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A CONSUMER AND INVESTMENT MODEL OF HOUSING DEMAND OF IRAN: ESTIMATION AND POLICY IMPLICATIONS[6]

This paper presents a study of the housing demand in Iran according to the consumer and investment approach during the period of 1995-2011. The first approach is based on a statistical evaluation of the consumer function, based on a system equations, which describes the consumer housing demand as five groups of consumer goods and services. The second approach evaluates the consumer housing demand as a separate investment good, which depends on several factors. Based on the achieved results, the paper makes an analysis of the influence of the different factors on the consumer housing demand.

In consumer approach behavior of the consumers of deciles urban households in all over the country has been assessed, through the panel data by using the Linear Expenditure System (LES) with using Seemingly Unrelated Regression Estimation (SURE) housing consumption demand of households are estimated. Result shows that housing market has been support law of demand with negative income elasticity of 0.81. Also the cross-elasticity of all groups are negative which is indicating that these commodities are supplement for the housing good in the consumption household budget .

The second approach, capital characteristic of the commodity, investigates the impact of price house, and household income, local gold price, consumer goods price index

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and housing credits on effective housing demand of Iran in same period. The main result of this approach is that price elasticity of housing is positive.
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1. Introduction

In the last decade, the strong surge in housing prices in the vast majority of industrialized countries (with the normal exceptions, such as Germany or Japan) has raised concern regarding the workings of housing markets at the international level. Among experts on the subject, there is a certain consensus that a great part of the housing-price increase can be explained in terms of demand factors (Case and Shiller, 2003; Himmelberg et al., 2005). This is in addition to the restrictive effects of different housing supply features that help to feed this climbing price scenario (such as an increasing proliferation of zoning rules or government retreat from the housing sector).

Therefore, analysis of housing demand shifters, and, particularly, an evaluation of the income and price elasticities of demand, is of enormous interest in this context. Nevertheless, most of the work devoted to analyzing housing demand has been based on British and U.S. databases. Thus, it is crucial to test the results, collected from this vast amount of literature, on other countries, such as Iran, which present a strong idiosyncrasy in the housing market.

From other side, Global demographic development indicate that increasing urban population against the rural population. So according to estimation for the first time in 2007 the majority of world population live in cities (Sclar, 2005). As the urban population increases always new problems arise in these communities that one of the most important is the housing demand. Housing is the most basic and the most critical part of the economic and social development planning.

Housing with food and clothing, is introduced as the main and most basic of human needs from long time ago. In fact, inhabitance is the smallest physical embodiment form of interactions between humans and the environment and it is the space crystallization of vital functions of human settlement in performing his key roles. In general, adequate housing is defined a space or location which can be provide the necessary basis for individual and collective growth of each household member so that they can find the desired privacy in terms of their psychological needs and kind of desired activity.

In most countries, more than half of domestic gross fixed capital formation is included in building sector; just the share of housing is about 20 to 58%. Housing's share of GDP (Gross Domestic Product) is different from 2 to 10% in various countries[7]. The survey shows that about 120 sectors are in relation to the building. In result not only a quality of regular supply and technical standard of other industries has the influence on housing, but also construction activities has interaction effect on the growth of other economic sectors .

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[7] The statistics provided by the World Development Indicators (WDI).

Also the housing sector in Iran is as leading sector and main share of industrial development. This sector is a powerful stimulus to enhance the sustainable development in the all sector of economy. After government, based on output – input table, housing had been the second consumer of the intermediate commodity of the Iran economy. Although, this sector has been consumed the most part of the intermediary goods from the group of manufacturing industries like iron and steel, non-electrical machinery, cement, lime and gypsum.

This paper is structured as follows. In Section 2, we provide housing definition, features and an overview of the Iranian housing market. Section 3 details the theoretical framework and the econometric modeling used to carry out housing demand study. Then, we specify econometric model, the data source and the variables used, showing, in Section 5, the main conclusions drawn by the demand for housing services, estimated for the dwellings belonging to each of the alternatives considered. Section 6 presents the main conclusions and policy implication.

1.1. Housing

In economic attitude, housing in addition to being consumed, is the capital goods that consider as a saving for household. Housing was a minor and non-productive asset in the past. Nowadays the housing is as an investment and the increased income which has an economic concept.

In fact, the best, safest and the most lucrative areas of investment are in land and housing sectors. in inflation and growing prices time, the construction or purchase of housing is an effective plan for fixing assets and a secure investment for the household (Dalalpour, 2000). National accounts figures in different countries shows that in these countries, building is one of the largest sectors of economic activity.

This sector in developing countries is after the agriculture and in developed countries after the industry. In most countries, the building sector has more than half of gross domestic fixed capital that just the share of housing is 20 up to 50% (Dalalpour, 2000). On the other hand, the building industry, is using between 50 to 55% of the products of other industrial sectors. According to research conducted by the United Nations, create any new job in the building and housing has led to three new jobs in other sectors of economic (Nikouseresht, 1994).

1.1.1. Housing definition

Housing is the good which is of utmost importance due to its multi-dimensional nature in the socio-economic life. So that it cannot be define just as a physical environment to meet human needs for shelter. In the second session of the Human Settlements (1996) which was held in Istanbul, this property has been defined as:

"Proper shelter is not just a roof over everyone's head, proper shelter means good comfort, suitable environment, physical access and adequate security, property security, stability and

durability of the structure, suitable lighting, ventilation and heating system, good basic infrastructure such as water supply, health and education, Waste disposal, environmental suitable quality, proper hygienic factors, appropriate place and available for work and basic facilities, which all of these items must be provided according to afford people (Dalalpour, 2000).

1.1.2. Housing features

As a durable goods, housing has a unique feature that led distinguishes its market from other markets. The reason is that the housing:

- It is essential commodity because meet the human need for shelter.

- For most households constitute the most important consumer goods.

- Durable goods with spatial stability.

- It is capital goods with long life.

- It is a heterogeneous commodity with many components.[8]

- Housing services for existence of housing services (shelter), facilities residential units (providing welfare services) can be investigated (Esna ashari, 2007).

1.1.3. Types of demand in the housing market

The existence demands in the housing sector are divided into two parts of consumer and investment:

1. Consumer demand is the demand to supplies its consumer demand attends in the land market (buying land in order to construction) and dispels their needs.

2. Investment Demand is a demand which is in the land and housing market for obtain more profit and revenue. The demand for capital is divided to into two parts of productive investment demand and nonproductive investment demand divided into two parts:

   a) Productive investment demand is a demand that join to land and housing market with generate revenue motivation and earn a reasonable profit, with the aim of produce and supply of housing.

   b) Unproductive investment demand is a demand that join to land and housing market with the aim of receive high profit, buy and sell the land.

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[8] Based on Lancaster's theory of a residential unit with vector of n measurable components, explained, such as prices or implicit value of housing in urban economics discussion, is called Hedanic price. This price is ultimately due to the heterogeneity of housing goods which finally for shortcomings in the market, cause the government intervention be necessary.

2. The empirical literature

There is an abundance of literature on housing policy related to homeownership and housing prices (Muth, 1969; Tremblay and Dillman, 1983; Apgar, 1990; Listokin, 1991; Green, 1996; Green and Hendershott, 1996; Malpezzi, 1996; Sazama, 2000; Whiting, 2004; Lewis, 2005). These studies found that, for the most part, income and demographics drive demand for housing. Population drives the demand for number of units and income drives the demand for the quality of those units (Muth, 1969; Meyer, 1973; Green and Hendershott, 1996; Green and Malpezzi, 2003). Muth (1969) in particular found that income was the most critical factor affecting demand and that low income households could only afford lower quality housing. In most respects lower quality has been associated with lower priced dwellings such as manufactured homes. Wubneh and Shen (2004) showed that this price-quality association leads to a negative effect on the property value of site-built homes from manufactured homes.

In reference to literature on site built homes, price elasticity of demand ranges between -0.40 and -1.10, income elasticity of demand is spread from 0.89 to 1.46, and interest elasticity of demand from -0.131 to -2.36 (Goodman and Kawai, 1984; Goodman, 1988, 1990, 2005; Glennon, 1989; Harmon, 1988; Harrington, 1989). Estimates from studies on site built homes should provide an interesting comparison to those estimates obtained for the manufactured housing sector.

In local studies, many important studies in the field of housing demand inside and outside of the country have been conducted, some of which are listed below.

Shirinbakhsh (1996) is concern the relationship between effective housing demand and other economic sectors as a scheme form. He says that in codification of housing policies, it is preferred pay attention to effective demand; instead of rely on the needs because needs-based planning can lead to failure guidelines.

He thought household income, housing credit, household asset and housing prices is from the factors affecting on effective demand and income in his model, is permanent income that excluded from the short-term currency fluctuations.

He justifies a positive relationship between income and housing demand so that the increase in income, lead to increase household formation rates, leave rental housing and housing substitution, in result the demand will increase.

In his view the best equation for estimating housing price index is an equation which is used variables such as GDP, land prices, the price index of consumer goods and services, or the rate of inflation and the lag quantity of endogenous variable.

Khiabani (2003) by applying ARDL model, analyzed the effects of macroeconomic variables such as money, exchange rates, GDP and stock price index on housing price volatility. In this study, for the separation of the effects of positive and negative shocks on housing price and In other words, to distinguish the effect of symmetric and asymmetric shocks, uses the modified ARDL model. Based on the findings of this study, the sensitivity of real housing price is estimated to one percent change in real money balance in the long

term 0.86 and short term 0.34. Also the reaction of the real price of housing in real output in the long term 0.89 and short term 0.3 is estimated.

Jafari Samimi (2007) by applying an autoregressive model, with the wide lags order analyze the impact of macroeconomic variables such as per capita household income, stock price index, the price index of construction services, money quantity, inflation rate on fluctuations in the housing price index. In this study, estimation model has been done with use of seasonal data taken from years 1996-2003. Also in order to review the adjustment speed of the dynamic model to the long-term model, the error correction model is estimated as well.

The result of the estimation shows that the macroeconomic variables have significant explanatory power for determining the behavior of house prices index in Iran. In addition, the sign of the estimated coefficients is as expected in theory. Also based on this study, the long-term equilibrium relationship between the mentioned variables is accepted. It should be noted that, due to model estimation of error correction, error correction coefficient is equal to -0.09 which shows the low speed of adjustment is going toward the long-term adjustment . In other words, according to this figure, in each term about 9% of the balance in housing prices is moderated, it means that it will take up about 11 term that total imbalances be compensated.

It can be noted to the Moth study between international studies that he presents a model for the housing demand function. For this purpose, the basic assumption that he would consider, is the balance of the housing market in the long term and that the net demand for housing formed based on difference between current and potential conflicts. He says that newly residential housing units are only to compensate for the depreciation of the new population. Thus, with having return rate, the demand function of housing inventory can be easily derived from the demand for housing services.

Olsen (1986) with micro-driven approach, obtaining housing demand function based on utility function and maximizing it has been done with respect to a particular constraint. In his view the consumer's utility is a function of the different values of all goods and services that consumed during the life of each person. The constraint against this utility is a relationship which is equate the total value of the future costs of individual with wealth (the present value of labor income and non-human wealth). The basic assumption of Olsen model is based on that the utility function, has no specific shape, as well as all individual consumption goods is classified in two groups, housing services and other goods.

Dipasquale (1994) based on gradual adjustment price mechanism, in fact a combination of flow model and mechanism of price adjustment, is reviewing the housing demand. Since he has considered detail for supply, therefore, changes in demand, is not led to same rapidly increasing in supply.

Indeed, the price in this model is not a perfect variable for the behavior of supply and structure of housing. Accordingly, an imbalance in the housing market as a result of each shock and its impact on prices disappears during some period.

In this model, the demand is assumed a function of a set of exogenous variables such as population feature, real permanent income, real price level of housing and the opportunity cost of capital.

3. Theoretical framework for the housing demand function

In this research, two approaches were used to examine factors that affecting on housing demand. The first approach, consider housing as consumer goods and studied households behavior against the consumption of this goods compared to budget constraints and the prices of other consumer items.

In the second approach, housing capital characteristic interest has been noted and housing is assumed as a homogeneous commodity. In this method, the amount of demand is estimated with price and income elasticity. Following, the two approaches are studied separately.

3.1. The consumer approach

This method was entirely micro approach and as mentioned it considered housing as consumer goods and studied the household behavior towards the consumption of this product compared to budget constraints and the prices of other consumer items .

Allocative system shows that how consumer, allocate their income between different types of goods that sometimes includes leisure as well. These models, often are based on microeconomic theory that analysis the supply side, independent from demand side (Mohammadzadeh, 2004).

Allocation problem includes the allocation of specified optimum income among various options. Allocative models is formulated not only for consumer demand but also for numerous cases, such as demand for produce entities, allocation of import demand, the distribution of the investment asset basket and the distribution for area of farmland between different products.

In all these models, the main argument is that how objective function are identified based on a series of relevant variables, reaches its optimal point which in this optimization, different systems, consequential form of objective function and related constraints. Although these systems are based on the economic theory of individual behavior but often is used for the behavior of whole market or the whole economy. In fact, by imposing a set of specific assumptions can be done the aggregate individual behavior for explanation behavior of the whole.

Consumers explanation behavior, have devoted much effort of economists to itself and many models have been proposed to quantify them . Elementary basis of final studies of the goods and services was formed systematically in 1941 by Lessier. The gap between theory and practical applications in examination of consumer behavior to present a utility function of Klein & Robin continued in 1948 .

But the first comprehensive empirical model in this field was presented by Aston in 1954 which this model was a known model for studying the demand and it is known as the Linear Expenditure System (LES) (Khosravi-Nejad, 2003).

This system extracted of Aston - Gary utility functions which was retractable and follow the certain incidental forms that:

$$U = \prod_{i=1}^{n}(q_i - \gamma_i)^{\beta^i} \tag{1}$$

If:

$$(q_i - \gamma_i) > 0 \qquad , \beta_i > 0 \qquad , \sum \beta_i = 1$$

Where γ_i is minimum consumption of *i* th goods, q_i is *i* th goods in household basket, β_i is consumption elasticity of i th goods and U is the utility level .

What the utility function defines is the total utility that the consumer receives from the consumption of goods basket, the function of the product of consumption surplus for each goods to minimum consuming of that goods and the share of the surplus in the total utility is with the exponent like β_i .

Thus, consumer will be satisfied when his consumption be higher than whatever we call the minimum subsistence or γ_i.

If we consider this function as logarithmic (convert of monotone utility function, which does not effect on the maximum value), then we have:

$$\log U = \sum \beta_i \log(q_i - \gamma_i) \tag{2}$$

Which $q_i \geq \gamma_i$ and $M = p_i q_i$ is budget constraints. It makes the Lagrange function as follows:

$$L = \sum \beta_i \log(q_i - \gamma_i) + \lambda(M - \sum p_i q_i) \tag{3}$$

With the implementation of the first optimality clause we will have:

$$\frac{\partial L}{\partial q_i} = 0 \Rightarrow \frac{\beta_i}{q_i - \gamma_i} = \lambda p_i \Rightarrow \beta_i = \lambda(p_i q_i - p_i \gamma_i) \tag{4}$$

Add up both sides of equation (4) then below equation will be obtained:

$$\sum \beta_i = \lambda(\sum p_i q_i - \sum p_i \gamma_i) \tag{5}$$

Then we will have:

$$1 = \lambda(M - \sum p_i \gamma_i) \Rightarrow \lambda = \frac{1}{M - \sum p_i \gamma_i} \tag{6}$$

Substitute λ that obtained from equation (6) in equation (4):

$$\beta_i = \frac{1}{M - \Sigma p_i \gamma_i}(p_1 q_1 - p_1 \gamma_i)$$ (7)

After a simple displacement, the following demand functions will be resulted:

$$q_i = h_i(p, m) \Rightarrow q_i = \gamma_i + \frac{\beta_i}{p_i}(M - \Sigma p_i \gamma_i) \quad , i=1,2,3, \dots , n$$ (8)

With multiplying the above equation in p_1 demand for the n goods will be resulted which in it, γ_1 is minimum consumption of M_i goods and $\Sigma p_1 \gamma_1$ is the total necessary expenditure for the Supernumerary Expenditure [1] and β_1 is the marginal propensity to consume of income surplus for Supernumerary Expenditure what is the marginal propensity to beyond subsistence expenses.

$$p_1 q_1 = p_1 \gamma_1 + \beta_1(M - \Sigma p_1 \gamma_1)$$ (9)

This system of equations in which the expanse of each item is a function of all prices and total cost, is named Linear Expenditure Systems.

According to the Stone-Gary utility structure, all β_1 is positive and the clause of $\Sigma \beta_1 = 1$ will make the function Quasi-concave, also in linear expenditure system model, the income elasticity is always positive and so, the LES system Post is not able to explain the low quality goods . The income, prices elasticity, and cross elasticity in linear demand systems is using the following relationships:

$$E_M = \beta_i \left(\frac{M}{p_i q_i}\right)$$

$$E_{ii} = \left[(1 - \beta_i)\frac{p_i \gamma_i}{p_i q_i}\right] - 1$$ (10)

$$E_{ij} = -\frac{\beta_i}{p_i q_i} \cdot p_j \gamma_j$$

Therefore, E_M, E_{ii} and E_{ij} represent the income, price and cross elasticity of consumer goods respectively.

3.2. Investment approach

In this estimation method the housing demand function is such that investigator assumes housing as homogeneous goods and estimates demand quantity with its price and revenue elasticity.

In this method different characteristic of housing demand has less important. In other word, the housing demand function is considered to be as follows:

$$Q = f(P, Y) \tag{11}$$

Where Q is the demanded quantity, P is housing prices and Y is household income. In this method, a residential unit is considered as a standard unit, then by dividing the price of the other buildings to the standard unit price, the standard number of residential unit will be resulted.

With considering the household utility of having the housing and its services and the other consumer goods, has been drawn the utility function and with using a cross-sectional and time-series data estimates the household demand. It should be noted that housing in this method is considered as one-dimensional.

$$AD = f(P, TC, PI.CB, GO) \tag{12}$$

Now generalize the model and in addition to housing prices and household income variable, financial resources variables and the price of other consumer and investment goods variables are added, so that:

Where *AD*, represents the demand for housing, *P* , the price per square meter of housing, *TC*, average annual total food and nonfood costs of an urban household (replace of income factor), PI – index of foods, beverages in urban areas of Iran, *CB* – value of the bank housing facilities and *GO*, measured by gold coin price (as proxy of local good price) which is different years during of time. The model is the logarithmic form so, coefficients obtained shows sensitivity or demand elasticity of housing towards the considered factors.

$$lnAD = \alpha_0 + \alpha_1 lnP + \alpha_2 lnTC + \alpha_3 lnPI + \alpha_4 lnCB + \alpha_5 lnGO \tag{13}$$

Which we study these factors and how they impact on housing demand as following:

a) **Housing price:** based on the normal demand law, there is inverse relationship between the price and the quantity demanded in the market. But, before conclusion about the relationship between the price and the demand for housing it is necessary that housing goods features be explained again. Increasing price of the house and decreasing the purchasing power of the people, the effective demand for housing will decrease, but it does not effect on the housing requirement. After the decline in effective demand, non-effective demand grows, in other words it can be said the people demands type will decline toward the residential units with lower quality.

On the other hand, in the analysis of the growth for goods price it mentions to the both income and substitution effect. But housing is a kind of goods that there is not any substitute for it and the consumer, ignore his ideal goods, just if the price increased and choose lower-quality housing. In addition, housing as consumer durable goods could be as a property. So, with developing the price, this property efficiency also increased. It should be mentioned, to calculate P, a square meter value of land depending on the type

of building materials, has been added up to a square meter price of residential building depending on the type of building materials.

b) **Income**: Due to normality of housing in terms of revenue, there is a direct relationship between income growth and the decision to purchase a house. This can be for several reasons, one of them is with increasing the income, lead to increases the desire of households to ownership and leave rental housing in metropolises where the relative price of housing is high. Therefore, households demand for purchase housing will be more. This section of the increases of housing demand referred to consuming side of housing demand. But on the other side, with rising incomes, housing demand as investment goods will also increase . Since the marginal propensity to save rises with increasing income, Can be expected that with increasing the saving, the willingness of households to invest also increase. Households are facing to the housing market as a place which attracts a part of the economy investments. With this explanation, it is not far from the expectation that increasing in household income leads households to invest more in the housing market.

This investment can change both the housing market supply sector (Through the manufacture and supply of new housing by the private sector and in fact the households) and either the demand side of this market (through the purchase of house by them as investment durable goods). The total effects of households' income lead to increased demand for housing and consequently will increase the price of this goods.

c) **Financial resources**: the housing is one of those goods that need high initial cost to purchase. If we consider purchasing the house as an investment, household with two sets of financial resources will be able to invest; saving and banking facilities. Normally the top income group has the ability for more savings and gets the bank loans easily. That would be logical for these groups to have better quality housing. So, the only option for low-income strata is to use the banking facilities. It could be expected the bank far-reaching impact on the effective demand for housing because a large group of society people in the middle classes are classified in the low deciles.

For credits concessional Banks, the researcher has relied on data from Maskan Bank the bank for specialized goods. But which of the types of credits concessional Banks directly effect on the effective demand for housing should consider an important role to credits of housing purchase and providing construction materials.

d) **Price of other consumer goods:** in consumption aspect, housing has supplements like any other commodity which their price changes will be effective on housing demand and housing price. In order to add the price factor of other commodities, the general index of goods and services, the housing and non-food products index has been omitted and the foods, beverages, tobacco index have been used as an option to consider other commodities.

e) **The price of other investment goods**: in asset aspect, housing in addition to being consumed has the feature of capital reserve and like many goods have substitutes which their price changes will be affective on housing demand and price. If the housing was for keeping the asset and having property, existence of substitute for housing demand

could be justified. For example, the stock market or gold market is as a substitute of housing market for private investors.

Making any reduction in index price of these markets, some investors transfer their capital to other sections of the economy such as housing and with creation of promissory note markets cause to increasing the housing prices. In this situation, the gold or the stock market, acts as the competing market for capital absorption and any boom will leads to reception of more investors to these markets. And that means turning away investors from other competing markets, such as foreign exchange and housing market. So, in theoretical frame, housing price is negatively correlated with the index of such markets. It should be noted that, according to the current data, the price of gold (coin) is considered for the replacement of housing goods.

4. Data

For studying of the first approach, used annual data related to consumption expenditure of deciles for urban household in Iran and their corresponding prices has been used for the period of 1995-2011. Initial collected data includes eight groups of goods and services are : Foods, Fruits, Vegetables, Housing, Appliances and furniture, Healthcare, Transportation, Entertainment, and Miscellaneous

For estimation of model, the last four groups were assigned the lower share to themselves be gathered as group named other. So, the categories of expenses and abbreviations that used in this research are as follows:

1. Housing ;

2. Appliances and Home Furnishings;

3. Other (includes entertainment, health, education and miscellaneous);

4. Fruits and Vegetables;

5. Food crops (including groups of cereals, sugar, beverages and food types).

It should be noted that the statistic for expenditure of urban household, gathered from census elaborative results of the costs and income of urban households that each year is disseminated by the Statistical Center of Iran. The consumer price index for urban goods and services is derived from statistics published by the Central Bank.

The second approach data in order to estimate housing demand index has been obtained from the statistical yearbook, statistical year book of House bank and economic report Central Bank of Iran for different years. Also the territory for obtaining the relevant data has been considered 21 big provinces of Iran .

Meanwhile, the time line of study is from 1995 to 2011, and should be emphasized that in this period, Iran has been relative stability for economic and political aspects.

5. Econometrics results

In this section the results of housing demand estimation has been set in two parts. The first part is related to the estimation of the linear expenditure system in which has tried to estimate the system firstly, and then study the theoretical properties of consumer behavior for housing demand. The next part will study the estimation of investment approach of housing demand.

5.1. The consumer approach (Linear Expenditure System (LES))

In this study, the model that used is the linear expenditure system. In order to estimate model correctly, the seemingly unrelated regressions has been used. Linear Expenditure System is as follows:

$$p_i q_i = p_i \gamma_i + \beta_i (M - \sum p_i \gamma_i) + \varepsilon_t \tag{15}$$

In the above equation, M, p and q are active, but γ_i and β_i passive parameters in the relation of the linear expenditure system and must be estimated with using econometric relationships. ε_i presents error term which added to the model in econometric estimation.

Because of the increasing degrees of freedom in econometric estimates as well as the shortening of the estimated equations, the eight groups of the Statistical Center of Iran in this study have been reduced to five groups.

Table 1

Results of the estimation of the marginal propensity to beyond subsistence expenses and minimum expenditure of urban households in Iran

Group of Goods	Coefficient	Prob	Coefficient	Prob	R^2
Housing	28648	0.00	0.248	0.00	0.98
Appliance	6865	0.00	0.063	0.00	0.99
Others	31124	0.00	0.496	0.00	0.98
Fruit and vegetables	7768	0.00	0.053	0.00	0.95
Grain,Suger, Protein	22874	0.00	0.135	0.00	0.96

The results show that the highest marginal propensity to beyond subsistence expenses (β_i) is related to other group, so that in urban areas in Iran, households after estimating their minimum subsistence, spend 49 percent of its expenditures to the other group.

After the other group, the housing is located in second row with a share of 0.25. Lowest share is belonging to the group of fruits and vegetables with final cost share of 0. 05.

So, any growth in revenue (expense) of urban household in Iran, the most pressure is on demand of housing and other group respectively.

With respect to the coefficients γ_i , the highest quantity of minimum subsistence is belonging to the other group and then allocated to housing. The lowest quantity of the minimum subsistence is belonging to the appliances group which is locate after the fruits and vegetables group.

Now with considering the obtained results in Table (1), can be calculated the income, price and cross elasticity, for housing demand goods. Calculation results in Table 2 have been reported.

Table 2

Elasticity of consumer demand for housing

	Price elasticity	Cross elasticity for Appliances	Cross elasticity for Other	Cross elasticity for Fruit	Cross elasticity for Grain	Income elasticity
Housing demand	-0.453	-0.024	-0.161	-0.043	-0.115	0.811

According to Table 2, it can be said that all cross elasticity are negative, which indicating that these items are supplement for the housing commodity in the consumer household budget.

Among them, the other group, with 0.16 had the greatest impact on housing demand so that a ten percent increase in the price of other group, 1.6 percent of the housing demand will be reduced. Also, the housing goods supply the demand low and have the negative prices elasticity.

Income elasticity of housing commodity is 0.81 it means with a ten percent increasing in expenditures of urban households, urban housing costs will increase 8.1 percent. This issue suggests with increasing the income (expenditure) of urban households will reduce budget share of housing goods.

5.2. Second approach: housing capital demand

In this section, with using Eviews 6 software presented platform for the investment housing demand function is estimated. It should be noted that the time series for variables which their characteristics (for example average and variance) are constant over the time, called stationary (Noferesti, 1999).

Usual econometric methods in the empirical work are based on stationary assumptions of studied variables, because the possibility of spurious estimation with non-stationary variable. Therefore, before using time series variables, it is necessary to ensure if it is stationary or non-stationary. Thus, first the stationary studies for used variables in the pattern. In this section the stationary variables, has been studied by the ADF test.

As the test results of Diky fuller shows, the generalized statistic modulus of Diky-Fuller, all variables of housing demand function in different levels, had been higher than their critical values, it can be concluded that all of them in first differential levels in the level of 10%, are stationary (first degree of difference).

The results of estimating the pattern for housing demand in Iran is indicate in the table (4). Because of the logarithmic model, the estimated coefficients represent the related variables elasticity compare to housing demand. The statistic value of R^2 is presented that the pattern value is satisfactory according to indicated data. Meanwhile, it also should be noted that the significant coefficients are within acceptable limits.

Table 3

Dicky-Fuller test results generalized for the variables of the demand function

Symbol	Variable	ADF statistic		Critical value at the level of 5%	Critical value at the level of 10%
AD	Housing demand	D(0)	-3.29	-3.71	-3.29
		D(1)	-4.88	-3.73	-3.30
CB	Bank credits	D(0)	-3.38	-3.71	-3.29
CO	Coin price index	D(0)	-3.62	-3.71	-3.30
P	Housing price	D(0)	-1.51	-3.71	-3.29
		D(1)	-5.12	-3.73	-3.30
PI	Consumer goods index	D(0)	-1.25	-3.73	-3.30
		D(1)		-3.76	-3.32
TC	Household income	D(0)	-.004	-3.73	-3.30
		D(1)		-3.76	-3.32
		D(2)	-3.79	-3.79	-3.33

Table 4

Results of estimating housing demand in Iran (ln*AD* as a dependent variable)

Explanatory variables	Coefficients	t-statistic	Prob
C	15.4200	56.16	0.0000
lnCb	0.0360	2.24	0.0551
lnCo(-1)	0.1368	8.60	0.0000
D(lnP)	0.1398	3.04	0.0150
D(lnPi)	-0.8800	-5.54	0.0000
D(D(lnTc))	0.4900	2.76	0.0280
MA(1)	-0.9800	-1635.00	0.0000
R^2	0.9859		
F	164.7700		0.0000
DW	2.0820		

As it can be seen from the statistical point, elasticity of banking facilities is 0.036 and considering that it is less than one, it indicates that drastic changes in bank loans, on housing demand do not lead to a high sensitivity which is not compatible with the available realities inside the country. The reason of the above noncompliance can be searched in other factors, such as administrative and organizational restrictions which are neutralized the sensitive effect of housing demand function towards credits.

Also, the housing commodity is considered as an essential commodity from income aspect which is aligned with the current realities of Iran. But there is an interesting point about the housing price elasticity mark which is positive. Analyzing of this situation must be

searched according to the specific conditions of the country in the years after the war and appearing the inflation during the war and after that due to development programs; which provide different responses with economic rules for the housing market. Based on the results of the estimated price elasticity which obtained 0.14, it can be said housing is a Giffen goods in Iran. Initial conclusion is due to such perception, but the income elasticity of housing does not show it Inferior and housing is considered an essential commodity in terms of revenue. Thus it cannot be concluded that housing is a Giffen goods but it can be said that housing was in demand at any price which indicates that there is pressure of demand potentially for housing in recent years. Also, expectation prices and its increase from the applicant's viewpoint can be considered as another reason of the demand price elasticity.

However, it should be noted that due to the investment feature of this goods, housing is considered as an asset worth preserving. Being positive of the price elasticity of coin, is a proof of being weak substitutes of these two goods just with the mentioned reason. According to the above estimates, increasing of one percent in the price of coin is lead to 0/14 percent increasing in housing demand[9]. It should be noted that residual tests, is indicating the existence of Autocorrelation between disruption components. For this purpose, firstly after studying the correlation functions of the residuals amount, it can be seen that the model is MA(1) which correlation resolved after added up it to the model.

6. Conclusions

In recent years, extensive studies have been done on how to determine housing demand. In these studies, within the frame of different patterns, tried to answer questions, such as is housing demand determined by Macro economic variables? Or is there a strong relationship between the real variables of the economy and housing demand? In this regard, we wanted to measure the effect of recognized economic elements on housing demand and present some criteria for responding to the raised questions about housing. Accordingly, from two aspects was investigated to the demand of this goods and demand of this goods in consumer aspect and investment aspect.

In the first approach, consumer demand for housing in the household budget was studied systematically based on the linear expenses system. The results indicated that this goods in household consumer budget has a special place and among other consumer goods, other group, has the most influence by its consumer demand.

In the second approach, the elements such as income, bank facilities, housing prices and the price of other consumer goods were chosen for this issue and the effect of each of them were evaluated in investment housing demand separately.

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[9] It should be noted coin prices index has been considered with a lag period of time which the reason of it can be found in factors such as lack of information on market and decisions opportunities for the applicants.

In estimating the model, what is the mostly observed was coefficient elasticity of housing price so that the sensitivity of housing demand compared to its price was obtained +0.14.

This indicates this fact that housing demand towards the increasing the prices do not react negatively, and this goods is in demand at any cost due to population pressure. The other reason for being positive of the price elasticity of demand can be considered in expected prices and its increasing from the viewpoints of applicants and lack of substitute goods in terms of application. From this issue it can be concluded that implementation of policies such as tax policies by authorities or government agencies lead to indicate some problems such as inflation and increasing prices in this sector and because of the lack of the price sensitivity of this goods, all its pressure is applied to the final applicant sector for this good.

The other important point of this research was the great impact of the consumer price index variable in explaining the behavior of housing demand so that the elasticity of housing demand was obtained -0.88 with compare to this index.

This indicates the high impact of the prices index or the inflation on housing demand in Iran and states this fact that increasing the prices level or the inflation, reduce the savings and investment power of households and consequently, the housing demand will decrease as a capital accumulation in long-term. Other findings of this study is the role and effect of the macro-economic variables such as household income , the gold price index, the amount of bank credits and the housing price index on behavior of the effective demand for housing in Iran.

Moreover, it was found that some factors such as the gold price index and the consumer goods price index has considerable power to explain the behavior of housing demand in Iran.

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