

Analysis the Effects of Macroeconomic Factors on the Housing Accessibility Index in Urban Areas of Iran: Emphasizing the Role of Government

Izadkhasti, H.^{1*}, Arabmazar, A.², Ahmadi, Kh.³

Abstract

From the microeconomic perspective, housing is a commodity with consumption and capital use and is a special commodity with properties such as heterogeneity, non-substitution and immobility and as consumer goods has the largest share in the household's basket. On the other hand, housing as a commodity, can absorb a large part of the capital and liquidity of the society and lead to an increase in demand for speculation in the housing market. Formation of demand for housing capital with incentive for speculation, the interactions of this market with alternative markets and limited land resources has led to higher land prices and housing and a decline in household accessibility index. Therefore, imposing a tax on demand for housing can reduce the demand for housing and, consequently, the decline in housing prices. Ultimately, this will increase the financial strength of the household to buy housing with incentives to consume. In this regard, the purpose of this study is to investigate the effects of macroeconomic factors on the housing accessibility index in urban areas, using the dynamic panel data model over a period (2006-2016). The results indicate that the facility to purchase housing has led to a reduction in household accessibility index and increasing household access to house. Also, the tax policy applied in the housing sector has increased household accessibility index through controlling speculative demand for housing. In addition, land leverage, the price of housing replacement assets, inflation rate, employment rate, and marriage rate have been other factors affecting on household accessibility index.

Keywords: Housing market volatility, Monetary and fiscal policies, Household accessibility index, Dynamic panel data

JEL Classification: R30, R38, C22, E62.

1. Introduction

Housing is one of the natural and basic human needs, especially today. With the expansion of cities and increased urbanization, housing has become the main concern of the inhabitants in big cities. On the other hand, the increasing rise of migration and urbanization as the result of industrialization and the reduction of household density in residential units has led to an increasing demand for urban housing. Accordingly, from this perspective, housing is a commodity with consumption and capital use. Housing as a consumer good has the largest share

in the households' expenses and its share in the consumption expenses of households varies according to the different classes in the society. According to the Central Bank data of 1395, the average household consumption expense was 35.5 percent. On the other hand, housing as a commodity can attract a large part of the capital and liquidity in the community leading to an increase in demand for speculation in the housing market. Therefore, imposing a tax on demand for housing can reduce the demand for housing and, consequently, reduce housing prices.

This will ultimately increase the household's financial strength for buying consumer-oriented housing. From a general perspective, housing also has the largest share of investment among all sectors of the economy and in all developed societies. Investments in the housing sector typically comprise 2 to 8 percent of the gross national product and 10- 30 percent of the total world's fixed capital formation (Ghaderi et al., 2011, p. 48). In addition, the housing sector is ranked fourth in direct employment after public services, government, agriculture and non governmental buildings, and in terms of indirect employment, second only to non-residential buildings. Currently, for every 57 square meters of residential infrastructure, one person is directly employed, and consequently 0.24 indirect employment is created. The share of housing sector in the recent years has always been between 11 and 13 percent (Morovate and Bahrami, 2013). Therefore, many decisions at the macroeconomic level can affect the indicators in the housing sector. Also, developments in the housing sector will also have a major impact on the economy.

The purpose of this study was to analyze the macro factors affecting the household availability index in urban areas using the *generalized method of moments* Model (GMM) over a specific period of time (2006-2016). The present study uses the household accessibility index of urban housing and specifies a relevant econometric model to investigate the macroeconomic factors affecting it in Iran's provinces with a view to the role of the state.

2. Background

One of the important issues in people's investment is how resources are allocated between different assets. Based on the Asset Basket Theory, it is better for individuals to invest in different assets to put their investment risk and returns in a good position. Housing prices are affected by demand and supply factors. Dipasquale and Wheaton (1992) presented a four-dimensional model for explaining long-term pricing. The theoretical basis of this model is the utility and budget constraints of the household. The household expenses consist of housing and a combination of other consumer goods. Households seek to maximize the appropriateness of housing and other commodities according to the budget. In Fig.1, the four-dimensional model of the housing market is presented:

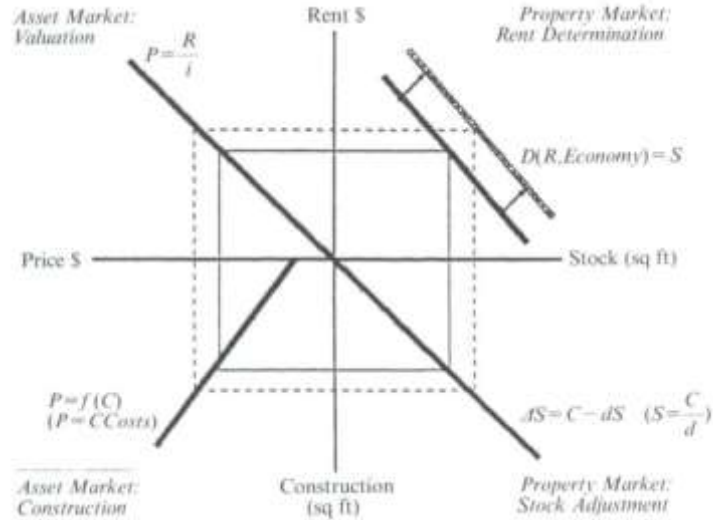


Fig.1: Four-dimensional Model

The first part of the four-dimensional model presented in Fig.1, shows the demand curve for rental housing, which is equal to the stock of residential units. In the second part, the relationship between price and rent is shown. Thus, with the increase in rental rates in the second part, housing prices also rise. The tax on the return on residential capital causes a change in the rate of investment causing a change in the price of housing and the slope of this curve. The third section shows the supply of new housing, indicating the dependence of housing construction on the producing units. If the supply of the producing units is non elasticible, the curve will become more horizontal and increased cost of the production will move the curve to the left and the outer side. The fourth part, finally, shows the balance of housing inventory in the long run. Accordingly, housing stock depends on the level of new constructions and the rate of depreciation of residential capital.

3. Method

The mathematical model will be analyzed based on the theoretical foundations presented by Dipasquale and Wheaton (1992) and in the framework of the models presented by Turnovsky and Okuyama (1994) and Andrew and Meen (1998), the. The utility of the representative household is assumed to represent the function of housing services and other consumer goods (C). Thus, the social welfare function is expressed as the following equation (1):

$$W = \int_0^{\infty} e^{-\rho t} U(C(t), H(t)) dt \tag{1}$$

Where H represents the housing inventory, C denotes other consumer goods and ρ is time preferences. The family budget constraints are also defined in the form of equations (2) to (4):

$$P_h(t) \cdot H(t) + S(t) + P_c(t) \cdot C(t) = (1-\theta) \cdot \omega(t) + (1-\theta) \cdot i(t) \cdot A(t) \quad (2)$$

$$\dot{H}(t) = X(t) - \delta H(t) \quad (3)$$

$$\dot{A}(t) = S(t) - \pi A(t) \quad (4)$$

By maximizing the utility of the representative household in equation (1) subject to the constraints (2) to (4), and according to the first order (FOC) and second-order (SOC) conditions, the ratio of marginal utility of housing services to marginal utility of consumer goods will be equal to the relative price of them. Finally, the housing price equation is obtained in the form of (5):

$$P(t) = R_h(t) / [(1-\theta)i(t) - \pi + \delta - \dot{P}/P(t)] \quad (5)$$

Based on the analyses, the confirmed model of the household availability index is as follows:

$$Pe_{it} = \alpha + \beta_1 Pe_{it-1} + \beta_2 Employment_{it} + \beta_3 Rwedding_{it} + \beta_4 Rland_{it} + \beta_5 Inflation_{it} + \beta_6 Rlicenses_{it-2} + \beta_7 Rcredit_{it} + \beta_8 Rgold_{it} + \varepsilon_{it} \quad (6)$$

Where, pe represents the index of urban housing accessibility index (the average ratio of the residential unit of 75 meters to the average annual household income), $Employment_{it}$ denotes employment rate, $Rwedding$ is the marriage growth rate, $Rland$ indicates real growth rate of residential land, $Inflation$ is the inflation rate, $Rlicenss$ represents growth rate of construction permits issued, $Rcredit$ is real growth rate of the housing bank facility, and, finally, $Rgold$ denotes growth rate of the coin price of the old plan in province.

4. Analysis of results

The results of the estimated models show that a significant part of the housing accessibility index of the urban household in the present time was influenced by its value in the previous period. The estimated coefficient of land price growth rate was significant at 95% level of significance. Accordingly, rising land prices, as the most important inputs in house construction, have the largest share in the cost of house constructions and has led to a rise in house prices, a reduction in the power of housing ownership and an increase in the waiting period for buying a house in the urban household. This result is consistent with the findings of Wen and Goodman (2013).

5. Effective literature

Tupenaite et al. (2017) have studied the factors influencing housing market fluctuations using the Analytical Hierarchy Process (AHP) process during the time period 2005-2015 in Lithuania. The results have shown that a significant contribution to the housing market fluctuations has been affected by interest rates and loans granted to the housing sector.

Yiqi (2017) investigated the effect of oil price on real estate prices using the least squares method and seasonal data (1991-1992) in Norway and its different regions. The results indicated that much of the housing price changes are explained by the variables of captive income, population, interest rate, unemployment rate, construction costs and oil prices. In this study, oil prices had a direct and positive impact on housing prices.

Chen (2017) investigated the impact of real estate transfer tax on housing price volatility using the least squares method and seasonal data in the time period 1975-2012 in 14 different US states. The results of parametric and non-parametric tests showed that in states where asset transfer tax were applied, less volatility was observed in housing prices and housing prices were more stable.

6. Policy suggestions

In order to reduce the cost of land in line with reducing the cost per meter of residential unit, there is a need for short-term and long-term planning. For instance, taxing on demand speculation for housing, as a way of preventing an increase in housing prices, would increase the housing ownership of urban households.

References

- Andrew, M., & Meen, G. (1998). *Modelling regional house prices: a review of the literature*. Report Prepared for the Department of the Environment, Transport and the Regions, Centre for Spatial and Real Estate Economics, University of Reading.
- Chen, H. (2017). "Real Estate Transfer Taxes and Housing Price Volatility in the United States". *International Real Estate Review*, 20(2), 207-219.
- Dipasquale, D., & Wheaton, W. C. (1992). "The markets for real estate assets and space: a conceptual framework". *Real Estate Economics*, 20(2), 181-198.
- Ghaderi, J., Eslamolayian, K., and Ojje Mehr, S. (2011). "Factors Affecting Housing Investment in Iran, Quarterly Journal of Economic Research (Sustainable Growth and Development)", 11(3), 47-70. (In Persian).
- Morovat, H. & Bahrami, J. (2013). "A Simple Model for the Speculative Bubble of Tehran's Housing Market", *Journal of Economic Modeling Research*, 7(1), 68-51. (In Persian).
- Tupenaite, L., Kanapeckiene, L., & Naimaviciene, J. (2017). "Determinants of Housing Market Fluctuations: Case Study of Lithuania". *Procedia Engineering*, 172, 1169-1175.
- Turnovsky, S. J., & Okuyama, T. (1994). "Taxes, housing, and capital accumulation in a two-sector growing economy". *Journal of Public Economics*, 53(2), 245-267.

Wen, H., & Goodman, A. C. (2013). "Relationship between urban land price and housing price: Evidence from 21 provincial capitals in China". *Habitat International*, 40, 9-17.

Yiqi, Y. (2017). The effect of oil prices on housing prices in the Norwegian market
Master's thesis.