Introduction

Housing has certain features that make this product different from other consumer goods and capital. It features the same dimensional characteristics of both consumer goods and housing, it is also considered as the assets. Because of is a durable asset and it has low depreciation. So it is affected by economic shocks and since it forms a large part of gross capital of a country it causes shock to economy.

Economic shocks causing boom and bust cycles in housing and housing characteristics of the asset will cause fluctuations in the sector. Since the housing shapes large amounts of the society assets with its volatility can make irreparable damage to the economy and may cause financial and economic crises. Prominent example is the 2008 financial crisis, which increased the housing demand and prices and after outnumbering supply after a period of falling prices and caused the loss of the community's assets. Uninterrupted supply of housing is another characteristic of the housing which formed the recent financial crisis. Fluctuation in the price of housing and land has a direct impact on macroeconomic activity, because it affects the consumption and investment simultaneously.

Housing developments should be of interest to policy makers at the central bank. This is because when the price drops down spraying the housing bubble, households face debt burden and savings reduces, consumption and investment are reduced, and banks liquidity contracts. In these circumstances, banks are faced with the debasement of collateral, which will lead to lower prices and profits decrease. As a result, the number of bankruptcies will increase, and banks will face a financial crisis.

The other importance of housing is related with inflation. Some economists believe that inflation in asset prices should be used. Adjustment supporters of inflation are favor of Log in asset prices in inflation index, because an asset price reflects not only inflation but also can show future inflation trends. By increasing the money supply, asset prices will increase and affect other goods. Housing component of the weight of the commodity price index is more than 25%.

At next paper's theoretical model and methodology is presented. In the third section the theoretical literature relating to the housing market cycles is discussed while reviewing internal and external studies. The stagnation of the housing market boom is checked and statistics is investigated. The final section analyzes the findings and recommendations are presented.

Materials and methods

In this paper, a Markov model is used to describe the sampling interval. These models are patterns that are typical of all the variables on the Vector interrupts the system considers other variables and estimates two coefficients. Hamilton (1989) first applied this model to the U.S. business cycle and demonstrated that this model has the ability to show some properties of the Business Cycle. Evans and Lewis (1995) long-term relationship with the Fisher-Markov process for periodic testing had inflation and concluded that this model has the ability to take advantage of the features compared with linear models of time series. Vargas (2009) Cyclic Vector Auto Regression Markov model and uses it to help with the financial crisis pre-warning system design. They concluded that this model can increase the likelihood of financial crises in Asia through the crisis well before the occurrence of the predictions.

The Markov model described the following equation to be separated between the two conditions. If the variable is replaced by a vector of variables is used to model the Vector. s_t This model is a random variable that varies as a result of structural changes. . s_t is assumed to be a value of 1 or 2. For example, during the recession, the number 1 and number 2 is on the boom.

$$y_t = \alpha_{s_t} + \sum_{i=1}^{\rho} \varphi_{i,s_t} y_{t-i} + \varepsilon_{s_t} \qquad (1)$$

Which y_t is the dependent variable, ،$\alpha_{s_t}$and φ_{i,s_t} intercept and coefficient, respectively. Imagine s_t for periods ،t_0 ... 1, 2, is the time and i (t_0+1) will change condition, So for the time of (t_0+0), (t_0+1), ... , $Ts_t$is equal to j. With these assumptions, the variables can be treated s_t as a dummy variable. But because of the

visibility of the variables$_t$, it is not easy approached. Since it is not possible to define the visible s_t , which the change occurs from 1 to 2. It is easiest using the Markov chain, which is defined as a probability matrix for s_t variable is constant over time.

$$pr(s_t = j|s_t :$$

Markov state transition matrix has the form:

$$\mathrm{P} = \begin{pmatrix} p_{11} & p_2 \\ p_{12} & p_2 \end{pmatrix}$$

One of the main characteristics of the matrix of the Markov model alternative explanation is that in periods of recession and boom periods with probability suggests.

By changing the matrix model complexity will be added over time, in this research, Markov chains are assumed to be constant over time. Equation (1), no explanatory variable, the first time by Lindgren (1978) and Baum (1980) were analyzed. The presence of a continuous variable by Porits (1982) was introduced.

y_tVariable probability density function is:

$$f(y_t|s_t) = \frac{1}{\sqrt{2\pi\sigma_{s_t}{}^2}} \exp\left(-\frac{y_t - \mu_{s_t}}{2\sigma_{s_t}{}^2}\right) \qquad (2)$$

Which μ_{s_t} is s_t state variables. If you knew how long s_t Simulation dummy variable changes could deal with it. To zero in the first position and the second number is 1, the joint probability density function of the state should α_1 ،α_2 ،φ_1 ،φ_2 ،$\sigma_1{}^2$ و $\sigma_2{}^2$ take the derivative. But it can not be recognized as emphasized s_t period $t \in [1،2 \ldots T]$ How changes. Therefore, the following process should be over.

$$f(y_t،s_t|y_{t-1})$$

$$f(y_t|y_{t-1}) = \sum_{s_t=0}^{1} f(y_t|s_t،y_{t-1})\, pr(s_t|y_{t-1}) \qquad (3)$$

$$= \frac{1}{\sqrt{2\pi\sigma_{0_t}{}^2}} \mathrm{ex}$$

$$+ \frac{1}{\sqrt{2\pi\sigma_{1_t}{}^2}} \mathrm{ex}$$

Log-likelihood function can be written in the following steps:

$$LnL = \sum_1^t Ln\{ \sum_{s_t=0}^1 f(y_t | s_t ‘ y_{t-1})\, pr(s_t | y_{t-1})\} \qquad (4)$$

It is the weighted average of the conditional probability density function. To obtain the maximum likelihood estimators of the log-likelihood function of α_1 ‘α_2 ‘φ_1 ‘φ_2 ‘ $\sigma_1{}^2$ ‘$\sigma_2{}^2$ ‘p_1 and p_2 are derived.

Finding and results

In this section the results of estimating three equations housing private investment, and liquidity-adjusted GDP price index using the Vector periodic Markov model is presented in detail. The data used in this article, have been extracted from the site of the Central Bank for the period 1353 to 1386, the data limitation prevents the development of the. Model is estimated using MATLAB software.

Total of 28 parameters are estimated: the standard deviation of 3 equations in 4 chance of passing the relevant parameters and 18 parameters associated with the interruption of model coefficients. Here, a Markov model to explain the periodic interrupt vector (ρ = 1) and status (s_t = 1,2) are the estimated coefficients and standard deviations.

Standard deviations of the equations for different conditions are presented in Table 1. Standard deviation of private housing investment equation (the first equation) shows that the volatility of volatility in the second position is 1. The same criteria can be used as a scaling parameter of the recession and the boom in the housing sector. Gross domestic product Standard deviation of the equation, has a reverse results from the first equation that shows asymmetry in periods of recession and economic boom in the housing sector. Conditional standard deviation of the equation in the attached chart can be viewed in three different periods.

Standard deviation of the wastes	State	Equation
0.00042	State1	**First:Investment private housing (i)**
0.00050	State2	
0.00038	State3	**Second: Gross Domestic Production (y)**
0.00030	State4	
0.00250	State5	**Third, the liquidity to price index (m)**
0.00303	State6	

TABLE 1. State of standard deviation of the equations in different situations, Reference: results of the study.

The status of transition probabilities, in the state transition matrix, p, and show that the probability of remaining in state 1 is equal to 95% chance of passing the condition 1 to condition 2 is equal to 5%. The second column of the matrix represents the likelihood of remaining in state 2 and state 2 to state 1 transition probability is 27% and 73%, respectively.

$$\widehat{\mathrm{P}} = \begin{pmatrix} 0.95 & 0.27 \\ 0.05 & 0.73 \end{pmatrix}$$

Smoothed probabilities of recession and boom conditions are in the Appendix. The results show the model years 1354 to 1356 and the years 1364 to 1367 is known as the recession period.

The smoothed probability of recession has increased 83 years after the housing market recession is meant to move, however, due to the unavailability of data for 86 years after an unprecedented downturn in the housing 87 and 88 years has been away from the eye pattern. Pattern recognition of mild depression, 82 to 84 are unsuccessful. Expected period of boom and recession, is calculated with the state transition probability matrix. The expected duration of recession 76/3 years is calculated, which is expected to be out after about 4 years of the housing slump.

Coefficients of the continuous variables are presented in Table 3. The coefficient on housing investment equation, in the coefficient associated with the interrupt status of 1 (boom) is significant. The coefficient sign change interval first equation shows that private investment in the housing, boom and bust cycles in the housing sector is relatively stable. In a way that reduced funding during a recession is to increase investment in the next period. Coefficients of the other variables in the first equation are meaningless.

Table 2. With variable coefficients of the Vector Interrupt periodic Markov model (numbers in parentheses indicate the significance level)

(m) Continuous variable	**(y) Continuous variable**	**(i) Continuous variable**		**Equation**
−۰/17 (۰/8۰)	−۰/24 (۰/27)	۰/9(۰/۰۰)	Position 1	**Private investment in housing(i)**
−۰/17 (۰/43)	−۰/۰5 (۰/27)	−۰/19 (۰/45)	Position 2	
−۰/21 (۰/3۰)	۰/75 (۰/۰۱)	۰/11 (۰/42)	Position 1	**Gross domestic product(y)**
۰/5۰ (۰/71)	۰/11 (۰/۷۶)	−۰/75 (۰/1۰)	Position 2	
−۰/29 (۰/26)	1/27 (۰/۰۲)	۰/۰۰ (1/۰۰)	Position 1	**Liquidity price index (m)**
−۰/15 (۰/69)	۰/55 (۰/۵۷)	−2/42 (۰/1۰)	Position 2	

Coefficients in the second equation (y) Gross domestic product gap and the liquidity boom, and continuous variables are significant private investment in the housing period of recession. Coefficient of private investment in the housing, the second equation (75/0-) means a negative effect on investment in the housing sector during

the recession. This result is consistent with the result in Table 1 asymmetry in periods of recession and the housing sector and the economy was booming.

In the third equation coefficients (m) with the timeout variable rate Gross domestic product during the coefficient of private investment in the housing boom and the depression is significant. No statistically insignificant coefficients of the third equation of the macroeconomic status of in the housing sector, including monetary policy, the central bank is the Business Cycle. While the importance of this is emphasized in the economic literature

Conclusions

The findings of this paper can be summarized in the following:

- Volatility of investment in the housing sector is an asymmetric relation with economic fluctuations. This means that during the housing boom has coincided with a period of economic stagnation. Similarly, periods of recession and housing are associated with periods of economic prosperity. One reason for this phenomenon, housing investment is being deferred so that in the transfer of the recession completed investment boom during the remaining half is better than ignoring the completion of this investment during the recession.

- Housing sector of in the economy rather than suffering from the recession has been relatively stable, likely to remain so in the boom period of transition to a recession.

- Periods of economic stability in the housing sector average over longer periods of instability, so that the evidence indicates that, on average, five times during the boom period of recession.

- Central bank policy should pay more attention to market their assets, both the supply side and in the demand side is. As it is said, because the housing sector has a significant impact on the economy and monetary policy, regardless of the status of the housing market can be neutralized.