Performance and Diversification Benefits of Housing Investment

in Iran

Tajul Ariffin Masron (PhD)

School of Management, Universiti Sains Malaysia (USM)

11800, Minden Campus, Pinang, Malaysia

E-mail: tams@usm.my

Hassan Gholipour Fereidouni (Corresponding author)

School of Management, Universiti Sains Malaysia (USM)

11800, Minden Campus, Pinang, Malaysia

Tel: 60-17-480-9810   E-mail: hassanhgf@gmail.com

Abstract

The objective of this study is to examine the effectiveness of housing as an investment instrument in Iran. In this paper, the performance and diversification benefits of housing over 1993-2008 are examined. Risk-to- reward ratio is used to assess the risk-adjusted performance of housing and other financial assets (stocks, gold coin and US dollar). Correlation analysis is also used to examine the portfolio diversification benefits of housing. Additionally, the relationship between housing performance and inflation is investigated. The results show that housing is an effective property investment vehicle as it delivers the lowest risk-to-reward ratio when compared with three major assets over this study period. In addition, the results suggest that adding housing in properties can provide more diversification benefits. Moreover, housing returns exceed the rate of inflation and also there is a positive and significant relationship between housing returns and the rate of inflation. This study has some implications for Iranian investors who seek to include housing in their portfolio.

Keywords: Iran, Housing, Risk, Return, Portfolio Diversification

1. Introduction

During the past two decades, housing in Iran has been viewed as an important property investment asset, although traditionally it is as a consumer good or a shelter (Abbasinezhad & Yari, 2009). This means that housing acquisition in Iran is not only motivated by consumption purpose, but also investment purpose.

Housing is one of the largest industries of the Iran economy. The housing sector (including housing and real estate services) was one of the largest components, contributing around 15 percent of Iranian GDP (MHUD, 2007). Annual housing sector growth has been 5.8 per cent from 1959 to 2006 which is more than GDP growth. Besides, around 20 to 40 per cent of Iran economy's capital stock is pertained to housing sector in recent years (MHUD, 2007). The development in the housing market has drawn the attention of many investors to this market. As depicted in Figure 1, private sector investment in new buildings in urban areas has been increased from around 37,000 billion Rials in 2001 to around 300,000 billion Rials in 2008.

Insert Figure 1 here

The increasing trend of investment in housing has led Iranian investors and researchers to question whether it is appropriate to include housing in a multi-asset portfolio with traditional investment alternatives such as stocks, foreign currency and gold coin. Therefore, investors need to consider the performance (risks and returns) and diversification benefits of housing as an investment vehicle.

Many studies have argued that housing is an effective investment instrument in a mixed-asset portfolio. Lee (2008) examined the performance of housing market in Australia from 1996 to 2007. He showed that housing market is a well-performing asset for investment because it recorded the highest risk-adjusted returns in comparison to other assets. Moreover, he documented that housing should be included in a mixed-asset portfolio in order to obtain portfolio risk reduction since it had a negative correlation with other major assets. Goetzmann (1993) estimated the effects of including a single family home in the investor portfolio over 1976 through 1986 in the USA. He found that home ownership reduces overall portfolio risk and therefore delivers diversification benefits for investors. Chua

(1999) did a comprehensive analysis of a mixed-asset portfolio including international real estate by examining assets from five different countries. He included direct real estate, stocks, bonds, cash and gold and analyzed quarterly data over the period 1977-1997. He demonstrated that the inclusion of real estate reduced portfolio risk. Cocco (2004) studied portfolio choice in the presence of housing and found that investment in housing is important for asset accumulation and portfolio choice among stocks and treasury bills. Giliberto (1989) compared historical real estate investment performance with other traditional financial assets within two countries (the UK and the USA). He found that real estate investments should be considered as an alternative investment class by both American and British investors due to the lack of correlation in returns and diversification benefits. Englund et al. (2002) analyzed the composition of household investment portfolios including housing, common stocks, stock in real estate holding companies, bonds, and t-bills in Sweden during a 13-year period. They showed that there was no significant diversification benefit for short holding periods. However, for longer periods, their results indicated that there are large potential gains for households to hedge their investments in housing. Seiler et al. (1999) reviewed the early studies and summarized that property has a low correlation with other asset classes, and thus should be included in a mixed-asset portfolio. Eichholtz et al. (2002) analyzed the effects of residential property holdings on optimal investment portfolios in the USA. They showed that residential real estate delivers significant diversification benefits relative to investments in stocks and bonds for US investors. Jud et al. (2006) examined the portfolio rate of return and risk of single-family housing investment during 1978-2001in the context of a portfolio of financial assets and found that there was a large allocation to residential in most efficient portfolios.

Although many researchers have studied the performance of housing in multi-asset portfolio in several countries, little research has been done in Iran. Moreover, given the importance of housing as an investment instrument in Iran, this study intends to examine the performance and diversification benefits of housing market over 1993Q2-2008Q1. The paper is structured as follows: Section 2 describes the sources of data and the methodology used in this paper; Section 3 reports the findings; Section 4 makes some concluding remarks and implications; and Section 5 presents research limitations and directions for future research.

2. Data and Methodology

The study uses quarterly data on Iranian housing, stocks, gold coin and US dollar for the time period 1993Q2-2008Q1. Data for returns of different assets were collected from Central Bank of Iran (CBI), Ministry of Housing and Urban Development (MHUD) and Tehran Stock Exchange (TSE) as follows:

Housing (MHUD)
Stocks (TSE)
Gold Coin: Full and old design (CBI)
US Dollar: Non-official rate (CBI)

In this paper, the principles of the Modern Portfolio Theory (Markowitz, 1952) are used to analyze the performance of housing investments in a multi-asset portfolio. Modern portfolio theory suggests that investors make their asset allocation decisions based on the risk-return characteristics of the asset returns, as well as on the co-movement of the asset returns, and thereby provided diversification benefits (Falkenbach, 2009; Elton & Gruber, 1995). In other words, the importance of each asset is evaluated in terms of its individual relative return and risk characteristics, as measured by its mean and standard deviation, and its portfolio risk as measured by its correlation with other assets (Lee & Stevenson, 2005). In this study, to analyze the performance of assets *coefficient of variation* of the returns (or *risk-to-reward* ratio) is used. This concept is intended to "relate total risk, as represented by the standard deviation, to the mean return with the idea of determining how much return an investor could expect to earn relative to the total risk taken if the investment was made" (Brueggeman & Fisher, 2008). This ratio is computed as the standard deviation of returns divided by the mean return:

Risk-to-reward ratio = SD / Mean   (1)

It should be noted that, in this approach, the lower risk-to-reward ratio shows the better risk-adjusted returns. This study also compares the performance of housing market with three financial assets. Then, correlation analysis is used to examine the portfolio diversification benefits of housing. Additionally, housing returns are compared with the quarterly rate of inflation, as represented by the Consumer Price Index to provide insight into whether returns from housing investment can exceed the rate of inflation and thereby earning real returns.

3. Results

3.1 Performance analysis

The results of performance analysis are presented in Table I, which shows that housing provided the highest average returns (6.16 per cent) at the lowest risk level (8.2 per cent) over this period. Therefore, housing achieved the lowest risk-to-reward ratio (= 1.3) in comparison to other assets. Stocks recorded the highest risk level in which SD is 10.9

per cent and higher risk-to-reward ratio (= 2) in compare to housing market. Thus, stocks did not perform very well in a risk-adjusted basis over this study period. Moreover, results indicate that US dollar provided the highest risk-to-reward ratio over this period (= 2.6) and the performance of gold coin was average over the study period with 5.19 per cent return at the 10 per cent risk (risk-to-reward ratio = 1.9). Hence, it can be concluded that the housing market is a significant investment instrument in which it had the lowest risk-to-reward ratio when compared with three major assets over this study period. The enhancement of these interesting characteristic of housing market is also evident in recent years in Iran economy. It is because of the lack of well-performing stock market along with high inflation rate which have encouraged many investors to purchase house as an investment vehicle to avoid lower returns in stock market and preserve their real rate of returns.

Insert Table 1 here

Insert Figure 2 here

3.2 Portfolio diversification benefits

The diversification benefit of housing with other assets is analyzed by doing a correlation analysis (see Table II). As shown in Table II, housing is statistically insignificant correlated with other assets suggesting diversification benefits of housing. It means that since the housing is producing returns that does not move in a pattern that is not similar to movements in portfolio returns, the inclusion of housing in the portfolio reduce total variation (risk). This is consistent with the findings from housing studies in Australia and USA by Lee (2008) and Goetzmann (1993). Additionally, correlation coefficient is positive and statistically significant at the 5 per cent level between US dollar and gold coin. This indicates that limited diversification benefits can be achieved by investing in gold coin and US dollar at the same time. In sum, housing is the well-performing investment vehicle and has potential diversification benefits.

Insert Table II here

3.3 Housing performance and inflation

Finally, the relationship between housing performance and inflation is considered. More specifically, the question is whether housing returns exceed the rate of inflation. To answer this question, housing returns and the Consumer Price Index (CPI) is compared. As exhibited in Table I, the housing returns (6.16%) exceed the rate of growth in the CPI (4.4%). This implies that for the period 1993Q2-2008Q1, housing returns, as represent by the data in Table I, exceed the rate of inflation and produce the real investment returns. Another important question which should be considered is whether housing returns are correlated with inflation. As can be seen in Table II (correlation matrix), there is a positive and significant relationship between housing and the CPI. This positive correlation is favorable for Iranian investors because it indicates that housing is an inflation hedge. That is, if inflation increases, then returns also increase, this preserves the real rate of return.

4. Conclusion and Implication

This paper investigates the performance of housing market in Iran for the time period 1993Q2-2008Q1. The performance of housing is compared with the performances of other assets (stocks, gold coin and US dollar). This study also examines the diversification benefit of housing for the studied time period. Moreover, the relationship between housing performance and inflation is investigated.

There are some important results from this study. First, since the housing market has delivered the highest return and the lowest risk (or lowest risk-to-reward ratio) in comparison to other assets therefore housing can be an effective asset for investment in Iran. Second, based on the potential diversification benefits of housing in this study, housing could be included in a mixed-asset portfolio in order to reduce portfolio risk. Third, the housing returns exceed the rate of growth in the CPI (inflation rate) which produces the real investment returns. Finally, the positive and significant relationship between housing and the CPI indicates that housing is an inflation hedge. Thus, as housing is an effective investment, individual and institutional investors should consider allocating their funds in housing.

5. Research Limitation and Future Research

The results of the study should be considered in light of its limitations, which also point to some issues for future research. First, the results of this study are limited by limitation of the study period and the number of assets. Future research should address this issue by expanding the data set and assets. Second, results are based on historical returns over a specific time period and may not be suggestive of future performance. Historic returns are only used as one indication of what might be realistic to expect in the future. Investors make investment decisions based on future or expected risks and returns (Brueggeman & Fisher, 2008). Therefore, there is no promise that these findings

will be repeated in the future. In future research it may be useful to examine the expected return instead of using historic returns.

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Table I. Descriptive statistics for Iranian asset returns, 1993Q2-2008Q1

	Housing (%)	Stocks (%)	Gold Coin (%)	US Dollar (%)	CPI
Return	6.16%	5.45%	5.19%	3.33%	4.4%
Risk (SD)	8.2%	10.9%	10%	8.87%	3.2%
Coefficient of variance (risk-to-reward ratio)	1.3	2	1.9	2.6	0.72

Table II. Correlation Matrix for Selected Assets: Quarterly Returns, 1993Q2-2008Q1

Asset	Housing	Stocks	Gold Coin	US Dollar	CPI
Housing	1				
Stocks	0.399	1			
Gold Coin	0.023	0.079	1		
US Dollar	0.149	0.193	0.578**	1	
CPI	0.219**	0.342**	0.678**	0.565**	1

Note: **Indicates significance level at the 5 per cent
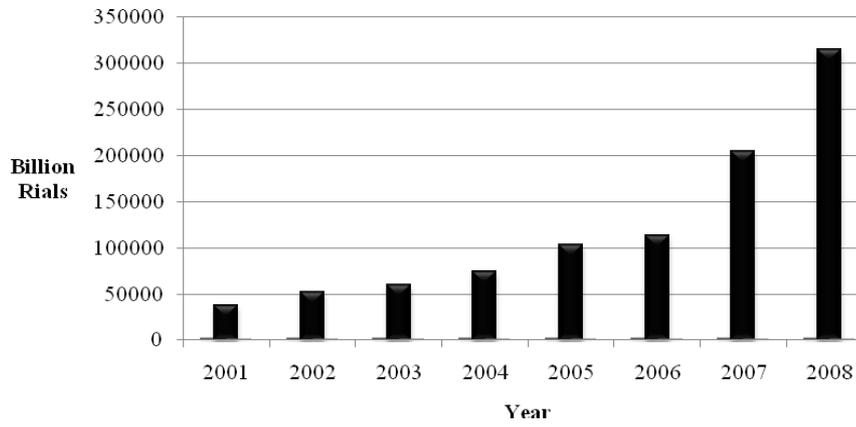
Figure1. The trend of private sector investment in new building in urban area

Source: Central Bank of Iran
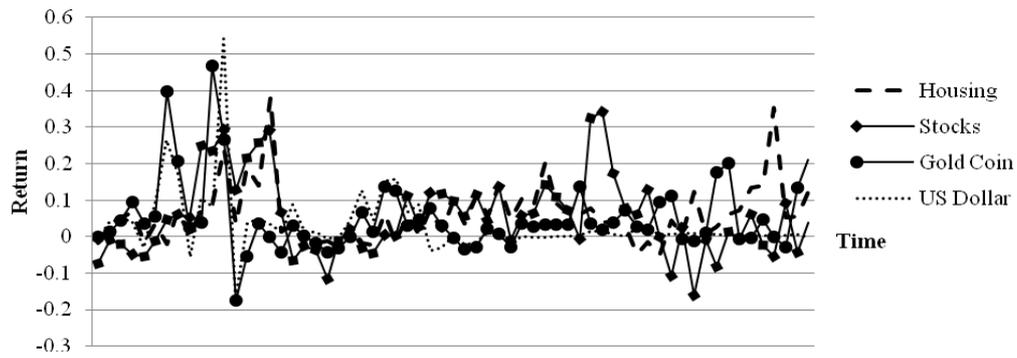
Figure2. Cumulative Total Returns Housing, Stocks, Gold Coin and US Dollar, 1993Q2-2008Q1