

## The Relationship of Income and Interest Rate towards Housing Price in Malaysia

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**Keywords:** Housing price, income, interest rate, housing bubble, and housing price index

**Abstract.** This study attempts to investigate the relationship of income and interest towards housing price in Malaysia by testing several hypotheses on how income and interest rate could impact to the changes of housing price in Malaysia. Macroeconomic variables which are income and interest rate are tested throughout this study. This study found that only interest rate do has significant impact towards housing price in Malaysia. As for the other variables which is income, this study found that there is no significant relationship between income and housing price in Malaysia. This study also proves that there are negative relationship between income and housing price in Malaysia as any increasing of the variables will lead to the decreasing of housing price.

### Introduction

Malaysia is made out of 11 states on the Malaysia Peninsular, and two government locale (Kuala Lumpur and Labuan Island). Late house price increments have been gathered in the most created districts. In 2010 property price in Kuala Lumpur together with, Penang expanded between 10 for each penny and also, 30 for each penny (Sivalingam, 2011). Based on a review of individuals in March 2011, the Land and Housing Developers' Affiliation Malaysia (Rehda) anticipated property price in Kuala Lumpur to increment between a further 15 for each penny and 30 for each penny in 2011 (New Straits Times, 2011).

Housing industry in Malaysia has developed together with the increasing of population over years. According to Jarad (2010), the rapid increasing and developing housing industry has provided greater advantages to the developing countries such as Malaysia. The rapid increasing could attract more foreign investors and in the mean time is able to generate economy activities in Malaysia. According to Agus (1997), the Malaysian housing development has kept on battling regardless of different developments and restrictions.

The house prices offered in Malaysia are categorized in a quite low and affordable price as compared to the other neighbor and west side countries such as Thailand, Netherland, and Irish. However, due to the increasing population may lead the house price to accelerate rapidly as the demand of it is increasing. The increasing of demand may be due to the increasing of population over time which caused the house to become major priority assets to own. Together with the unstable economic condition, purchase a house will be a burden for Malaysians especially fresh graduates as the price keeps increasing over time.

**Problem Statement.** The increasing of house price in Malaysia has become a major concern to the Malaysians. As the house price is increasing, the worries of Malaysians are increasing as they might become anxious to their afford abilities to own assets (Sutton, 2002). According to Irving Fisher (1933), the high house price leads to higher acquiring against expanding property estimations and eventually will increase debt burden. Natives will have to apply for house loan in order to acquire a house as the rising price is beyond their capabilities. Hence, in order to own a house, Malaysians will have to face a debt burden as the price is exceeding the level of income. Another problem happened due to the rising of house price is the increasing of bankruptcy among Malaysian's households nowadays. Malaysia Insolvency has reported that in October by 2015, there are 94, 077 people that are already declared bankrupt by the agency which took up to 45% is because of the purchasing of real properties. The number shows a big increment from the previous year, 2014. This might be worries by countries since the increasing number of Malaysians bankruptcy will be a negative effect on financial stability of the countries itself.

**Research Objectives.** The researcher examines the work of previous research and scholar publications on the changes of housing price in Malaysia which could be contributed by some other factors including income and interest rate. The primary objectives are:

1. To examine the factors that leads to the changes of housing price in Malaysia.
2. To study the relationship of income towards housing price in Malaysia.

3. To study the relationship of interest rate towards housing price in Malaysia.

**Research Questions.** In this research, the researcher has come out with three research questions that are able to be answered throughout this research. The research questions are:

1. What are the factors that lead to the changes of housing price in Malaysia?
2. What is the relationship between income and housing price in Malaysia?
3. What is the relationship between interest rate and housing price in Malaysia?

**Significance of the Study.** This study useful to give beneficial and added knowledge to all related parties such as:

1. Organization  
One of the vital elements of the national development is real estate industry; it significantly affects Malaysia's economy. It increments in job also, advancing the utilization. Malaysia real estate created in a fast and takes heavier degree in the nearby monetary improvement, and drove other related businesses improvement of building industry, Chemical industry, furniture industry. Whether land industry grows steadily or not is key to Malaysia.
2. People  
This study would also provide additional information and awareness to the people regarding to the rising of house prices in Malaysia. The result of this study can benefit them to proper plan their investment and spending in purchasing a new house in a current state of economy. Besides, this study also helps people to prevent of being declared as bankrupt through some approaches.
3. Researcher  
This study is only focusing on the relationship between interest rate and income with the housing price in Malaysia. Hence, through this study, the researcher will obtain as much possible of information on the causes of rising housing price and their relationships that eventually will benefits the researcher. The researcher may identify the causes of the problem and will be able to point out several solutions on the problem.

**Limitation of the Study.** The researcher faced some barriers and limitations in completing this study. The limitations are:

1. Data Limitation  
As the extent of this study is the expanding of household debt in Malaysia, there is absence of data that has been done some time recently. The restriction of information has ended up being insufficient data and information to complete the research. The distributions of journals are not distributed in complete report. Additionally, some of the journals are obliged as the accessibility need to be subscribed by the college. This has become a barrier to researcher as it influenced the improvement of this research.
2. Accuracy of Data  
The other barriers face by researcher is accuracy of data. This study requires researcher to use secondary data. There are some units of analysis found in journals that are argued and differ by one to another that become redundancy to the researcher. Besides, due to the lack of number research done in Malaysia, the researcher could not get the actual data of the independent variables to translate into theories.
3. Language  
Last but not least, the researcher face language barrier to complete this research. Most of the journals are using extra difficult words and terms in describing the theory and it is become barrier as it is hard for the researcher to have better understanding of the journal. For example, the researcher has some limitations to read and interpret foreign and lingua franca of the language of the past research studies of the topic.

### Literature Reviews

In a general, house prices for most countries have increasing over years. This statement is supported by a few past researchers such as Cho and Ma (2006)- South Korea), Tse (1998)- Hong Kong, Abelson et al(1997)- Sydney, Chen and Patel (1998) - Taipei, and Potepan (1996)- United States which stated in their journals that house prices have raised significantly over the previous decades, crosswise over various metropolitan ranges. This situation also including Malaysia as the natives nowadays are facing increasing house price that may be a burden for them as the price might be beyond their capabilities. Another exploration which led by Tse (1999) stated that the change in the housing price affects the monetary states of the population and society. Additionally, the demand for housing is expanding in the business sector. Along these lines, the housing price is required to ascend because of the lopsidedness amongst purchasers and merchants. Hence, according to Levin and Wright (1997), when there are a larger number of purchasers than merchants, the housing price

will increment. This can bring about a self-satisfying theoretical price bubble.

There are also literature stated that income variables could influence housing price. For instance is Abraham and Hendershott (1996) which in journal said that the thought is ordinarily formalized in the housing writing by setting a co integrating relationship between house price and basics, for example, income. The statement highlights that house price and income are thought to be connected by a stable long-run relationship; they may float separated briefly, yet their propensity is to come back to their long run harmony. One of the studies of housing market by Cheng et al (1999) is to analyze the house prices and household income in Taiwan. By using traditional co integration test on house price to income ratio, the paper discusses the equilibrium relationship between house price and income and what causes disruptions of the equilibrium between them. As a result, it is found that the slow increase in income may just sustain the long-run trend in house prices.

Some proves of interest rate reaction to house price has been made by the previous researcher. According to Barakova (2003), the better accessibility of credit will bring about the interest for housing to increment when the households are obtaining obliged. The development popular will then be reflected in higher housing price. Housing price may fundamentally impact household obtaining through different riches impacts. At the point when the housing loan interest rate is low, nationals will be empowered to make a few speculations, for example, purchasing more houses. The credit cycles have coordinated the housing price cycles in various nations. The importance of income and interest rates as the most important house price drivers is confirmed in the majority of the studies. Sutton (2002) applied the research on six developed economies which are in the United States of America, the United Kingdom, Canada, Ireland, Netherlands and Australia which concluded that positive changes in GDP boosted house prices, while increases in interest rates led to lower house prices.

**Results and Findings**

The findings of the data is being discussed in this chapter which is based on the objectives proposed in chapter one and in line with the conceptual framework designed.

**Normality Test.** Normality test is run by using Jarque-Bera Test and is apply to each dependent and independent variables. The result of the test is good to be insignificant (more than 0.1) which means that the data is normal and the hypothesis is failed to reject null hypothesis. The result of Jarque-Bera Test for housing price in Malaysia shows to reject null hypothesis at 99 percent confidence level interval. It means that the data is not normally distributed and does not follow normal distribution. Meanwhile the result of Jarque-Bera Test for income in Malaysia shows evidence to insignificant test which is fail to reject null hypothesis at 90 percent confidence level interval. It means that the data is normally distributed and does follow normal distribution. The next result of Jarque-Bera Test for interest rate in Malaysia from the year of 1990 – 2015 shows evidence of significant test which is reject null hypothesis at 99 percent confidence level interval. It means that the data is not normally distributed and does not follow normal distribution.

**Unit Root Test.** Unit root test is conducted in order to check whether the series of data is stationary or non-stationary. This study is using Augmented Dickey-Fuller Test (ADF) to each variables to conduct the findings of stationary test. The result of Augmented Dickey Fuller Test (ADF) for housing price in Malaysia from the year of 1990 – 2015. The result shows that the data for housing price is stationary at Level and also at 1<sup>st</sup> difference I(1). This finding shows that housing price is station at 1 percent significance level with 99 percent confidence level interval to reject null hypothesis at level. Meanwhile the result of Augmented Dickey Fuller Test (ADF) for housing price in Malaysia from the year of 1990 – 2015. The results shows that the data for INC is stationary at 1<sup>st</sup> difference I(1). This finding shows that income is station at 1 percent significance level with 99 percent of confidence level interval to reject null hypothesis at 1<sup>st</sup> difference test. The next result of Augmented Dickey Fuller Test (ADF) for housing price in Malaysia from the year of 1990 – 2015. The result shows that the data for interest is stationary at 1<sup>st</sup> difference I(1). This finding shows that interest is station at 1 percent significance level with 99 percent of confidence level interval to reject null hypothesis at 1<sup>st</sup> difference test.

**Multicollinearity Test.** Multicollinearity test is being conducted in order to know whether there is correlation coefficient exists between these variables. This test is conducted by using Variance Inflation Factors(VIF).

Generally, if the findings of the study show that the VIFs < or = 10 for the listed independent variable, multicollinearity is not considered a problem. From the results of VIFs above, it can be concluded that there is no multicollinearity problem since all the VIFs values between the independent variable are less than 10. It means that, all the variables are correlated each other with the main variable which is housing price in Malaysia. Hence, it can simplify that each of the variables does not contribute redundant information to the entire model.

**Multiple Regression Analysis**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INCOME_RM_	-9.06E-07	3.09E-05	-0.029345	0.9768
MALAYSIA_INTEREST_RATE	-7.390208	2.714912	-2.722080	0.0122**
C	29.56131	10.41631	2.837984	0.0093
R-squared	0.263959	Mean dependent var		5.034615
Adjusted R-squared	0.199955	S.D. dependent var		10.66459
S.E. of regression	9.538969	Akaike info criterion		7.456815
Sum squared resid	2092.814	Schwarz criterion		7.601980
Log likelihood	-93.93859	Hannan-Quinn criter.		7.498617
F-statistic	4.124127	Durbin-Watson stat		2.023612
Prob(F-statistic)	0.029470			

$$\text{Housing price in Malaysia} = 29.56131 - 9.06E-07(\text{INC}) - 7.390208(\text{INT}) + \epsilon$$

Based on the table above, it shows that the relationship between independent and dependent variables. For interest, it shows significant result at 5 percent level with the 95 percent confidence level to reject null hypothesis. The result means that the interest rate variable has significant positive effect on the housing price in Malaysia. While, income shows insignificant result and null hypothesis are not able to be rejected. It can be concluded that income do not has significant impact towards any changes of housing price in Malaysia.

T-Statistic for income is recorded 0.0293 which is said to be insignificant which means to accept null hypothesis and has negative relationship which means any increasing 1 percent in income is estimated to decrease in housing price by RM9.06E-07. Meanwhile interest is recorded to be more than 1.96 percent which the significant level must be more than 5 percent and the result proves to reject null hypothesis at 95 percent confidence level which is negative relationship that means any 1 percent increasing in interest rate is estimated to decrease in housing price by 7.3902 percent.

R-squared shows 0.263959 that shows weak model. Based on that, about 26.40 percent of housing price in Malaysia is explained by the income and interest variables. The remaining 73.60 percent of housing price in Malaysia is unexplained by the model which can be explained by other variables.

From the model tested, F-Statistic recorded was 4.1241. The result shows the significant level which is failed to reject null hypothesis. It means that one of the variables tested has no impact towards housing price in Malaysia which is INC.

**Conclusions**

This study also found that interest rate has negative relationship towards housing price as any increasing in interest rate could leads to the decreasing of housing price. This finding is also supported by the previous researchers such as Sutton (2002) which stated that the increasing of interest rate led to lower house prices in developed countries’ perspectives (United States of America, United Kingdom, Canada, Ireland, Netherlands and Australia). This study also found that income do not has significant impact towards the changes of housing price in Malaysia. It is may be due to the no proof provided that shows the relationship between income and housing price (Gallin, 2013).

Housing price in all countries especially in developing countries such as Malaysia could be a main concern to the citizens. Hence, a thorough study on this specific area should be done by the next researchers in order to find the real factors that lead to the changes of housing price. The next research is recommended to include other macroeconomic variables that are not included in this research as the R-Squared of this study is low. Further, researcher could expand the duration of period observation until more recent years. It is to get more accurate information and researcher could be able to compare the current situation with the previous one which will have solid proves in the future. Moreover, the study should be done

Table: Result of Multicollinearity Test of The Relationship Of Income and Interest Rate towards Housing Price in Malaysia.

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
Income	9.53E-10	3.360792	1.120976
Interest Rate	7.370746	24.16361	1.120976
Constant	108.4994	31.00258	NA

in developed countries instead of developing countries in order to get fit model of the research as developed countries provide more accurate information. The next researcher is recommended to choose panel data instead of time series. It is because the data will be more precise and accurate as exported to the time series and it will leads to the significant of the independent variables as recommended by previous studies.

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