms for reaching economies or diseconomies

of scale in the production process. The investment policy of the firm is highly related with the extent of economies of scale. If scale economies exist and demand grows with respect to a specific good, construction firms may find it profitable to invest more to produce that product (Ball and Nanda, 2012).

The concept of scale economies for single product firm has been the focus of many studies. The case of multi product firm has been the center of interest. The efficiency of a multi-product firm needs to be examined by estimating scope economies. The existence of economies of scope may lead to reduce the cost of producing. Adding new product or deleting some of them generally involves changing the types and amounts of a variety of inputs and consequently is a long-run decision (Goodman and Thibodeau, 2007).

In the housing market, the product differentiation is observed in the form of varying the size and types of the housing units produced. House builders produce housing units with various attributes which have different prices for households with different income levels (ISR, 2013). Ball and Nanda (2012) say that if there is insufficient housing with special attributes designed for the tastes and preferences of households with different income levels, the quality of life of households who cannot acquire such units will decline.

If households value housing variety in the market, they would like to benefit from a large housing market because in such, more unique products would be introduced to the system, which will increase households' utility (Hesham and Anas, 2003).

This condition mainly relates to the increasing income elasticity of housing demand mentioned in Section 3.1. Some types of housing are considered as a luxury good because households' expectations for a shelter have increased with the product differentiation strategy of the house builders in the market. House builders' business plans regarding to the expansion of the production scope result

in the realization of new housing demand. House builders are currently well aware of the households search for better life qualities with the increase of income levels; they tend to differentiate their products according to the needs and preferences of the households, which serve their desire to live in better standards (Ball and Nanda, 2012).

Considering the fact that in a housing market, product differentiation can only be achieved by investing at different locations and producing housing units with different size and endowments, this can be achieved by the firms which have enough capital accumulation to invest at different neighborhoods with different land values and have enough institutional capacity to produce variety of housing units with various attributes. There is a strong link between the capability of producing in large numbers and producing with different features.

3.5 Identifying Household Preferences: The Relation Between Household Satisfaction and Housing Production Schemes

People have natural desire and preference for owning a house. Choosing where to live is a critical point for households which can be affected by demographic and economic trends, including health and environmental concerns (Litman, 2015). Hurtubia et al (2010) explains these conditions as the constraints of households in decision making process in housing purchases which are related with capacity and budget issues.

People's desire for owning a house may occur for different reasons. It may be a desire to have a property of one's own, for stability, for pride of ownership or they may want to buy a house to be a part of elite group, just be in a group or for prestige. In other words, households may act under Veblen, Snob or Bandwagon effect in the market. Thus, satisfaction level for each reason is defined differently for every household (Haurin et al., 2002).

In simple terms satisfaction can be defined as a condition that meets a person's expectation. Related to that, Dekker et al (2011, p.482) define housing satisfaction as;

> Satisfaction with a dwelling means that tenant considers the accommodation large enough or feels that it has enough amenities. Satisfaction with the estate implies that tenant likes the neighbors, the physical state of the area or the location relative to the city center.

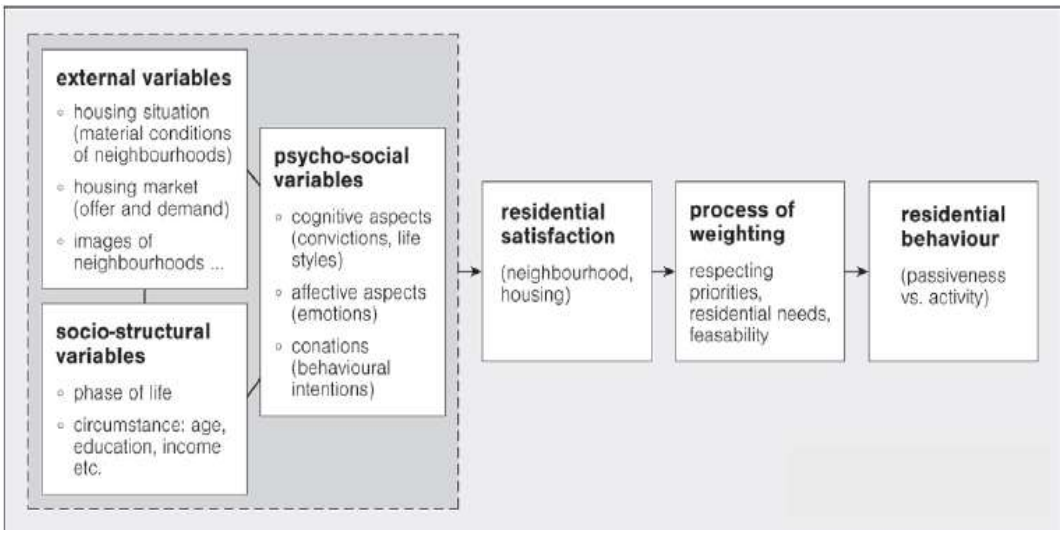
Households' satisfaction level for housing purchase is important for the functioning of the housing market since it is generally accepted that higher levels of satisfaction among households are beneficial for both the households and for the producers of the dwelling units and housing estates (Dekker et al., 2011).

As mentioned in Section 3.4; households satisfaction level in purchasing a house would increase as more types of housing is introduced to the market which are produced according to the tastes and preferences of households. Thus, heterogeneity of housing has an effect on household decision making in both consumption and investment terms . Consequently, the choice of housing is a set of choice of attributes (Laszek, 2013)

Figure 3.3 illustrates the households' satisfaction and choice behavior in housing purchase. It indicates that household satisfaction and housing choice is affected by external, socio-cultural, and structural variables. Francescato et al (1989) defines this as;

> ... a complex, multi-dimensional and global evaluation of living environment that comprises cognitive and affective aspects and connotations...

Herfert et al (2012) explain the residential mobility and housing preferences through household satisfaction level with housing unit and neighborhood attributes (Figure 3.3).



Source: Herfert et al, 2012, p. 59 (based on Francescato et al., 1989)

Figure 3.3 The Relation of Housing Choice, Housing Satisfaction, and Behavior.

They say that, housing satisfaction is determined by triple interaction of external variables such as housing market conditions and physical structures of estates; socio-structural variables such as education, age, and income levels of households and psycho-social variables such as behaviors and emotions. Thus, households' housing preferences and satisfaction level is a result of environmental and physical attributes of housing (Flade, 2006).

Ibem et al (2012), say that there is a strong relationship between the households' characteristics, preferences, and tastes, attributes of housing and household satisfaction level in Nigeria. They indicate that household characteristics such as sex, age, education and income level which basically shape tastes and preferences, has strong relation with physical, locational and spatial attributes of housing. The level of positive interaction between them determines the satisfaction level of households. The satisfaction level of the household is measured by the indicators such as spatial comfort, scale, security, service, and aesthetic quality. The result of

their study show that welfare levels of the households increase, as they have more attributes of housing.

In addition, Delmelle et al (2014) say that, new residential development patterns are characterized according to the household preferences in USA. Wang and Li (2006) argued that households' utility and satisfaction increase with multi-level exercise, involving tenure options, housing types, neighborhood, and location in China.

It is known that households are willing to pay more to live in a neighborhood with low crime rate and other security problems (Wang & Li, 2006). Tan (2011) say that house builders should consider safety issues in housing development project. He also adds that housing estates with security precautions could raise housing property prices by 18.1%, indicating that households would prefer to live in secured areas.

There are many studies for the effects of structural attributes on household house buying preferences (Fierro et al, 2009; Opoku & Abdul-Muhmin, 2010). Clark et al. (2006) and Hurtubia et al (2010) show that households aim to increase the size of their housing lot as it symbolizes more luxury for the inhabitants. In addition studies show that households put importance on the presence of garden or playgrounds in their house for children's activities. Related to that, studies from Europe (Luttik, 2000) and North America (Tajima, 2003) show that households are willing to pay more for garden and green space with open space activities.

In addition to that, Dekker et al (2011), aim to find out which housing unit and housing estate characteristics in large scale housing estates affect household satisfaction in nine different countries across Europe. They reach the conclusion similar to those of Baker (2008) and Clark and Onaka (1983) that in the context of large scale housing estates; space and quality of housing is a positive asset for all households. Their study also shows that households with children are less satisfied

with high rise housing estates. They search for the presence of gardens for their children. At least they prefer to have playing areas in their housing estates. On the other hand, older households' satisfaction level is less related to the existence of garden. They have higher levels of satisfaction with high rise housing estates with respect to the young ones. Furthermore, they indicate that households with higher incomes are more satisfied with large housing estates which have different amenities within.

In summary; studies regarding the relation between the household satisfaction level and the housing production schemes show that, households' reaction to the production schemes vary from country to country. However, it is a common fact that, satisfaction tends to increase in accordance with the proportion of meeting needs and priorities of households. Considering the fact that needs and priorities are mainly defined by the tastes and the preferences of households; house building industry tend to define their production schemes according to those tastes and preferences in order to operate in a well-functioning housing market.

3.6 Concluding Remarks

Globalization has different impacts in various countries resulting in different spatial developments in particular cities. The transformations in social, political, and economic conditions in cities have forced people to redefine their tastes and preferences focusing on better urban housing. This has led to transformation in the household behavior in housing purchases. Searching for better living areas combining with individualism and decentralization movements in cities, encourage people to live in more secure areas which have various attributes within. Households tend to leave overcrowded city centers for residential areas out of the city with more open spaces, housing amenities including car parking areas.

However, transformation in households' behavior in housing purchases generates different spatial results in different countries. Because of differences in legal frameworks, planning regulations and applications, housing policies, social values, economic conditions, production characteristics of the house builders and different amounts and the size of land supply it is observed different production schemes in housing market across the world. This chapter aims to analyze the general structure of large scale housing production across the world, and evaluate the approaches and the consequences on both house builders' and households' sides.

This research shows that, due to different features of the housing market and the construction industry in each country; a general definition for production schemes, level, and scale of output may not be possible. Related studies indicate the fact that, although there is no single definition or a universal explanation for the scale of production in house building industry, the annual output of the house building firm is used as the basic indicator in some studies.

The literature related to the subject points out that as the total output increases, the size of the firm increases as well, and as the size of the firm increases, they become more innovative and their projects become more unique. Their innovative capacity and capital accumulation defines the scale and the quality of the projects they produce. Due to their institutional capacity, economic power, and investment capability, they are able to produce various types of housing units with different indoor and outdoor attributes. Moreover, there is a strong argument in the literature that larger firms benefit more from the planning constraints. Large capital construction firms not only act as an economic actor but also political terms. They have more effect on land development decisions with their lobbying relations and they can affect political bodies in order to direct their plan decisions on firms' owned land, which will ease their investment plans. As long as they use their production capacity efficiently, large capital house builders are more

advantageous in the housing market because they benefit from scale economies by reducing their production cost by producing more.

Large capital house building firms have to define their production and business strategies based on consumer-oriented, focusing product differentiation in order to reimburse the temporary shifts in demand in the process of producing more. The range of output produced by the large capital house builders is determined according to the demand of the households in a way to increase their utility and satisfaction level. In other words, production scope and scale are defined by the mutual interaction between households and house builders within their economic powers. House builders have to take into consideration households' characteristics, preferences, priorities, and tastes; in defining their production schemes which would increase utility and satisfaction of households.

However, defining circumstances of household satisfaction is not easy. Because choosing where to live is a critical point for households which can be affected by demographic and economic trends, including health and environmental concerns. The constraints of households in decision making process in housing purchases are associated with capacity and budget issues. Related to that, people's desire for owning a house may be desire to have a property of one's own, for stability, for pride of ownership or they may want to buy a house to be a part of elite group. In other words, households may act under Veblen, Snob or Bandwagon effect in the market. Studies have shown that, as the scale of the housing estates increases, the odds of the availability of specialized attributes has also increased in a housing estate and the attraction of such estates increases in the market. Thus, the large scale housing estates are more likely to increase the satisfaction and utility of the households and increase the profitability of the house builders.

In summary, large scale housing production implies different results and show different outcomes for different countries. Related to that, households' priorities and preferences differ in each country. However, studies show that, households

are satisfied as long as their demands are met and large capital house builders are more likely to meet their desires in the market with respect to the small ones. Studies confirm that large capital house builders can cope with the shifts in the demand, differentiate products, and lead urban development in order to provide the most preferred types of housing for households. In this context, the next section analyses the housing market conditions for large scale housing production in Turkey by taking into consideration the issues raised in this chapter.

CHAPTER 4

AN OVERVIEW OF LARGE SCALE HOUSING PRODUCTION IN TURKEY IN THE LAST TEN YEARS

4.1 Introduction

With the effect of globalization on economic, social, and political life, in the 2000s there has been a radical shift in housing market in Turkey from populist to neo-liberal mode. Especially with the liberal economies, urban space has become one of the most profitable sources of investment. As a result, cities have become the focal points that are applied aggressive marketing strategies that attract capital by house builders. Large scale housing projects have an important role in these regime shifts as to their investment power to the areas which have not been economically fully exploited in cities (Kuyucu and Ünsal, 2010).

Combining with the new definition of life style, shifts and consumer preferences and large scale housing projects supported by the regime shifts bring about desire and a need for a new housing pattern in urban land by both households and house builders in Turkey. It is inevitable that, both households and house builders in Turkey change and redefine their vision of housing preferences and their priorities because of external and internal forces.

Presently, in Turkey households are not only concerned about the locational and price advances of the housing but also they consider the design and quality of the housing site, services and attributes that are provided. Those circumstances are mainly related with the supplier, therefore reputation and the previous projects that have been built by the house builders become important. In addition to that, parallel to the demand of households; in the way of creating living areas with styles and prestige rather than only housing unit; house builders produce housing in mass amount focusing on profit orientation and scale economies. They

concentrate on the idea of architectural signature and to become a trustable supplier for households.

Although, Turkey was introduced to the idea of new types housing areas both in physical and psychological terms in the 80s, enforcement of Mass Housing Legislation paved the way for the production of such areas in large scales. At the beginning the main aim of the house builders was to meet the standard demand and need of the households. However, in time with increasing demand for such housing estates and the competitive environment in the construction sector, the definition of large scale housing production has changed in that sense.

Especially with the 90s, high income groups began to prefer to live in more isolated areas away from the city crowd which are more homogenous in both social and economic terms. These types of areas began to appear at the outer fringes of the cities which were donated with unique endowments that attract high-income groups. The desire for status, privacy, and investment potential reinforced the idea of becoming a part of isolated community.

Presently, due to the increase in car ownership and growing concern for healthy living environment, demand for living in housing estates which provide most of the preferred amenities has increased which lead house builders begin to produce such goods in which parking, fitness and recreational areas with security services as well as special indoor housing attributes are available. Households extend their expectations from a living area and house builders are expected to diversify their products. Reputation of the supplier turn out to be one of the considerations in the decision making process. So, new housing projects are qualified due to their house builders.

The power of house builders is mainly determined by the quality, reliability and the continuity of the projects. Thus, marketing strategy, advertisement, and financial opportunities become important in the market. In a competitive

environment such as in housing market such conditions can be provided only by the firms who are economically powerful and can maintain their economic conditions for a long time.

Related to that, the main aim of this section is to investigate the political, social, economic, and spatial reasons that affect the development of large scale housing production in Turkey. In order to do so, the chapter begins with the discussions on the housing policy applications and probable outcomes for large scale production in the country. The chapter also puts emphasis on statistical analysis of the housing sector in order to evaluate and define the general structure and investigate the data that point out the reasons behind the large scale residential investments in Turkey. Next, historical development of large scale housing estates is analyzed from both house builders' and households' sides. Under this context, it has been tried to explain the definition of the perception of large scale production in the housing sector by analyzing the production structures, styles and the applications of actors in the process. This part mainly puts emphasis on the importance of large capital construction firms to investigate the mass production with special attributes in order to evaluate the power of large scale housing production in the determination of housing pattern in both households' and house builders' sides. The chapter concludes with the comparative analysis in the housing production schemes in Turkey, Ankara, and Yenimahalle in order to understand the households' preferences and production strategy of house builders in the market at the moment.

4.2 The Effects of Housing Policies on Housing Production Level in Turkey

The production of housing is a process which absorbs social, economic, cultural, and political issues that employs many actors. Key actors in the housing sector vary significantly with respect to their understanding and approach to housing which imply different interests and aims in the sector. Thus housing policy is used

as an intervention tool to regulate the market in order to prevent conflicts of interests between the parties. Related to that, each state has adopted various housing policies specifically constructed for the needs of both producers and the consumers in the market. Therefore, housing policy has a direct impact on the production level of housing in a country. Harsman and Quigley (1991, p. 1) defines that as following;

> The production, consumption, financing, distribution, and location of dwellings are controlled, managed, and financed in complex ways. In fact, compared to other economic commodities, housing is perhaps the most tightly controlled of all consumer goods. The policies have been adopted for a variety of economic, political, ideological, and historical reasons. The application of these policies affects the view and development of urban areas, the economic well-being of households, and their social environments.

Related to that, housing policies are defined according to three different motives. Firstly, they aim to promote efficient allocation of resources and goods in the economy. Harsman and Quigley (1991) say that government interventions for financing or pricing housing may have an effect on the promotion of the efficiency in the market. Secondly, housing policy is one of the best tools for the redistribution of income. Lastly, housing policy aims to provide social security for the citizens which aim to improve health and safety. Under these circumstances, three types of policy instruments are defined for the housing market; demand-oriented, supply-oriented, and direct market interventions.

In general terms; demand-oriented policies cover housing allowances and tax exemptions to owner occupiers. Harsman and Quigley (1991) say that, cash transfers are stimulated by equity concerns. However, tax exemptions or other subsidies for housing mainly involve political concerns as well. Supply-oriented polices relate to planning and land use policies, building and zoning regularities and construction and interest rate subsidies. These policies are also designed under the context of equity to produce enough housing of reasonable quality.

Direct market intervention can be in the form of price and rent control and tenure security regulations which mainly aims to secure tenants in the market.

Housing market in Turkey has experienced all three types of housing policies identified by the motives mentioned above. The most important demand-oriented policy has been the provision of the mortgage credits below market interest rates. The mortgage credits have been supplied different bodies in Turkey. In the last decade, the credits for the purchase of Housing Development Administration (TOKİ) housing have become the most important demand-oriented policy in Turkey. In addition to that, with the increase of the involvement of commercial banks in credit funding, they have become another source of the mortgage credits in the country. Also zero capital gains' tax from real estate investments when sold after five years of acquisition has been one of the tools in the demand-oriented policies (Türel and Koç, 2015).

In addition to that, supply-oriented policies in Turkey have been described through mass housing production, VAT reductions for certain housing types and provision forms and various legislative developments. Housing production by TOKİ on publicly owned land has become the most important supply-oriented policy in Turkey in the last ten years (Özdemir, 2011). This approach of the government is generally called "mass housing provision" as it helps to produce and sell housing units on a mass scale. The rapid increase in the mass housing production has attracted the attention of the private sector investors as well. The decentralization policy which is defined in the Urban Development Law No. 3194 leads to new large scale residential investments and land development activities in the country.

Considering the housing production statistics, it is seen that, housing has been produced in large amounts especially in the last ten years. The study of Türel and Koç (2014) points out the fact that, housing market in Turkey operates with little regulation, although high production level of housing in the country is taking

place at the moment. Among all the applied policies, they singled out three important policy applications which have significant effect on the level of housing production.

Firstly, decentralization policies defined in the Urban Development Law No. 3194 empowered municipalities to plan large areas of land for development. With this law; planning was decentralized and has led to an increase in planned areas on the developed land, and consequently housing production. With this policy, the way to make large scale residential investments on large parcels was opened. In addition to that, the Law on The Transformation of Areas under Natural Disaster Risk has led to rebuilding of large number of buildings located in the risky areas, especially for earthquakes.Second one is the reduction in VAT rates for the newly built housing. Mostly private sector has been supported by this approach as it promotes the new residential investment. VAT rates are applied in the housing sales according to the value of land which is built. VAT reductions would serve the interest of both house builders and households since these reductions increase profitability of the house builders and affordability in housing acquisitions. The third policy application that affects the level of housing production is zero income/capital gain tax where a property is sold after five years of acquisition. This creates an advantage for the investment in the sector because it increases profitability for house builders.

In summary, study of Türel and Koç (2015) reveals that, housing policy applications have determined the type, location and the level of production in Turkey. The policies mentioned above have played a very important role in the creation of necessary environment for the large scale housing production in the country. These policies not only have direct impact on the production level by supporting mass housing production but also establish necessary spatial conditions by enabling municipalities to develop land for new residential investments.

4.3 A Quantitative Review of Turkish Housing Industry in The Last Ten Years

Housing sector in Turkey has been in a significant development process in recent years. Housing has become an economic tool not only in domestic but also in international markets for Turkey. Thus, statistics of housing sector would give an insight for understanding of current situation and for the prediction of future residential investments.

There is an important relationship between economic growth of the country and the consumption and investment behavior of the actors in the market. Therefore; analyzing the growth, population, and per capita income would be important.
Table 4.1 illustrates GNP growth rate of Turkish economy between 2002-2014. Although population increased by 12 million and reached 77,7 million, per capita income has risen from 3,492 to 10,404 dollars, partly helped by the rise in the value of Turkish currency.

Table 4.1 Economic Growth, Population, Per Capita Income

	GNP Growth %	Population (million)	Per Capita Income ($)
2002	6,2	65,8	3,492
2003	5,3	66,8	4,565
2004	9,4	67,8	5,757
2005	8,4	68,7	7,036
2006	6,9	69,7	7,597
2007	7	70,6	9,247
2008	0,7	71,5	10,444
2009	-4,8	72,6	8,561
2010	9,2	73,7	10,003
2011	8,8	74,7	10,428
2012	2,1	75,6	10,459
2013	4,05	76,7	10,822
2014	2,9	77,7	10,404

Source: TUİK, TCMB

Table 4.2 shows GNP and building construction sector growth rate between 2002 and 2014. According to the values shown in the Table 4.2; both GNP growth rate and construction sector growth rate show similar trends. The most significant movement is observed in 2008. In this year, Turkish economy achieved 0,7 % growth, however, construction sector shrank 10,5% with the effect of the financial crisis in USA housing sector. In 2009, the global financial crises affected almost all economies in the world, thus Turkish economy shrank 4,8% and the effects of that on construction sector was much more devastating (-20,7%) (Kılıç et *al*., 2013).

Table 4.2 GNP and Construction Sector Growth Rate

Years	GNP Growth Rate (%)	Building Construction Sector Growth Rate (%)
2002	6,2	13,9
2003	5,3	7,8
2004	9,4	14,1
2005	8,4	9,3
2006	6,9	18,7
2007	4,7	5,3
2008	0,7	-10,5
2009	-4,8	-20,7
2010	9,2	18,3
2011	8,8	15,8
2012	2,2	0,5
2013	4,05	3,6
2014	2,9	7,5

Source: TUİK, TCMB

After 2009, the effects of global crisis began to diminish; Turkish economy has reached a growth trend and in 2011 economy grew by 8,8%. Parallel to that, building construction sector has expanded 15,8%. The study of Candemir et *al*. (2012) indicates that fact that, one of the main reasons behind the significant expansion of the building construction growth rate is the demand for new housing and the redevelopment of the existing housing stock in cities. In 2014, although

GNP growth rate is recorded as 2,9 %, whereas building construction growth rate is 7,5% indicating the ascending investments in the sector.

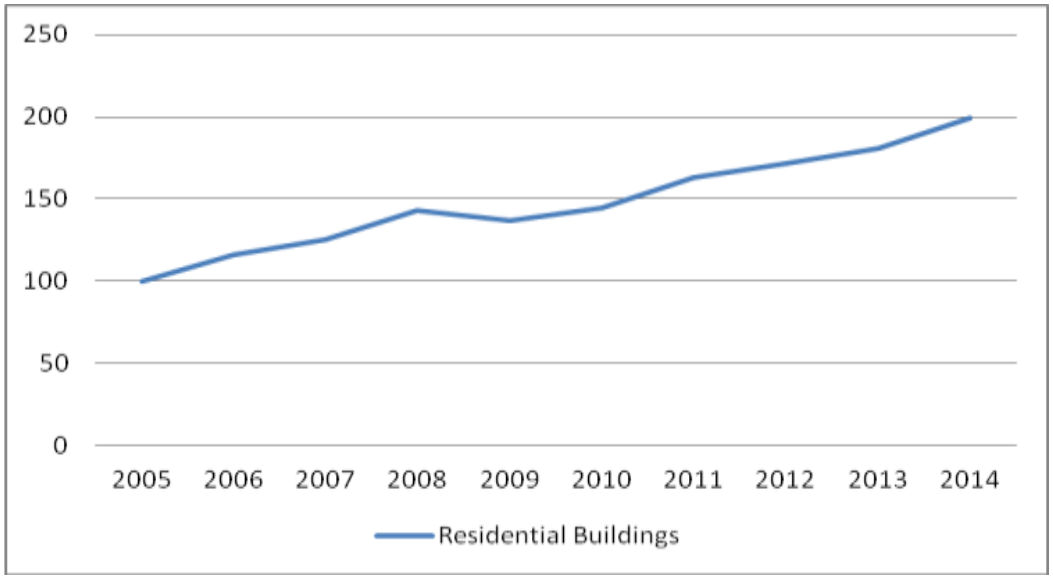
Similar to the effect on the growth rates, global financial crisis has also affected housing prices. Crisis reduced the housing consumption and resulted in the diminishing of housing demand which caused increase in prices. Table 4.3 illustrates the housing price index and the housing sales between 2010 and 2014. According to the table, housing price index increased in the given period. Due to the extensive increase in prices in 2012, there is a significant decrease in housing sales (Kılıç et *al.*, 2013). In 2013 there is a significant increase in housing sales although the prices continued to increase as well.

Table 4.3 Housing Price Index and Housing Sales (2010=100)

Years	**Housing Price Index**	**Housing Sales**	**Change in Housing Sales %**
2010	100	607098	
2011	110,215	708275	16,67
2012	123,08	701621	-0,94
2013	138,69	1157190	64,9
2014	158,81	1165381	0,7

Source: TUİK, TCMB

Figure 4.1 shows the building construction cost index for residential buildings between the years 2005 and 2014. The data shows that, within the given period of time, building construction cost index has increased significantly because of the increase in material and labor costs. The increase in the building construction index for residential buildings is 10,5% in 2014. This is mainly because of the increase in labor by 9,8% and material by 10,9% for the same year. This indicates that fact that, the increase in building construction cost (10,5%) and house prices (14,5%) index are higher than the inflation rate (8,17%) resulting in the increase the demand for housing in Turkey.

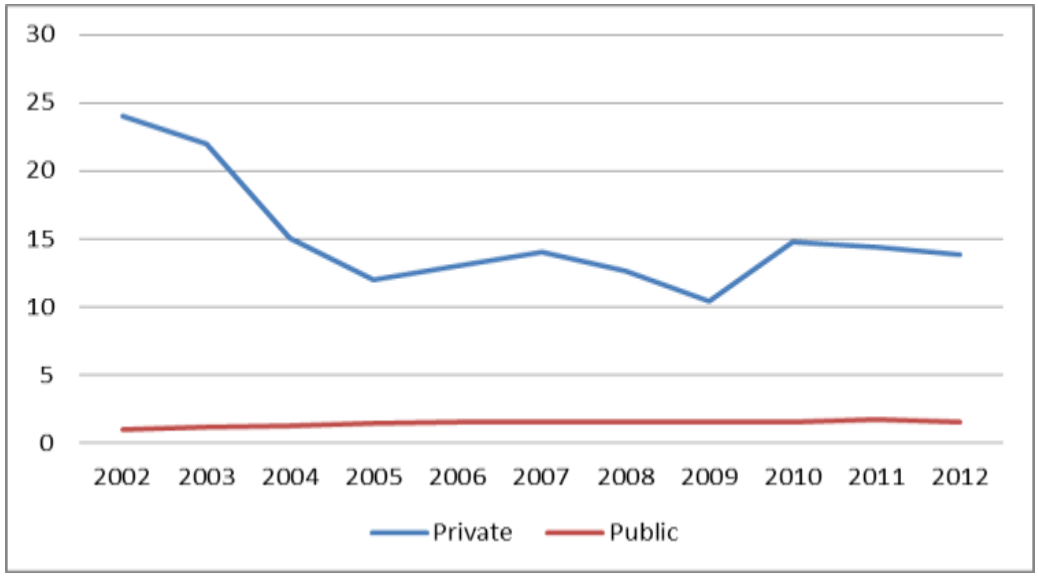


Source: TUİK

Figure 4.1 Building Construction Cost Index (2005=100)

In addition, gross fixed investment in housing mainly measures the value of acquisitions of new or existing assets. Thus, it shows the investments of new value added in the economy (Figure 4.2). In Turkey, in the private sector, in 2002 housing investments had the second place with the share of 23,3 % in gross fixed investment among all sectors, however, in 2010 it is in the third place after manufacturing and transportation. Although it has the third highest share, the share of housing investments has decreased 5 points from 23,3 % to 17,1 % in last ten years. In the public sector, the share of housing investment is below 2 % during the last ten years but it has increased from 0,8 % to 1,5%.

Within the research period, according to Household Budget Survey of TUİK, housing consumption and rent have the highest share among households' total consumption expenditures. Although the shares of housing consumption and rent expenditure have decreased, it is still in the first rank in 2011. Considering the housing expenditures according to the income groups ordered by 20% shares, 36,1% of total housing consumption expenditure is maintained by the fifth group with the highest income.



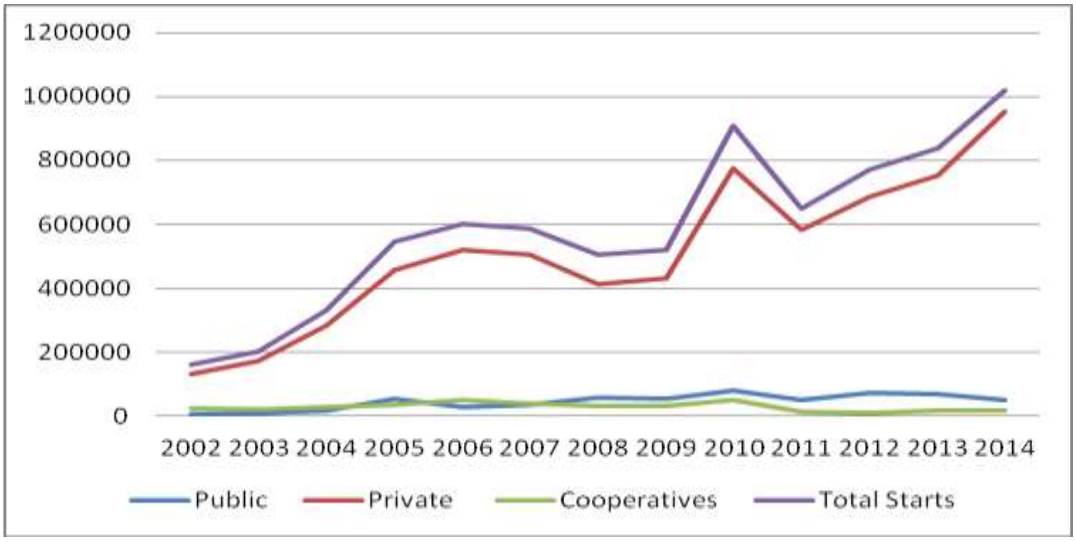
Source: Ministry of Development

Figure 4.2 Share of Housing in Gross Fixed Investment

Figure 4.3 illustrates the housing starts in Turkey and distribution of the production of housing among public sector, private sector, and cooperatives. between 2002 and 2014. Housing production has showed an excessive growth in the given period in Turkey. The market is dominated by the private sector in terms of production which is showing a steady increase from the beginning analysis period of the study. Within the research period, private firms dominate the housing production in Turkey. Privates firms produce above 90% of all production in last ten years. On the other hand, cooperative starts have decreased in time to 15.000 in 2014. Public starts increased in a very limited extent. The increase in total housing production can be linked to the housing policy applications in Turkey (Türel and Koç, 2015).

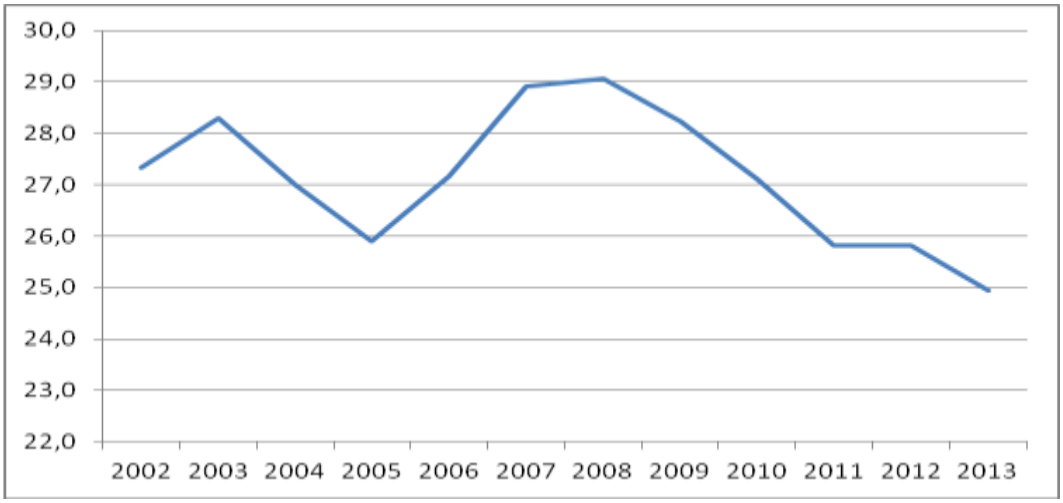
In addition to that, the ratio of housing credits to GDP and total credits provide information about the trading volume of housing expenditures (Figure 4.5). The share of housing credits in total credits has increased significantly from 1,18% to 10,92% indicating the increasing trend of credit use in housing purchase in last ten

years. According to the ratio of housing credits to GDP, stock of housing credits is also in an increasing trend.



Source: TUİK

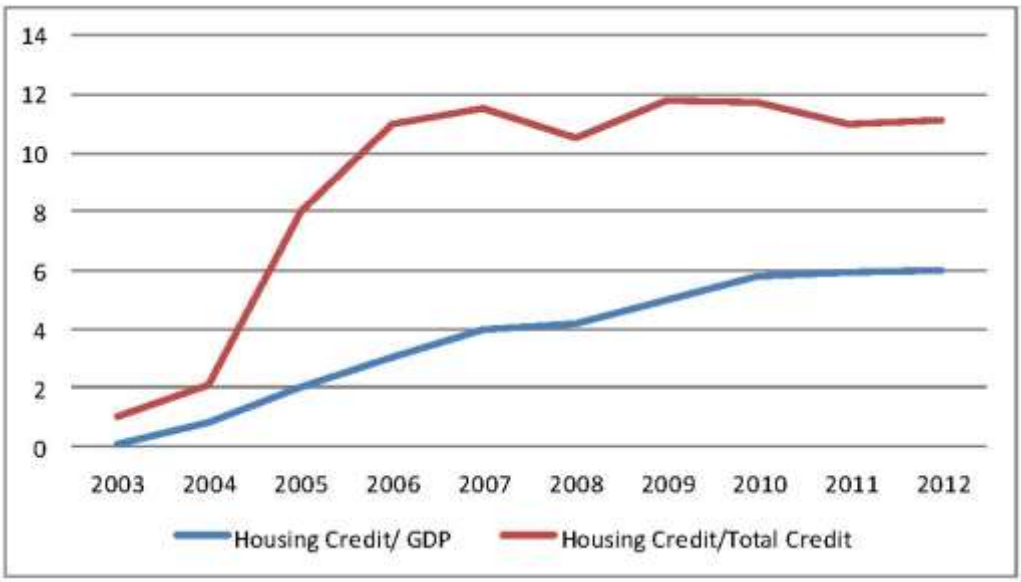
Figure 4.3 Total and by Producer Group Housing Starts Between 2002-2014



Source: TUİK

Figure 4.4 Share of Housing and Rent in Total Household Consumption Expenditures

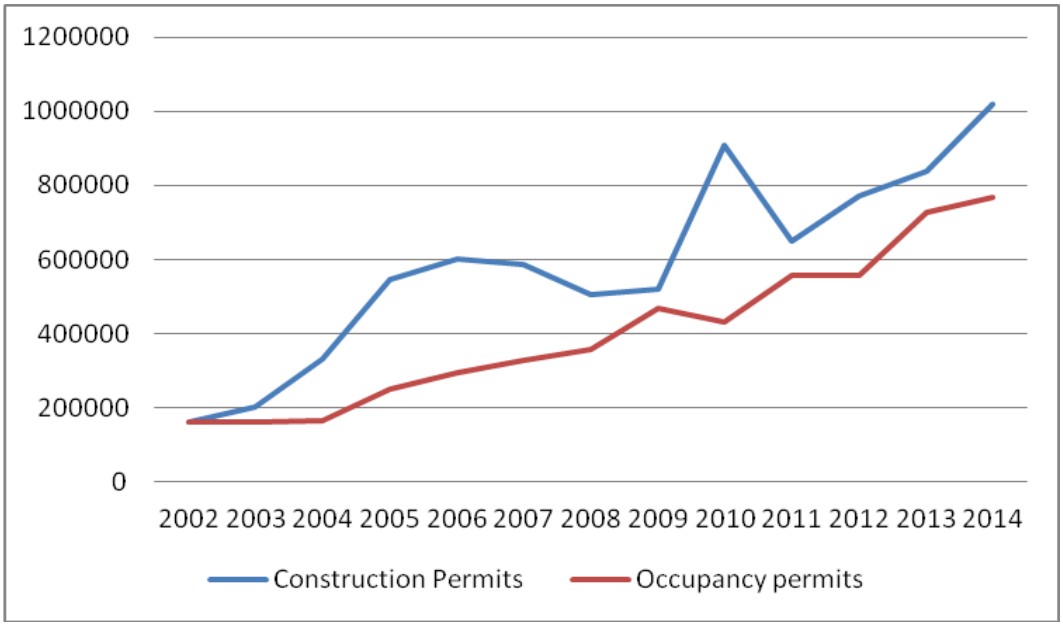
The number of housing units according to the construction permits has increased from 161,920 to 1.019.760. Within the same period, occupancy permits have also rise but they are below residential permits. Although small capital house builders are continuing to produce on single parcels in the city but the rise in the number of the construction and occupancy permits mainly relates to the tendency of private firms with large capital to produce at the fringe of the city onto the large parcels for middle and high income groups in large numbers (Figure 4.6).



Source: TUIK

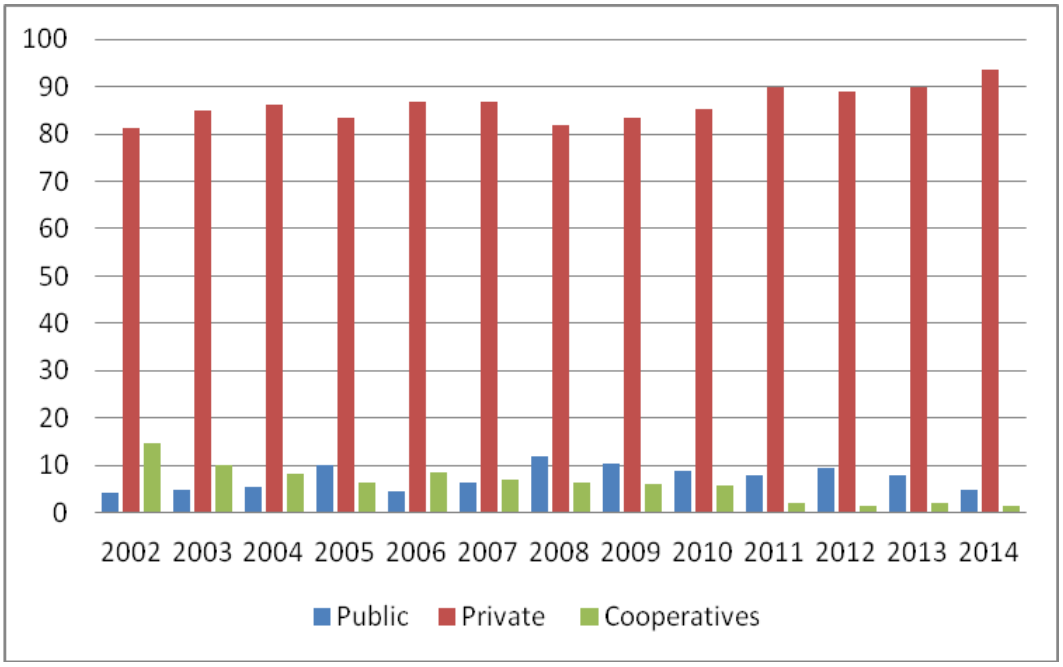
Figure 4.5 Ratios of Housing Credits, GDP and Total Credits

Having the biggest share in housing production, private house builders have the most important impact on the supply of housing. The share of cooperative has shrink in the study period. The contribution of the public sector varies in time but they remain in a limited context (Figure 4.7).



Source: TUİK

Figure 4.6 Total Number of Construction and Occupancy Permits



Source: TUİK

Figure 4.7 Shares of Producers in Housing Production

Review of the statistical data reveals the housing is produced in excessive amount in Turkey especially in the last ten years. The increase in the use of mortgage credits and land development facilities as a result of decentralization of planning activities can be associated to increasing housing starts in Turkey. Statistics show that tax redemptions and the increase in mortgage credits contribute to increase the private sector production. On the other hand the decrease in the share of the cooperatives can be explained by the reductions in government support and the end of TOKİ credits discussed at the previous section (Türel and Koç, 2015).

4.4 Historical Development of Large Scale Housing Production and Emergence of New Housing Pattern in Turkey

With the effect of globalization as in many other cities around the world, Turkish cities have been driven by the effects of transformation in social, economic, and cultural terms. These rapid changes have important spatial consequences which has a direct impact on housing production decisions.

Ataöv and Osmay (2007) summarize the urban transformation in Turkey in Table 4.4. Table illustrates the facts that, urban transformation is not only the result of the transformation of the built environment but also the transformation of economic and social structure of the society. As for the whole study is concerned, the main area of the concentration is the last column of the table.

After 2000, the economic policy of Turkey concentrated on EU and Customs Union and privatization. Definition of national economic policy in international level which was reinforced by free trade areas and tax reductions supports firms to operate in international markets. Operating in international level, firms began to learn and observe different methods and opportunities in the market. This new environment encouraged private sector to participate in various economic activities, including housing.

Table 4.4 Urban Transformation in Turkey

REGENERATION VARIABLES AND IMPLEMENTATIONS	1950-1980	1980-2000	AFTER 2000
STRUCTURAL/ CONTEXTUAL	*Economic Policies:* Economic Growth *Demographic Change:* Rural-urban migration and fast increase in urban population	*Economic Policies:* External Expansion of economy; Globalization and decentralization. *Demographic Change:* Increase in urban population; decrease in birth rate in metropolitan areas	*Economic Policies:* Privatization; EU relationships *Demographic Change:* Migration from east to west
SOCIO-ECONOMIC	*Types of Housing Provision:* Build and sell housing, limited number of cooperative, Mass Housing *Relation between Labor force and Housing:* Industrial and non-industrial employment of low-income labor-force; squatter housing to satisfy need of housing	*Types of Housing Provision:* Permitted and non-permitted housing *Relation between Labor force and Housing:* Those working at small sized production (manufacturing) units in city centers are unqualified and low-income population living in squatters and centre areas (neighborhood); decentralization of life spaces of middle-income group	*Types of Housing Provision:* Municipality Mass Housing Cooperatives, private sector luxury housing sites, low-qualified apartments, historical buildings in city centers, disaster houses by government loans where there is earthquake risk *Relation between Labor force and Housing:* High-income group are establishing housing neighborhoods on countryside; Housing types and standards are changing in squatters pursuant to the change in employment structure
ADMINISTRATION/ IMPLEMENTATION	*Distribution of Authority;* State Planning Organization, the Ministry of Development Public Works and Housing, New Municipalism Movement *Planning Implementations;* Central Planned Development Model; Integrated Planning Approach *Policies and Legal Regulations;* Municipality, Squatter, General Directorate of Building Land Office, Physical Development Planning Law, Law of Property Ownership	*Distribution of Authority;* Planning authorization had been given to local district municipalities; Local Agenda 21 *Planning Implementations;* Decentralization of urban development; Physical Development and Implementation Plans; Top-down management in *Policies and Legal Regulations;* Law of Metropolitan Municipalities; Physical Development Planning Law; Law on Conservation of Cultural and Natural Assets, Law of Bosporus; Law of National Parks and Repentance Laws	*Distribution of Authority;* Authority of Metropolitan Municipalities had been extended *Planning Implementations;* Strategically Planning and interactive planning implementations had been started *Policies and Legal Regulations;* Law of Metropolitan Municipalities, Financial Administrations, Urban Renewal and Law on Conservation of Cultural and Natural Assets
URBAN MACROFORM	"Azman Kent" (concentration in center, development of squatters)	Multi Centered Metropolitan Urbanization (Urban Sprawl; Legalization of illegal housing)	Regional Sprawl (Diversification of centers and establishment of new relation networks)
URBAN REGENERATION IMPLEMENTATIONS	1. Rehabilitation of squatter districts; 2. Decay of city center 3. redevelopment of squatter areas 4. Renewal of these areas	1. Renewal of risky and low quality areas 2. Implementation of upgrading and rehabilitation 3. Conservation and gentrification of historical areas	**1. Renewal of urban areas 2. Improvement of apartment sites 3. Redevelopment of new residential sites ad enclosed systems 4. Gentrification of historical housing areas**

Source : Ataöv and Osmay (2007) p. 60

Economic advances, improvement in the production technology and decrease in the raw material prices caused the economic empowerment of the construction sector and the emergence of large capital firms in the market. This condition strongly affected the types of provision in the housing sector. Mass housing cooperatives and private sector's luxury housing estates became part of housing provision types. Distribution of authorities and new policy and legal regulations about urban renewals and redevelopment projects resulted in the diversification of centers and establishment of new relations.

Expansion of the cities allows exploring large areas for urban development for new types of housing provisions. Technological advances in construction sector, combining with the production behaviors of the house builders and preferences of the households supported the emergence of new types of residential areas in cities.

Kurtuluş (2005) has emphasized that the emergence of these new residential sites which are designed as enclosed systems is a tendency for trying to integrate global culture by new residential area demands and suppliers' realization of potential demand on urban environment in Turkey. The emergence of these enclosed residential areas mainly represents a new pattern of consumption in terms of life styles in Turkish cities for the first time.

Turkey met the concept of these residential sites after the 1980s by the formation of new mass housing legislation. At first, the concept mainly related to the housing areas which were surrounded by walls for isolation rather than security. However, in time, with the changes in the social and economic status of the households, they represent prestige, luxury, and security and became focus of market strategy and target of house builders.

Levent and Gülümser (2004) list the fact of new residential sites that are the fastest growing housing types in the 21st century in Turkey as;

- represent hope of security,
- appeal to consumers searching for sense of community and identity,
- offer an important niche marketing strategy for developers in a competitive environment,
- keep out the unwelcome,
- associated with attractive amenities,
- increase property value,

At the fringe of the metropolitan areas, existence of large urban areas for housing development enables house builders to produce such commodities that meet the demand of middle and high income groups. The concept of enclosed residential areas mainly relate to services and development provided inside rather than outside which ensure the quality of place and services. With the philosophy translated into the built environment result in high-tech building sites with unique attributes. Webster (2002) said that house builders prefer to build these systems to meet the demand for security-by-design, for prestige and for life style of a community. As the choice of housing becomes a choice of life styles, these areas are introduced for providing high quality, security, and prestige for the citizens. (Gökmen and Özsoy, 2011).

In Turkey, first examples of these residential areas are observed in Istanbul. It has the largest share in housing production in Turkey. Thus, observation of housing development process of Istanbul would provide an insight for the large-scale housing production in Turkey.

4.4.1 First Examples of New Housing Pattern: Istanbul Case

Spatial effects of the global culture were firstly observed in Istanbul in Turkey. The new types of residential areas were seen as a solution for the spatial problems

coming from the past and to meet the complex needs of citizens of which preference were redefined (Yıldız and Inalhan, 2007).

Housing production in Istanbul experienced four step transition processes. Firstly, the idea of these residential areas was reflected in garden housing estates at the beginning of 80s, which were not totally closed but privatized, located in the periphery of the city. The households were wealthy people, mainly married and living with children. They preferred to live in more private areas away from the city center with likeminded people (ex. Bahçeşehir).

In the mid-80s with the effect of the emergence of garden housing estates, idea of living in more closed areas spread, so highly wealthy people began to prefer living in luxury apartment flats and big villas which were luxury gated areas. The key issues in those types of housing settlements were high security and ultra-luxuriousness (ex. Kemer Country) (Levent and Gülümser, 2007).

Beginning of the 90s, the housing preferences shifted to multi-storey residences near the city center. High income groups preferred those housing units because they wanted the comfort and luxury of single housing units that were located at the peripheral areas. They wanted to live the privileges of living in garden housing estates by living in luxury apartment buildings (ex. Uphill Court Residence). The last step in urban transformation in Istanbul is mixed inner city housing. Those type of housing settlements are large-scale production enclosed residential areas which are preferred not by highly wealthy people but by high and middle income groups that have desire to live in luxury housing sites (ex. Incity) (Kurtuluş, 2005).

Today in Istanbul residential areas designed as enclosed areas do not only serve as a housing site for high income group but for middle income group as well. As similar to the examples in US, the enclosed residential areas in Turkey are the reflections of prestige and lifestyle (Baycan and Akgün, 2012).

Related to that, house builders have analyzed the trend and have begun to produce projects in large scales with unique attributes that could raise housing unit to luxury standards for middle and high income groups. As a result of competitive environment, housing suppliers diversify their products. The production strategy in Turkey has shifted from traditional to more innovative lines by adding up new attributes which directly reflected in the price of housing. Studies up to 2005 showed that detached housing was considered as luxury residence. However after 2005, trend for luxury housing has shifted to multi-story buildings with specific features (Pazarlıoğlu, 2007).

There are many studies that analyze the reasons of change in housing preference both of producers and consumers in Istanbul. Kellekçi and Berköz (2006) focus on housing preference from physical and social terms. They tried to understand the user satisfaction by analyzing housing environment, neighborhood quality, and characteristics of household members, accessibility, and spatial features of housing. Berköz (2008) analyze the tendency of buying and selling enclosed residential areas and their effects on social and spatial terms.

Pazarlıoğlu (2007) focuses on housing preference according to the age and occupancy of households. Turgut and İnalhan (2007) put through main concepts and features of new housing patterns according to their location, concept, security conditions, spatial, architectural, and social pattern, technical services, and earthquake resistance. They have found out that new urban housing settlements bring about social exclusion with its spatial borders but also they introduce some kind of belonging and identification. It supplies people a sense of security and status.

These studies indicate the fact that, the quality of the projects, the attributes of housing and the theme of life style provided within the project has a direct effect on the value of housing both in qualitative and quantitative terms. Thus, the emergence of such projects has significant effect on urban development. Çizmeci

and Önal (2008) point out that, residential areas which are endowed with various attributes are mainly developed by the private sector which includes a number of housing units. Those housing sites provide good quality living spaces for upper and middle income group. In addition to that, the study of Yönet and Yirmibeşoğlu (2009) shows that, residential areas in Istanbul which have unique quality are directed by private house builders. Their study indicates that the preference of these new types of residential areas in Istanbul cannot be only explained by security consideration of the residents but by the power of house builders.

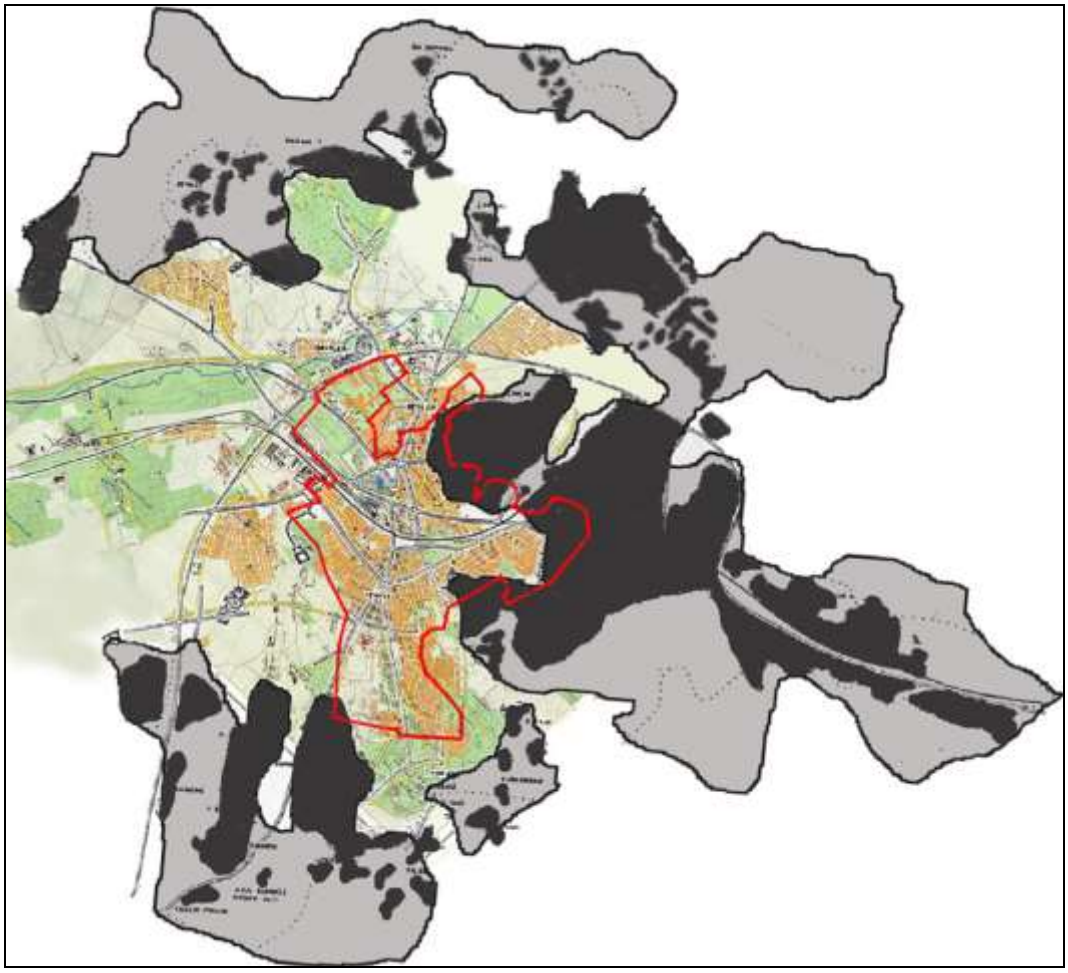
4.4.2 First Examples of New Housing Pattern: Ankara Case

As a capital city and second largest city of Turkey; Ankara has a particular importance not only in spatial but also in cultural and social terms. It has experienced not only significant spatial but also socio-economic transformation in time. The urban development of the city has tried to be guided by plans since the early years of the Republic. The main aim of the early plans was to determine macroform and define land use policies across the city and to cope with the housing problems arising from the increasing population. Housing production schemes and the scales in the city have been mainly determined by the applied plans. Therefore, the analysis of the city plans would give important insights about the housing production approaches in Ankara.

Ankara has experienced a constant level of migration from the beginning of Republic. Especially after the 50s, with the rapid industrialization, the number of the new comers increased significantly and population of city reached almost half a million which resulted in the decrease in the effectiveness of the early plans. With the increasing population, the number of existing housing stock was not enough to meet the housing demand of huge immigrations. These conditions resulted in the emergence of illegal production of squatter housing around the city

which had significant spatial and socio-economic results in the urban area (Uzun, 2005).

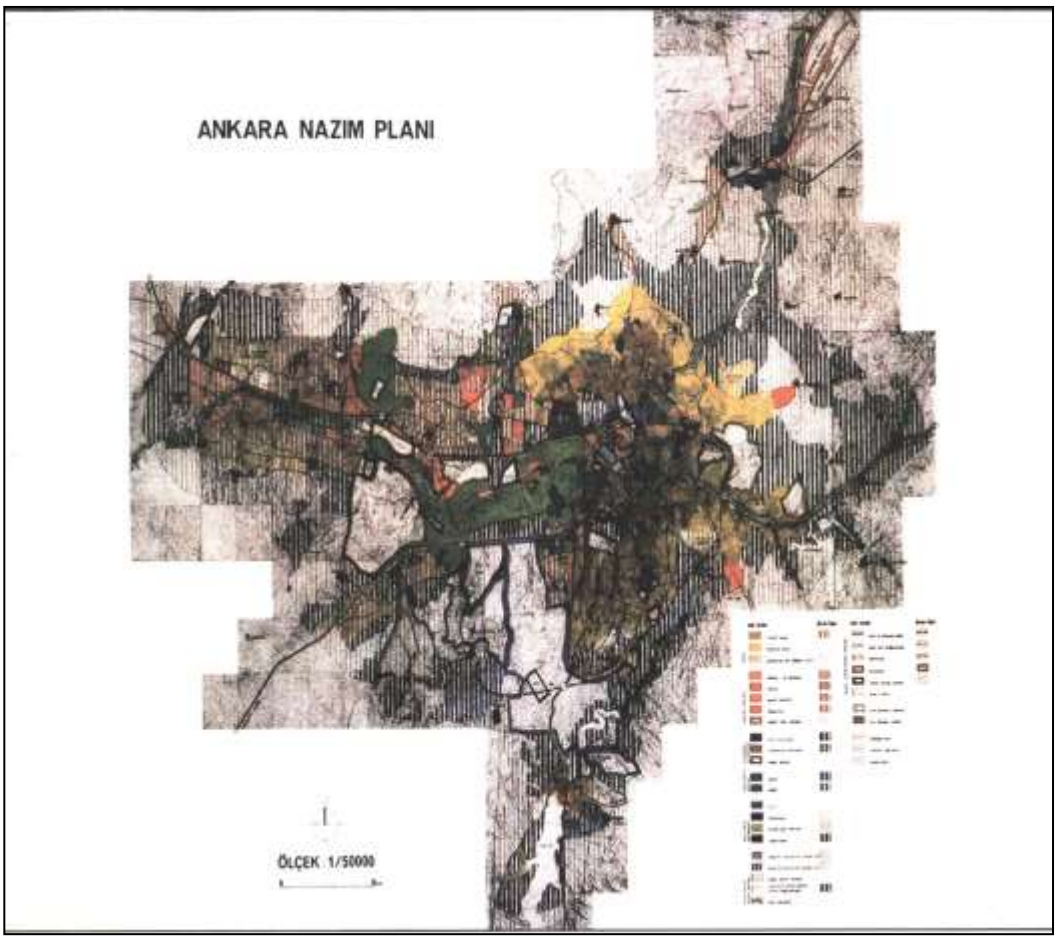
Figure 4.8 illustrates the expansion of Ankara and growth and the locational distribution of squatter areas in the city. Dark areas shows the squatter areas merged in 60s and grey areas show their extent in 1990. Figure illustrates the fact that by the 70s, squatter housing was in bottleneck because there was no land to occupy in the city center (Batuhan, 2013).



Source: Batuman, (2013),p. 582

Figure 4.8 Expansion of Ankara and The Growth of Squatter Areas

By end of 70s, decrease in the supply of land in city center, high rate of inflation, high cost of construction material made unprofitable for small contactors to produce in cities where large companies preferred land speculation at fringes which was more profitable than housing production. Therefore, the housing production activities were very limited at that period.



Source: Batuman, (2013),p. 582

Figure 4.9 Ankara Development Plan for the Year 1990

With the decentralization activities resulted by neo-liberal policies and increasing importance of transportation investments and car ownership, Ankara experienced suburbanization and the expansion of the city towards west at the same time. Suburbanized growth which were supported by partial plans and project starts

located on land which were developed by private producers caused uncontrolled sprawl. In order to control the sprawl Ankara Development Plan was implemented (Figure 4.9)

The main goal of 90 Ankara Development Plan was to direct urban development in north-south direction towards western corridor basically to solve air pollution problem and traffic where city fringes were not surrounded by squatter areas. During the sprawl high income groups left city for suburbs which were developed by private builders. After that; city growth was mainly controlled by housing investments at the western and eastern fringes of the city. The scale of the sprawl increased in 2000s which were mainly guided by partial plans.

In these areas private sector built targeting high income groups with specific features. The surplus of land at the fringe allows private house builders to produce large scale housing estates different from the ones in the city center. The residential areas at Çayyolu, Beytepe and Ümitköy formed by partial plans which are located at the western development corridor at the city are the significant examples of these type of developments.

All these development have led to a new planning activity for Ankara. Figure 4.10 shows south western part of 2023 Development Plan of Ankara which was approved 2007. In the plan, it is emphasized that, south western part of the city has been the most speculated area since 1980s. The plan also points out that, when the intended use of the buildings in this region analyzed 88,99% of the buildings in the region are only used for domestic purposes. The area is indicative of the fact that city the growth is not shaped by mixed-use of working and residential areas by the areas of sole purposes. Thus housing investments in the area is an important tool for directing the growth of the city.

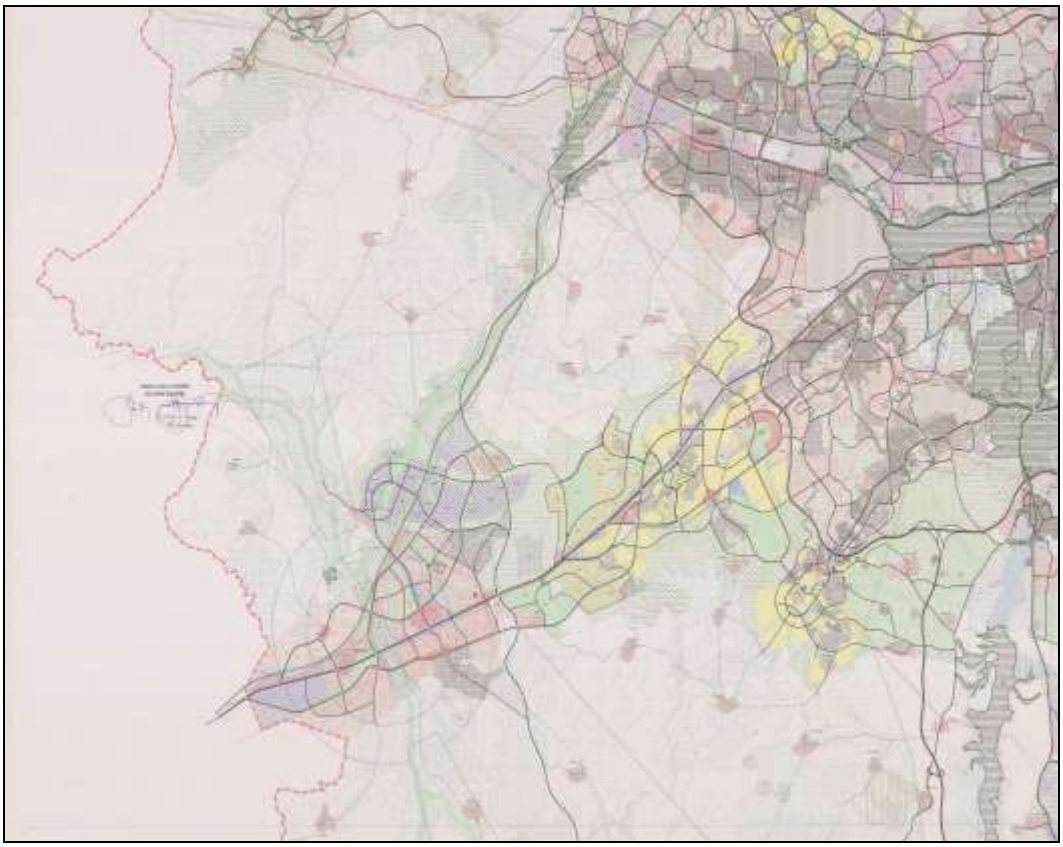


Figure 4.10 Ankara Development Plan for the Year 2023

In summary, the emergence of the large scale developments in Ankara mainly relates to the spatial and socio-economic conditions that matured in time. Land development preferences of private sector at fringes and the decrease in land availability in city center combining with the desire of high income groups to move out of the city lead the way to produce at the fringe where the land is abundant allowing producers to create distinctive projects. Thus, decentralization of residential areas formed in housing estates in Ankara is not a normative action but a tendency that allows changes both in households and house builders.

4.5 Definition of Large Scale Housing Production in Turkey

The scale of housing production in Turkey has experienced many transformations according to the production power of the house builders, needs, and preferences of

consumers, economic conditions, political decisions and the limitations of the cities. The level of housing production not only relates the power of house builders in the market but also the households' ability to purchase. Therefore, with the change in the production strategies of the house builders regarding to the shifts in consumer preferences and new land development approaches in and out of the city; scale of housing production takes a new meaning.

The main problem is to define what exactly "large scale" in the housing market means. The term large scale mainly refers to above average in size or quantity. However, considering the sociological side of housing provision, in Turkey; production in large scales has meanings in both quantitative and qualitative terms. Analysis among large scale housing projects in Turkey shows that, number of housing units and the number of floors in the housing projects is the main indicators of large scale production. In addition to that, design of the buildings and the variety of the endowed attributes add qualitative meaning to the scale of the project.

On the other hand, the construction size and the investment value of the projects are not good indicators of large scale production, because they would vary according to the design and the quality of the project. Construction size would differ according to the available land, however, by producing multi-story buildings high amount of housing units can be produced. Also, investment value of the project significantly varies according to the quality of the construction materials used, design of the projects and the endowed attributes. To generalize, production of housing in large scales considers the production of a housing estate at once in a predetermined time frame with multi-story buildings having minimum 10 floors and minimum 200 housing units that have an impact on city silhouette[2].

[2] This definition is constructed according to the annual reports of Konut-Der, financial statements, national economic reports and relevant publications as well as secondary publications.

There are two types of large scale production in Turkey; for low and middle income groups and for high income groups. The size and the features of these two types of large scale production differ significantly. In order to understand the differences between the two types it would be useful to analyze the large scale house builders in the market.

4.5.1 Actors in Large Scale Housing Production in Turkey

Considering the housing provision in Turkey with respect to large scale production; there are three actors in the market; Housing Development Administration of Turkey (TOKİ), Housing Cooperatives and Large Capital Construction Firms.

In the last ten years; 5 million 529 thousand 405 housing units have been produced in Turkey. 10,6 % of these housing units have been produced by TOKİ, 6,4 % by cooperatives and 1,6% by large capital construction firms. The rest (81,4 %) have been produced by small capital construction firms which mainly produce 5 to 10 housing units in single plots.

Despite their small shares in the housing market, the economically value added and the impact on urban land of the large capital construction firms are noteworthy. Regarding to the size of their projects; they provide and guide urban development. They have stimulating effect on the economy and they support the improvement of the construction sector in national and international market. These actors employ lots of people and increase employability. Thus, they have an important role not only in the economic growth but also in the urban development and prosperity.

Although all three actors tend to produce in large amounts, they significantly differ from each other in some aspects. Firstly, the target groups of three actors

are different. They produce for the consumers with different welfare levels. Thus, the project of each actor differs from each other regarding to their building design and quality. In addition, these actors apply different finance systems on their projects which affect their finishing times. Related to that, their sales and marketing strategies are different.

In that sense, following section analyses three actors in details in order to understand their effects and the contributions to the housing sector in Turkey.

4.5.1.1 Housing Development Administration of Turkey (TOKİ)

With respect to the rapid population growth in Turkish cities, urbanization has formed pressure for housing quality especially for low and middle income group which have limited opportunity for private funding through banking systems. According to the Turkish Constitution;

> Article 56: Everyone has the right to live in a healthy and balanced environment. It is the duty of the State and citizens to improve the natural environment, to protect the environmental health and to prevent environmental pollution. The State shall regulate central planning and functioning of the health services to ensure that everyone leads a healthy life physically and mentally, and provide cooperation by saving and increasing productivity in human and material resources. The State shall fulfill this task by utilizing and supervising the health and social assistance institutions, in both the public and private sectors. In order to establish widespread health services, general health insurance may be introduced by law.
>
> ARTICLE 57- The State shall take measures to meet the need for housing within the framework of a plan that takes into account the characteristics of cities and environmental conditions, and also support community housing projects.

Related to that, Turkish government aimed to create livable cities by making adequate shelter available and affordable for migrated population who cannot

afford to purchase or rent housing units within the legal housing stock. In order to increase the level of housing production, the Mass Housing Fund Law (No.2487) was enforced in 1981. Three years later, in order to clarify the problems related to credit provisions for housing production, Housing Development Administration Law (No.2985) came into force in 1984. Related to the new legal developments a new entity is formed; the Housing Development and Public Participation Administration with Law No.2983. Housing Development and Public Participation Administration was separated to two different institutions in 1990 with Governmental Decree No.412. Related to that; Housing Development Administration of Turkey (TOKİ) is defined as the public local entity according to the Mass Housing Law No. 2985. The Mass Housing Law defines the duties of TOKİ as;

> a) Issuing internal and external bonds and any kind of stocks with or without state guarantee.
>
> b) Deciding upon receiving credits from foreign resources to be used for the expenditure relating to its scope of activity upon approval of the Undersecretariat of Treasury.
>
> c) Taking actions aimed at ensuring participation of the banks in financing housing; providing banks with credit to this end; and establishing procedures relevant to enforcement of this provision.
>
> d) Supporting the industry related to housing construction or those who are involved in this field.
> e) Establishing companies related with housing sector or participating in those that have already been established.
>
> f) Subcontracting any research, projects and commitments, where deemed necessary,
>
> g) Granting individual and mass housing credits; granting credits for projects intended for improvement of rural architecture, transformation of squatter areas, preservation and restoration of historical and regional architecture; and making interest subsidies for all such credits, where deemed necessary,

h) Developing projects both in Turkey and abroad directly or through the agency its participations; carrying out or appointing others to carry out applications for housing, infrastructure, and social facilities,

i) Implementing or appointing others to implement profit-oriented projects to ensure sources to the benefit of the Administration,

j) Building, promoting and supporting construction of housing units as well as social facilities and infrastructures in locations where disasters take place, if considered necessary,

k) Fulfilling duties imposed by laws and other legislation." (www.toki.gov.tr/english/MASSHOUSINGLAW.pdf).

However, after the abolition of Mass Housing Fund in 2001 by Law No. 4684, TOKİ lost its financial power and had difficulty in fulfilling the duties. In years, some arrangement has been done in order to reinforce the financial condition of the administration. Currently, the primary incomes of TOKİ consist of revenues from the sales and the rents of properties, loan reimbursements, interest incomes, and budget allowances and it is attached to Prime Ministry.

The main customer profile of TOKİ is low and middle income families who are not able to own a housing unit. However, production for high income groups becomes one of the main priorities of TOKİ at the moment parallel to the consumption tendencies in the housing market and to generate resources for its cross-subsidy policy (Türel and Koç, 2014). TOKİ produces mass housing projects on its own lands in order to meet the needs of these targeted groups. Some of the housing projects of TOKİ refer to social housing projects. Among the all provisions of TOKİ, provision of social housing has the share of 86% with total number of 527.525 housing units in 2014. In the social housing provision; three types of housing units are defined for poor, low income and middle income groups. Housing units for poor are designed 45-55 $m^{2,}$ 65-87 m^2 for low income and 85-120 m^2 for middle income groups.

As being one of the major actors in housing provision in Turkey; within the Turkish Government's "Planned Urbanization and Housing Production Program"

between the years 2003-2014; the construction of 640.415 housing units has been started in 81 provinces by TOKİ. It is notified that, TOKİ aims to produce 1 million housing units by allocating 57 billion TL by 2023.

4.5.1.2 Cooperatives

Housing sector is one of the sectors that cooperatives can operate. There have been cooperative movements in Turkey since 1930s. The main feature of the housing cooperatives in Turkey has been the production of large number of housing units.

With the adaptation of Cooperative Law in 1969 and the encouragement of mass housing projects in Five Year Development Plan (1967-1972); there was an expansion of housing cooperative developments in Turkey. The two events let housing cooperatives as the major supplier of large scale housing projects at that time. Especially after Mass Housing Law, the contribution of housing cooperatives increased substantially[3] (Türel, 2002).

After 1990, the contribution and the power of the housing cooperatives began to diminish. Özkan (2009) explains the decrease in the number of housing cooperatives by three reasons. First reason relates to the economic challenges in Turkey. The crises in 2000 resulted in the increase in the real interest rates causing significant rise in the construction cost. As cooperatives are known to be completed in long periods of time, the total cost of construction grows in years reflected in high monthly payments which make cooperatives less attractive. Second reason relates to the significant growth of the large scale construction companies in the sector. Especially after Marmara earthquake, private

[3] Housing cooperatives founded in 1980 was 131, 91 in 1983, 411 in 1984, 920 in 1985, 1,705 in 1986, 2,613 in 1987 and 1988 was the peak production year with 167,514 co-op units representing 35% of the total building permit (TUİK).

construction companies began to produce not only for high income groups but also for lower income groups. Different from cooperatives; these firms produced in large numbers with different features that attracts households.

The last reason relates to the increasing activities of TOKİ. TOKİ produces in large scales targeting low income groups by using financial subsidies. The main effect of TOKİ on cooperatives is that, it supplies alternatives for low income groups in more advantageous manner than housing cooperatives. Although the share of the cooperatives has shrunk in time, they are still one of the main actors in the housing sector.

4.5.1.3 Large Capital Construction Firms

Private sector is the lead actor in the housing provision in Turkey. In the historical development of housing provision; they vary from individual producers to contractors, squatter housing builders to large capital construction firms.

In the context of housing provision, Balaban (2011) emphasizes that, there are two major turning points in 1980s and 2000s in Turkish cities regarding to construction sector that affect the behavior of private sector provision. 1980s experienced the decentralization of development authority to municipalities, establishment of TOKİ in order to support mass production of social housing for middle and low income groups and enforcement of the law of amnesty of unauthorized buildings. All these reasons supported the development of built environment mostly targeting the middle and low income groups in the cities. At that time, individual producers and the contractors were the main providers in the private sector.

After 2000s, as large scale urban projects become one of the key elements in urban policy with the rise of the liberal policies, the role of large capital

construction firms have increased,. Production of large scale projects does not only define the role of these firms in urban environment but also the indicator of the capital accumulation of them. Therefore, the firms with enough capital accumulation tend to produce large scale projects that have impact on city design. Related to that, with the economic conditions of the country and the new legal arrangements related to the housing production; large capital construction firms which are highly related to the financial sector begin to focus on large scale housing projects for high and middle income groups.

There is a big question that why the projects of large capital construction firms only target middle and high income groups. The study of Kazaz and Birgönül show that, in Turkey, there are not many high-qualities and large scale housing projects that addressed to low income groups. Because the quality assurance for large scale housing projects should focus on the client satisfaction which result in price rise. However, low income groups are seeking for low prices. Thus, large scale housing projects for low-income groups are the ones with low-quality. Even though firms tend to produce that type of housing it would not be preferable for low-income groups since the large scale housing projects with low-quality results in the fact that, households are not fully satisfied with the quality of housing which led them into extensive repair or renewal. This brings extra burden on their limited budget. In addition to that, low income groups are not likely to pay high maintenance cost which is inevitable in such housing areas.

Related to that, large scale housing production can only be achieved by the economically powerful firms that can compete in the market in order to supply high- quality housing. House builders can survive in such an environment only by producing large number of housing with all social and environmental attributes that are defined within the project. Regarding, Levent and Gülümser (2005) say that the main concern of large capital firms is to become reliable by becoming a trustable brand to achieve their first goal to gain money. Becoming a trustable firm guarantees the future sales of them.

Presently, large capital construction firms in Turkey have been built over 200 thousand housing units which provide approximately 3 billion dollars per annum for Turkish Economy and provide employment approximately 30 thousand people directly or indirectly (Konut-Der, 2013). Different from any other actors in the housing market, they have power not only to regulate the sector but also prepare solutions that housing market would encounter.

Large capital firms develop and plan according to the visions of the households. They put emphasis on the consumer demand analysis. They are aware of the fact that they do not sell only houses but also a way of living in which all public issues are private. The main idea behind the housing projects of the large capital construction firms is to produce not apartment buildings but living areas with its green zones that covers modern urban planning principles and making all housing units to be designed in high standards and attributes. Therefore, large capital firms seek different construction methods including labor trainings. Institutionalization is one of their priorities. They seek opportunities to increase their capital accumulation.

Land acquisition is one of most important problem in project development for the large capital construction firms. These firms may acquire land in and out of the city based on the idea of their projects. The projects of the large capital firms that are located in near the city center are usually growing vertically with a striking design. They are part of city skyline. If the land is acquired out of the city center, the projects consists of multi-story buildings but not as high as the ones in the city center. Regardless of the location, the main approach of the large capital construction firms is to provide various types of housing units with wide range of price range in one project in order to attract various household. The most significant difference from other actors in the market is that their completion time of the project. The most projects are aimed to be completed in 36 most. The short completion time of the construction attracted both investors and owner occupied. According to the data of KonutDer (2013), in most large scale housing projects,

more than 50% of the housing units have been sold out during the construction period. With the reason to offer different price and payment options, sales rate seems directly proportional to the variety of size of housing units in the project.

4.6 Housing Production Tendencies in Last Decade: A Comparative Analysis of Turkey, Ankara and Yenimahalle District

In Turkish housing market, housing is produced in different types and sizes. The production decision of the house builders has been changing according to the international and national economic conditions, housing market conditions, political decisions regarding to urban development and the demands of the households.

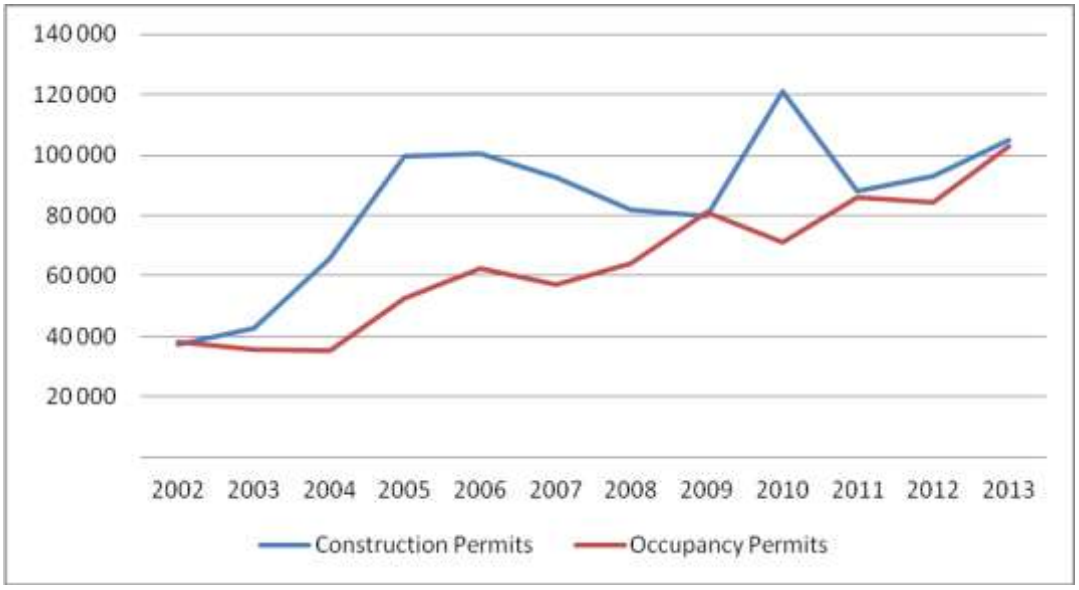
The main aim of this section is to understand the housing production tendencies by analyzing the distribution of the buildings that construction permits are issued regarding to the categories defined according to the number of housing units[4] and the number of floors[5] in the last ten years. The analysis is made for Turkey, Ankara, and Yenimahalle district separately. Ankara is selected as study area because the city shows both spatial outcomes of housing policies applied in the country and the contemporary residential development approaches of the investors at the moment. Parallel to that, Yenimahalle district is one of the fastest growing areas of Ankara which absorbs new residential developments and new investments with the opening of new land by municipalities.

The results of the analysis show that, in the last ten years, housing production in Turkey has been experiencing a very productive period. Between 2002-2006; the

[4] The classification of housing units is determined as ; 1-2, 3-5, 6-10, 11-20, 21-50, 51-100, 101-200, 201-500, 501-1000 and 1000+.
[5] The classification of floors is determined as 1-2, 3-5, 6-10, 11-15, 16-20, 21-30 and 30+.

positive trend in the housing production is striking to such an extent that the number of construction permits has been almost tripled. However after 2006, there is a slight decrease in the permits issued until 2009. In 2010, the number of construction permits reaches its highest point which is followed by a sharp decrease. Although there have been rise and falls due to the economic conditions of Turkey, housing production reaches its rising trend at the last three year of the study period.

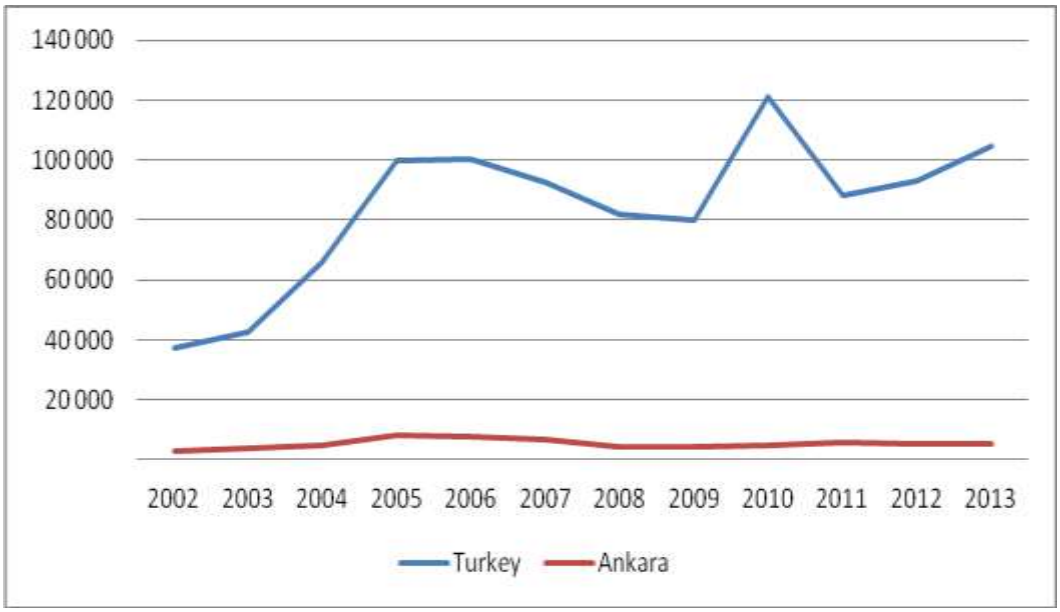
On the other hand, the increasing trend in occupancy permits is more stable than the construction permits. Figure 4.11 shows that, the difference between the numbers of construction permits and the occupancy permits has increased in the first half of the study period. However, the difference diminishes in the second half with the rise in the occupancy permits and the numbers of construction permits and the occupancy permits almost become equal in 2013.



Source: TUİK

Figure 4.11 Number of Buildings That Construction and Occupancy Permits are Issued in Turkey

Figure 4.12 illustrates the comparison of the distribution of construction Turkey and Ankara. It indicates that, in spite of the fluctuations in Turkey with respect to the number of construction permits, Ankara is in more stable condition. Although there has been a slight decrease after 2005, positive trend can be observed since 2008. However, the rise in the number of construction permits is not as aggressive as in Turkey.



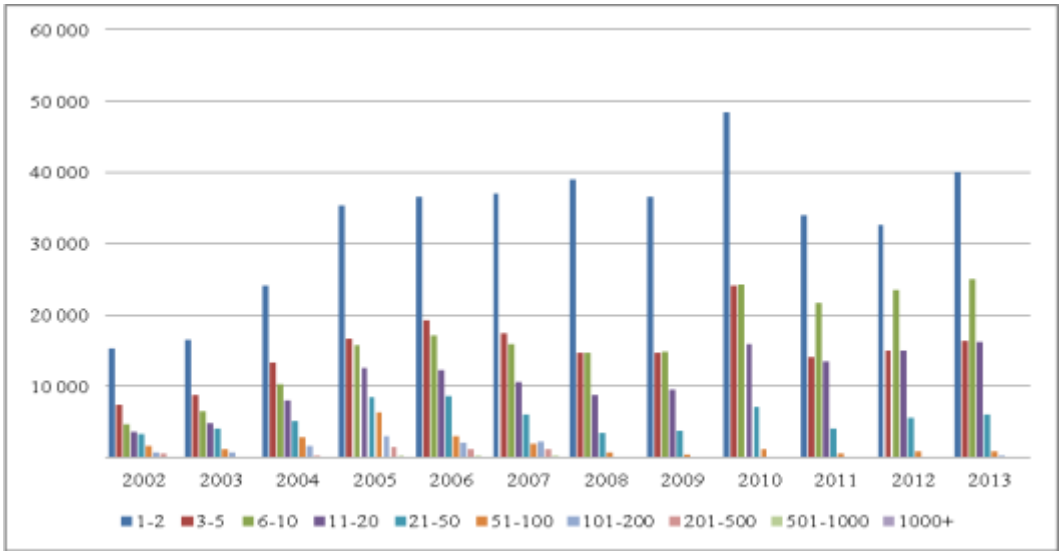
Source: TUİK

Figure 4.12 Comparisons of Construction Permits in Turkey and Ankara

Considering the distribution of construction permits among the number of housing units, in Turkey, the analysis shows that, between the years 2002-2013; the buildings with 1-2 housing units have the highest share and it has a growing trend. The buildings having 3-5 and 6-10 housing units has second and the third share and they are also increasing in given years. The production of 11-20 and 21-50 is become preferable and have rising share in the given time period. The production of categories of 51-100, 101-200, 201-500, and 501-1000 show ups and downs between 2002-2013. The production of 1000+ housing units are very limited (Figure 4.13).

When the data is evaluated according to the total percentage change, the ranking of the housing unit classification has changed. Between the years 2002 and 2013, the buildings with 6-10 housing unit have the highest percentage change with 435%. Buildings with 11-20 housing units have the second ranking with 349%. Buildings with above 50 housing units have negative total percentage change due to the fluctuations in the given period.

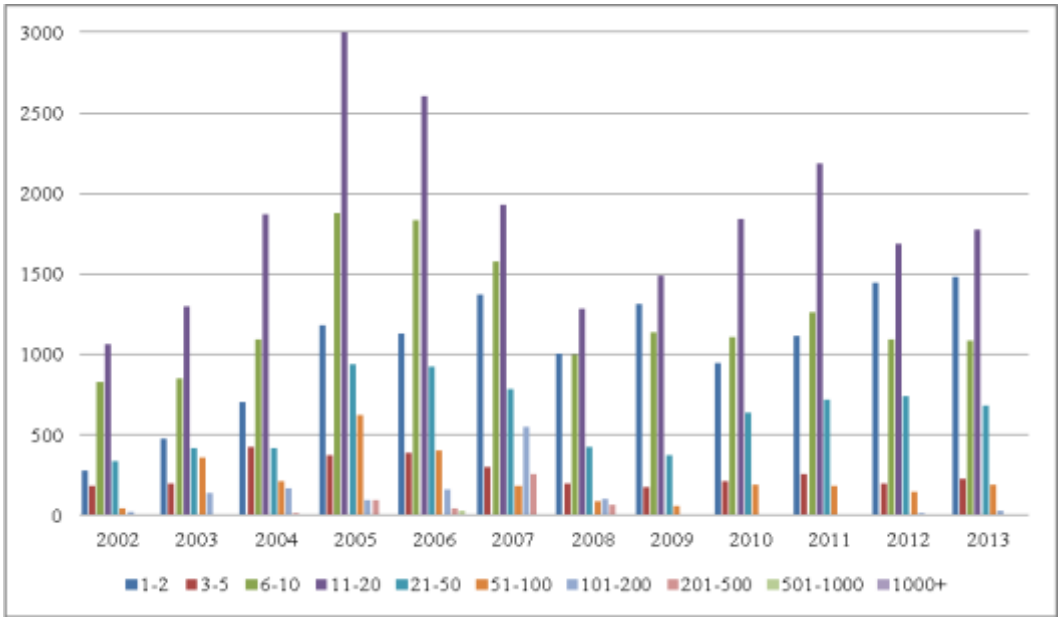
The distribution of construction permits according to the number of housing units fluctuates within the given time period in Ankara (Figure 4.14). Different from the case of Turkey, buildings with 11-20 have the highest share among the other categories which is followed by the ones with 6-10 and 1-2. There is no production of over 500 housing units. However, according to the shares of the categories, tendency for production of buildings with higher number of housing units is more determined in Ankara than in Turkey. Production decision in Ankara mainly focuses on producing between 10 and 100 housing units.



Source: TUİK

Figure 4.13 Distribution of Number of Buildings That Construction Permits are Issued in Turkey According to No. of Housing Units

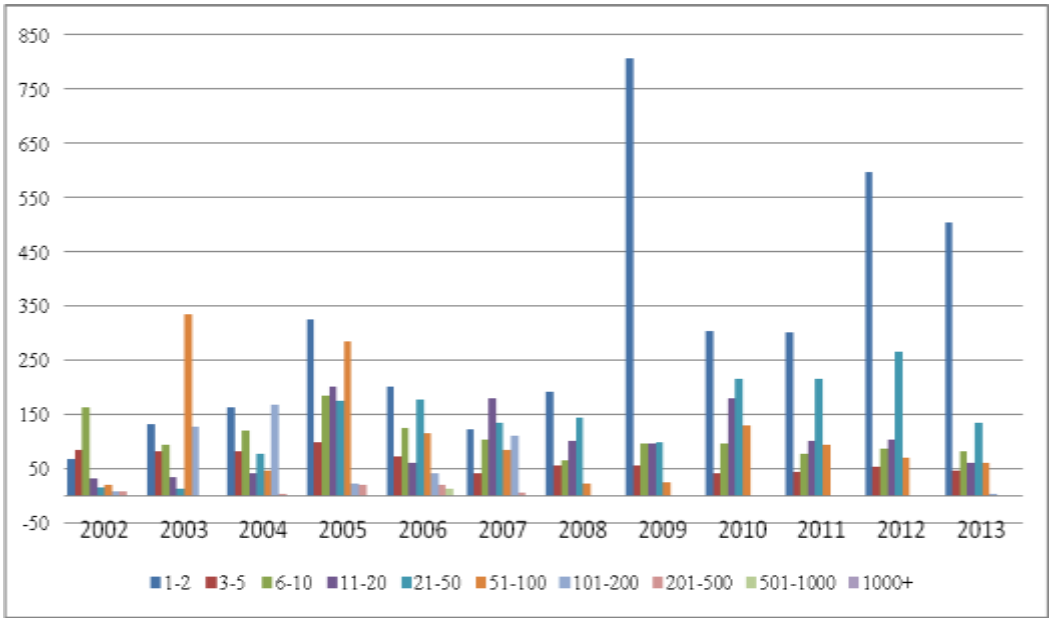
Considering the distribution of construction permits among the number of housing units, in Yenimahalle District, the analysis shows that, between the years 2002-2013; the buildings with 1-2 housing units have the highest share. Different from Ankara, the buildings with 3-5 and 6-10 housing units has second and the third share but they are in a decreasing trend in the given years.



Source: TUİK

Figure 4.14 Distribution of Number of Buildings That Construction Permits are Issued in Ankara According to No. of Housing Units

The most significant difference from Turkey and Ankara case is the increasing share of the production of the buildings with 11-20, 21-50 and 51-100 housing units. The production of buildings with 500-1000 housing units is very limited and there is no production above that within the study period. Overall results of the data indicates that, in Yenimahalle, although the production of the buildings with 1-2 housing units dominates the market, there is a trend for producing buildings with above 20 housing units, which causes housing market being shaped by larger structures in the last ten years (Figure 4.15).



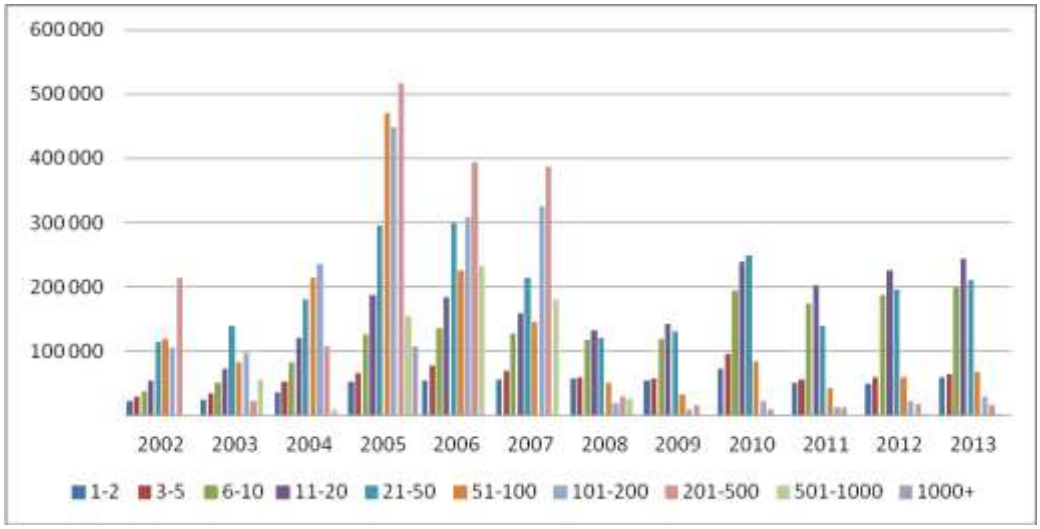
Source: TUİK

Figure 4.15 Distribution of Number of Buildings That Construction Permits are Issued in Yaşamkent According to No. of Housing Units

Although the comparisons of number of the buildings that construction permits issued in Turkey, Ankara, and Yenimahalle give tangible results for the evaluation of the housing market in each case, analysis of the contribution of production of buildings with different housing units would give different perspective. In order to analyze the each category's contribution to the housing production, average number of housing in each defined category is multiplied with the number of the buildings that construction permits are issued.

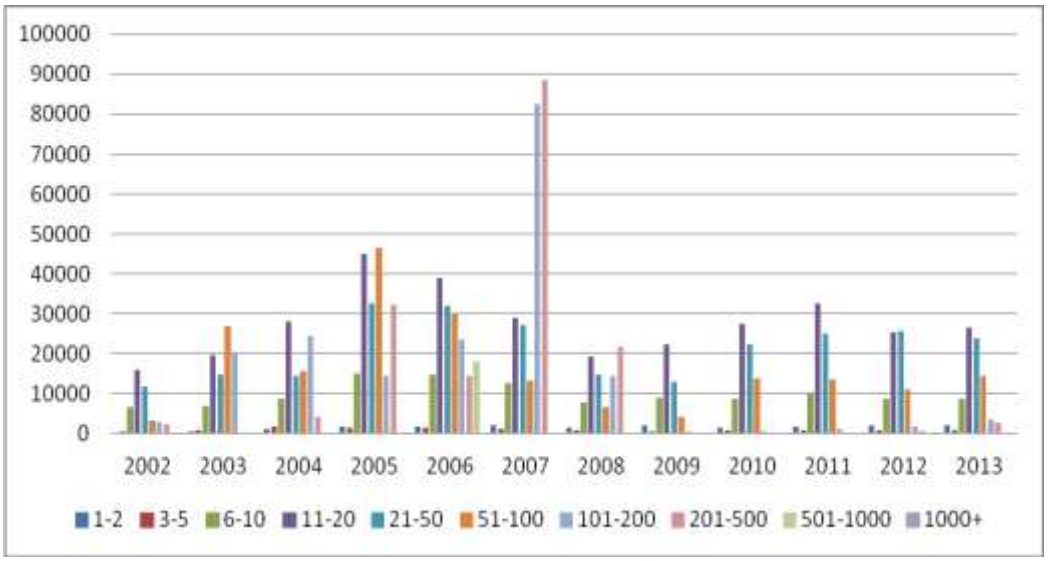
The results for Turkey case indicate that (Figure 4.16), although the number of construction permits is higher for buildings with small number of housing units; when we consider the total number of housing units that is produced, the shares of the buildings with above 20 housing units dominates the housing production in Turkish housing market. Overall results of the analysis for Turkey identify that the tendency for producing in large amounts (101-200 and 201-500) is more significant in the first six years of the study period and in the last six years, the

contributions of buildings with 11-20, 21-50 and 51-100 housing units are the highest ones.



Source: TUİK

Figure 4.16 Number of Housing Units Produced Within Each Category in Turkey

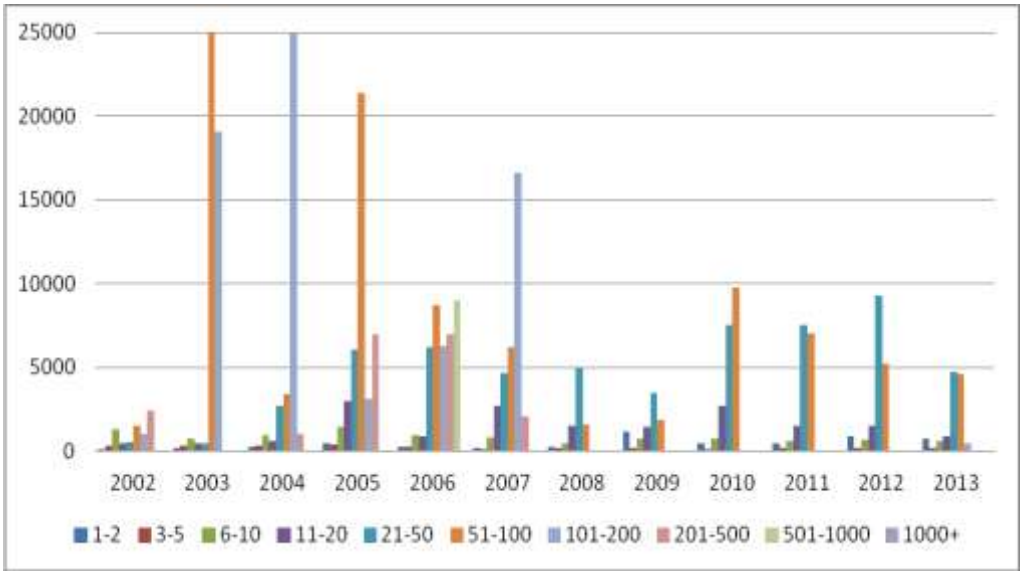


Source: TUİK

Figure 4.17 Number of Housing Units Produced Within Each Category in Ankara

Although results of Turkey and Ankara are not alike regarding to the number of buildings produced, the results about the contribution of each category to the market is similar. Contribution of the buildings with 11-20, 21-50 and 51-100 housing units are the highest in the housing market in Ankara. In spite of the highest level of production of the buildings with 1-2 and 3-5 housing units, the least contribution belongs to these categories (Figure 4.17) in the given time period.

Figure 4.18 illustrates the number of housing units produced within each category in Yenimahalle District in the study period. The contribution of the building categories to the housing production in Yenimahalle district is significantly different from both Turkey and Ankara. It is observed that the increasing share of the production of the buildings with 11-20 , 21-50 and 51-100 housing units, increase the level of contribution to the housing production in the area. The figure shows that, in the study period most of the housing production has been done by producing buildings with minimum 20 housing unit.



Source: TUİK

Figure 4.18 Number of Housing Units Produced Within Each Category in Yenimahalle

Overall results of the analysis explain that housing production in Yenimahalle District is subjected to be done in larger amounts from the beginning of the study period. Therefore, the contribution of the buildings with the defined numbers of housing units in Yenimahalle shows different behavior from both Turkey and Ankara.

Second part of the study considers the distribution of the buildings according to the number of floors for Turkey, Ankara, and Yenimahalle.

The results for Turkey show that the share of buildings with 1-2 floors decreases in time whereas the share of buildings with 3-5 floors is stable. However after 6-10 floors, although the shares of the buildings with higher number of floors are small they all show an increasing trend. The most striking point regarding to the floor numbers is rise in the share of the buildings with 11-15 and 16-20 floors (Table 4.5).

Table 4.5 Shares of Number of Buildings That Construction Permits are issued in Turkey According to No. Floors

	1-2	**3-5**	**6-10**	**11-15**	**16-20**	**21-30**	**30+**
2002	43,19%	45,47%	10,55%	0,67%	0,10%	0,01%	0,00%
2003	39,46%	46,53%	13,10%	0,82%	0,08%	0,01%	0,00%
2004	39,98%	45,15%	13,63%	1,10%	0,12%	0,01%	0,01%
2005	40,70%	43,46%	14,10%	1,47%	0,22%	0,03%	0,02%
2006	38,08%	44,17%	15,68%	1,68%	0,32%	0,05%	0,01%
2007	38,86%	42,47%	16,10%	1,82%	0,59%	0,12%	0,05%
2008	41,26%	41,26%	15,26%	1,72%	0,41%	0,06%	0,02%
2009	39,43%	42,20%	15,96%	1,80%	0,48%	0,10%	0,02%
2010	36,26%	42,52%	17,80%	2,68%	0,62%	0,10%	0,03%
2011	37,23%	42,63%	17,95%	1,62%	0,49%	0,07%	0,03%
2012	34,27%	42,98%	19,63%	2,35%	0,58%	0,10%	0,08%
2013	35,28%	43,24%	18,27%	2,36%	0,81%	0,04%	0,00%

Source: TUİK

Considering the results for Ankara, it is observed that the shares of the buildings with less than 10 floors fluctuate in the given time period. On the other hand, there has been a significant rise in the share of the buildings with above 11 floors. The shares of the buildings with 11-15 floors has increased more than six times and the shares of the buildings with 16-20 floors has increased more than four times in the study period (Table 4.6).

Table 4.6 Shares of Number of Buildings That Construction Permits are issued in Ankara According to No. Floors

	1-2	**3-5**	**6-10**	**11-15**	**16-20**	**21-30**	**30+**
2002	8,12%	49,32%	40,43%	1,84%	0,26%	0,04%	0,00%
2003	7,2%	53,60%	37,30%	1,80%	0,10%	0,00%	0,00%
2004	12,43%	47,22%	37,91%	2,07%	0,33%	0,04%	0,00%
2005	9,33%	52,17%	35,76%	2,32%	0,41%	0,01%	0,00%
2006	15,61%	44,81%	35,38%	3,24%	0,70%	0,24%	0,01%
2007	20,39%	41,18%	30,92%	5,27%	1,37%	0,40%	0,47%
2008	12,50%	46,14%	35,87%	4,07%	1,24%	0,03%	0,15%
2009	9,89%	51,82%	34,68%	2,66%	0,89%	0,06%	0,00%
2010	8,34%	43,76%	38,43%	7,08%	2,27%	0,04%	0,08%
2011	7,48%	48,36%	35,77%	5,61%	2,63%	0,12%	0,03%
2012	14,51%	43,01%	32,07%	7,13%	2,75%	0,38%	0,15%
2013	18,78%	40,21%	30,51%	6,00%	4,51%	0,00%	0,00%

However, Yenimahalle district shows different behavior regarding to the number of floors from both Turkey and Ankara. The shares of the buildings with less than 3 floors and more than 11 floors are increasing indicating the development of both low rise and high rise buildings in the area (Table 4.7). Data shows that, similar to Turkey and Ankara case, most striking increase is observed in the buildings with 11-15 and 16-20 floors.

Table 4.7 Shares of Number of Buildings That Construction Permits are issued in Yenimahalle According to No. Floors

	1-2	3-5	6-10	11-15	16-20	21-30	30+
2002	0,49%	72,93%	23,17%	3,41%	0,00%	0,00%	0,00%
2003	0,24%	83,99%	12,71%	2,69%	0,37%	0,00%	0,00%
2004	4,55%	64,00%	25,66%	4,97%	0,55%	0,28%	0,00%
2005	7,46%	67,95%	16,77%	6,67%	1,14%	0,00%	0,00%
2006	1,27%	58,63%	20,56%	16,88%	2,41%	0,25%	0,00%
2007	7,79%	46,63%	26,69%	13,40%	4,47%	0,93%	0,10%
2008	1,75%	44,85%	32,64%	17,80%	2,97%	0,00%	0,00%
2009	8,21%	69,09%	14,73%	6,10%	1,61%	0,25%	0,00%
2010	1,66%	41,82%	23,19%	25,26%	7,87%	0,21%	0,00%
2011	1,56%	46,09%	18,53%	23,35%	10,11%	0,36%	0,00%
2012	18,74%	39,98%	14,51%	19,86%	6,56%	0,35%	0,00%
2013	3,26%	62,36%	11,80%	12,36%	10,22%	0,00%	0,00%

Source: TUİK

In conclusion, although the data for three cases show some differences from each other, it is observed that, the production for the buildings with small number of floors and housing units constitute an important part of the housing production in all three cases. However, especially in the last five years of the study period, general trend in housing production has been shifted to produce in large scales designed in multi-story buildings.

Considering the definition of large scale production in Turkey mentioned in section 4.5, the house building industry in Turkey is concentrating on producing more to make contributions to the cities both in qualitative and quantitative terms at the moment.

4.7 Concluding Remarks

Housing market in Turkey has transformed and shaped significantly under the influence of political decisions, domestic and national economic conditions, limitations in the cities, production power of the house builders and needs, and preferences of consumers from the beginning of the Republic. The scale of the production has not only been affected by economic structure and power of house builders and households but also by the housing policies applied in the market.

The shifts in the housing policies from populist to neo-liberal mode especially after 2000s, urban space has become one of the most profitable sources of investments in Turkey. As a result, Turkish cities have become the focal points that attract capital by house builders for new investments. Related to that, housing production has showed an excessive growth and tripled in the last decade in Turkey. This increase is explained by the significant contribution of the private sector. Although small capital builders that produce housing on single parcel has dominated the private sector in housing market, in recent years the share of large capital house builders which build housing estates on larger areas with indoor and outdoor attributes such as parking, sport facilities and security has been increasing (Türel and Koç, 2015).

The demand for living in housing estates which provide most of the preferred amenities has also increased which lead house builders begin to produce more. Therefore, the shifts in consumer preferences and the change in the production strategies of the house builders scale of housing production takes a new meaning in Turkey which has both quantitative and qualitative meanings.

Analysis among large scale housing projects in Turkey shows that, when a residential project is having more specific attributes that attracts people's attention more, it gets larger in size. Therefore in the last five years; trend in housing production has been shifted to produce in large scales designed in multi-story

buildings indicating the increasing importance of the large scale producers in the housing market.

In that sense, large scale housing projects have become one of the tools in urban economics in order to stimulate the market. The production of the large scale housing is supported by the decentralization policies of government where municipalities were able to open land for new residential developments.

The most important indicator of this condition is the high income groups' tendency to move out of the cities for security, new identity, more defined living areas with attractive amenities that represent prestige and luxury and high property value. At the fringes of the metropolitan areas, existence of large urban areas for housing development enables house builders to produce such commodities that meet the demand of middle and high income groups. Thus, living in housing estates endowed with most preferred amenities has created its own trend in the country. People have begun to prefer to live such housing estates because not only provide high quality of living environment but also they represents style and status.

Consequently, review of the historical development of the large scale housing production in Turkey shows that the preferences of both house builders and households have changed in the last few decades due to the changing socio-economic and political conditions of the urban environment. The tendency towards such housing estate have centered on the households' desire of luxury and prestige. Thus, the role of the house builders and the expectations of the households has transformed in the housing market. The importance of the additional features defined in the housing projects besides the design of the buildings have increased and have become the main determinant of the success of the project. Therefore, house builders' tendency to produce such housing areas have risen with the increase in the willingness to pay of the households.

This created sprawls and fragmented growth in cities. The development of Ankara tried to be controlled with city plans under these conditions. Related to that, main goal of 90 Ankara Development Plan was to direct urban development in north-south direction towards western corridor where city fringes were not surrounded by squatter areas. During the sprawl high income groups left city for suburbs which were developed by private builders. After that; city growth was mainly controlled by housing investments at the western and eastern fringes of the city. In these areas, private sector built targeting high income groups with specific features. The residential areas at Çayyolu, Beytepe and Ümitköy formed by partial plans which are located at the western development corridor at the city are the significant examples of these type of developments.

All these development have led to a new planning activity for Ankara and 2023 Development Plan of Ankara was approved 2007. In the plan, it is emphasized that, south western part of the city has been the most speculated area since 1980s. The area is an example where city the growth is not shaped by mixed-use of areas but by residential developments. Thus housing investments in the area is an important tool for directing the growth of the city.

In the next chapter, the housing market conditions which is analyzed in national level is tried to be elaborated by examining one of the fastest developing regions of Ankara; Yaşamkent District which is located at the western development corridor of the city. The chapter aims to investigate the housing provision structure in the area considering all the spatial and socio-economic conditions that district provides in order to understand the underlying reasons that lead house builders to produce in large scales and households to prefer such housing estates.

CHAPTER 5

LARGE SCALE HOUSING PRODUCTION ON A DEVELOPMENT AREA OF ANKARA: A FURTHER STUDY ON YAŞAMKENT

5.1 Introduction

This chapter focuses on Yaşamkent district which is a recently developing area of Ankara. Yaşamkent is selected as the study area because it is not only one of the fastest developing residential regions of Ankara along with Ümitköy, Çayyolu, and Konutkent but also it contains various types of housing estates that allow evaluating the main hypotheses of the thesis. Regarding, study area is analyzed with respect to various aspects in order to understand not only the structure of spatial developments but also to evaluate the general socio-economic condition of the area.

In order to do so, the study selects all the housing estates with minimum 50 housing units within the district boundaries of Yaşamkent as samples; however, some other housing estates located near the district boundaries are also included into the sampled housing estates, as they are making important contribution to the study.

The first part of the chapter gives information about the general structure of the urban development on Yaşamkent. This section reviews variety of the residential developments, the development plan decisions made by the municipality in the study area and socio-economic conditions of the residents in Yaşamkent.

The next section focuses on the housing estates which have minimum 50 housing units at the area. There are 38 housing estates which provide this condition in Yaşamkent. The section aims to give detailed information about these 38 housing estates with 5406 housing units according to their producers, types of estates and

development plan decisions. Following section demonstrates the housing estates chosen for the study by concentrating on descriptive statistics and analysis. The discussion about 38 housing estates gives insights about the current situation and allows comparisons between the housing estates in order to identify differences and similarities between them. The final part consists of log-linear hedonic regression and binary logistic regression for revealing the results for the given hypothesis and discussion points of the thesis.

5.2 General Structure of Urban Development on Yaşamkent

Yasamkent is one of the most rapidly growing residential areas of Ankara, which is located on south-western development corridor of the city along the Eskisehir Highway. It was within the boundaries of Yenimahalle Municipality[6] until the 30th of March, 2014 (Figure 5.1).

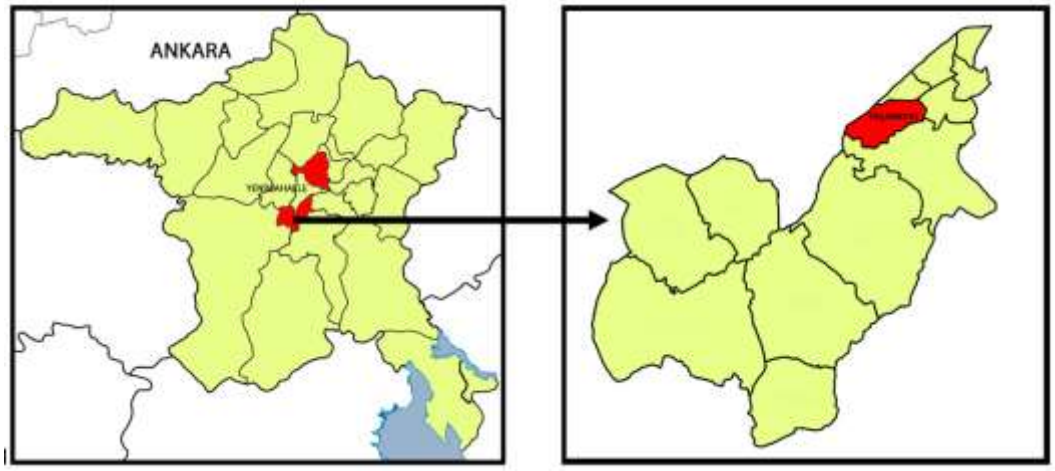


Figure 5.1 Boundaries of Yenimahalle Municipality

[6] According to the Law No: 6360 "On Üç İlde Büyükşehir Belediyesi ve Yirmi Altı İlçe Kurulması ile Bazı Kanun ve Kanun Hükmünde Kararnamelerde Değişiklik Yapılmasına Dair Kanun", Yaşamkent is included in the Çankaya District Boundary and will be under authorization of Çankaya Municipality after the local authorities' election on 30th March 2014.

The district has an area of 5230 km^2 and is located approximately 20 km away from city center. The size of plots and the existence of abundant available land result in the emergence of various housing projects as different from those in the inner city.

It is known that, inner city neighborhood is jammed by overlapping of different functions. It has become spatially inadequate even for the basic needs of contemporary citizens. Thus, contemporary citizens' search for quality of life and desire for meeting new tastes and preferences lead them to new housing estates with original attributes and more open areas at the outskirts of the city. Related to that, rapid development of Yaşamkent is fed by the original opportunities offered by the new housing estates in both spatial and social terms.

Figure 5.2 and 5.3 show the bird's eye view of the two housing areas from the inner neighborhoods of Ankara (Ayrancı District) and Yaşamkent. Urban development patterns of the two areas are significantly different from each other. Comparison of bird's eye views illustrates the fact that, living environment in Yaşamkent is more defined than inner city with its breathing spaces, green areas, and land use. Availability of the larger size of plots in Yaşamkent allows house builders to produce housing estates with high number of housing units which have the opportunity to contain various facilities within their areas such as parking spaces and sport facilities. The housing estates are designed in enclosed systems that provide security and privacy for the households.

Whereas in an inner district; plots are small in size which only allow to build single apartment buildings. Related to that, in order to overcome economic limitations of producing in inner city, construction firms prefer to use the area solely for housing and cannot include other attributes that can be simply offered in the large plots in Yaşamkent.

Figure 5.2 Bird's Eye View from City Center (A. Ayrancı)

Figure 5.3 Bird's Eye View from Yaşamkent

Related to the limited opportunities in producing in the inner city and changes in tastes and preferences of households, Yaşamkent has become one of the focal points of residential development in Ankara. Housing estates in Yaşamkent have been developed according to the development plan prepared by the Yenimahalle Municipality. Construction of most housing estates has been completed and there are few empty parcels left currently. Occupancy map of Yaşamkent (Figure 5.4) illustrates the areas in which the construction has been completed in the area.

Figure 5.4 Occupancy Map of Yaşamkent District

5.2.1 Types of Housing Estates in Yaşamkent

Construction permits of the housing estates in the area show that, residential developments in Yaşamkent have begun in the year 2000 and have significantly accelerated since the mid-2000s. Developed housing estates offer both spatial and social facilities that are related to the necessities of urban life.

Figure 5.5 Individually Built Low-Rise Developments (1)

Figure 5.6 Individually Built Low-Rise Developments (2)

In the study area there are different types of housing developments; large-scale housing estates as well as low-rise ones. North-eastern part of Yaşamkent has older low-rise housing developments mostly on single plots, which have been constructed individually. This part of the district does not exhibit a unique pattern (Figure 5.5 and 5.6). The size of plots is small and the development plan decision of the municipality identifies 6m as the maximum height for that area.

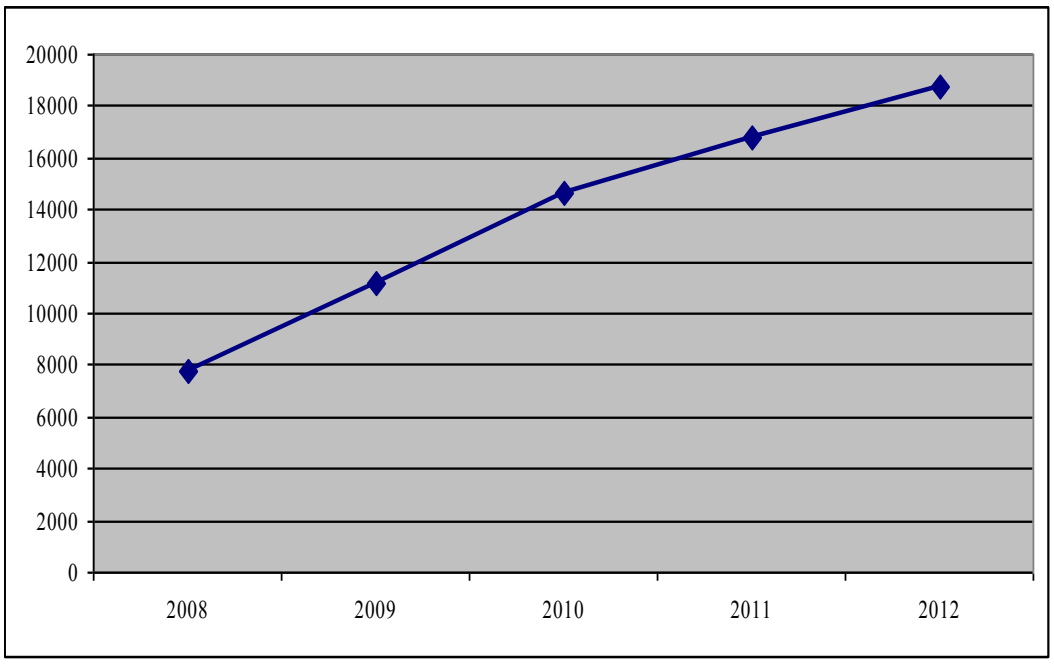
Figure 5.7 Large-Scale Housing Developments (Multiple-Story)

Figure 5.8 Large-Scale Housing Developments (Low-rise)

Buildings of large scale housing estates are for residential use, and due to the need for trade centers, structures that were built on single plots along the main roads have been turned into commercial uses. Western and southern parts of Yaşamkent are mostly new residential areas. There are both large-scale multi-story housing estates and low-rise developments (Figure 5.7 and 5.8). Both types of residential developments appear to be designed for the middle and upper income groups.

5.2.2 Socio-Economic Indicators in Yaşamkent

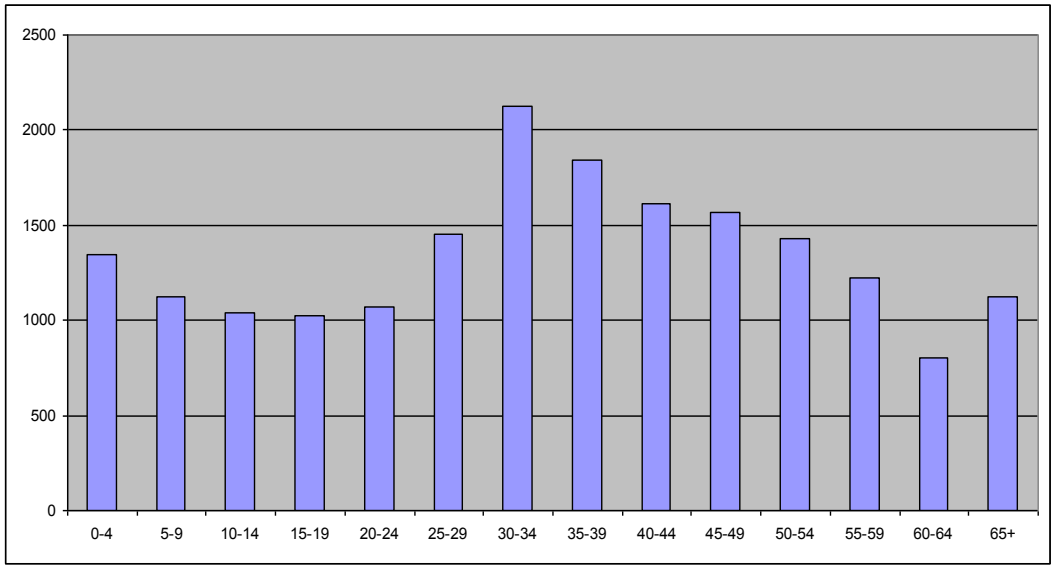
Data shows that there has been a significant increase in the population of Yaşamkent during the last 5 years. In 2008 Yaşamkent's population was 7,749 and it has more than doubled and reached to 18,781 in 2012 (Figure 5.9). According to the population forecasts of TUIK, it is expected to exceed 20,000 in 2015.



Source: TUIK

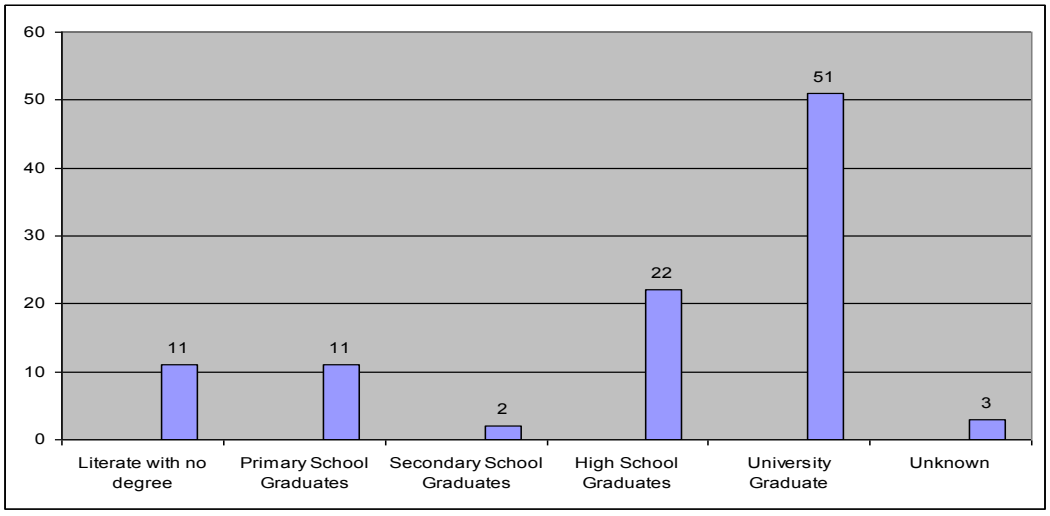
Figure 5.9 Population Increase of Yaşamkent (2008-2012)

Age group statistics of TUIK (Figure 5.10) shows that the population of Yaşamkent is young; 25-45 years old people dominate the population of the area. Families are nuclear with one or two children. This group mostly consists of people who are either working or continuing their education. Education level of the area is high, as 51% of the population has at least a university degree (Figure 5.11).



Source: TUİK

Figure 5.10 Age Group Distribution of Yaşamkent (2012)



Source: TUİK

Figure 5.11 Education Level of Yaşamkent (%)

The area attracts educational investments by private sector for primary, secondary and high schools. According to the TUIK data, working members of the family mostly works at the city center. Although means of public transportation is available for the area, the car ownership rate is high and above the Ankara average.

Satellite Photo - Before 2000

Satellite Photo – 2003

Satellite Photo - 2007

Satellite Photo - 2013

Related to that, the rapid growth of Yaşamkent's population is reflected to the spatial development of the area which is demonstrated in the following satellite photos that was taken in 2000, 2003, 2007, and 2013.

In 2000, it is observed that there were only few construction activities which are in initial stage in the area. Infrastructural developments are very limited. However, after only 3 years, urban development and construction activities are more defined in 2003, and developments were concentrated around the main transportation axes in the area. Satellite photos of 2007 and 2013 illustrate that housing developments expanded throughout the area and the infra-structure development is visibly improved. It is observed that, besides the completed housing estates, there are many new constructions indicating the fact that the area has continued to attract house builders to invest on new projects.

5.3 Data, Discussions, and Methods

This section covers the detailed analysis of the data and the variables used the models. Firstly the process of data gathering is explained in this section. Secondly, variables are analyzed in detail in order to create a basis for the models used in the thesis. And finally two sets of models are defined, based on the data to test the hypotheses.

5.3.1 Data

In this study; a research has been carried out for all housing estates in Yaşamkent between 2000 and 2015. This research provides data related to housing estate, housing and dwelling unit attributes of the selected housing estates in the study area.

In the process of creating the data, two methods have been used in the study. The first one is from the survey of construction permits of all housing estates, issued by the Yenimahalle Municipality, which cover information about construction firms, land owners, number of buildings, number of floors, number of dwelling units, and age of buildings, construction materials, and indoor and outdoor attributes. Second one is on-site study in the research area.

After the analysis, the sample was limited to housing estates which have minimum 50 housing units in the area. There were 38 housing estates which provided this condition. Total number of 5406 housing units in the 38 housing estates was also studied in details. Table 5.1[7] shows the names of housing estates and the number of housing units that they contain.

Table 5.1 Name of Housing Estates and the Number of Housing Units in the Study Area

Names of Housing Estates	Number of Housing Units
1. Besa Karina	620
2. Yeni Atabilge	440
3. Gülbeng Sitesi	314
4. Besa Ataşehir	265
5. Crystal Towers	256
6. Besa Nova	224
7. Başkent	218
8. Yeşiller Esertepe	217
9. Mesa Yonca 1	168
10. Anka Modern	153
11. Park Flora	152
12. Ataşehir Sitesi	144

[7] In the following part of the study, instead of the names of the housing estates the reference numbers will be used.

Table 5.1 Name of Housing Estates and the Number of Housing Units in the Study Area (continued)

Names of Housing Estates	Number of Housing Units
13. Mesa Yonca 3	138
14. Güneş Sitesi	130
15. Mehtap Sitesi	130
16. Şeker Kent	129
17. Sedef Evler	117
18. Park Lima	110
19. İnan Sitesi	107
20. Özkar Kayra Park	106
21. Kar Evler	102
22. Mesa Yonca 2	96
23. İkizler Sitesi	92
24. Rain Park	86
25. Park Lopelya	85
26. Ayarslan Sitesi	78
27. Park Armoni	74
28. Pelit Yaşam	72
29. Perge-Pergamum	68
30. Zümrüt Evler	65
31. Barış Sitesi	63
32. Bahçeşehir Sitesi	60
33. Vadi Evleri	56
34. Anka Konutları	56
35. Milenyum Sitesi	55
36. Sarı Frezya	54
37. Zirve Yaşam	54
38. Tarz Evler	52

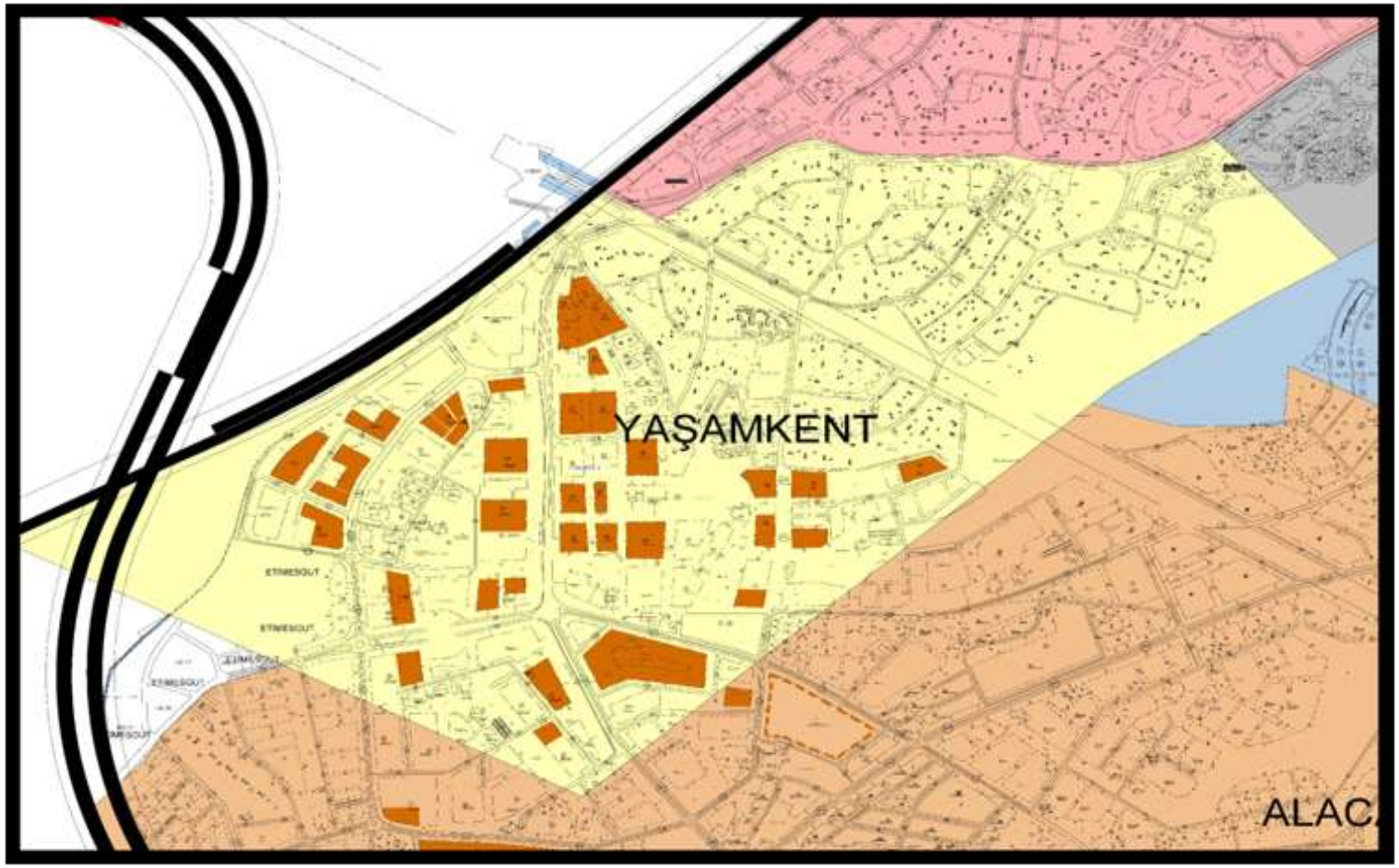


Figure 5.12 Map of Spatial Distribution of Studied Housing Estates

According to the spatial distribution map (Figure 5.12) of the studied housing estates, it is observed that, they are scattered throughout Yaşamkent. Thus, they do not constitute cluster.

This part of the study covers firstly the detailed analysis of housing estates under the titles of type of house builders, the form of land acquisition, types of the estates and some explanatory variables defined in the development plan.

Next, the descriptive statistics is undertaken in order to analyze the data in qualitative terms. The analysis is carried out according to the housing estate, housing, and dwelling unit attributes of the studied housing estates. Evaluation of the data is followed by cross-tab analysis. The analysis was completed with the estimation of hedonic regression and binary logistic regression equations.

5.3.1.1 Structure of House builders of the Housing Estates

In the research area within 38 housing estates, there are three actors; private firms, house building cooperatives and the owners of the plots themselves. Public sector is not involved in housing production in the research area.

Data obtained for the housing estates are analyzed according to the type of house builders and land ownership patterns (Figure 5.13, 5.14 and 5.15). Private firms, particularly those that acquire land by making deals with land owners to pay for by flats to be produced, dominate the housing production in Yaşamkent. They produce housing units in different size endowed with different attributes. Private firms offer alternatives for house buyers on the housing estates that they build. Builders of 24 housing estates out of 38 (63%) acquired land by making deals with land owners, 3 of them built on plots owned by themselves and 5 housing estates were built on plots owned by house building cooperatives. The number of

housing units produced by private firms varies between 50 and 620 units among 38 housing estates. It is observed that those built on their own land have at least 138 units. Related to that, private firms presently, tend to build on their own land, thus land acquisition becomes one of their priorities in this area.

House building cooperatives; with the second highest share of 29%; act as both land developer and house builder. Similar to private firms, house building cooperatives produced housing units varying between 52 and 440. They produced mostly standard type of housing. The alternatives of housing types in a single housing estate are limited.

The share of plot owners who built on their own land is 8%. However, number of the housing that they produce is small relative to that of private firms and house building cooperatives, with 102 units on the average.

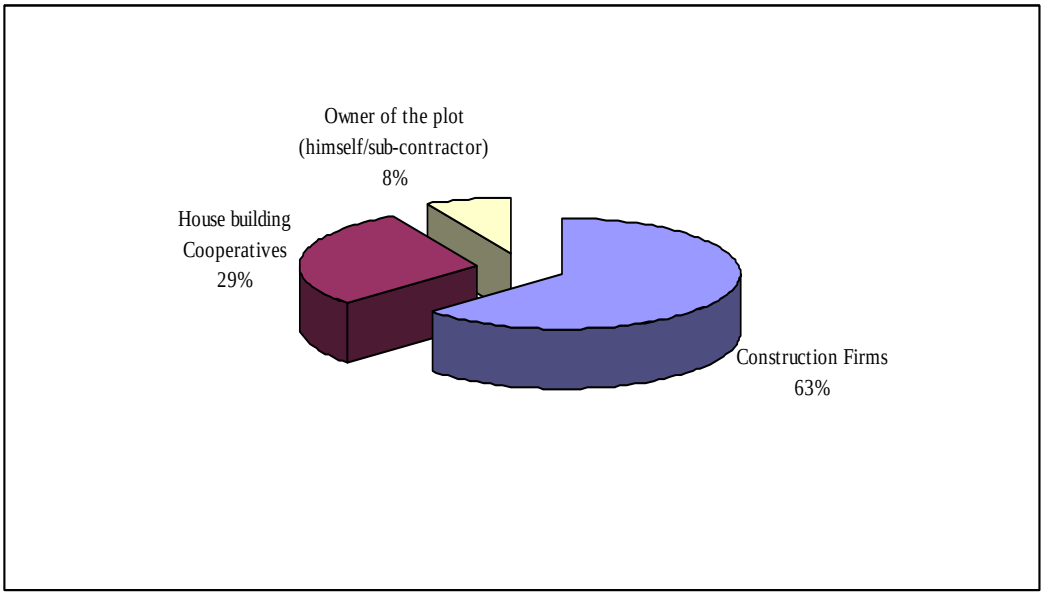


Figure 5.13 Shares of House builders that Produced Sampled Housing Estates in Yaşamkent (no. of housing estates)

Regarding to the number of housing units produced, private firms still have the highest share of 68% which is followed by the house building cooperatives' share

of 28% whereas, plot owners have only 4% share (Figure 5.14). The land developer role of private firms is very limited in the area. Figure 5.15 shows that, private firms solve the problem of land acquisition by making deals with land owners have the highest share. Analysis shows that, house building cooperatives are the most important land developers in the area.

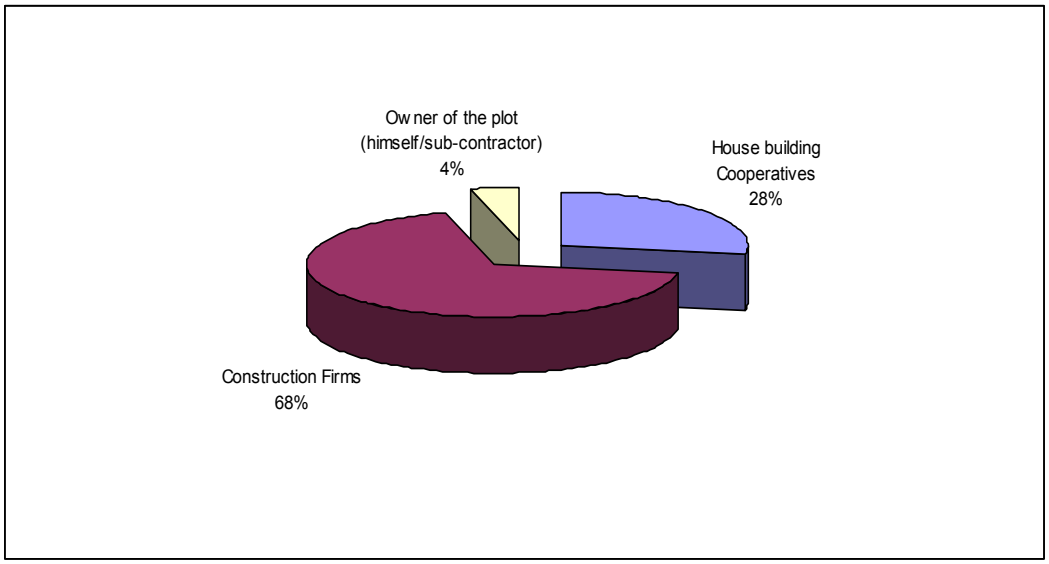


Figure 5.14 Shares of House builders That Produced Sampled Housing Estates in Yaşamkent (no. of housing units)

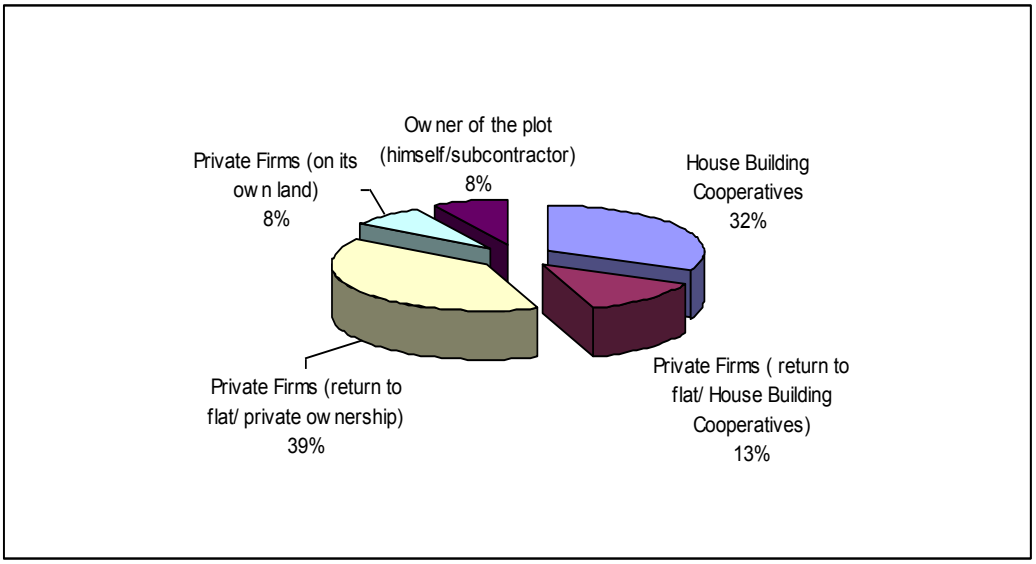


Figure 5.15 Shares of House builders by the Acquisition of Land for the Production of Sampled Housing Estates in Yaşamkent

The results of the analysis indicate that, private firms not only dominate the area in terms of the number of housing estates but also number of housing units produced.

5.3.1.2 Defining Typologies of Sampled Housing Estates

38 housing estates offer various features to households in Yaşamkent. Due to the size of the plots and availability of land combined with the preferences of households, projects built on large areas include different physical and social attributes. Three typologies can be created in this regard.

Table 5.2 Three Typologies of Sampled Housing Estates

Type		***Features***
Luxury Developments	Residential	Highly prestigious living areas, highly exclusive in price, smart building, large in size and variety of housing units, high technology security and large private security personnel, top-notch communication and infra-structure, consumption, sport and social services, private management,
Semi-Luxury Developments	Residential	Prestigious living areas, highly priced, large in size, two or three types of housing units, high technology security, limited sport, social services and communication services,
Standard Developments	Residential	Preferable living areas, large in size but single type housing units, with limited or no security service, limited/no social and sport facilities,

The first type is luxury residential developments, which are developed by private firms, are highly prestigious living areas. Prices of the housing units are greatly above the market level. These types of estates contain different sized housing units. The areas are highly secured with high technology devices and security staff. Buildings are equipped with top-notch communication and infra-structure. There are not only designed open spaces for the residents but also trade and sport centers which are privately managed. They have their own websites which allow consumers to reach to every detail of the housing estates from general structures of the project to floor plans of every type of housing units. In addition to that, they appear in both visual and print media. With respect to the sample size, luxury residential developments have the lowest share (17%) among the three typologies (Figure 5.16).

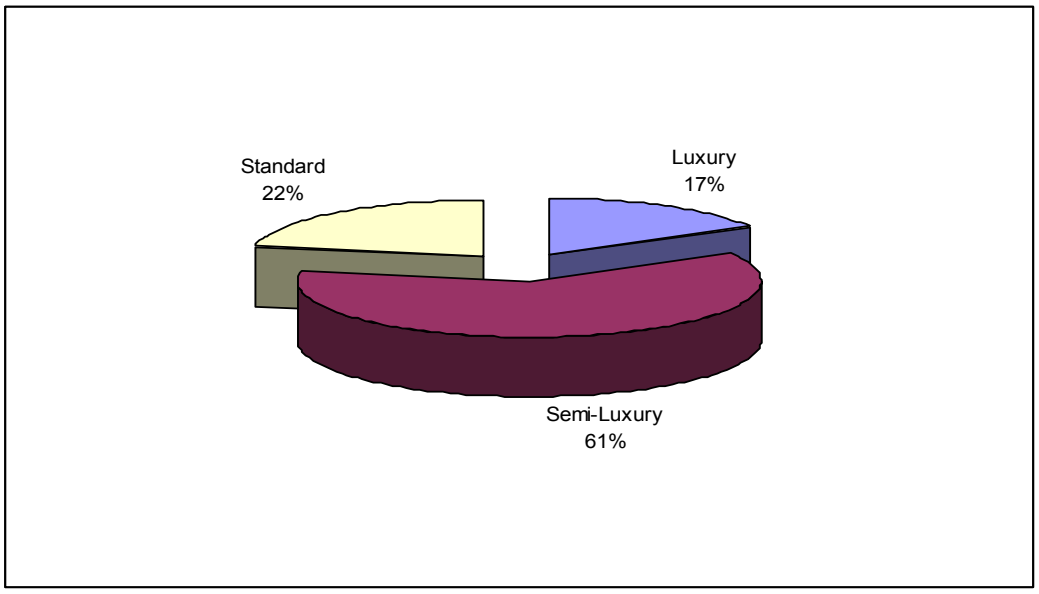


Figure 5.16 Shares of Typologies
(No. of housing estates)

Second type is semi-luxury residential developments, which are either built by private firms or house building cooperatives. They are prestigious living areas with high prices. These developments offer two or three types of housing units with security. Sport facilities and social services are limited and there is no

commercial facility. These types of developments do not have a website but it is possible to see advertisements in the print media. Semi-luxury residential developments have the highest share (61%) in the research area.

Last typology type is standard residential developments. They have the second highest share (22%). These have been built by all three house builders which are defined in the area. They are preferable residential areas with reasonable prices. However, the external and internal attributes of housing units are very limited. They are not supported by any type of advertisement.

Presently, all three types of typologies are built in the research area. However, it is observed that, all luxury residential developments are built after 2008 and in time they have become more preferable by construction firms. In addition, in spite of the fact that they have the lowest share among the three typologies with respect to the number of housing estates, in the production of total number housing units, luxury ones have the second highest share with 35% after semi-luxury residential developments with 52% share (Figure 5.17).

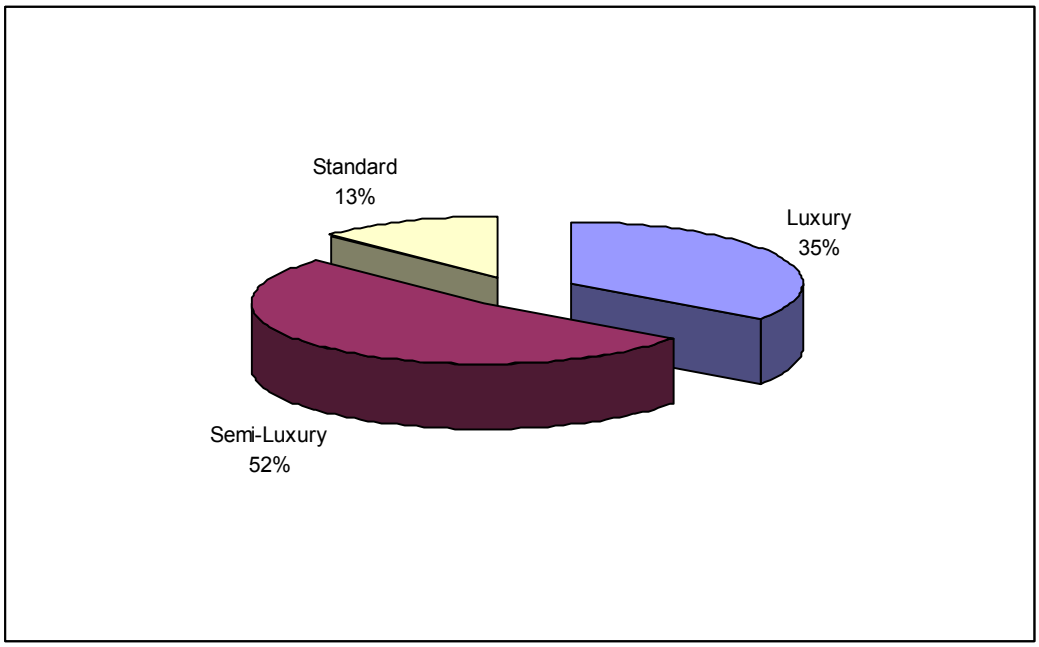


Figure 5.17 Shares of Three Typologies

5.3.1.3 Analysis of Some Explanatory Variables of Sampled Housing Estates

The Land Coverage Ratios (LCRs) and Floor Area Ratios (FARs) are defined by the development plan of the Yenimahalle Municipality. LCRs are the same for all the sampled housing estates and it is 0,35. FARs are changing as 1, 1,4, 1,5 and 2 in the area. Topçu (2004) pointed out the fact that, although the height of the housing structures is increasing along the western part of Ankara, FAR decreases from 2 to 0, 75. However, FAR of luxury and semi-luxury housing estates are defined 2. This condition points out the development of new types of residential sites in the area. There are no height restrictions for the sampled estates. Regarding the number of floors, they vary from 8 to 21 stories. It is observed that, more recently built samples have more than 15 floors.

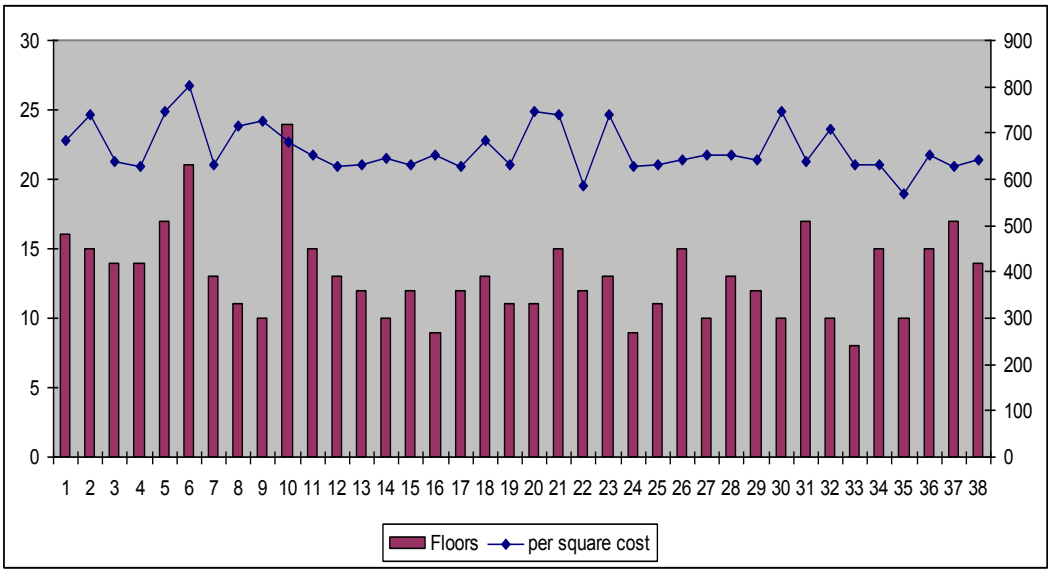


Figure 5.18 Costs per Square and Number of Floors Relationship

Construction permits show that; among the 38 sampled estates, costs per square meter[8] vary between 566 TL and 802.

[8] Cost per squares of each sample which one defined in construction permits are converted into 2015 prices by using producer price index.

Considering the variety of sampled estates, number of floors in the buildings is above 8 and cost per square meter does not show significant differences. Figure 5.18 shows that, there is no strong relation between cost per squares and number of floors of the sampled estates.

On the other hand, relationship between cost per square meter and number of housing units in housing estates is more insightful (Figure 5.19). Although, the number of housing units in the housing estates are changing significantly ranging from 50 to 620, cost per square meter of sampled estates are changing in small range.

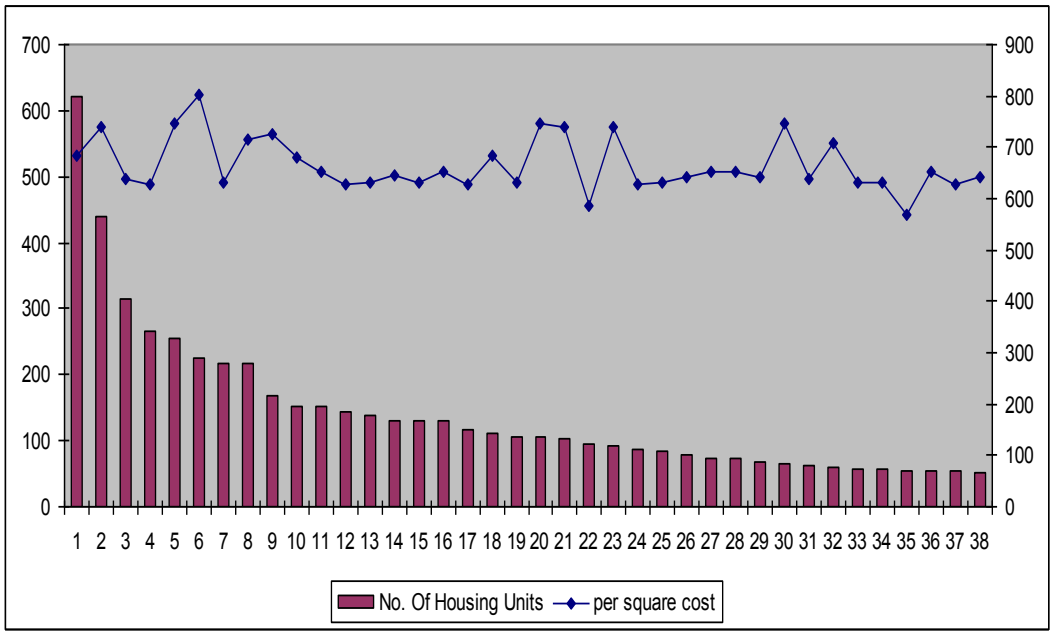


Figure 5.19 Costs per Square and Number of Housing Unit Relation

In other words, data indicates that, there is not much difference in per square meter costs in producing small and large number of housing units. This can be explained as, house builders' tendency to use the cost advantage gained by producing more to compensate the cost of adding luxurious attributes to the project.

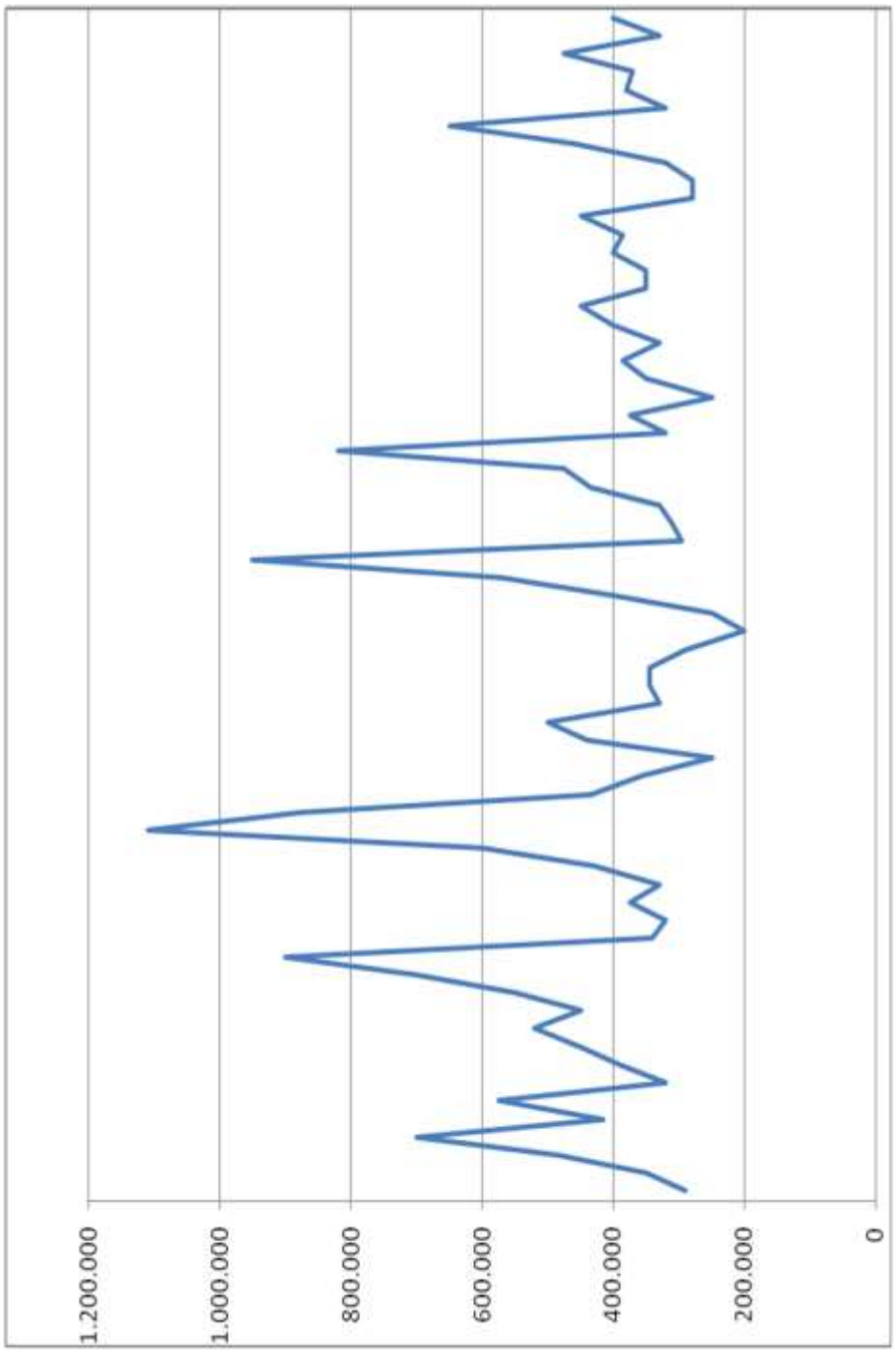


Figure 5.20 Distributions of Price Levels among Sampled Housing Estates

Regarding to the different construction quality and cost, land price and the variety in housing provision in the area, the price levels[9] of housing units among the housing estates differ significantly. Among the 5406 housing units, the price levels fluctuate from 200.000 TL to 1.110.000 TL. However, as illustrated in Figure 5.20; most of the housing units are clustered around 400.000 TL. The average price level of the sampled housing estate is 435.000 TL.

Different price levels in the area can be explained by the size of the estate, age, location, and different levels of attributes that each housing unit and the housing estates have. The degree of influence of each input on the determination of price level in housing estates is discussed in the following sections of this chapter.

5.3.1.4 Descriptive Statistics

Descriptive statistics are expected to provide a quantitative way of evaluation of urban land and physical structures as well as preferences of both consumers and producers in that part of the housing market, which is crucial in this thesis.

Analysis focuses on housing estate, housing, and dwelling attributes of samples which provided broad interpretation of information. Data regarding to typologies, types of housing units, number of rooms, square meters, landscape, daycare, garage, lot, number of elevators, security, alarm, commercial facilities, generation, pool, tennis court, fitness center, sport facilities, inset cupboard, number of bathrooms, jacuzzi, dressing room, water tank and types of heating, vestry, number of WC and types of kitchen were defined for each housing estate.

[9] Price level of each housing unit used in the thesis are converted into 2015 prices by using producer price index. Prices are collected from real estate agencies and sales offices of the sampled housing estates.

Analysis of 5406 housing units showed that there were eight different housing units defined according to their number of rooms with different attributes. Considering these eight types of housing units, 66 different housing units were detected in the data. Each type of housing unit had been examined according to their exterior and interior attributes in order to make meaningful comparisons and to put through similarities and differences not only between housing units but also between the housing estates.

Descriptive statistics of the samples are summarized under four titles. First three titles cover the detailed information about three types of attributes that housing estates have and cross-tab analysis is carried out under the last title.

5.3.1.4.1 Examination of Housing Estate Attributes

It's observed that all 38 housing estates are designed according to the tastes and preferences of households which cannot be satisfied in the inner neighborhoods of the city anymore. Related to that, housing estates in Yaşamkent provide special housing estate attributes which in need of space to build. Low land prices in the area allow housing estates to offer more open space activities within the estates.

According to the findings of the research, it is observed that all housing estates have playground. In addition to that, all housing units in housing estates have minimum one parking spot. It is observed that, 47% of the housing estates have both closed parking garage and parking lot, which are defined for each housing unit; %5 has only closed parking garage and 48% have only parking lot (Figure5.21).

Moreover, it appears that, security is an indispensable attribute of large scale housing developments. Among 38 housing estates; only one other has no security;

69% of housing estates have full security with high-tech security systems and staffs and 29% have only cameras and security bars (Figure 5.22).

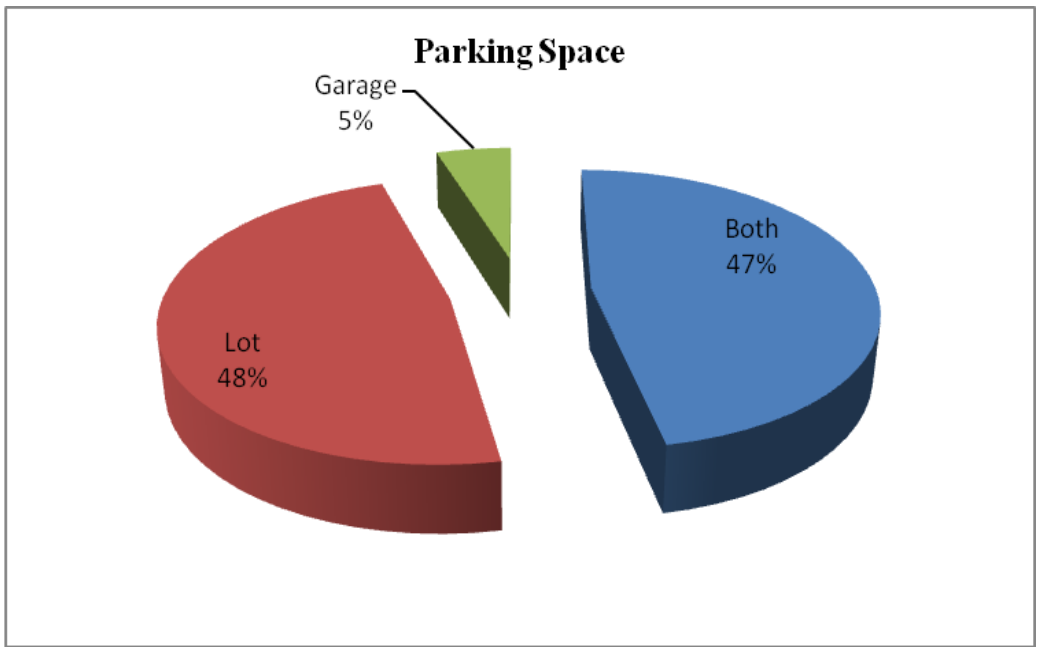


Figure 5.21 Parking Space Distributions

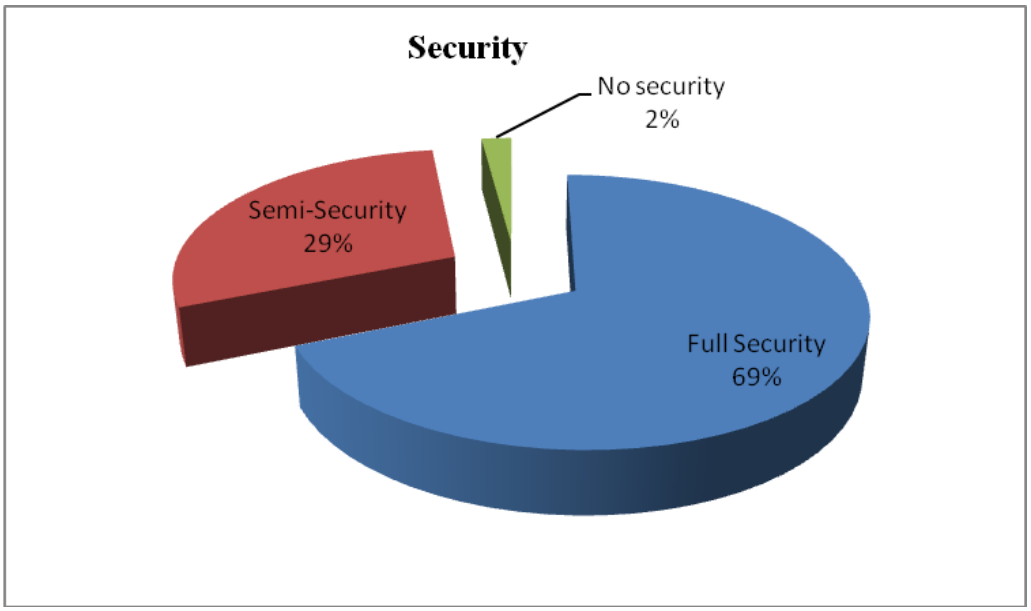


Figure 5.22 Security Levels

In addition to that, existence of sports facilities is important in the sampled housing estates. 76% of the samples acquire at least one type of sport facility. Related to that, attributes of sports facilities differ significantly. Almost half of the housing estates have basketball field (43%) and walking tracks (37%). Those with tennis courts (24%), swimming pools (18%), sports halls (18%), volleyball fields (5%), mini-football fields (3%) and bike lanes (3%) are all built by private firms which are categorized as luxury large scale developments that have at least 110 housing units (Figure 5.23).

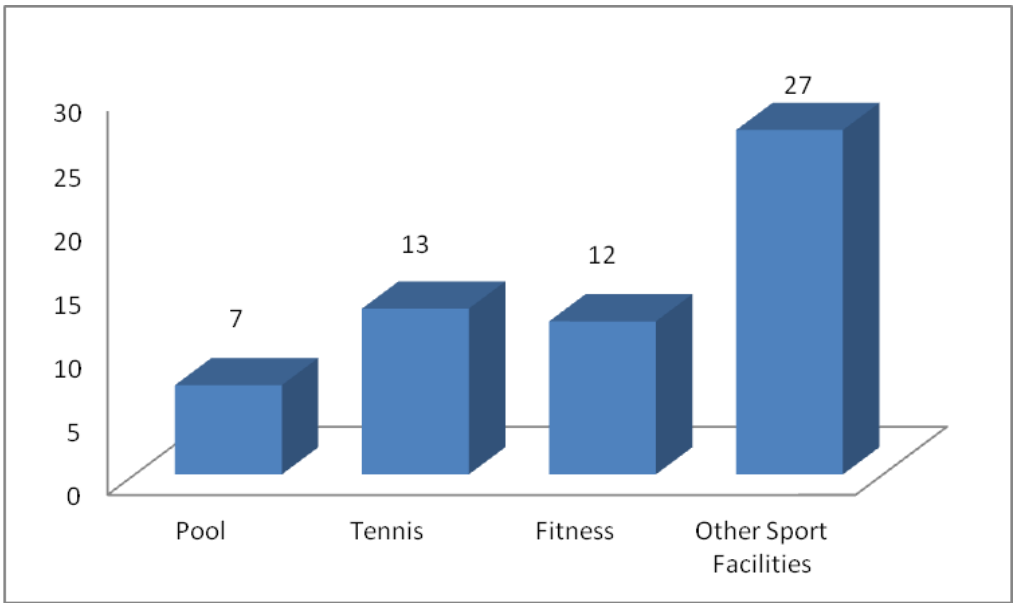


Figure 5 23 Sport Facilities

Social and commercial activities are very limited among the housing estates. Among 38 housing estates; only 2 of them have day-cares and 8 of them have commercial facilities. Considering heating systems, both combi boilers and central heating systems are used in the housing estates; 58% of the samples have central heating systems whereas the rest use combi boilers. Housing estates with central heating systems mainly use calorimeters which allow households to determine the level of their own room temperature and to eliminate unnecessary consumption (Figure 5.24).

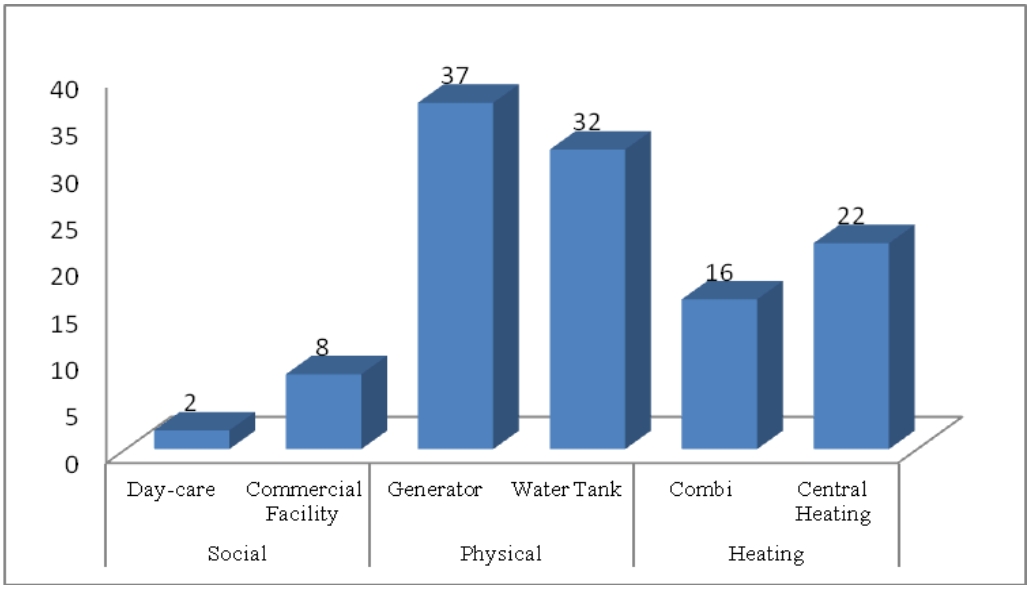


Figure 5.24 Existing General Features

It is observed that, although all the housing estates are located in a recently developed residential area of Yaşamkent, there are frequently water and electricity shortages. Therefore, generators and water tanks become essentials for the housing estates to prevent any inconvenience. Related to that, in the research area, only one housing estate does not have a generator and only 5 do not have water tanks.

In summary; the research of the housing estate attributes reveals that, there is a relationship between the scale of the estate and the availability of the some luxurious housing estate attributes. The analysis show that these attributes need a certain level of production scale for existence otherwise it is inefficient to apply those services in the estate.

5.3.1.4.2 Examination of Housing Attributes

Examination of the interior features of the samples has been done according to the various attributes of the housing units. Among 5406 housing units that are

analyzed in the study, 8 different types (t_1 (1+1), t_2 (2+1), t_3 (3+1), t_4 (4+1), t_5 (5+1), t_7 (5+1 duplex), t_8 (6+1 duplex), t_9 (7+1 duplex) are defined according to the number of rooms they have. Regarding, 66 different types of housing units are identified among the 38 housing estates. All other interior attributes are also analyzed according to each type of housing unit in the study.

It is observed that, 38 housing estates provide from 2 rooms to 8 room types of housing units (Figure 5.25). However, house builders mostly provide attributes according to the preferences of the households. Related to that, types of t_3 and t_4 dominate the research area. It is seen that, 80% of the total housing units are t_4 type and 16% of the total housing units are t_3 type. Most of t_4 have more than 150 m^2 floor area which are imposed to higher VAT rate. The analysis indicates the fact that, households prefer bigger housing units to purchase.

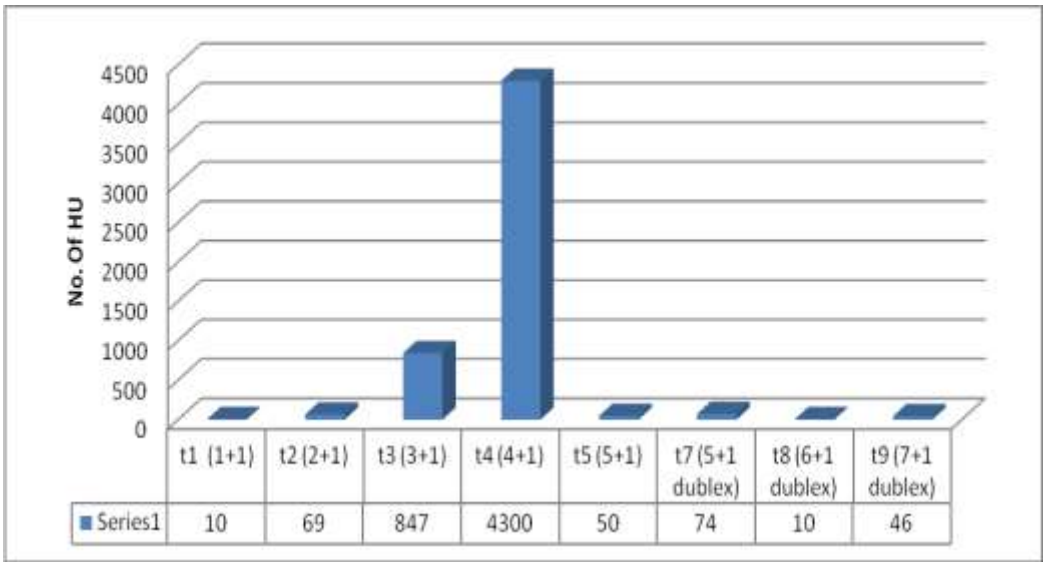


Figure 5.25 Distributions of Housing Units among Types

It is also observed that duplex housing units are also preferred in the area as 2% of the total housing units are duplex (t_7,t_8 and t_9). The duplex housing units are mostly at the top floor of the buildings. In addition to that, relating to the family structure on the area, the least preferred types are t1 and t_8 (0,1%).

Considering the housing production by years, five year classification is made in order to show the distribution by the year of construction (Figure 5.26). Year 2000 is selected as the starting point of the survey because; according to the construction permits of the 38 sampled housing estates, the oldest sample is constructed in that year. The distribution results show that t_4 is the most preferred type in the area and it is the dominant type in all periods. It is also observed that, there is a significant decrease in the production of t_3 through years.

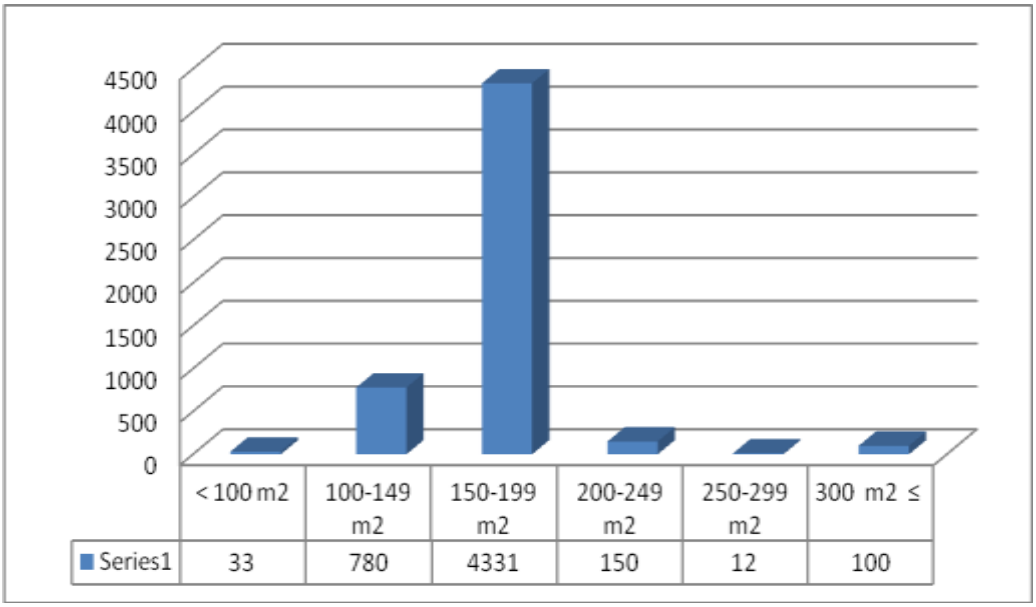


Figure 5.26 Distribution of Housing Units (m^2)

Due to the variety of the types in the research, square meters of the housing units differ significantly. The study shows that the size of the housing units vary from 70 m^2 to 600 m^2. Related to that, in order to make an evaluation, housing units are classified under six categories; less than 100 m^2, 100-149 m^2, 150-199 m^2, 200-249 m^2, 250-300 $m^2$and more than 300 m^2 (Figure 5.27). The classification shows that, 80% of total number of housing units is within the 150-199 m^2 categories.

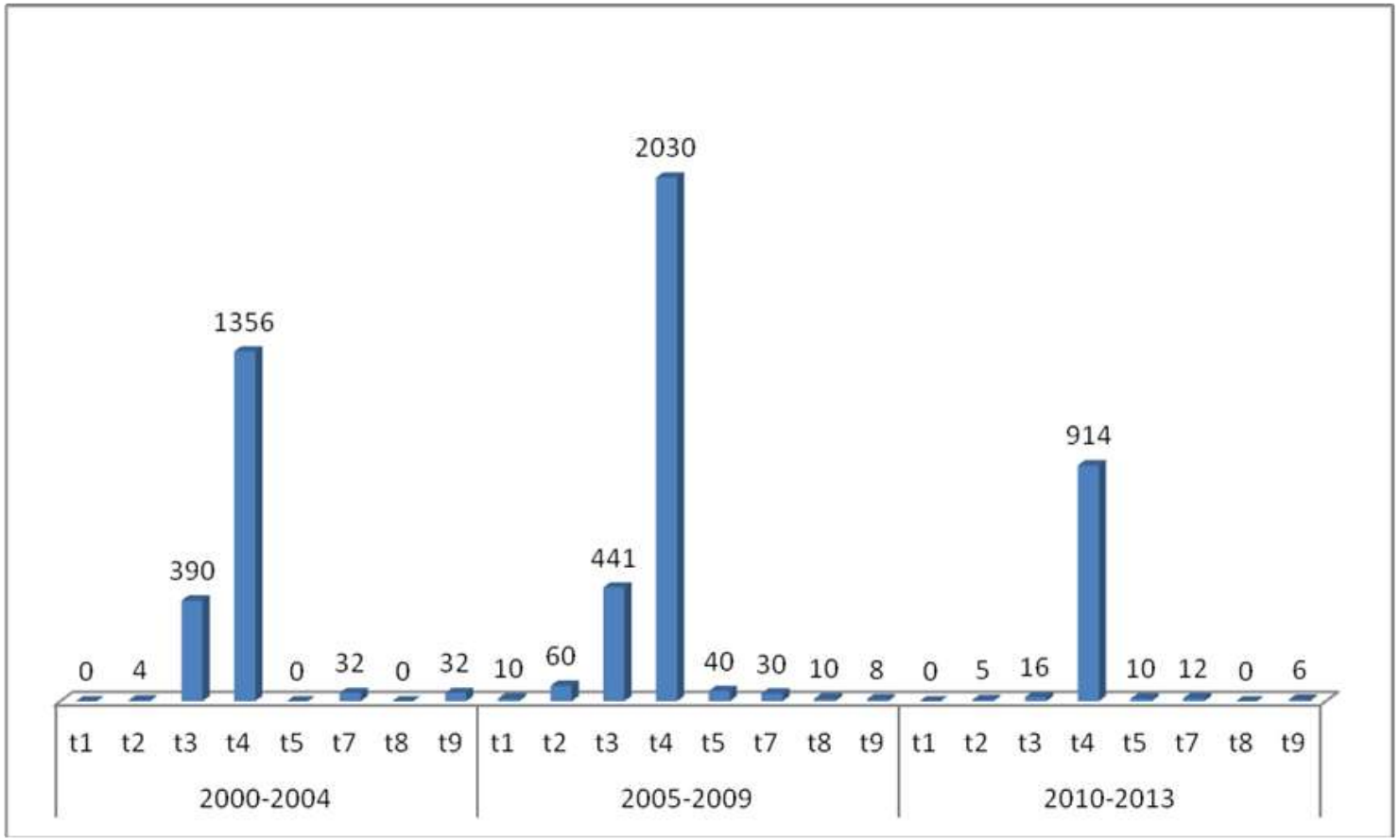


Figure 5.27 No. of Housing Units Types Produced Through Years (2000-2013)

In addition to that, less than 1% of the housing units are smaller than 100 m^2 and almost 2% of housing units are bigger than 300 m^2. There is no height restriction for the area, thus all housing estates have only multi-story buildings (min. 8 floors) equipped with necessary security inputs such as fire alarm systems, fire escape ladders and extinguishers. Due to the multi-story structure of the buildings, installing them elevators is inevitable. Among the 38 housing estates only 5% have single elevator in the buildings. Whereas the rest have two elevators, one of which works as the freight elevator (Figure 5.28).

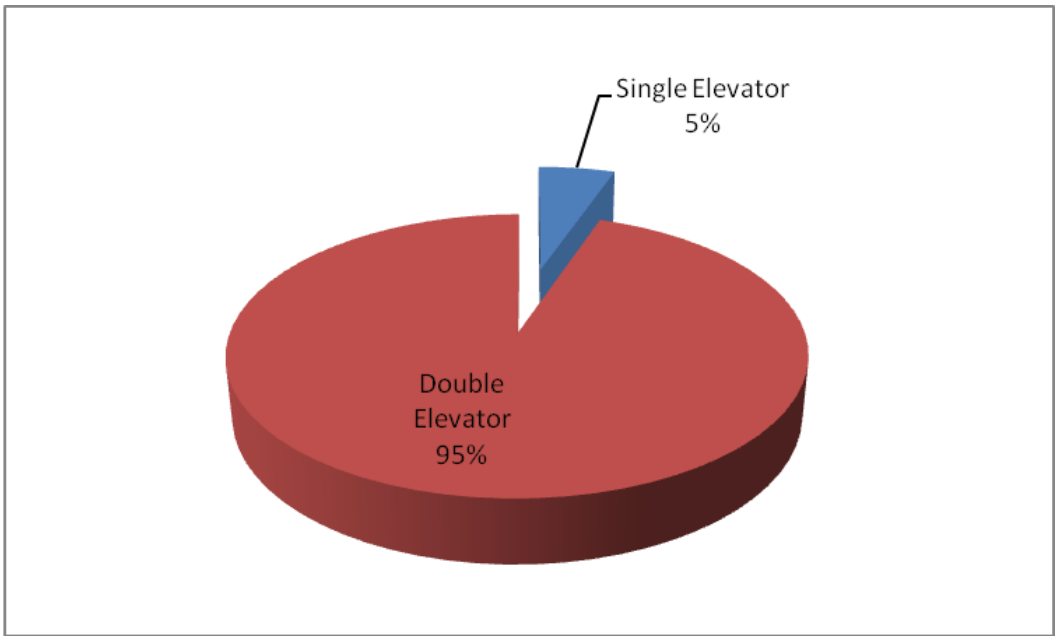


Figure 5.28 No. of Elevators (%)

In addition to that, as part of the security systems, height of the buildings brings about the application of alarm systems for fire and gas leakage to the buildings. Therefore, 77% of the housing units have alarm systems in the studied housing estates (Figure 5.29).

In summary, research of the housing attributes reveals that, almost 80% of the housing units are larger than 150 m^2 and almost 83% of them have more than 3 bedrooms indicating the fact that larger houses are preferred the most in the area

regardless of high VAT rates that housing units are subjected to. Although housing units with three bedrooms are the most preferred type, house builders take into consideration of other probable preferences of households and provide variety of housing units.

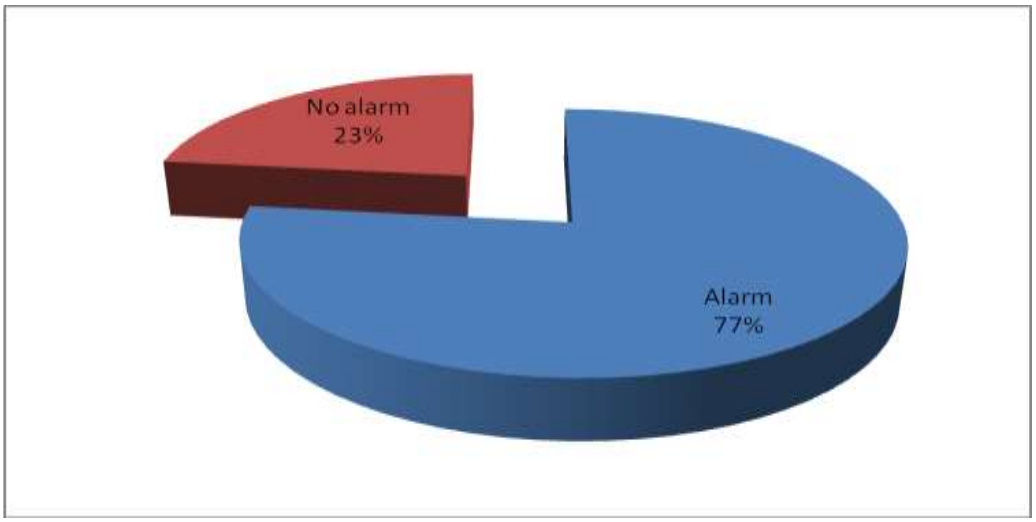


Figure 5.29 Alarm Systems

5.3.1.4.3 Examination of Dwelling Unit Attributes

Regarding the interior attributes of the housing units, analysis indicates that, internet connection, laminate flooring, steel front door, insulating glass, satellite broadcasting, gas pipeline network in kitchens, papier mache and balcony are essential for all housing units in the study area. On the other hand, there are various attributes defined for the housing units that significantly separate them from others.

Related to that, creative designing items are practiced for the main living spaces in the housing units. Considering kitchens, two types become available; fixed-in kitchens and standard kitchens. Results of the study shows that fixed-in kitchens are mostly preferred in the area; 63% of the housing units have fixed-in kitchen

whereas the rest have standard kitchens. Kitchen appliances exist in 45% of the dwelling units with the fixed -in (Figure5.30).

Moreover, design and the number of the bathrooms become one of the key issues in the housing units in all types. Results of the survey show that (Figure 5.31), only 2% of the total number of housing units in the survey has one bathroom. However, additional bathroom in the housing is strongly preferred by both households and house builders, such that 96,5% of the housing units have additional bathrooms in the main bedroom. In addition to that, 1,2% of the housing units has three bathrooms and 0,3% have four bathrooms.

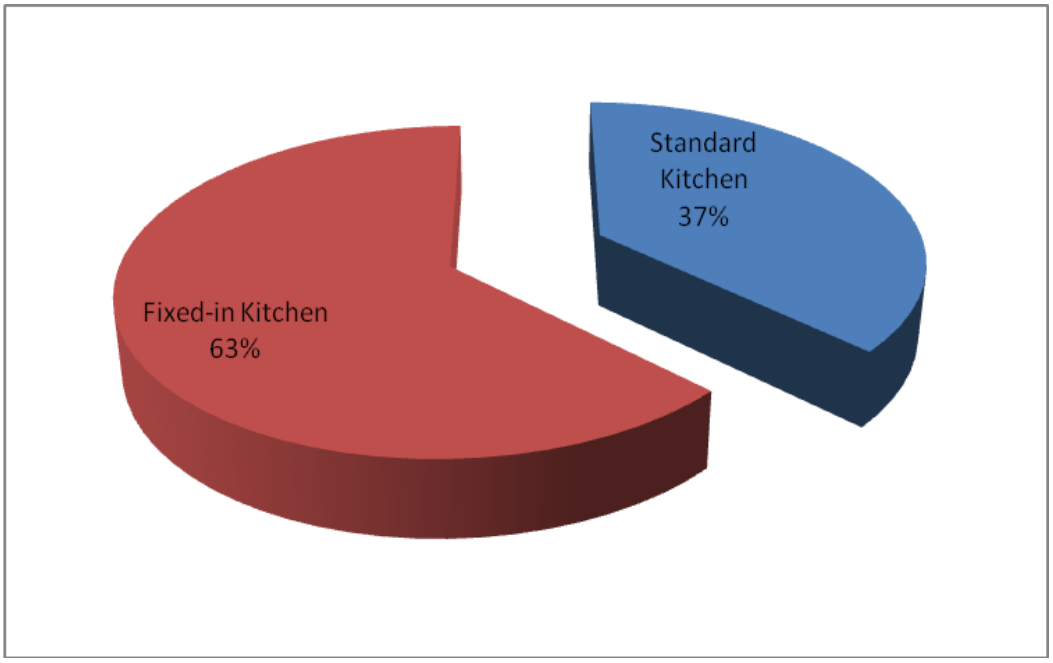


Figure 5.30 Types of Kitchen

It is observed that, according to the types of the housing units in the survey, as the number of rooms increases, the number of bathrooms also tend to increase. Moreover, 9% of the housing units have water closets addition to the bathrooms. Related to that, designs and the appliances in the bathrooms become important

and differentiate; 35% of the housing units have jacuzzi and built-in wash basin whereas the rest have standard bath tub or showers

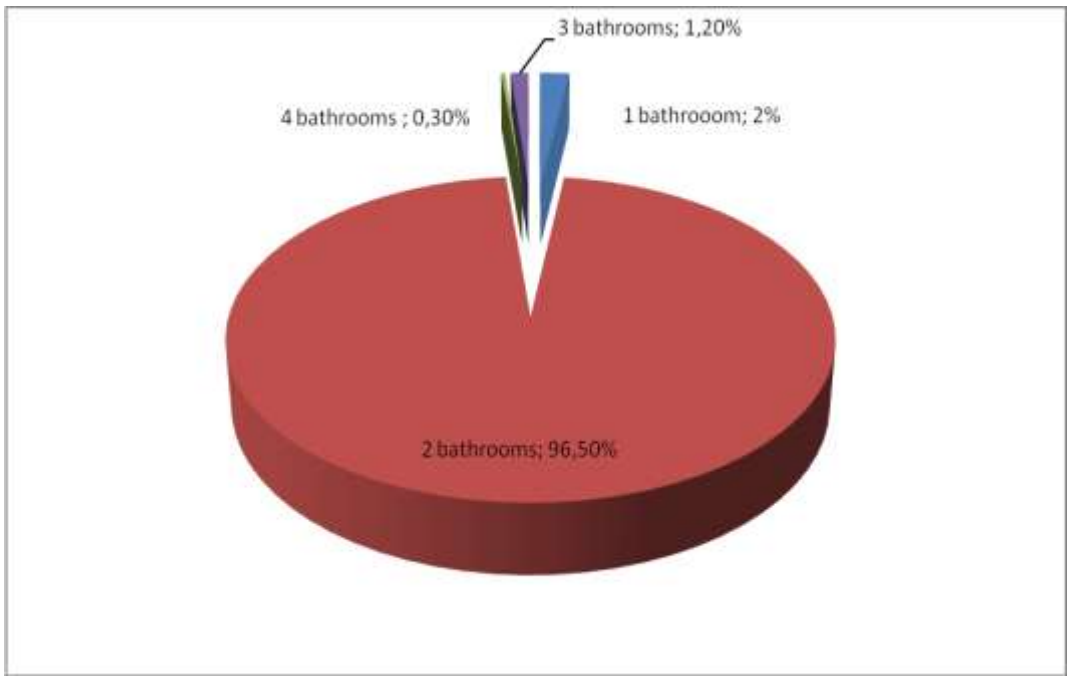


Figure 5.31 Numbers of Bathrooms (%)

In addition to that, size of the housing units in the area allows defining various spaces for different purposes. It is observed that housing units are designed according to the best use of space by the division of intended use. Dressing rooms in the bedrooms, pantries addition to the kitchens, laundry rooms besides bathrooms and vestiaries at the entrance are placed in the architectural designs of the housing units of the estates. Those additional spaces make main areas more functional in the housing units.

Dressing room is one of the most preferred attributes in the housing units by both households and house builders. The results of the survey show that almost half of the housing units (48%) in the research have at least one dressing room.

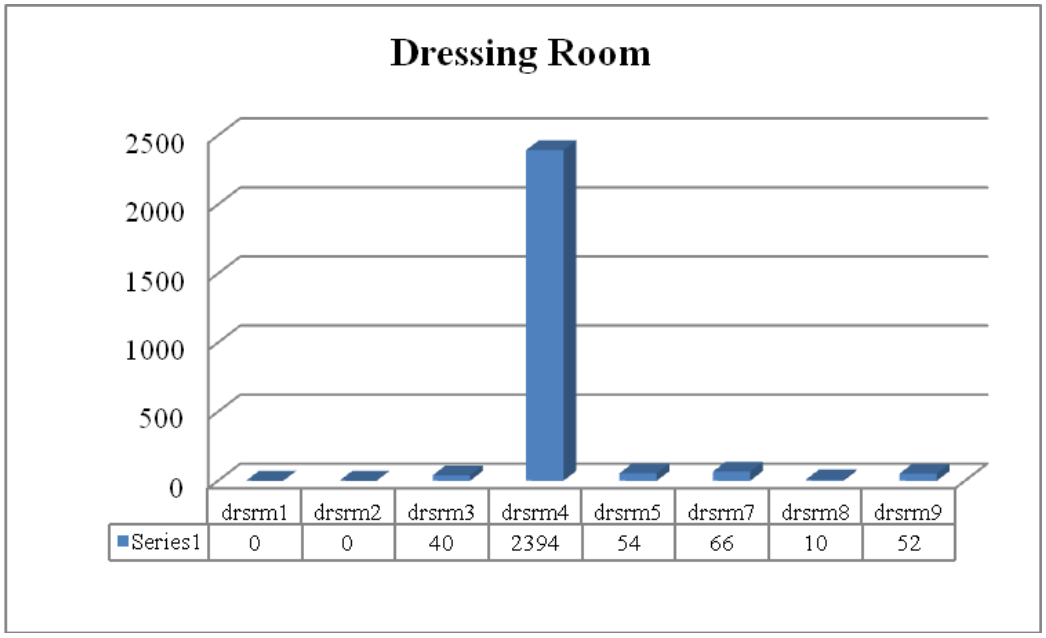


Figure 5.32 No. of Dressing Rooms

In addition, total number of housing units with dressing rooms, 36 of them (~1,5%) have two dressing rooms and 30 of them (~1%) have three dressing room. On the other hand, t_1 and t_2 types do not have any dressing rooms. It is observed that, there is strong relationship between the number of rooms and existence of dressing rooms (Figure 5.32).

Although it is not as common as dressing room, pantry is another preferred attribute in the housing units. Almost 20% of housing units have pantries which are designed as small rooms with inset cupboards that act as storage units (Figure 5.33).

Moreover, the results of the survey show that, vestiaries are one of the top attributes in the housing units. Almost 94% of the housing units in the research have vestiaries. Considering the types of the housing units, regardless of the size or the number of rooms, vestiaries are placed in all types of housing units in the study area (Figure 5.34).

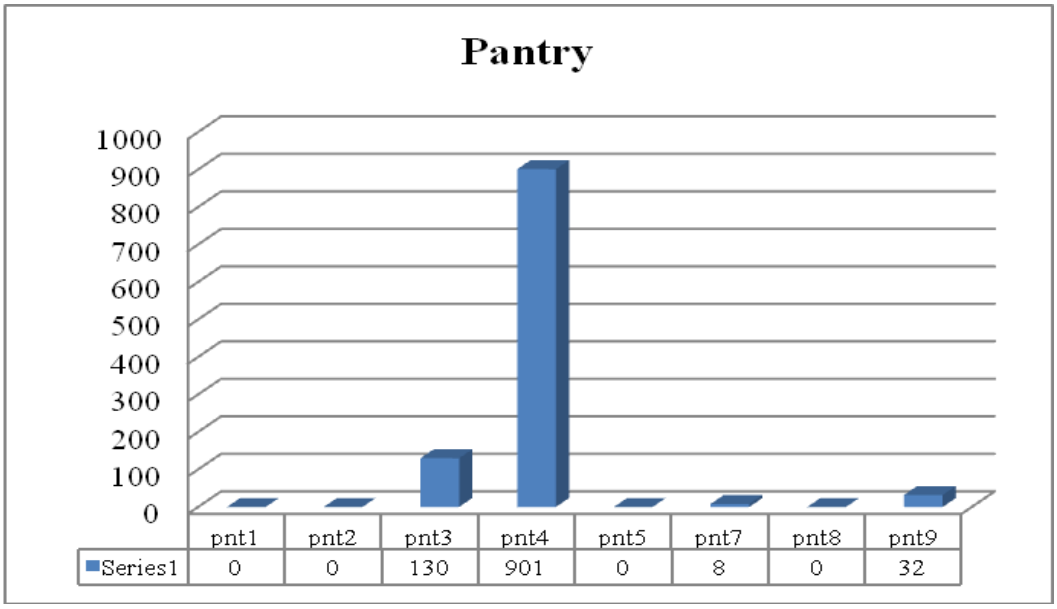


Figure 5.33 No. of Pantry

Laundry rooms are other defined areas that increase the use of space in the housing units; 64% of housing units have laundry rooms in the area. These rooms are designed to have features such as washing machines, tumble machines, washing supplies and other related supplies.

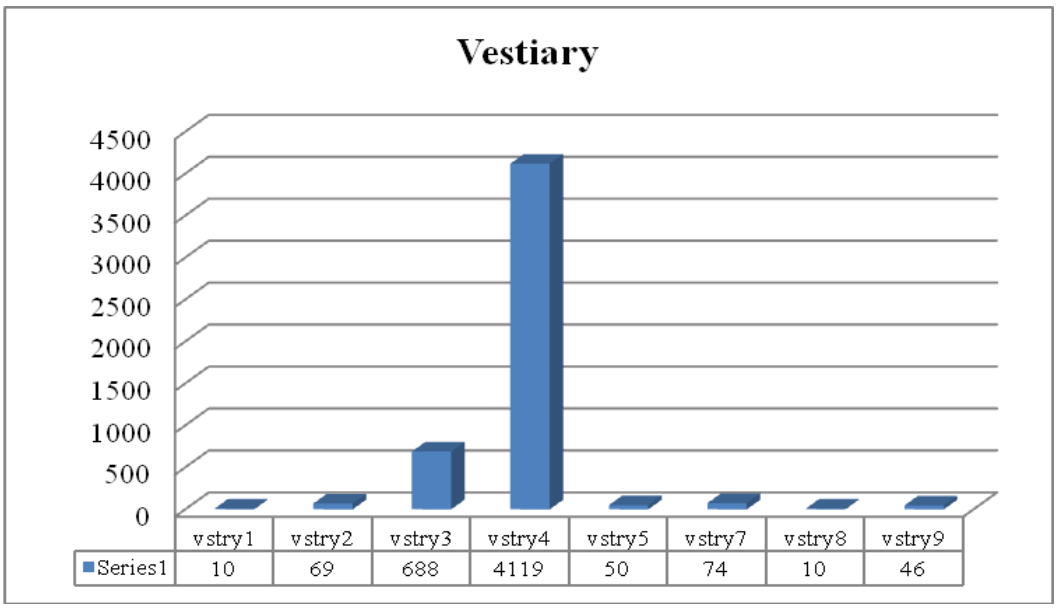


Figure 5.34 No. of Vestiaries

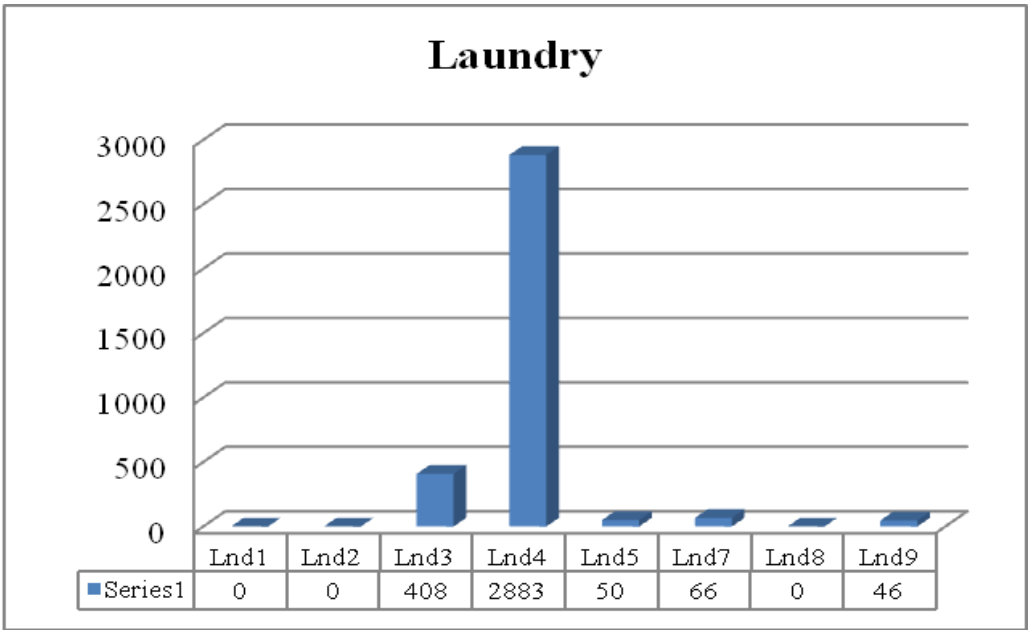


Figure 5.35 No. of Laundry

In summary, the research of the dwelling unit attributes reveals that, housing units are endowed with various indoor attributes. Although some of the dwelling unit attributes are seemed to be standard, considering the age of the housing estates in the area, these attributes represent the current production fashion in the housing market.

5.3.1.4.4 Cross-Tabs Analysis

This section aims to investigate the relationship between the size of the housing estates and the endowed attributes. The statistical method employed in this section is the Cross-tab in order to generate information about the degree of relationship between the pairs of variables.

Three different cross-tab analyses have been carried out according to the three different groupings of the sampled housing estates. These are;

1) No. of Housing Units: 38 housing estates are divided into five categories according the number of housing units they obtain; 100>HU (1), 200>HU≥100 (2), 300>HU≥200 (3), 500>HU≥300 (4)and HU≥500 (5)

2) No. of Floors: 38 housing estates are divided four categories according to the number of floors they have; 10># floors (1*), 15># floors≥10 (2*), 20># floors≥15 (3*)and #floors≥20 (4*)

3) Types of ownership: 38 housing estates are classified according to the house builders; cooperatives (1**), private firms (2**) and single ownerships (3**).

The research question of the analysis is; "*Is there a relationship between number of housing units/number of floors/types of ownership of sampled housing estates and the endowed attributes?"*

Dependent variables of each case are the number of housing units, number of floors and types of ownership.

Given the data, 12 marginal attributes are selected as independent variables in the analysis. These are; daycare, closed garage, parking lot, commercial facility, tennis court, fitness center, other sports facilities, types of security, no. of dressing rooms, kitchen appliances, jacuzzi and no. of bathrooms.

The null and the alternative hypothesis are;

H_o : There is no relationship between the three defined groups and endowed attributes.

H_1 : There is a positive relationship between the size and the ownership patterns of the sampled housing estates and availability of endowed attributes.

The table below reports the results arising from Cross-Tabs analysis on the samples under the study. By looking at the results of the cross-tabs; the assessments for each case are as in follows;

- CASE (1): Analysis of the distribution of responses for different attributes across the number of housing unit categories.

    - There is a strongly positive relationship between daycare and the number of housing units. Table reveals that, housing estates with a minimum of 500 housing units are 100% more likely to have daycare than the other categories.

    - Commercial facility and number of housing units are also strongly related. Results indicate that as the number of housing units increases, the probability of the existence of a commercial facility rises.

    - The relationships between the categories of the number of housing units and the attributes of pool, tennis, fitness and kitchen appliances are non-monotonic. It is observed that, category (3) is about three times more likely to have pools, tennis and fitness center, about two times more likely to have kitchen appliances than the ones with above or below that number of housing units.
    -
    - There is weak relationship between the number of housing units and the closed garage, parking lot, sports facilities and security

systems. Results show that, the percentages of the categories of the number of housing units for all the categories of attributes are almost the same.

- The relationship between the number of bathrooms and the number of housing units shows different behavior. Results indicates that, considering the (1) bathroom case, there is a negative relationship between independent and the dependent variable. In the (2) bathroom case, percentage distribution are almost the same indicating weak relationship between the variables. For (3) and (4) bathroom cases there is non-monotonic relationship between the variables.
-
- The relationship between the housing units and the number of dressing rooms indicates similar behavior to the number of bathrooms. In the 1 dressing room case there is a positive relationship between the variables but for the 2 and 3 dressing rooms the relationships becomes non-monotonic.

Overall conclusion for Case (1) is, there seems to be a positive relationship between the endowment of attributes and the number of housing units. The monotonic structure of relation between some of variables points out that, most advantageous category are (3); however, category (1) and category (5) are the least endowed with attributes indicating the fact that, endowment of some attributes are not feasible under 100 housing units and above 500 housing units. Therefore; null hypothesis can be rejected.

- CASE (2): Analysis of the distribution of responses for different attributes across the number of floor categories.
-

- There is a strongly positive relationship between the number of floors and the attributes of commercial facility, pool, tennis, fitness center, other sport facilities, kitchen appliances and jacuzzi. The results of the analysis show that as the number of the floors increases, the percentages are also increasing.

- There is weak a relationship between the number of floors of the housing estates and the closed garage, parking lot and security systems. Results indicate that, the percentages of the categories of the number of floors for all the categories of attributes are almost the same.

- The relationships between the categories of number of floors and daycare are non-monotonic.

- The relationship between the number of floors and number of bathrooms vary in each category. There is a negative relationship between number of floors and (1) bathroom case. In the (2) bathroom case; the small percentage differences indicate the weak relationship between the variables. There is a positive relationship between the variables in (3) bathroom case. Each category in the number of floors is about three times more likely to have (3) bathrooms than the previous category. The (4) bathroom case shows a non-monotonic relationship.

- Considering the relation between the dressing room and the number of floors; (1) and (2) dressing rooms has a positive relationship. However; (3) dressing room has non-monotonic relationship.
-

Over all conclusion of the Case (2) is that, the number of floors and the endowment of attributes are positively related. It is observed that, higher a housing estate gets it is likely to be endowed with more attributes. Therefore; null hypothesis can be rejected.

- CASE (3): The analysis of the distribution of the responses for different attributes across categories of ownership.

    - Distribution of the attributes among the ownerships indicates that, housing estates produced by private firms is the most advantageous type regarding to the endowed attributes.

Over all conclusion of the Case (3) is that, types of ownership and the endowment of attributes are weakly related.

In summary, the outcome of the cross tab analysis shows that, independent from the producer or the size of the estate, the most preferred attributes are parking space and security. In addition to that, attributes such as, dressing room and multiple bathrooms become part of the design in every housing estate in the area. The attributes which require land such as tennis court and swimming pool are more prestigious and available only a limited number of estates.

The study points out the fact that, although provision of some attributes is almost impossible in inner cities however, they have become standard in the sampled housing estates representing a current mode of housing production in the research area

Table 5.3 Descriptive Summary of Cross Tabs Analysis

Cross-Tabs Analysis			Daycare	Garage	Lot	Commercial Facility	Pool	Tennis	Fitness	Other Sports Facilities	Kitchen Appliances	Jacuzzi
HU	100>HU	Count	0	11	12	0	0	4	2	11	1	5
		% within HU	(0,0%)	(64,7%)	(70,6%)	(0,0%)	(0,0%)	(23,5%)	(11,8%)	(64,7%)	(5,9%)	(29,4%)
	200>HU>100	Count	0	9	13	4	3	4	4	10	3	5
		% within HU	(0,0%)	(69,2%)	(100,0%)	(30,8%)	(23,1%)	(30,8%)	(30,8%)	(76,9%)	(23,1%)	(38,5%)
	300>HU>200	Count	0	2	5	2	3	3	4	4	2	2
		% within HU	(0,0%)	(40,0%)	(100,0%)	(40,0%)	(60,0%)	(60,0%)	(80,0%)	(80,0%)	(40,0%)	(40,0%)
	500>HU>300	Count	1	1	2	1	1	1	1	1	0	1
		% within HU	(50,0%)	(50,0%)	(100,0%)	(50,0%)	(50,0%)	(50,0%)	(50,0%)	(50,0%)	(0,0%)	(50,0%)
	HU>500	Count	1	1	1	1	0	1	1	1	1	0
		% within HU	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(0,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(0,0%)
Total		Count	2	24	33	8	7	13	12	27	7	13
		% within HU	(5,3%)	(63,2%)	(86,8%)	(21,1%)	(18,4%)	(34,2%)	(31,6%)	(71,1%)	(18,4%)	(34,2%)
#of_floors	10> No.of floors	Count	0	4	4	1	0	0	0	2	0	1
		% within #of_floors	(0,0%)	(80,0%)	(80,0%)	(20,0%)	(0,0%)	(0,0%)	(0,0%)	(40,0%)	(0,0%)	(20,0%)
	15>No.of floors ≥10	Count	1	11	20	2	3	7	6	14	1	5
		% within #of_floors	(4,5%)	(50,0%)	(90,9%)	(9,1%)	(13,6%)	(31,8%)	(27,3%)	(63,6%)	(4,5%)	(22,7%)
	20>No.of floors ≥15	Count	1	8	8	4	3	5	5	10	5	6
		% within #of_floors	(10,0%)	(80,0%)	(80,0%)	(40,0%)	(30,0%)	(50,0%)	(50,0%)	(100,0%)	(50,0%)	(60,0%)
	No.of floors ≥20	Count	0	1	1	1	1	1	1	1	1	1
		% within #of_floors	(0,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%)	(100,0%
Total		Count	2	24	33	8	7	13	12	27	7	13
		% within #of_floors	(5,3%)	(63,2%)	(86,8%)	(21,1%)	(18,4%)	(34,2%)	(31,6%)	(71,1%)	(18,4%)	(34,2%)
Types of Ownership	Cooperatives	Count	1	4	11	1	1	3	1	10	1	4
		% within Types of	(8,3%)	(33,3%)	(91,7%)	(8,3%)	(8,3%)	(25,0%)	(8,3%)	(83,3%)	(8,3%)	(33,3%)
	Private firms	Count	1	17	20	7	6	8	9	15	5	8
		% within Types of	(4,3%)	(73,9%)	(87,0%)	(30,4%)	(26,1%)	(34,8%)	(39,1%)	(65,2%)	(21,7%)	(34,8%)
	Single Ownership	Count	0	3	2	0	0	2	2	2	1	1
		% within Types of	(0,0%)	(100,0%)	(66,7%)	(0,0%)	(0,0%)	(66,7%)	(66,7%)	(66,7%)	(33,3%)	(33,3%)
Total		Count	2	24	33	8	7	13	12	27	7	13
		% within Types of	(5,3%)	(63,2%)	(86,8%)	(21,1%)	(18,4%)	(34,2%)	(31,6%)	(71,1%)	(18,4%)	(34,2%)

Table 5.3 Descriptive Summary of Cross Tabs Analysis (continued)

Cross-Tabs Analysis			No. of Bathrooms				Types of Security		No. of Dressing Rooms		
			(1)	(2)	(3)	(4)	Full Security	Semi-Security	(1)	(2)	(3)
HU	100>HU	Count	1	16	2	0	9	8	6	0	0
		% within HU	(5,9%)	(94,1%)	(11,8%)	(0,0%)	(52,9%)	(47,1%)	(35,3%)	(0,0%)	(0,0%)
	200>HU>100	Count	3	13	3	2	10	3	4	1	1
		% within HU	(23,1%)	(100,0%)	(23,1%	(15,4%)	(76,9%)	(23,1%)	(30,8%)	(7,7%)	(7,7%)
	300>HU>200	Count	0	5	1	0	5	0	3	1	0
		% within HU	(0,0%)	(100,0%)	(20,0%)	(0,0%)	(100,0%)	(0,0%)	(60,0%)	(20,0%)	(0,0%)
	500>HU>300	Count	0	2	1	0	1	0	1	0	0
		% within HU	(0,0%)	(100,0%)	(50,0%)	(0,0%)	(50,0%)	(0,0%)	(50,0%)	(0,0%)	(0,0%)
	HU>500	Count	0	1	0	0	1	0	1	0	0
		% within HU	(0,0%)	(100,0%)	(0,0%)	(0,0%)	(100,0%)	(0,0%)	(100,0%)	(0,0%)	(0,0%)
Total		Count	4	37	7	2	26	11	15	2	1
		% within HU	(10,5%)	(97,4%)	(18,4%)	(5,3%)	(68,4%)	(28,9%)	(39,5%)	(5,3%)	(2,6%)
#of_floors	10> No.of floors	Count	0	5	0	0	3	2	1	0	0
		% within #of_floors	(0,0%)	(100,0%)	(0,0%)	(0,0%)	(60,0%)	(40,0%)	(20,0%)	(0,0%)	(0,0%)
	15>No.of floors ≥10	Count	2	22	3	0	16	6	6	0	1
		% within #of_floors	(9,1%)	(100,0%)	(13,6%)	(0,0%)	(72,7%)	(27,3%)	(27,3%)	(0,0%)	(4,5%)
	20>No.of floors ≥15	Count	2	9	3	2	7	3	8	1	0
		% within #of_floors	(20,0%)	(90,0%)	(30,0%)	(20,0%)	(70,0%)	(30,0%)	(80,0%)	(10,0%)	(0,0%)
	No.of floors ≥20	Count	0	1	1	0	1	0	1	1	0
		% within #of_floors	(0,0%)	(100,0%)	(100,0%)	0,0%)	(100,0%)	(0,0%)	(100,0%)	(100,0%)	(0,0%)
Total		Count	4	37	7	2	27	11	16	2	1
		% within #of_floors	(10,5%)	(97,4%)	(18,4%)	(5,3%)	(71,1%)	(28,9%)	(42,1%)	(5,3%)	(2,6%))
Types of Ownership	Cooperatives	Count	1	11	1	0	5	6	4	0	0
		% within Types of Ownership	(8,3%)	(91,7%)	(8,3%)	(0,0%)	(41,7%)	(50,0%)	(33,3%)	(0,0%)	(0,0%)
	Private firms	Count	3	23	5	1	18	5	9	2	1
		% within Types of Ownership	(13,0%)	(100,0%)	(21,7%)	(4,3%)	(78,3%)	(21,7%)	(39,1%)	(8,7%)	(4,3%)
	Single Ownership	Count	0	3	1	1	3	0	3	0	0
		% within Types of Ownership	(0,0%)	(100,0%)	(33,3%)	(33,3%)	(100,0%)	(0,0%)	(100,0%)	(0,0%)	(0,0%)
Total		Count	4	37	7	2	26	11	16	2	1
		% within Types of Ownership	(10,5%)	(97,4%)	(18,4%)	(5,3%)	(68,4%)	(28,9%)	(42,1%)	(5,3%)	(2,6%)

5.3.2 Methodology

This study attempts to apply two different techniques to investigate the level of influence of housing attributes on house prices. In the first stage of the study, log-linear hedonic model was defined to estimate the influence of estate, housing, and dwelling unit attributes on price levels. In the second stage of the study, a binary logistic regression was employed to investigate the factors underlying the likelihood of pricing structure of the 38 housing estates.

In order to analyze different types of housing units in the study, the models were run for different sizes of groups so that estimates from different perspectives can be evaluated.

5.3.2.1 Hedonic Regression

The term hedonic is used for the implication of relative importance of inputs of value and attractiveness. Rosen (1974) said that a commodity is sold with many of its attributes. He defined the slope of the hedonic price function is inferred as the implicit price of its characters or attributes. Thus, hedonic model is based on the principle that the price of the particular product is determined by the utilities of the various attributes of that product.

As for the housing sector, the model was firstly used by Lancaster (1966), at which he offered an economic basis for estimating the value of attributes. Rosen (1974) used the model for analyzing the relationship between housing characteristics and prices. His approach created a theoretical framework for hedonic pricing model. Goodman and Tchibodeau (1998), Fletcher et al (2000), Bourassa et al (2007) used the hedonic pricing model for investigation of submarkets.

Considering the heterogeneous character of housing, it is a package of various features related to its location, quality, size, and environment. Most of these features cannot be implied in the market directly. But they have significant effect on the determination of the price level indirectly. Therefore, hedonic pricing models are used for the estimation of the marginal contribution of every indoor and outdoor attributes which can be easily measured or not; to the price. As Rosen (1974) identifies, it is a way of interpretation of the willingness to pay of the households to pay for the particular attributes. In other words, it is a statistical analysis at which house prices are set as dependent variable and the structural, building and the dwelling attributes and characteristics are employed as independent variables.

In this study, hedonic pricing model was built in order to investigate the relationship between the price of the housing and indoor and outdoor attributes. The model used in this thesis based on the assumptions that the market contains heterogeneous housing supply and heterogeneous consumers. Housing stock differs according to built-in, locational and neighborhood facilities. In addition, consumers differ due to economic conditions and behavioral characteristics.

Hedonic pricing model was employed by including two categories of attributes: housing estate and dwelling unit characteristics. Housing estate characteristics are, lot, garage, daycare, fitness, other sport facilities, tennis, swimming pool, and security. Dwelling unit characteristics are floor area, number of rooms, number of bathrooms, jacuzzi, dressing room and kitchen appliances.

A log-linear functional form was used in order to improve the efficiency of parameter estimation since it performs well in goodness of fit criterion and it improves model's ability to estimate the marginal contribution of each attributes to the price (Abdulai and Ansah, 2001). Dependent variable which is the price of dwelling unit was based on the data gathered from real estate agencies in the area and sales offices of some of the housing estates.

As explained in the data section, because housing estates have been produced within a span of 15 years, in order to eliminate inflation effect, prices were converted to 2015 prices on the basis of the producer price index. The dependent variable -price- was measured in log which allowed the marginal contributions of attributes to be measured in percentages.

The following hedonic function was employed in the estimation of the factors that affect housing prices:

$$P= e^{\beta_o + \beta_1 X + \beta_2 R}$$

$$\text{Log } P= \beta_o + \beta_1 X + \beta_2 R + \varepsilon$$

where;

P : transaction prices of housing units

X : housing characteristics

R : matrix of dummy variables

As mentioned in the data section; dataset used in this study consisted of housing estates built between 2000-2015. All the housing estates were analyzed in detail in the previous section in order to identify the current situation in the area. However; not all the data were used for the analysis because some of them did not constitute useful information for the purpose of the house price analysis. After cleaning the data, fifteen characteristics which would be useful, were selected to use in the model.

The characteristics and attributes affecting the housing prices were measured according to the variables listed in the Table 5.4. The table illustrates names of the variables and how they are included into the models.

Table 5.4 Description of Variables

Variable Used	Description of Variable
Price	The price of housing unit in TL,
Floor Area	Floor area of the housing unit (m^2),
Room	Number of rooms in the housing unit,
Bathroom	Number of bathrooms in the housing unit,
Security	Dummy equal to (1) if there is security in the housing estate,(0) otherwise,
Jacuzzi	Dummy equal to (1) if there is jacuzzi in the housing unit, (0) otherwise,
Dressing room	Dummy equal to (1) if there is dressing room in the housing unit, (0) otherwise,
Other Sports Facilities	Dummy equal to (1) if there is other sport facilities in the housing estate, (0) otherwise,
Tennis	Dummy equal to (1) if there is tennis court in the housing estate, (0) otherwise,
Fitness	Dummy equal to (1) if there is fitness center in the housing estate, (0) otherwise,
Swimming Pool	Dummy equal to (1) if there is swimming pool in the housing estate, (0) otherwise,
Garage	Dummy equal to (1) if there is garage in the housing estate, (0) otherwise,
Lot	Dummy equal to (1) if there is lot in the housing estate, (0) otherwise,
Daycare	Dummy equal to (1) if there is daycare in the housing estate, (0) otherwise,
Kitchen appliances	Dummy equal to (1) if there is kitchen appliances in the housing unit,(0) otherwise,

Table 5.5 Descriptive Statistics

		N		Mean	Std. Deviation	Minimum	Maximum
		Valid	Missing				
Model A1	Price	5406	0	404295,23	93894,675	200000	1110000
	Floor Area	5406	0	162,70	35,859	70	600
	Room	5406	0	3,83	,612	1	7
	Bathroom	5406	0	2,00	,199	1	4
	Security	5406	0	,94	,234	0	1
	Jacuzzi	5406	0	,39	,489	0	1
	Dressing room	5406	0	,48	,500	0	1
	Fitness	5406	0	,48	,500	0	1
	Tennis	5406	0	,48	,500	0	1
	Pool	5406	0	,30	,457	0	1
	Other Sports Facilities	5406	0	,74	,436	0	1
	Garage	5406	0	,64	,479	0	1
	Lot	5406	0	,94	,236	0	1
	Daycare	5406	0	,20	,397	0	1
	Kitchen appliances	5406	0	,28	,450	0	1
Model A2.1	Price	66	0	437272,73	177764,282	200000	1110000
	Room	66	0	4,03	1,277	1	7
	Bathroom	66	0	2,08	,474	1	4
	Security	66	0	,97	,173	0	1
	Jacuzzi	66	0	,42	,498	0	1
	Dressing room	66	0	,48	,504	0	1
	Fitness	66	0	,45	,502	0	1
	Tennis	66	0	,53	,503	0	1
	Pool	66	0	,29	,456	0	1
	Other Sports Facilities	66	0	,82	,389	0	1
	Garage	66	0	,74	,441	0	1
	Lot	66	0	,88	,329	0	1
	Daycare	66	0	,09	,290	0	1
	Kitchen appliances	66	0	,35	,480	0	1

Table 5.5 Descriptive Statistics (continued)

		N		Mean	Std. Deviation	Minimum	Maximum
		Valid	Missing				
Model A2.2	Price	15	51	495666,67	168479,192	290000	900000
	Room	15	51	4,33	1,345	2	7
	Bathroom	15	51	2,13	,352	2	3
	Fitness	15	51	,87	,352	0	1
	Pool	15	51	,53	,516	0	1
	Garage	15	51	,73	,458	0	1
Model A2.3	Price	42	24	471428,57	207453,450	200000	1110000
	Room	42	24	3,98	1,370	1	7
	Bathroom	42	24	2,10	,532	1	4
	Security	42	24	,95	,216	0	1
	Jacuzzi	42	24	,48	,505	0	1
	Dressing room	42	24	,50	,506	0	1
	Garage	42	24	,76	,431	0	1
	Daycare	42	24	,14	,354	0	1
	Kitchen appliances	42	24	,50	,506	0	1

Table 5.5 presents the descriptive statistics of the variables used in the model. The table shows four different descriptive statistics regarding the number of samples employed in the study. In order to find out if the number of housing units in the study had an effect on the price level and the influence level of the attributes, the data was separated and grouped into four. Thus, hedonic regression analysis was performed for the overall 5406 housing units (Model A1.1 and A1.2), for 66 different types of housing unit in the sampled housing estates (Model A2.1), for the housing estates which had minimum 200 housing units (Model A2.2) and lastly for the housing estates which had minimum 100 housing units (Model A2.3).

5.3.2.1.1 Results and Discussions

Table 5.6 summarizes hedonic price functions for all the defined four groups. The table illustrates ANOVA results, standardized and unstandardized coefficients for all the models in the study. In the table, ANOVA scores indicated that independent variables used in all the models were significantly related to dependent variable. The adjusted R square values ranged from 0.745 to 0.948 among the four groups.

In Model A1, the estimation was done for the variables of number of rooms and floor area separately in order to eliminate the multi-collinearity problem. In Model A1.1; dressing room and other sports facilities were dropped from regression analysis as their VIF scores exceeded 10. All the variables in the model were statistically significant except for the jacuzzi. Insignificance of jacuzzi may relate to its being a dwelling unit attribute that can be applied any other types housing in the city. In addition, although daycare and lot were statistically significant; they had negative signs indicating reverse relationship. This can be explained by the limited number of daycare in the overall sample. In this model; the standardized coefficients indicated that the most significant factors affecting the price of the housing were tennis (39,8%), floor area (36,4%), kitchen appliances (33,3%) and swimming pool (10,7%) respectively.

When the model was estimated by including number of rooms (Model A1.2), almost same conclusions were reached with the previous model. Similarly, dressing room and other sports facilities were dropped from regression analysis as their VIF scores exceeded 10. Different from Model A1.1, all variables were statistically significant. However, jacuzzi, fitness center, lot and daycare had negative signs. According to the standardized coefficients; tennis (42,9%), number of rooms (41,4%), kitchen appliances (35%) and swimming pool (24,8%) were the most important factors that affect the housing price.

When the Model A1.1 and Model A1.2 were compared it can be seen that in both models tennis became the most influential factor on price. The findings regarding to the two models revealed that the number of rooms became much more important than the floor area. Considering both the number of rooms and floor area has high percentages, it can be said that the size of the housing unit was very important for the price of the housing. In addition, the influence of kitchen appliances on price of housing was very high and almost the same in the two models; point out the importance of quality and luxury in the household preferences. Swimming pool was almost two times effective in Model A1.2 than in Model A1.1.

In the second part of the model, estimation was done for the 66 types housing units. In Model A2.1; floor area was dropped from regression analysis as its VIF score exceeds 10. Among all the variables only number of rooms, number of bathrooms, and swimming pool, were significant. Standardized coefficient of the model showed that, number of rooms was the most effective factor (45,2%) on price. It was followed by number of bathrooms (30,3%) and swimming pool (21,7 %) respectively.

When the same data was reorganized according to the number of housing units that housing estates have, two different results have been obtained. There appeared unanticipated results revealing negative signs arising because of the small sample size. In Model A2.2; only number of rooms, number of bathrooms, fitness, swimming pool, and garage could be employed in the model due to the high VIF and they were statistically significant except for garage and fitness. Number of bathroom had negative sign. It was mainly related the fact that among the sample almost all housing units have 2 bathrooms but a very limited ones have more than 2 bathrooms. Thus it was related to the limited number of data in the model. The number of rooms had the most significant influence on the price in this model (111%).

On the other hand, in Model A2.3; floor area, fitness, lot, and swimming pool were dropped because of high VIF. Only number of rooms and bathrooms, tennis and daycare was statistically significant. In the model number of rooms (51,5%), followed by number of bathrooms (24,9%) and tennis (24,6%) has the highest influence on housing price.

Although significance of the variables differed in all four models, the findings of the hedonic regression for different sample sizes generally produced similar results. Outcomes of the all four models indicated the fact that size of housing units was the most influential factors that affects the price levels, followed by tennis court, kitchen appliances, and swimming pool.

In addition to that, the findings of the hedonic regression supported the results of Cross-Tab analysis performed in the previous section. Cross-tab analysis revealed a positive relationship between the number of the endowment of attributes and the number of housing units. As the number of housing unit increased in a sampled housing estate the availability of specific attributes also increased in that housing estate as well.

Findings of hedonic regression pointed out that as long as the attributes were more specific, and luxurious regardless of whether or not it was a housing estate or dwelling unit attribute, its effect on price level increased. Therefore, outcomes of the study mainly implied that, the sampled housing estates endowed with more unique and luxurious attributes and had bigger living spaces had higher prices. This also brought about the fact that housing unit price was mainly determined by the more prestigious attributes that represents wealth and power rather than ordinary ones.

In summary, two important conclusions can be reached as a result of hedonic regression. Firstly, the outcomes of the hedonic regression reveal households' high willingness to pay for housing which are larger than 150m^2 and have more than 3

bedrooms. This indicates the fact that households undertake the cost of paying %18 VAT rate rather than 1 % for the housing estates which are located at the outskirts of the cities where land prices are low. In addition to that, the large size of the housing units allows the addition of different attributes to dwelling units, such as dressing rooms, multiple bathrooms, pantries, vestiaries, kitchen appliances, which are the current fashion in the house building industry, as they represent housing quality and luxury. Thus people are willing to pay more such housing units that bear the features of new modes of production.

Secondly, the outcomes of the regression points out the importance of luxurious housing estate attributes such as tennis court, swimming pool, security services and also multiple parking areas. These attributes not only require certain size of the housing estate but also available land to accommodate such attributes. This condition highlights importance of low land prices out of the city where these large scale housing estates are located that provide most preferred luxurious amenities for households.

In this regard, the effect of the prestigious attributes of housing estates appears to be very high on the price level of housing. These findings support the hypothesis on households' increasing willingness to pay for luxury goods which is triggered by Veblen and Bandwagon effect at the moment.

In addition hypothesis on having housing developments with lower floor area ratio and endowed with the attributes that require large land at the fringe of cities is partly rejected. The outcomes of the models highlight the requirement of sufficiently large size plots for building housing estates with luxurious attributes. The study of Topçu (2004) pointed out the fact that, by moving at western direction of Ankara, although the height of the buildings increase, FAR decreases from 2 to 0,75 at Ümitköy and Konutkent quarters. However, FAR is defined as 2 in Yaşamkent District in the development plan for the sampled housing estates with no height restrictions.

Table 5.6 Results of Log-Linear Regression

	ANOVA				Unstandardized Coefficients		Standardized Coefficients			
Variables in Models	F	Sig	R^2	Adj. R^2	B	Std. Error	Beta	t	Sig.	VIF
Model A1.1	1437,118	,000	,746	,745						
Floor Area					,001	,000	,364	42,926	,000	1,527
Bathroom					,050	,004	,105	13,010	,000	1,391
Security					,007	,003	,018	2,336	,020	1,196
Jacuzzi					-,001	,002	-,005	-,452	,651	2,941
Fitness					,011	,002	,061	5,109	,000	3,038
Tennis					,075	,002	,398	32,543	,000	3,167
Pool					,022	,003	,107	8,296	,000	3,498
Garage					,013	,002	,069	7,599	,000	1,746
Lot					-,023	,003	-,059	-7,654	,000	1,248
Daycare					-,039	,002	-,166	-17,726	,000	1,870
Kitchen appliances					,069	,002	,333	33,106	,000	2,151

Table 5.6 Results of Log-Linear Regression (continued)

	ANOVA				Unstandardized Coefficients		Standardized Coefficients			
Variables in Models	F	Sig	R^2	Adj. R^2	B	Std. Error	Beta	t	Sig.	VIF
Model A1.2	1718,709	,000	,778	,778						
Room					,063	,001	,414	53,850	,000	1,435
Bathroom					,053	,003	,114	15,719	,000	1,273
Security					,039	,003	,097	13,606	,000	1,233
Jacuzzi					-,022	,002	-,116	-10,387	,000	3,036
Fitness					-,015	,002	-,082	-7,229	,000	3,155
Tennis					,080	,002	,429	37,457	,000	3,184
Pool					,051	,002	,248	20,612	,000	3,507
Garage					,016	,002	,080	9,436	,000	1,745
Lot					-,025	,003	-,064	-8,968	,000	1,242
Daycare					-,028	,002	-,119	-13,944	,000	1,762
Kitchen appliances					,073	,002	,350	37,148	,000	2,159

Table 5.6 Results of Log-Linear Regression (continued)

	ANOVA				Unstandardized Coefficients		Standardized Coefficients			
Variables in Models	F	Sig	R^2	Adj. R^2	B	Std. Error	Beta	t	Sig.	VIF
Model A2.1	18,179	,000	,820	,775						
Room					,053	,011	,452	4,924	,000	2,429
Bathroom					,095	,026	,303	3,614	,001	2,026
Security					,022	,057	,026	,386	,701	1,269
Jacuzzi					-,047	,028	-,159	-1,688	,097	2,545
Dressing room					,048	,029	,163	1,663	,102	2,759
Fitness					-,002	,033	-,005	-,047	,963	3,532
Tennis					,049	,029	,167	1,675	,100	2,859
Pool					,071	,033	,217	2,121	,039	3,018
Other Sports Facilities					-,020	,030	-,051	-,656	,515	1,749
Garage					,021	,027	,063	,782	,438	1,849
Lot					,018	,038	,041	,489	,627	2,017
Daycare					-,050	,035	-,097	-1,437	,157	1,319
Kitchen appliances					,055	,031	,178	1,808	,076	2,807

Table 5.6 Results of Log-Linear Regression (continued)

		ANOVA				Unstandardized Coefficients		Standardized Coefficients			
Variables in Models		F	Sig	R^2	Adj. R^2	B	Std. Error	Beta	t	Sig.	VIF
ModelA2.2		43,604	,000	,970	,948						
	Room					,115	,012	1,114	10,018	,000	3,333
	Bathroom					-,163	,045	-,413	-3,668	,006	3,412
	Fitness					,069	,034	,174	2,017	,078	2,014
	Pool					,066	,020	,244	3,237	,012	1,527
	Garage					-,028	,035	-,091	-,788	,453	3,611
ModelA2.3		18,482	,000	,856	,810						
	Room					,064	,016	,515	3,938	,000	3,692
	Bathroom					,079	,036	,249	2,225	,033	2,694
	Security					,050	,067	,063	,750	,459	1,544
	Jacuzzi					-,012	,028	-,034	-,411	,684	1,503
	Dressing room					,047	,040	,139	1,156	,257	3,111
	Tennis					,086	,043	,246	2,001	,054	3,256
	Other Sports Facilities					-,051	,054	-,106	-,937	,356	2,740
	Garage					,025	,045	,063	,560	,580	2,769
	Daycare					-,074	,037	-,154	-1,973	,057	1,319
	Kitchen app.					,062	,037	,183	1,650	,109	2,664

Analysis regarding to the relationship between cost per square and number of housing units in the housing estates in Section 5.3.1.3 revealed that, there is not much difference in per square meter costs in producing small and large number of housing units. House builders require higher floor area ratios to compensate additional cost of luxurious attributes and it appears that they are able to convince municipal authorities in their demand in that direction. Due to high price of housing with those attributes, producing more housing units with increased floor area ratios brings higher profit to builders of such housing estates. Therefore large scale production with high floor area ratios enables house builders to produce greater number of dwelling units on their plots.

These findings imply that building housing estates endowed with those attributes require using some land for this purpose, and this becomes a pretext for increasing floor area ratios and producing greater number of dwelling units to benefit from high prices for such housing rather than aiming to reach scale economies.

5.3.2.2 Binary Logistic Regression

In general terms logistic regression is used to analyze the relationship between a dependent variable which is dichotomous and non-metric independent variables. Different from linear regression model; the outcome is binary. It combines the independent variables to estimate the probability that a particular event would happen. In other words, logistic regression calculates the probability of a case with a particular set of values of the independent variables.

In logistic regression, the individual coefficients illustrate the change in the odd to be in the defined category. Thus, if the coefficients are less than 1, it implies a decrease in the probability of the event occurrence. If it is 1, it means the coefficient has no effect. And it is greater than 1 the defined category is likely to occur (Hosmer and Lemeshow; 2000).

Table 5.7 Variables and Description of Variables

Variable Used	Description of Variable
Price	Dummy equal to (1) if the price of housing unit is above or equal to 435.000 TL,(0) otherwise,
Floor Area	Dummy equal to (1) if floor area is above or equal to 150 m^2, (0) otherwise,
Room	Dummy equal to (1) if total number of room is above or equal to 4 , (0) otherwise,
Bathroom	Dummy equal to (1) if total number of bathroom is above 2, (0) otherwise,
Jacuzzi	Dummy equal to (1) if there is jacuzzi in the housing unit, (0) otherwise,
Dressing room	Dummy equal to (1) if there is dressing room in the housing unit, 0 otherwise,
Other Sports Facilities	Dummy equal to (1) if there is other sport facilities in the housing estate, 0 otherwise,
Tennis	Dummy equal to (1) if there is tennis court in the housing estate, (0) otherwise,
Fitness	Dummy equal to (1) if there is fitness center in the housing estate, (0) otherwise,
Swimming Pool	Dummy equal to (1) if there is swimming pool in the housing estate, (0) otherwise,
Garage	Dummy equal to (1) if there is garage in the housing estate, (0) otherwise,
Lot	Dummy equal to (1) if there is lot in the housing estate, (0) otherwise,
Kitchen appliances	Dummy equal to (1) if there is kitchen appliances in the housing unit,(0) otherwise,

Table 5.8 Descriptive Statistics

		N		Mean	Std. Deviation	Min.	Max.
		Valid	Missing				
Model B	Price	5406	0	,38	,486	0	1
	Floor Area	5406	0	,83	,374	0	1
	Room	5406	0	,78	,414	0	1
	Bathroom	5406	0	,01	,121	0	1
	Jacuzzi	5406	0	,39	,489	0	1
	Dressing room	5406	0	,48	,500	0	1
	Fitness	5406	0	,48	,500	0	1
	Tennis	5406	0	,48	,500	0	1
	Pool	5406	0	,30	,457	0	1
	Other Sports Facilities	5406	0	,74	,436	0	1
	Garage	5406	0	,64	,479	0	1
	Lot	5406	0	,94	,236	0	1
	Kitchen appliances	5406	0	,28	,450	0	1

In the second stage of the study, a binary logistic regression was used to test the marginal effects of attributes of sampled housing estates on the probability to a housing unit to be priced above the average price level.

The variables employed in the binary logistic regression and descriptive statistics are presented in Table 5.7 and Table 5.8. The first table illustrates names of the variables and descriptions in the model. The following table shows number of cases, means, standard deviations, minimum and maximum values of the variables.

In the model binary dependent variable was defined as the average price level. Every housing unit was described by twelve specific attributes which were either housing estate or dwelling unit attributes. These attributes were floor area, number of rooms, number of bathrooms, jacuzzi, dressing rooms, other sport facilities, tennis, fitness, swimming pool, garage, lot, and kitchen appliances. Different from the previous models, all the variables were transformed to dummy code variables in the model.

The average price level was calculated by taking the average of the prices of 66 different housing units in the sample, which was found as 435.000 TL. The limit for the floor area was defined as 150 m^2, due to the application of different VAT rates below and above that size. The number of room was firstly determined as 3; however, results of the model displayed insignificant coefficients. Thus, it was redefined as 4 for the sake of the study. And similarly the number of bathroom was categorized as 2. The other variables were defined as dummies similar to the previous models.

5.3.2.2.2 Results and Discussions

Table 5.9 summarizes results of binary logistic model. The table illustrates logistic coefficients (B), standard error (SE), significance level, and odds ratios (Exp (B)). Binary logistic regressions was run twice; firstly for the number of rooms and then for the floor area of the housing units since these two variables are not included into the same model in order to eliminate the multi-collinearity problem.

The chi-square values indicated that both models were significant. R^2s of the Models (B1) and (B2) are 0,72 and 0,65 respectively representing that the second model lost its predictive power by little fraction by using different variables.

Classification table of the models revealed that, 83% of outcome in Model B1 and 81% of outcome in Model B2 were correctly predicted.

In Model B1, significant coefficients were estimated for the number of rooms, dressing room, fitness, tennis, swimming pool, lot, and kitchen appliances. Interpretation of the Exp (B) value displayed that, number of rooms, dressing room, tennis, swimming pool and kitchen appliances were greater than 1 indicating positive relationship between housing prices. An unexpected result was that fitness and lot which had Exp (B) less than 1 indicating a decreasing relation with housing price. The findings displayed that dwelling unit attributes were much more likely to affect the price level than the housing estate attributes of the sampled housing estates. Kitchen appliances were the most significant attribute that affected the likelihood of higher prices. Findings also suggested that, houses with equal or more than four rooms were highly priced, since odds ratio indicated that the number of rooms was significantly associated with higher prices. As considering the housing estates attributes, findings pointed out that likelihood of having priced above the average was strictly related to the attributes of tennis and swimming pool.

In Model B2; significant coefficients were identified as floor area, dressing room, fitness, tennis, swimming pool, and kitchen appliances. Interpretation of the Exp (B) value showed that estimated coefficients for all the statistically significant variables except for the fitness center are greater than 1 indicating a positive relationship with the housing price.

Similar to Model B1 fitness center had Exp (B) less than 1 representing a decreasing relation with the price level. However, different from the previous model, the effects of dwelling unit attributes were not as strong as those of Model B1, but likelihood of having priced above the average was strongly related to the attribute of kitchen appliances. Floor area and the dressing room had almost same odds ratios in the model indicating a positive relation.

The findings of Model B1 and B2 indicated that, number of rooms was much more significant than the floor area in the determination of the price level of the housing unit. Results suggested that the housing units with more or equal to four rooms were more likely to have higher prices than the ones with more than 150 m^2 floor area. In other words, model displayed that housing units were likely to have higher prices when they had one additional room. In addition to that, findings implied that when the number of the rooms was defined as one of the independent variable housing estate attributes such as tennis and swimming pool became more important and their odds ratios increased significantly.

In summary; binary logistic regression produced both anticipated and unanticipated results. Number of rooms, floor area, dressing room, tennis, swimming pool, and kitchen appliances were detected as the influencing factors on price. Kitchen appliances as being one of the most important indicators of building quality and design had the highest odd ratios. In addition, the odd ratios of tennis and swimming pool were also high indicating the fact that households were searching for services that require more land which cannot be provided in the inner neighborhoods of the cities. The odd ratios of these attributes revealed that, people were more likely to pay for attributes that represented wealth and prestige. Thus, they were more likely to pay more for such housing estate attributes which could only be provided in the housing estates at large scale.

Moreover, those variables without explanatory power on price are, other sport facilities, jacuzzi, garage and lot. The insignificance of parking space related the fact that it existed in all housing estates in the form of either garage or lot. Although fitness was statistically significant it had negative sign indicating a reverse relationship on the likelihood of high prices. This could be due to the fact that there is limited number of cases in the data of this study with those attributes

Table 5.9 Binary Logistic Regression

Variables in Models	Dependent Variable: Housing Price (0) below 435.000 TL and (1) above 435.000 TL							
	Model B1				Model B2			
	B	S.E.	Sig.	Exp(B)	B	S.E.	Sig.	Exp(B)
Floor Area					1,455	,144	,000	4,286
Room	4,437	,226	,000	84,555				
Jacuzzi	-,163	,186	,382	,850	-,167	,175	,340	0,847
Dressing room	,806	,164	,000	2,239	1,491	,160	,000	4,440
Fitness	-4,283	,292	,000	,014	-2,371	,214	,000	,093
Tennis	3,879	,231	,000	48,367	2,305	,164	,000	10,023
Pool	2,785	,232	,000	16,199	1,572	,187	,000	4,814
Other Sports Facilities	-,235	,173	,174	,790	,206	,165	,212	1,229
Garage	-,149	,118	,209	,862	,110	,110	,317	1,116
Lot	-,940	,220	,000	,390	,438	,234	,062	1,549
Kitchen appliances	5,472	,237	,000	237,990	3,255	,155	,000	25,911

The outcomes of the logistic regression revealed parallel results to those of hedonic regression, pointing out the fact that, the more the attributes gets prestigious, and their influence on the price level increases. Thus, findings of the models supported the hypothesis that under the Bandwagon and Veblen effect, people tend to pay more as long as housing becomes more luxurious with the prestigious attributes that are defined above.

5.4 Concluding Remarks

This chapter focuses on the housing developments on Yaşamkent which is one of the most rapidly growing residential areas of Ankara. It is located on the south-western development corridor of the city along the Eskişehir Highway.

Spatial developments in the area have begun in 2000 and significantly accelerated since then. The area offers different types of housing developments from large scale housing estates to low-rise ones. Parallel with the rapid spatial developments in the area, population of Yaşamkent has been doubled in the last five years of the research period and it is expected to increase 20.000 in 2015, indicating expectations from future residential investments in the area.

In order to analyze the current situation in Yaşamkent district, firstly a research has been carried out between 2000 and 2015. In the process of research two methods were employed. Firstly, all the construction permits of the buildings issued by the Yenimahalle Municipality had been analyzed in order to evaluate the conditions of all the housing estates in the area. Then, missing information was completed by on-site survey in the research area.

By investigating the all construction permits, the study was limited to 38 housing estates having minimum 50 housing units. There were 5406 housing units in housing estates and they are analyzed according to housing estate, building, and

dwelling unit attributes. Locational analysis regarding to those 38 housing estates showed that, they were scattered throughout Yaşamkent District without constituting clusters.

In addition, outcomes of the research revealed that, there were three house building actors in the area. These were private construction firms, house building cooperatives, and landowners. The role and the production approaches of three actors were not the same. The area was dominated by private construction firms both in terms of the number of sampled housing estates and number of housing units that they produced. They tended to produce on their own land, thus land development was one of their most important activity in the production process.

On the other hand, house building cooperatives were acting as land developer and house builder in the area. The survey showed that, land acquisition was the priority of house building cooperatives in the area. Although there had been significant production activities held by those cooperatives but they mostly made deals with the private producers by their lands.

Moreover, activities of landowners as house builders were very limited in the area. The analysis indicated that the production capacity of landowners was very limited both in qualitative and quantitative terms. In that sense, the most significant difference between these three actors were defined by the attributes they offered in the housing estates they produced. Thus, different approaches of these three actors resulted in various housing provision types in the research area.

Consequently, 38 housing estates offered various features to households in Yaşamkent. Due to the size of the plots and availability of land, combined with the preferences of households, projects built on large areas included different physical and social attributes. Related to that, three typologies were defined in the area regarding to the attributes they provided; luxury, semi-luxury and standard type of housing development. Results of the analysis showed that, standard type

of housing developments provided typical living environment with limited indoor and outdoor facilities defined in regular structures. However, as the residential developments became luxurious they began to provide specific attributes which could not be seen in every housing estate easily. In the area, cooperatives produced standard or semi-luxury developments and all the luxury type of developments were produced by private construction firms.

With the aim of analyzing the distribution of these attributes among the 38 housing estates a descriptive analysis was done. The analysis was carried out according to the housing estate attributes, housing attributes and dwelling unit attributes. Thus, data regarding to typologies, types of housing units, number of rooms, square meter of floor areas, landscape, daycare, garage, lot, number of elevators, security, alarm, commercial facilities, generation, pool, tennis court, fitness center, sport facilities, inset cupboard, number of bathrooms, jacuzzi, dress room, water tank and types of heating, vestry, number of WC and types of kitchen were determined for each housing estate. This analysis enabled to generalize and identify the attributes from standard to prestigious.

In that sense, attributes such as landscaping, playground, parking space and security were very common in the housing provision of housing estates in the area. This condition also revealed the fact that these attributes were the most preferred ones. On the other hand, attributes such as tennis, swimming pool, kitchen appliances, and daycare existed in limited number of housing estates which made difference from others. Kitchen appliances may also be representing building quality of the housing unit, and the others which are housing estate attributes require a certain size of the housing estate and availability of land to build them. For these reasons they can be categorized as more prestigious attributes than those that are common in every housing estate.

In addition to that, large size of the housing units in the area allows defining various spaces for different purposes. It is observed that housing units are

designed according to the best use of space by the division of intended use. Dressing rooms in the bedrooms, pantries addition to the kitchens, laundry rooms besides bathrooms and vestiaries at the entrance are placed in the architectural designs of the housing units of the estates. Those additional spaces make main areas more functional in the housing units and represent the new fashion in the house building industry.

Related to that, one of the most important findings of the analysis was that; as the number of housing unit and the scale of the housing estate got bigger, the availability of specific attributes increased as well. The analysis showed that larger housing estates had more available land to place outdoor facilities. In addition, as the number of housing units increased, the possibility to include different types of housing with different endowments also increased. All these reasons make large scale housing estates more advantageous in terms of attributes in the area.

In order to test the effects of these attributes on price levels, in the first stage of the study a hedonic regression and in the second stage of the study logistic regression methods were used. Different sample groups were defined for two models to estimate the variables from different perspectives. The variables defined separately for each models. Although the significances of the variables differed in the models, the findings of the hedonic regression and the binary logistic regression supported each other.

In the first stage of the study, the findings of the hedonic regression pointed out the fact that as long as the attributes were more luxurious, regardless of whether or not it was a housing estate or dwelling unit attribute, it affected the price level immensely. Thus, outcomes of the study mainly implied that, the sampled housing estates endowed with more unique attributes and had bigger living spaces; had higher prices. The model brought about the fact that, housing unit price was mainly determined by the more prestigious attributes such as size, tennis, kitchen

appliances, swimming pools that represent wealth and power. These attributes also require certain level of scale not only to become efficient but also to be established on.

In the second stage of the study, binary logistic regression was used to test marginal effects of attributes of sampled housing estates on the probability of a housing unit to be priced above the average price The outcomes binary logistic regression were mainly consistent with that of hedonic regression. The findings revealed that number of rooms was much more significant than the floor area in the determination of the price level of the housing unit. In other words, model displayed that housing units were likely to have higher prices when they had one additional room over three bedrooms. In addition, the attributes of tennis, kitchen appliances, swimming pool, garage, and other sports facilities have higher odd ratios than those of dressing room and number of bathrooms; indicating greater influence on likelihood of higher housing prices. Thus, the outcomes of the logistic regression revealed parallel results to those of hedonic regression pointing out the fact that, the more the attributes get prestigious, the higher their influence on the price level.

In this regard, the outcomes of both models revealed similar results regarding to the price of housing units. In that sense, analysis regarding to the relationship between the cost per square and the number of housing units in the housing estates in Section 5.3.1.3 revealed that, there was not much difference in per square meter costs in producing small or large number of housing units. Thus, households are not searching for the benefits of cost reduction by producing more on their project sites. Therefore; the data on construction permits on cost per square meter for studied housing estates do not substantiate the **first hypothesis** as the cost per square does not decrease with the size of housing estates.

Results indicated that the effect of the prestigious attributes of the housing estates appear to be very high on the price level of housing. This condition implied the

increasing trend for the consumption of prestigious attributes indicating the rising household preferences towards such housing units. People would like to buy such luxury housing despite their high prices. In addition to that; the outcomes of the models also emphasized the requirement of large land for the provision of luxurious attributes and they also pointed out the necessity of large scale production. Under these circumstances, the findings supported the **second hypothesis** on households' increasing willingness to pay for luxury goods which is triggered by Veblen and Bandwagon effect at the moment.

In addition to that, the outcomes of the models emphasize the requirement of adequately large size plots for building housing estates with luxurious attributes. The previous studies conducted with area showed that, floor area ratios were declining as the distance from the city center increased. However, the floor area ratios of most of the housing estates were defined 2, indicating that, house builders require higher floor area ratios to compensate additional cost of luxurious attributes and it appears that they are able to convince municipal authorities in their demand in that direction. Due to high price of housing with those attributes, producing more housing units with increased floor area ratios brings higher profit to builders of such housing estates. Therefore large scale production with high floor area ratios enables house builders to produce greater number of dwelling units on their plots. Thus, **third hypothesis** on having housing developments with lower floor area ratio and endowed with the attributes that require large land at the fringes of cities is partly rejected.

In summary, the results of the models point out the fact that, due to the increase in car ownership and growing concern for healthy living environment, there has been an increasing trend for living in housing estates which are designed as closed systems with securities and parking spaces and indoor and outdoor attributes in the Yaşamkent District. Households are searching for distinctive living areas endowed with prestigious attributes that are no longer provided in the city center. Moving to such housing estates has created a trend among households. Increasing

demand of households for such attributes lead house builders to produce housing estates, which are endowed with these prestigious attributes. The availability of land in the research area allows house builders to extent attribute composition of their projects and provide original ideas in the provision of housing estates. Adding one new attribute affects housing prices significantly, results in higher expectations of households, and makes them feel privileged. Increasing demand for such housing estates results in increase in prices which lead house builders to produce more. Thus house builders' approach for producing more dwelling units in the housing estates that they produce is mainly to meet increasing demand at rising prices and make more profit, rather than to enjoy scale economies.

CHAPTER 6

CONCLUSION

This dissertation is based on the observation that there is an increasing trend in the production of large scale housing estates at the outskirts of the cities in Turkey which are endowed with prestigious indoor and outdoor attributes such as kitchen appliances, multiple bathrooms, dressing rooms, security services, swimming pools, multiple parking spaces, and tennis courts. Since it is very important for the understanding of the dynamics behind the large scale housing production and developing policies and practices, first it is necessary to examine the conditions and the development processes that led to this approach in the housing market in Turkey. Although there are many studies regarding to the related subject especially from North America and Europe, studies related in this subject are very limited in Turkey and these that exist are mostly for İstanbul. However, due to the increasing demand and the production levels in the country, researchers have begun to concentrate on the subject for different cities especially in the last decade.

Related to that, this thesis explores the development process of large scale housing production which offers various prestigious attributes that cannot be provided in the inner city and also households' behavior in that context. The main questions here are; why house builders have begun to produce housing estates endowed with prestigious attributes in large scales and why households have begun to prefer to live recently in such housing estates and search for prestigious attributes in Turkey.

In this regard; this thesis investigates the fact that, there is an important rise in the demand for large scale housing estates with different attributes at the outer regions of cities where land prices are low, designed according to the needs and

preferences of households, and whether producing sufficient number of housing to meet demand is more important for house builders than the concern for scale economies. Thus, the hypotheses of the thesis were defined as house builders would exploit cost advantages by expanding their scales of production, the housing developments would have lower floor area ratio and endowed with prestigious attributes that require land at the outer regions of the city and households' increasing willingness to pay is triggered by Veblen and Bandwagon effect at the moment.

In order to create a theoretical basis, a critical survey of literature was carried out. A theoretical review regarding to the housing supply and demand and the related traditional and contemporary theories of urban economics has been covered. In that sense, the aim of the literature review is to form a basis for the understanding of general structure of housing economics, in this regard, to define the process of housing production, considering the scale economies from the perspectives of both households and house builders, to analyze the availability and the possible effects of scale economies in the housing market. In addition to that, this chapter covers analysis of behavioral economics in order to evaluate possible psychological effects on housing purchasing decision and human behavior in the housing market.

The analysis showed that, rapid growth in population and expanding responsibilities in the urban area combining with the outcomes of globalization have resulted in the emergence of new relations of people with housing in urban areas. Along with the new relations, citizens have shifted their tastes and preferences according to the needs of contemporary urban environment which made the development of new living spaces a worldwide concern. Especially for the last few decades, social and economic conditions in urban areas made people search for better living conditions, providing the needs of contemporary city life. Related to that, the meaning of housing has changed for both house builders and households.

Studies showed that as the households' income and welfare levels increased their desire for better quality living conditions increased as well. Households' search for improving living conditions resulted in the positive income elasticity of housing which indicated the fact that under increasing welfare levels housing was not considered a normal but a luxury good (p.70, Figure3.1). This approach of households reflected on the built environment as the production of new types of housing, designed in closed systems with, open spaces, and high quality structures which directly affected the production style and marketing strategies of house builders in the market.

However, due to the lack of land surplus and high land prices; new housing developments emerged under the effects of new production approaches of house builders, and priorities of households could only be provided in a limited extent in the inner city. House builders' search for new development areas and households' desire to escape from overcrowded and overregulated cities supported suburban growth and defined development strategies of cities (Figure 3.3 and Table 3.1). However, due to the differences in legal frameworks, planning regulations and applications, housing policies, social and cultural values and economic conditions in housing market across the world, these developments in the housing industry led to the emergence of production schemes at different scales in every country.

In the case of Turkey, cities experienced spatial outcomes of globalization like other cities in the world. Types and scales of housing provision varied parallel with the demand and supply conditions in the housing sector which has been transformed regarding to the needs, economic conditions, tastes and preferences of the households and production and investment power of house builders. With the shifts in housing policies from populist to neo-liberal mode especially after the 2000s, urban space has become one of the most profitable sources of investments in Turkey. As a result, Turkish cities have become the focal points that attracted the capital of house builders for new investments.

Related to that, housing production has showed an excessive growth and tripled in the last decade in Turkey. This increase is explained by the increasing contribution of the private sector in the given period whose share is 93,5% in 2014. Data regarding to building construction cost, inflation and house prices revealed the fact that, the increase in building construction cost (10,5%) and house prices index (14,5%) are higher than the inflation rate (8,17%) in 2014 which result in the increase the demand for housing in Turkey (Figure 4.1, p.105).

In that sense, studies revealed the fact that, the new trend for housing has been living in housing estates with extra and luxurious amenities such as kitchen appliances, multiple bathrooms, multiple parking areas, security systems, sports ground, swimming pools and tennis courts. This approach of the house builders has triggered the tendency to invest in outer areas of the cities where land prices are lower. The intensive construction investments at the outer areas of cities began to affect the direction of urban development not only in physical but also in social terms. The most important indicator of this condition is the high income groups' tendency to move out of the cities for security, new identity; more defined living areas with attractive amenities that represent prestige, luxury, and high property value.

The analysis of the housing market in Turkey showed that, various types of housing has been produced from low rise to high rise indicating the dynamic structure of the sector. Results pointed out that, the sector has begun to focus on the projects with high number of housing units, which are considered having significant economic value and have great impact on urban design. House builders pursued residential development projects that would make difference not only with their production scales but also their design features. Related to that, production of housing estates in Turkey has been growing as dominated by high rise structures in recent years.

At the fringes of the metropolitan areas, existence of large urban lands for housing development enables house builders to produce such commodities that meet the demand of middle and high income groups. Thus, living in housing estates endowed with most preferred amenities has created its own trend in the country. People have begun to prefer living in such housing estates that not only provide high quality of living environment but also they represent a style and status.

Considering new production approaches of house builders and priorities of households', new types of housing production are provided in a limited extent in inner cities due to the high price of land which is in short supply. The availability of low priced large tracks of land at the outskirt of cities let large capital construction firms to produce high quality housing with special attributes that require certain size to be profitable. Therefore the main hypotheses of the study were put as;

Main Hypothesis 1: "House builders can be expected exploiting cost advantages by expanding their scale of housing production. Therefore, economies of scale should be an important factor in the rise of the size of housing estate projects."

Main Hypothesis 2: "Households' increasing willingness to pay in the housing market has been triggered by the Veblen and Bandwagon effects together in Turkey which increase the desire of living in housing estates by the households who can afford acquiring housing in such living environments."

Main Hypothesis 3: "It is expected to have housing developments with lower floor area ratios and endowed with the attributes that require large land at the fringes of cities where land prices are lower than inner locations."

In the research; a case study was undertaken in order to test the hypotheses of the thesis. The selected area was Yaşamkent District, which is one of the most rapidly growing residential areas of Ankara. It is located on the south-western

development corridor of the city along the Eskişehir Highway which is emphasized as the most speculated area since the 1980s. In the 2023 Ankara Development Master Plan, this area is designated for residential developments.

Parallel with the rapid spatial developments in the area, population of Yaşamkent has doubled in the last five years of the research period and it is expected to increase to 20.000 in 2015.

In order to analyze the current situation in the Yaşamkent district, a research has been carried out. Firstly, all the construction permits of the housing estates issued by the Yenimahalle Municipality were analyzed in order to evaluate the conditions of all the housing estates in the research area. Then, missing information was completed by on-site survey in the area. By investigating all construction permits, the study was limited to 38 housing estates having a minimum of 50 housing units. There were 5406 housing units in 38 housing estates and they were analyzed according to housing estate, housing, and dwelling unit attributes.

Due to the size of the plots and availability of land, combined with the preferences of households, projects built on large plots included different physical and social attributes. With the aim of analyzing the distribution of these attributes among the 38 housing estates, a descriptive analysis was done. The analysis was carried out according to the housing estate attributes, housing attributes and dwelling unit attributes. Thus, data regarding to typologies, types of housing units, number of rooms, square meter of floor areas, landscape, daycare, garage, lot, number of elevators, security, alarm, commercial facilities, swimming pool, tennis court, fitness center, sport facilities, inset cupboard, number of bathrooms, jacuzzi, dress room, water tank and types of heating, vestry, number of WC and types of kitchen were determined for each housing estate. This analysis enabled to generalize and identify the attributes from standard to prestigious ones.

The hypotheses were tested by using two different methods in this study. Firstly a hedonic regression model was built in order to investigate the relationship between the scale of the housing estates and indoor and outdoor attributes with the price of housing. Secondly, binary logistic regression was used to test marginal effects of attributes of 38 housing estates on the probability of a housing unit to be priced above the average price.

In this regard, the outcomes of the both models revealed similar results regarding to hypothesis. The results of the models supported to the first hypothesis but partly supported the second hypothesis.

The **first hypothesis** of the study was rejected by the outcomes of the models because; although, the number of housing units in the housing estates are changing significantly ranging from 50 to 620 according the construction permit data, there is not much difference in the per square meter cost in producing housing estates with small or large number of housing units. In other words, the data on construction permits that show cost per square meter for studied housing estates do not substantiate the first hypothesis as the cost per square does not decrease with the size of housing estates. House builders appear to compensate additional cost of luxurious attributes by producing more dwelling units on their project sites by managing to get higher floor area ratios on the decisions of the greater city and related district municipalities compared to regular housing sites along the western development corridor of Ankara. Therefore, they increase their revenues and profits by producing high priced housing in greater quantities rather than trying to reduce unit cost of production.

Secondly, the most significant outcome of the models that support the **second hypothesis** is that; households are willing to pay more for an attribute as long as it is luxurious, regardless of whether or not it was a housing estate or dwelling unit attribute. Findings pointed out the fact that housing estates endowed with more prestigious attributes and had bigger living spaces; had higher prices. This

indicates the fact that, households undertake the cost of paying %18 VAT rate rather than 1 % for housing above 150 m^2 floor area in the housing estates which are located at the outskirts of the city where land prices are low. Thus, purchasing decision of households is no longer determined only by the price level but the availability of the attributes in the housing estates, because people are willing to pay high prices for such housing units in the housing estates endowed with the most preferred attributes.

Moreover, the provision of some attributes has created a production mode in the housing market at the moment in Turkey. For instance, security services, multiple parking spaces, landscaping activities, multiple bathrooms, and dressing rooms are very common attributes in the research area. The study shows that, currently in the housing market, the provision of some of the services provided within the housing estates have become regular. It was impossible before to imagine such serviced for housing located in inner cities.

Households are searching for prestigious living environments which not only provide so called standard indoor attributes that increase the use of space in the dwelling unit but also outdoor ones which represent wealth and power.

The outcomes of the estimated models implied that some of the attributes have limited influence on prices or are even insignificant. This is not because they are not effective in the area but because they exist almost in all the studied housing estates so that existence of these attributes does not create difference in price levels. In fact existence of these attributes actually implies a new fashion in the house building industry. And people are willing to pay more for such housing units that bear the features of new modes of production.

In addition to that, attributes such as tennis, swimming pool, kitchen appliances, and daycare existed in a limited number of housing estates which make difference from others. These attributes were emphasized as the indicators of the quality and

luxury of housing estates. The outcomes of both models also showed that these attributes have the highest odd ratios implying their marginal effects on price levels. Therefore, availability of these attributes highly affects households' decisions on paying high prices for housing. People would like to buy such luxury housing despite their high prices.

To summarize these findings, purchasing a housing unit endowed with prestigious attributes which cannot be provided in the inner city has become an important indicator of social and economic status which has resulted in the increase in the households' willingness to pay for such housing. Thus, the rise in the price of housing with these attributes indicates high demand as well, pointing out the existence of Veblen and Bandwagon effects in the market. The analyses indicate the fact that, both effects act together in the market since demand for such housing is still increasing together with the rising prices. House builders take into consideration the short term shifts in demand and quickly introduce newly demanded attributes in the housing estates that they produce.

The **third hypothesis** of the study was partly supported by the outcomes of the models because; housing estates that are endowed with prestigious attributes require additional land for that purpose and a certain size for profitability and efficiency which implies production of housing estates at large scale in this area.

The results of the models brought about the fact that, housing unit price was mainly determined by the more prestigious attributes such, as size of housing unit, tennis, kitchen appliances, swimming pools that represent wealth and power. It requires certain size of housing estate and available land to accommodate those attributes.

Related to that, one of the important findings of the analyses was that; as the number of housing units and the size of the housing estate got bigger, the availability of specific attributes increased as well. The analyses showed that

larger housing estates had more available land to place outdoor facilities. In addition, as the number of housing units increase, the possibility to include different types of housing with different endowments also increased.

Floor area ratio of most of the studied housing estates was 2,00 which is higher than the ratios for the residential sites at closer locations to the city center (Topçu, 2004). High floor area ratios for most of the sampled housing estates indicate that, house builders require higher floor area ratios to meet additional land requirement and compensate additional cost of luxurious attributes, and it appears that they are able to convince municipal authorities in their demand to raise floor area ratios for that plots.

Moreover, analysis regarding to the relationship between the cost per square and number of housing units in the housing estates revealed that, there is not much difference in per square meter costs in producing small and large number of housing units in the area. Therefore, builders of such housing estates can produce more dwelling units with increased floor area ratios, which bring them higher profits because of high price of housing endowed with those attributes.

To summarize these findings, building housing estates endowed with those luxurious attributes require using some land to include those attributes. This becomes a pretext for increasing floor area ratios by municipalities as demanded by the builders of housing estates. Producing greater number of dwelling units at higher floor area ratios enables builders to benefit from high prices for additional housing produced. Therefore it can be concluded that, primary aim of enlarging the scale such housing estate projects is to increase revenues and profits of their producers rather than achieving to reach scale economies.

In this context, the outcomes of the study emphasize important issues regarding to urban development in that part of Ankara as it appears that subdivision plans are not carried out to produce small parcels to build single apartments on each one as

at the inner city. In addition to that, it appears that, planning system have been meeting the expectations and demand of large scale house builders to increase FAR in that area. Such planning practice encourages the production of large scale housing estates but it also leads to inequality in land development rights in the city.

In this regard, this thesis revealed the fact that, households prefer to live in housing estates which are designed as closed systems with security systems, parking spaces, and indoor and outdoor attributes in Turkey not only for improving their living conditions but also for prestige. Outcomes of the study say that, households are searching for original living areas endowed with prestigious attributes that are no longer provided in inner cities. As the welfare level increases, the demand for such housing estates is continuing to increase despite the high prices pointing out the fact that such housing is considered as luxury good. This approach has created a consumption trend aiming households. This consumption trend has been shaped by the new modes of production of housing which acquire the provision of new housing attributes by house builders and households are willing to pay high prices for prestigious attributes. Related to that, increasing demand of households for such housing has led house builders to produce housing estates which are endowed with these prestigious attributes. The availability of land at the outskirts of cities allows house builders to extent their projects and provides original ideas in the housing estates. Adding new attributes affect housing prices significantly and results in higher expectations of households and makes them feel privileged. Increasing demand for such housing estates results in increase in prices which lead house builders to produce more.

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PROFESSIONAL EXPERIENCE

Year	Place	Enrollment
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APPENDIX

A. Sampled Housing Estates

Name of Housing Estate: Besa Karina
Number of Housing Units: 620

Name of Housing Estate: Yeni Atabilge
Number of Housing Units: 440

Name of Housing Estate: Gülbeng
Number of Housing Units: 314

Name of Housing Estate: Besa Ataşehir
Number of Housing Units: 265

Name of Housing Estate: Crystal Towers
Number of Housing Units: 256

Name of Housing Estate: Besa Nova
Number of Housing Units: 224

Name of Housing Estate: Başkent
Number of Housing Units: 218

Name of Housing Estate: Yeşiller Esertepe
Number of Housing Units: 217

Name of Housing Estate: Mesa Yonca 1
Number of Housing Units: 168

Name of Housing Estate: Anka Modern
Number of Housing Units: 153

Name of Housing Estate: Park Flora
Number of Housing Units: 152

Name of Housing Estate: Ataşehir Sitesi
Number of Housing Units: 144

Name of Housing Estate: Mesa Yonca 3
Number of Housing Units: 138

Name of Housing Estate: Güneş Sitesi
Number of Housing Units: 130

Name of Housing Estate: Mehtap Sitesi
Number of Housing Units: 130

Name of Housing Estate: Şeker Kent
Number of Housing Units: 129

Name of Housing Estate: Sedef Evler
Number of Housing Units: 117

Name of Housing Estate: Park Lima
Number of Housing Units: 110

Name of Housing Estate: İnan Sitesi
Number of Housing Units: 107

Name of Housing Estate: Özkar Kayra Park
Number of Housing Units: 106

Name of Housing Estate: Kar Evler
Number of Housing Units: 102

Name of Housing Estate: Mesa Yonca 2
Number of Housing Units: 96

Name of Housing Estate: İkizler Sitesi
Number of Housing Units: 92

Name of Housing Estate: Rain Park
Number of Housing Units: 86

Name of Housing Estate: Park Lopelya
Number of Housing Units: 85

Name of Housing Estate: Ayarslan Sitesi
Number of Housing Units: 78

Name of Housing Estate: Park Armoni
Number of Housing Units: 74

Name of Housing Estate: Pelit Yaşam
Number of Housing Units: 72

Name of Housing Estate: Perge-Pergamum
Number of Housing Units: 68

Name of Housing Estate: Zümrüt Evler
Number of Housing Units: 65

Name of Housing Estate: Barış Sitesi
Number of Housing Units: 63

Name of Housing Estate: Bahçeşehir Sitesi
Number of Housing Units: 60

Name of Housing Estate: Vadi Evleri
Number of Housing Units: 56

Name of Housing Estate: Anka Konutları
Number of Housing Units: 56

Name of Housing Estate: Milenyum Sitesi
Number of Housing Units: 55

Name of Housing Estate: Sarı Frezya
Number of Housing Units: 54

Name of Housing Estate: Zirve Yaşam
Number of Housing Units: 54

Name of Housing Estate: Tarz Evler
Number of Housing Units: 52