The Relationship between Bank Facilities and Housing Prices in Iran

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ABSTRACT

Background: The monetary sector has always been regarded by governments as one of the key factors contributing to economic growth and top monetary officials can take giant steps in reaching economic growth by adopting proper monetary policies. Among various forms of properties, housing is considered as the most important property as well as a vital requirement of the household. Objective: Therefore, this study aims at investigating the relationships between bank facilities and the factors influencing housing prices. Method: It was conducted using seasonal data for the period of 1991-2010, using the ARDL approach. Results: The findings indicated that economic growth rate, oil price, liquidity, and inflation exert positive and significant influences on housing prices. As any of these items increases in price, housing prices will also increase. Moreover, interest rate, the amount of bank facilities granted for constructing homes and the stock price index have a negative significant influence on housing prices. In other words, increase in any of these items leads to a housing price fall.

INTRODUCTION

The monetary sector has always been regarded by governments as one of the key factors contributing to economic growth and the top monetary officials can take giant steps in reaching economic growth by adopting proper monetary policies (Poole, 1972). A majority of economists have a general consensus that short-term monetary policies can affect production and inflation; however, they disagree on the effective channels of monetary policies and their importance against each other (Hoffman, 2003). Monetary policies affect GDP and inflation through various channels including interest rate, exchange rate, property price, and credits. Bank facilities serve as an effective tool for triggering economic growth, especially during the early phases of development (Lopez, 2005). Through their credit and financial policies, banks are able to trigger economic growth or economic recession; or they can contribute to growth by granting loans (Ja’afari Samimi et.al, 2007). They can facilitate and expand exports, increase GDP as well as industrial and agricultural growth, domestic and foreign commerce, transportation, imports, etc., by granting credits and can motivate people to save money. Granting facilities is a key feature of every bank (Poole, 1972). Through credit operations, banks facilitate transferring resources from those who are not willing or able to directly participate in economic activities to those who need financial resources to perform their financial actions, hence facilitating economic transactions, investment, and production (Hofmann, 2003).

The main properties held by the Iranian households include various forms of coins and gold, various forms of foreign exchange (mainly Dollar and Euro), stocks, and homes (Gerlach & Peng, 2005). Housing serves as both a shelter and a property for the household and is highly significant in the property basket of the household. Over the past few years, housing prices have undergone changes and fluctuations (De Lucia, 2007). Therefore, identifying and investigating factors affecting housing prices help adopt policies to control this form of property. On the other hand, governments attempt to find solutions for controlling the price of this property by making policies and managing planning. Thus, the present study can be helpful for statesmen, officials, investors as well as ordinary people (Eschkr, 2005).

This study was conducted for Iran, using seasonal data for the period 1991-2010. In the following section, a literature review is provided. Then, the theoretical framework and the model are presented and after that, the
findings are analyzed. In the final section, the conclusion and implications are provided (Jaafari Samimi et al., 2007).

**Theoretical framework:**

There are three groups of property prices in the literature of monetary mechanisms providing monetary policy with key channels to better influence the economy. They include: 1- prices in the stock market, 2- real estate prices and 3- exchange rates. Since the topic of this study deals with the second group, we investigate it here.

**Channels of real estate prices:**

The prices of real estate's can influence the total demand in three ways: 1- directly influencing investments in the house market, 2- the household holdings, and 3- bank balance sheets.

The expansionary monetary policy decreases interest rates and housing finances, and increases housing prices. Realizing that house prices are greater than their constructions costs, the house construction companies find constructing houses beneficial, leading to increased construction and total demands.

House prices are a key element in the household wealth which influence the household costs. Therefore, by increasing the house prices, the monetary policy increases the household wealth, eventually increasing consumer costs and the total demand.

According to the monetary mechanism’s credit approach, banks play a crucial role in the financial system. If the price of immovable properties increases in the expansionary monetary policy, the loss of bank loans will decrease and the bank property will increase since the immovable properties are held by the banks as a pledge and as the immovable properties increase in price, the bank capital also increases. A greater bank capital allows the banks to grant more loans, eventually leading to increased investments and total demands. When the situation is reversed, this mechanism of transition is referred to as “the capital crunch”, which was the key source of the recession in Japan, 1990.

Economic development is associated with great fluctuations leaving the economy at the peak or in the depth. Various factors influence house prices which can be generally categorized as extrinsic and intrinsic factors. The intrinsic factors involve those inside the house market changing the quality and quantity of demand and supply. The extrinsic factors include those generated by financial fluctuations such as improper monetary policies.

The GDP and its components are crucial items in the national accounts which are adopted by economic policy makers and planners as a suitable instrument for controlling and detecting economic changes. The fluctuations in the GDP indicate macroeconomic risks which can affect the principal risk. Any increases in the GDP lead to a rise in the actual prices of houses. Any growth in the house market is associated with a growth in the GDP and any falls in the house prices are linked with falls in the GDP. The GDP indirectly influences the housing market variables through changing the mediatory economic variables (employment, price levels, disposable income, etc.). Theoretically speaking, the increased income resulting from expansionary monetary policies affects supply and demand in the house market, which in turn affects the balance price of houses. Also, these economic factors might affect a number of population variables which tend to influence houses which are being constructed. Furthermore, policy makers might affect the GDP through increasing or decreasing the government’s cost by transitional payments or purchasing services. Assuming that the tax rates are fixed, increased (decreased) government costs will lead to increased (decreased) GDP.

An increase in the house price could be linked with high liquidity in the financial system. Liquidity is the sum of money and pseudo- money. A factor which affects house prices is rises in the costs leading in house price bubbles and financial instability. In this case, flowing an amount of money proper to the actual needs of the society, and having an optimal amount of liquidity are crucial. The most significant theory depicting the relationship between liquidity and property prices and especially property price bubbles is the monetarist theory.

Initially, the vast financial resources flow to the housing sector in a businesslike way, due to a number of reasons typically including the growth of liquidity. In the absence of systematic patterns and channels, the flow of liquidity takes an invasive form. Since trading businesses do not follow the law of diminishing, the profit in the housing sector remains high until excessive supply in this sector changes the expectations toward profitability in this sector. Financial resources are withdrawn from the housing sector, leaving this sector and eventually the economy, in a recession. Therefore, trading activities in the house sector leads to increases in its price, which in turn results in heightened expectations and eventually in increased prices. This trend continues until, due to a lack of not trading demands and excessive supplies, expectations suddenly reverse and the house sector goes into a recession. This sector is the most attached sector to the economic sectors; therefore, with any recession in the house sector, all parts of the economy will experience crisis.

Moreover, expansionary or contractionary monetary policies can change the variables in the house market by affecting the general level of the prices. A heightened general level of the prices has a number of various consequences. As a negative consequence, it leads to a lowered purchasing power. As a positive consequence, it
leads households to construct and buy more houses in order to preserve the value of their properties as they see prices are rising, unless the risk and return of assets in other economic activities are favorable. However, the impact of increased general level of prices depends on the type of inflation over the years. A sudden increase in the general level of prices and costs of constructing houses leads to lowered investments in the housing sector and heightened prices, but a long and chronic inflation mitigates this effect.

**Channels of impact of monetary policy on the house market variables:**

Theoretically, monetary policy affects demand for houses. Like other properties, house prices are sensitive to return of other assets such as bonds. If the return of bonds increases (interest rate increases), asset-holders change some part of their portfolio to bonds and avoid other assets including houses. It makes house prices fall until the returns of other assets become equal. Moreover, demands for houses are negatively correlated with interest rates since interest payments constitute a significant part of house purchasing costs. Also, the amount of money a person is willing and able to pay for housing is directly correlated with the initial interest payment. Households are limited to their current income for what they can borrow. Over time, as the real income increases and inflation reduces the real value of debts, the pressure of paying interest lessens. The current interest rate is a key factor determining housing prices. Another way in which monetary policy can reduce housing prices is through increasing the variable interest rates for houses which are sold to return the original interest rate is a key factor determining housing prices. Another way in which monetary policy can reduce housing prices is through increasing the variable interest rates for houses which are sold to return the original asset.

Mishkin (2007) describes the channel of other assets, based on the Q’ Tobin (1969) and Modigliani’s effect of wealth (1971). He believes that monetary policy can affect the actual part of the economy by influencing assets. When stock prices rise, Q’ Tobin increases and the capital price decreases, which leads to an increased demand for investment and eventually increased total production. The theory of Q’ Tobin could be adopted in both stock market and housing market. When the monetary officials increase interest rates through contractionary monetary policies and create limitations for house customers to receive bank loans, demands in the house market, and eventually the market value of houses, will decrease. Moreover, monetary policy affects the housing market and, as a result, the whole economic system through the following channels: directly influencing interest rate of the cost of using assets, the expectations of changes in the house prices in the future, indirectly influencing the consequences of the housing sector credits for the house demands. In the following part, we provide a brief description of these channels.

According to the neoclassic models, the cost of using assets is a key factor in creating demands for investing interest rates. The expansionary monetary policy increases investments by lowering interest rates. Also, when the contractionary monetary policies increase short-term interest rates, long-term interest rates also tend to rise since they rely on the forward short-term interest rates. With these increases, the cost of using assets increase and the demand for housing falls. A fall in demands leads to reduced house prices and house constructions. The channel of monetary policy transmission is one of the most important channels in the macroeconomic models. In Iran, due to dramatic forward changes in the housing prices, the influence of interest rate on house demands and investments in this sector is minor.

The actual forward rate of housing price rises provides another channel for the monetary policy to affect activities in the housing market. Changes in the expectations can significantly affect the cost of using assets and, as a result, house demands. When the contractionary monetary policy is enforced and the interest rate increases, house prices fall since house demands reduce through the mechanism of the cost of using assets. The expectations of enforcing a future contractionary monetary policy can reduce the actual forward increasing rate of house prices and increase the current cost of using assets, eventually leading in reduced house demands and constructions.

When households receive house loans, the loan is the indicator of two potential channels working through affecting demands. In the first channel, Poole (1972) and Kearl (1979) show that not only the real interest rate but also the nominal interest rate can affect house demands. Even if the real interest rate remains unaffected, it reduces the current cash flow (the difference between income and expenditure), which in turn reduces house demands since due to a higher forward inflation, the flow of interest payments is deviated toward the present. A reduces cash flow lowers the mortgage households can provide in return for loans. Therefore, the house they can afford will be smaller. In the neoclassic framework, only the long-term interest rate can affect house demands and it does not matter whether households can afford the fixed or variable amount of mortgage because the interest rate for the cost of using the asset is still a long term one since the variable interest rate is actually the average of the variable interest rate expectations during the possession of the house. The second channel indicates that if households can control the pressure of the loan, it is important that they have the variable rate of mortgage. In this case, variations in the short-term interest rates can affect house demands. If a large number of households purchase houses with the variable rate, increases in the short-term rates can significantly affect house demands even if the short-term rates are fixed or increase slightly. Since the variable mortgage rates tend to move along with short-term rates, monetary policy-makers use variable rates as a political instrument.
Therefore, in countries where more families use the variable mortgage rates, reactions to the changes in the monetary policy are more.

Oil price and oil income are closely correlated. Oil income is the product of oil price and oil exports. On the assumption that oil exports are fixed, oil income is affected by oil price. In order for oil exports to be fixed, it is required that the total production and domestic consumption be fixed, or production grows in line with growth in domestic consumption. Given these points, and assuming that oil exports are fixed, increases in oil price will have a number of significant consequences. First of all, it affects the power of purchasing houses. Since oil income constitutes a great proportion of the state income, which is considerable, rises in the oil price lead to an increased house purchasing power and vice versa.

Rises in the oil price can affect house prices through the following channels:

1- The production and exploitation stage: as oil prices increase, all institutions engaged in oil production and exploitation will experience increased income and profit, eventually increasing their house purchasing power.

2- Spending oil income: the government is the main recipient of the oil income. It is highly important how the increased income is distributed and who predominantly receives it since it affects the quality and quantity of house demands. Are price levels and the government’s costs affected by the oil prices? Suppose at the time of increased income, the government invests the extra income. In this case, all beneficiary people and institutions will experience an increased income, probably leading to their increased house demands. Changes in house prices rely on several factors, especially, whether increases in house prices are driven by the motivation to have more properties or a shelter. Or, what percentage of demands does this increase in demands constitutes and when does it happen? Therefore, the way the oil price is distributed among social classes is highly influential.

3- The effect of liquidity: rises in the oil price increase the monetary base, which is frequently experienced in Iran over the past few decades. The influence of liquidity on house prices and demands is generally wider than the first channel especially when the additional oil income is allocated to credits not normally granted to most social classes.

4- The Dutch Disease effect is the fourth channel through which the oil price affects the house prices. In economies like the Iranian economy in which natural resources such as oil play a crucial role, rises in the oil price result in rises in the value of the national currency, leading to a growth in exports and imports, which in turn reduces the prices of tradable goods and increases the prices of untradeable goods such as houses and estates.

5- This channel, which is linked to the previous one, influences the house prices through the cost of construction. Increased oil incomes spent on importing raw materials, construction materials, and production technology can result in lowered construction prices and, eventually, house prices. Nevertheless, this effect on the house market is often unnoticeable. If increased oil prices lead to increased imported construction materials, construction costs will grow. Generally, imported inputs have a small share in the whole housing costs. Most house economy models were developed after 1960. Initially, they focused on accounting for and determining the extent of housing investments. Afterwards, they shifted their focus to impulses of house prices based on the variations in the interest rate and the credits market. Then, most models investigated house demands and supplies.

The price growth of one of the properties can raise the demands for others due to the portfolio allocation strategy; it implies that most investors tend to keep a certain proportion of one property in their baskets. If the price of one property grows significantly compared to others, investors have to reallocate their portfolios; i.e. they have to sell those properties which have grown in price and purchase other properties. Therefore, price growth in one property’s market can lead to the expansion of other markets. When money supplies grow rapidly, households are not able to keep cash due to a lowered currency value; therefore, they try to invest their money in the housing sector to change cash into property. At the time of inflation, households try to change their cash properties into physical ones including houses so that they avoid the lowering of currency value. Still, they might turn to purchasing other forms of physical properties including gold coins. When making decisions on investments, households consider the relative return rate in various property markets. One alternative market which might be attractive for households to invest in is the stock market, which can protect households against the negative consequences of lowered currency value. Given these points, it seems that the stock price index can serve as the explanatory factor of fluctuations in the house prices. The real exchange rate and the real house prices are negatively correlated in the long run. The growth of the real value of Rial against Dollar leads to the flow of assets from the commercial sector to the non-commercial sector and eventually to lower house prices.

Methodology:
Model and estimation method:

The model adopted in the present study was developed according of the theoretical basis of the study and Liang and Cao’s study (2007).
Where, $LPH$ is the natural logarithm of, $LGDP$ is the natural logarithm of the GDP, $LIR$ is the natural logarithm of interest rate, $LVAM$ is the natural logarithm of house construction bank loans, $LOIL$ is the natural logarithm of oil income, $LPS$ is the natural logarithm of stock price, $LM$ is the natural logarithm of liquidity and $LCPI$ is the natural logarithm of price index.

The data used in this study were used as seasonal time series data from spring 1991 to winter 2010 and with the base price in 1997.

**The econometric method and Autoregressive Distributed Lag (ARDL):**

Adopting the traditional econometric approaches for experimental studies relies on the assumed stability of the variables. However, studies show that this assumption is wrong for most time series and a majority of them are unstable. This might contribute to false regressions and remove trust to the estimated coefficients. Therefore, based on the co-integration theory in modern econometrics, it is essential to adopt the time series which take stability and co-integration into account. In the Engel-Granger approach, the estimations in small samples are biased since the short-term dynamic reactions among the variables are not considered. Moreover, the limiting distribution of the least square estimators is not normal; therefore, conducting the test using the common statistics is not reliable. Furthermore, the Engel-Granger approach relies on the presumption of one co-integration vector; and when there are more than one co-integration vectors, using this method will be ineffective. In order to address these issues, Johansen (1989) and Johansen and Juselius (1990) proposed the maximum likelihood ratio for the co-integration test and extracting co-integration vectors. The Johansen-Juselius method cannot be helpful either since not all variables in the model might be equally stable. In the ARDL approach, optima pauses are selected for each variable, using the criteria including Schwartz-Bayesian, Akaik and Hannan-Quinn criteria this approach estimates the long-term and short-term relationships between the dependent variable and the explanatory variables of the model. Unlike the Engel-Granger approach, this method does not require equal degrees of co-integration among variables. It is still usable even if the variables are a combination of I(1) and I(0).

Generally speaking, a dynamic model is one in which variable pause inter like equation (2):

$$ Y_t = aX_t + bX_{t-1} + cY_{t-1} + u_t $$

(2)

To reduce the bias associated with coefficient estimations in small samples, it is recommended to use a model which assigns many pauses for the variables, like equation (3):

$$ \phi(L, P)Y_t = \sum_{i=1}^{k} b_i(L,q_i)X_{it} + c'w_t + u_t $$

(3)

In the above equations, $Y_t$ and $X_t$ are dependent and independent variables, respectively. $L$ is the pause operand and $W_t$ is a $S \times 1$ vector indicating the pre-determined variables including intercept, virtual variables, time trend, and other extrinsic variables. $P$ is the number of pauses used for the dependent variable and $q$ is the pauses used for the independent variables. The above model is an Autoregressive Distributive Lag (ARDL) in which:

$$ \phi(L, P) = 1 - \phi_1L - \phi_2L^2 - .... - \phi_pL^p $$

(4)

$$ b_i(L,q_i) = b_{i0} + b_{i1}L + .... + b_{iq_i}L^q_i \quad i = 1,2,...,k $$

(5)

The number of optimal pauses for each explanatory variable could be determined by one of these criteria: Akaike Information Criteria (AIC), Schartz-Bayesian Criateria (SBC), Hannan-Quinn Criteria (HQC), or the R-bar squared. Normally, in samples smaller than 100, the SBC is used, so that the freedom is not greatly lost. It economizes in assigning pauses, so the estimation will have a greater degree of freedom. In order to calculate the long-term coefficients, the dynamic model is used. The long-term coefficients for the variables $X$ are calculated through:
Through equation 6, it is possible to calculate the t statistic for the calculated long-term coefficient. In ARDL, long-term relationships can be estimated using a two-stage method described here. In the first stage, the existence of a long-term relationship between the variables is tested. Here, we can use two methods to make sure the identified long-term relationship is not false:

In the first method, after estimating the dynamic ARDL model, the following hypothesis is tested:

\[ H_0 : \sum \hat{\phi}_i - 1 = 0 \]
\[ H_1 : \sum \hat{\phi}_i - 1 < 0 \]  

(7)

The null hypothesis indicates the lack co-integration or long-term relationship. In order to perform the test proposed by Banerjee et al., we must deduct 1 from the sum of coefficients with the dependent variable pause and divide it by the sum of the coefficients’ standard deviations, yielding the t statistic.

\[ t = \frac{\sum \hat{\phi}_i - 1}{\sum S^2_i} \]  

(8)

If the absolute value of t statistic is greater than the one for critical values proposed by Banerjee et al at 95% confidence level, the null hypothesis is rejected and the long-term relationship is proved.

The second method proposed by Pesaran and Shin (1996) tests the existence of a long-term relationship between the variables by estimating the F statistic for testing the significance of paused variables in the error correction form.

In this part, the stability test is performed first because if a variable is I(2), the calculated F statistic is not trustable. The results of this test show that LGDP, LM, and LCPI are stable variables, indicating they are I(0). Also, LPH, LIR, LVAM, LOIL, LPS are stable in the first difference, so they are I(1).

According to the results of the stability test, and since the variables are not all stable in the location or I(0), the approach to be adopted is the ARDL. Normally, in annual data, the interval is one or two, and for data with greater frequencies (like seasonal or monthly ones) the interval could be longer, which is up to the researcher. After choosing the maximum interval, the optimal ones are identified by preferring the SBC over such criteria as the AIC, HQC, and R-bar squared. Normally, in samples smaller than 100, the SBC is preferred so that a greater degree of freedom is preserved. Since the SBC is greater in interval 2, it is chosen as the optimal maximum interval. In this stage, the maximum interval is set 2 and the Microfit 4.1 software estimates the model ARDL (2,0,0, 2,0,0,0,0) as the best model according to the SBC. The results summary is presented in table 1.

Table 1: Results of short-term coefficients of ARDL (2, 0, 0, 2,0,0,0,0)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Ratio</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPH(-1)</td>
<td>1/26</td>
<td>10/37</td>
<td>[0/000]</td>
</tr>
<tr>
<td>LPH(-2)</td>
<td>0/26</td>
<td>2/37</td>
<td>[0/020]</td>
</tr>
<tr>
<td>LGDP</td>
<td>0/13</td>
<td>2/11</td>
<td>[0/038]</td>
</tr>
<tr>
<td>LIR</td>
<td>-0/13</td>
<td>-1/46</td>
<td>[0/048]</td>
</tr>
<tr>
<td>LVAM</td>
<td>-0/11</td>
<td>-0/28</td>
<td>[0/777]</td>
</tr>
<tr>
<td>LVAM(-1)</td>
<td>-0/12</td>
<td>-2/66</td>
<td>[0/010]</td>
</tr>
<tr>
<td>LVAM(-2)</td>
<td>-0/11</td>
<td>-2/81</td>
<td>[0/006]</td>
</tr>
<tr>
<td>LOIL</td>
<td>0/09</td>
<td>2/03</td>
<td>[0/046]</td>
</tr>
<tr>
<td>LPS</td>
<td>-0/15</td>
<td>1/07</td>
<td>[0/038]</td>
</tr>
<tr>
<td>LM</td>
<td>0/97</td>
<td>0/078</td>
<td>[0/036]</td>
</tr>
<tr>
<td>LCPI</td>
<td>0/14</td>
<td>0/18</td>
<td>[0/045]</td>
</tr>
<tr>
<td>C</td>
<td>-0/41</td>
<td>-1/10</td>
<td>[0/274]</td>
</tr>
</tbody>
</table>

R-Squared=0.9976,R-Bar-Squared=0.9972,
F-Stat=25192/2 [0/000] DW-Statistic = 2/01

Source: Findings of the study
LPH(-1) and LPH(-2) are positively marked and statistically significant. In other words, house prices in previous years affect the current house prices. LGDP is statistically significant, indicating the positive influence of the GDP on house prices in Iran. LIR is significant and shows that interest rate negatively influence house prices. LVAM is negative but insignificant. This implies that bank loans granted for house construction negatively influence house prices. LVAM(-1) is significant and shows that bank loans negatively and significantly influence house prices in the following year. LVAM (-2) is significant and shows that bank loans negatively and significantly influence house prices in the second following year. LOIL is significant, showing that oil incomes positively influence house prices. LPS is statistically significant, showing the negative positively influences house prices. LCPI is significant and reveals that the price index positively influences house prices.

In order for the results to be trusted, the classic hypotheses are tested. The test is presented in table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Ratio</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGDP</td>
<td>1/38</td>
<td>1/968</td>
<td>[0.043]</td>
</tr>
<tr>
<td>LIR</td>
<td>-0/38</td>
<td>-1/196</td>
<td>[0.036]</td>
</tr>
<tr>
<td>LVAM</td>
<td>-0/028</td>
<td>0/089</td>
<td>[0.029]</td>
</tr>
<tr>
<td>LOIL</td>
<td>0/93</td>
<td>-1/773</td>
<td>[0.04]</td>
</tr>
<tr>
<td>LPS</td>
<td>-0/17</td>
<td>-0/889</td>
<td>[0.037]</td>
</tr>
<tr>
<td>LM</td>
<td>0/98</td>
<td>0/078</td>
<td>[0.038]</td>
</tr>
<tr>
<td>LCPI</td>
<td>0/16</td>
<td>0/1773</td>
<td>[0.020]</td>
</tr>
<tr>
<td>C</td>
<td>-4/13</td>
<td>-0/9247</td>
<td>[0.358]</td>
</tr>
</tbody>
</table>

Source: Findings of the study

According to the findings represented in table 3, it could be concluded that in the long run, the GDP, oil price, liquidity, and inflation are statistically significant and positive; and interest rates, and the amount of bank facilities for house constructions, and the stock price index have significant negative influences on the housing price function. In the long run, a 1% change in interest rates will lead to a 0.38% reduction in the housing price function. A 1% change in the GDP will lead to a 1.38% reduction in the housing price function. As income increases, since housing is normal goods, the demands for it will grow. This can be the result of several reasons. a. with increases in incomes, households tend to purchase houses and end tenancy, especially in large cities where house prices are relatively high. Therefore, households demand more for houses. This increase in house demand is in the consumption of the houses. However, as incomes increase, demands for houses as a form of asset also increase. In this case, the households tend to invest more. The housing market is a good target for the households trying to invest. Naturally, a growth in income leads to a growth in investments in the housing market. This investment can affect both supplies (through the construction of houses) and demands in the market (through buying houses as a long-living asset). The whole consequences of increased incomes lead to increased demands for houses and consequently increased prices. What is remarkable is that the sensitivity of house prices is different from those of most variables such as the household’s per capita income, liquidity, and the stock price index in the long run and short run. As the theory expects, the elasticity of house prices toward income, liquidity, and the stock price index, in the long run is greater than the short run. The different reaction of house prices to liquidity and stock price index, in the long run and short run are totally in line with economic theories. According to this theory, it takes several periods for changes in liquidity to change other indexes.
including the housing price index. Moreover, it seems that, since the stock market and housing market are not clear and competitive, capital movements between these two markets take a long time.

In the final section, the error correction model is tested. What matters most in the error correction model is the error correction statement, which shows the speed of the balancing of the unbalanced process toward long-term balance.

Table 4: Results of error correction coefficient of house price index

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>SD</th>
<th>T-Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM(-1)</td>
<td>-0.299</td>
<td>0.040</td>
<td>-2.438</td>
<td>0.017</td>
</tr>
</tbody>
</table>

Source: Findings of the study

As table 4 suggests, this coefficient is significant and negative. Since ECM is significant between 0 and 1, the long-term co-integration among variables is proved. Also, since the error correction statement coefficient is -0.299, it is concluded that in each period, 30 percent of the imbalance in the dependent variable is balanced in the next period and is removed. In other words, if a shock of imbalance occurs, after three years it will return to balance.

In order to investigate the consistency of the coefficients, the Cumulative Sum of Recursive Residuals and Cumulative Sum of Squares Recursive Residuals were used. In these tests, the null hypothesis tests the consistency of the parameters at the 5-percent significance level. The confidence interval in these tests is two lines representing a 95-percent confidence interval. If the statistic is between these lines, the null hypothesis stating the consistency of these coefficients could not be rejected. Graphs 1 and 2 show the results of these tests. The statistics are drawn against time.

Graph. 1: CUSUMQ test

Graph. 2: CUSUM test

As these graphs suggest, the statistics of these tests are in a straight line, which shows the coefficients are consistent at the 5-percent significance level. In other words, the null hypothesis stating the consistency of the coefficients at the 95-percent confidence level could not be rejected.

Conclusions and implications:

Property price changes, especially changes in house prices, significantly influence the consumption behaviors of the households and decisions made by financial institutions. An increase in the house price relative to the total price implies an increase in the real wealth of the household and it directly enters the consumption pattern of the household. The increased real value of wealth leads to a growth in the demands of the household
for consumer products and goods, hereby it increases the total demand. In the present study, the relationships between bank facilities and the factors affecting the house prices were investigated. To do so, the seasonal time series data during spring 1991 to winter 2010 and the ARDL approach were used. The findings indicate that, in the long run, the GDP, oil income, liquidity, and inflation are statistically significant and have positive influences on house prices. On the other hand, interest rate, the stock price index, and the amount the granted bank facilities have significant, negative influences on the house price function. In the long run, a 1-percent change in the GDP leads to a 1.38-percent increase in the house price function. A 1-percent in interest rate leads to a 0.38-percent fall in the house price function. Since the house is a normal kind of goods, as the per capita income of the household increases, the demands for houses grow. This can be the result of several factors; the first reason is that when the income of the households increases, they tend to purchase houses and end tenancy, especially in large cities, where the relative price of houses is high. Therefore, the households demand more for houses. This increase in demands is associated with the consumption demand. Moreover, with income growth, demands for houses as a form of asset increase. Since the tendency to save increases with income growth, it is expected that with more savings, the households are more willing to invest. As a major place attracting a considerable proportion of the whole economic investments, the house market is a good choice. Therefore, it is not unexpected that income growths lead to more investments in the house market. This investment can affect both the demands and the supplies of the housing market. The total influences of per capita income growths lead to increased house demands and, eventually, increased prices. It is remarkable that house prices have a different sensitivity to most variables including the per capita income, liquidity, the stock price index in the long run and the short run. As expected by the theory, the housing prices have a greater elasticity toward these variables in the long run than the short run. The different reaction of house prices to variables such as liquidity and the stock price index in the long run and short run are totally in line with economic theories. According to the theory, it takes several periods for the changes in liquidity to affect other indexes including the housing price index. Moreover, it seems that due to the unclear and uncompetitive nature of the stock market and the house market, it takes a long time for assets to shift between these markets. Therefore, the greater sensitivity of the house prices to changes in the stock price index in the long run is quite normal, which is supported by the findings of the present study. Finally, according to the results of the study, it is concluded that the monetary policy variables including the liquidity growth and the real interest rate are the most remarkable factors contributing to growths in the housing prices in the long run and short run. Therefore, it is essential that monetary policies be adopted properly. Using monetary policies to control the real interest rates and liquidity growth is the best way to prevent housing price bubbles or at least to mitigate them. It should be noted that the house market could not be controlled by merely adopting monetary policies; it is inevitable to adopt complementary financial policies. Moreover, since liquidity growth is a key factor contributing to housing price growths, the policy-makers can prevent liquidity from entering the housing market and price growths by attracting liquidity through creating security, stability, and growth in capital markets.

REFERENCES

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