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Real Interest Rate and House Prices in Malaysia: An Empirical Study

Tuck Cheong Tang
Department of Economics, Faculty of Economics and Administration, University of Malaya

Pei Pei Tan
Department of Applied Statistics, Faculty of Economics and Administration, University of Malaya

Abstract

This study examines the relationship between real interest rate and real house prices in Malaysia. The analysis covers recent quarterly data from 2001 to 2013. The regression results show a negative effect of real interest rate on the Kuala Lumpur house prices, but it is not the case for the remaining five reported states in Peninsular Malaysia. The Granger-causality tests also provide positive findings. The direction of causation is from real interest rate to real MHPI (the Malaysian House Price Indexes). This study supports the ripple effect – the states' house prices are inter-caused, except for Pulau Pinang. These findings are relevant for policy implications.

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Contact: Tuck Cheong Tang - tangtuckcheong@gmail.com, Pei Pei Tan - peipei@um.edu.my.

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1. Introduction

According to Chang, honorary secretary-general of National House Buyers Association (HBA), "*... there is a risk of a property bubble in Malaysia as property prices have increased rapidly in the past four to five years, and excessive speculation in the property market has driven property prices to its current artificially high level*" (The Star 2014). The Malaysian government has taken regulatory steps to slow down the over-heated property demand growth, in other words, to reduce the property bubble risk by imposing Real Property Gains Tax (henceforth, RPGT) and by increasing the bank lending rate, which are used as the tools for both the fiscal and monetary policies, respectively. The 2014 Budget speech in Malaysia has proposed a substantial increase of RPGT rates in order to control the Malaysian housing market from the speculative activities. Meanwhile, the Central Bank of Malaysia has decided to increase the policy rate - Overnight Policy Rate by 25 basis points to 3.25 per cent, the first in three years (New Straits Times 2014). It is given a prediction that a small increase of interest rate will help to curb speculation in the Malaysian property market (Malay Mail, 2014). Accordingly, the number of new launches declined by 74.5% in the 3rd quarter 2013 comparing to 3rd quarter 2012, from 14,662 units to 3,736 units. In addition, housing approvals dropped by 22.5% over these respective periods.[1]

An existing study by Kuttner (2012) finds that the impact of interest rates on house prices is quite modest. It is uniformly smaller than those from the standard user cost theory. The results are insignificant to explain the U.S. real estate boom occurred in the mid-2000s. However, some samples support a positive link between the expansion of the monetary base, and house prices (and housing credit). The study has explained the three mechanisms linking the interest rate to house prices, namely the user cost theory, credit channel, and risk taking channel (see also Kuttner 2012 pp. 3-7). For the case of Malaysia, Lean and Smyth (2013a) finds that majority of states housing prices is stationary or is segmented trend reverting. Their other work (Lean and Smyth 2013b) find an evidence of ripple effect[2] from the most developed states to the less developed states of Malaysia.

The objective of this study is to provide empirical evidence of the effect of interest rate on house prices growth in Malaysia. This study is driven by the current concern on the risk of a property bubble in Malaysia. With the increase of bank lending rate and the imposing of RGPT, Malaysia government is hoping to curb soaring house price in the country. However, those can only be the effective tools if there is a relationship between interest rate and house prices. Therefore, this study calls for a systematic examination of the interest rate that may affect the house prices in Malaysia.

The next section describes the data for empirical tests of interest rate and house prices in Malaysia. Section 3 report the empirical results, and Section 4 concludes the study.

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[1] They are taken from http://www.globalpropertyguide.com/Asia/malaysia/Price-History [Accessed: 8.8.2014].

[2] According to Canarella *et al.* (2012), the house prices between regions are not moving together because the nature of the regions such as demographic, economic environments, and so on are different. The ripple effect hypothesizes a phenomenon that house prices change in one region can later spread to other regions. It can be tested by some econometrics methods such as unit root, cointegration, as well as causality as noted by Lean and Smyth (2013b).

2. Data

This study considers two candidate variables, namely interest rate, and house prices. The house prices are measured by the Malaysian House Price Indexes (MHPI, 2000=100)[3], which are inflationary adjusted (by the authors), while the real interest rate is the average lending rate minus inflation rate. The data are obtained from the Monthly Statistical Bulletin, Central Bank of Malaysia's website. The reported six state-level MHPIs are Johor, Negeri Sembilan (N.S.), Kuala Lumpur (K.L), Selangor, Pulau Pinang (P.Pinang), and Perak from Peninsular Malaysia. The rest of the states in Malaysia has not been included because they are not available from the Monthly Statistical Bulletin. Following the available house prices data, the sample period covers 52 quarterly observations between 2001Q1 and 2013Q4. Table 1 reports the summary statistics of the underlying variables. The variables have been log-transformed (natural logarithm) for analysis.

Table 1 Summary statistics

	Real interest		State:					
	rate	MHPI	Johor	N.S	K.L	Selangor	P. Pinang	Perak
Mean	3.552	112.061	83.840	110.093	121.847	109.379	119.265	121.634
Median	3.497	107.000	82.137	107.576	116.068	103.682	113.585	118.483
Maximum	7.190	146.796	111.112	130.128	179.688	142.837	166.869	152.738
Minimum	-2.413	98.289	73.482	97.381	98.292	97.410	97.104	101.557
Std. Dev.	1.672	13.088	8.271	8.539	21.359	13.149	16.049	12.861
Skewness	-0.780	1.430	1.969	1.117	1.293	1.483	1.467	0.961
Kurtosis	4.736	3.937	6.646	3.292	3.908	3.818	4.664	3.044
Jarque-Bera	11.806	19.632	62.390	10.989	16.270	20.499	24.662	8.003
(Probability)	(0.003)	(0.000)	(0.002)	(0.004)	(0.000)	(0.000)	(0.000)	(0.018)

3. Empirical Results

Table 2 shows the estimated impact of interest rate on the Malaysian housing prices by Ordinary Least Square (OLS) estimator.[4] It shows that real interest rate has no significant negative impact on MHPI. Among the six states of Peninsular Malaysia, only Kuala Lumpur has a favorable outcome that real interest rate has a significant negative impact on its house prices, -0.09, the estimated interest rate elasticity. The estimated constant terms are statistically significant which inform that the impact of high interest rates does not automatic translate into low house prices, but

[3] It captures the change in prices paid for an "average" house. It is estimated by comparing the prices of a basket of houses transacted in the current period with the price of the same basket in the base year. (see also http://www.bnm.gov.my/files/publication/msb/2014/6/x_en.pdf) [Accessed: 7.8.2014].

[4] Real interest rate variable has been tested for unit root with its estimated test statistics of ADF test (-4.162, and *p*-value, 0.01), and the PP (-4.231, and *p*-value, 0.008) suggesting stationary, $I(0)$. Both ADF and PP tests suggest non-stationary for MHPI, and the six states' HPI, expect for, the PP test for N.S. is $I(0)$. Regardless of the non-stationary of house prices, no cointegration can be tentatively established. Conventional remedy of first-differencing $I(1)$ variable can result information loss.

it can be explained by the standard user cost theory, credit channel, and risk taking channel (Kuttner, 2012).

Table 2 Regression analysis (OLS)

Dependent variable:	MHPI	State: Johor	N.S.	K.L.	Selangor	P.P.	Perak
Real interest rate (*lnr*)	-0.043 (0.259)	0.026 (0.408)	-0.004 (0.890)	-0.094*** (0.091)	-0.022 (0.577)	-0.061 (0.158)	-0.047 (0.180)
Constant	4.791* (0.000)	4.377* (0.000)	4.705* (0.000)	4.962* (0.000)	4.728* (0.000)	4.885 (0.000)	4.882 (0.000)
R^2	0.025	0.014	0.000	0.056	0.006	0.040	0.036
F-stat	1.303	0.696	0.019	2.980	0.316	2.059	1.847
Q-stat.[2]	77.667 (0.000)	60.09 (0.000)	56.339 (0.000)	75.938 (0.000)	79.581 (0.000)	70.764 (0.000)	68.527 (0.000)
Jarque-Bera	13.543 (0.001)	54.107 (0.000)	8.276 (0.016)	8.419 (0.015)	15.719 (0.000)	13.055 (0.001)	4.604 (0.100)
LM[2]	47.017 (0.000)	44.320 (0.000)	35.539 (0.000)	46.332 (0.000)	46.881 (0.000)	46.247 (0.000)	41.533 (0.000)
RESET[1]	3.577 (0.001)	1.333 (0.188)	-	3.959 (0.000)	2.800 (0.007)	3.319 (0.002)	4.111 (0.000)
CUSUM	2012Q2	None	2013Q2	2012Q1	2013Q1	2012Q2	2012Q2

Notes: The number in (.) is the *p*-value. *, ** and *** denotes significance levels at 1%, 5% and 10%, respectively.

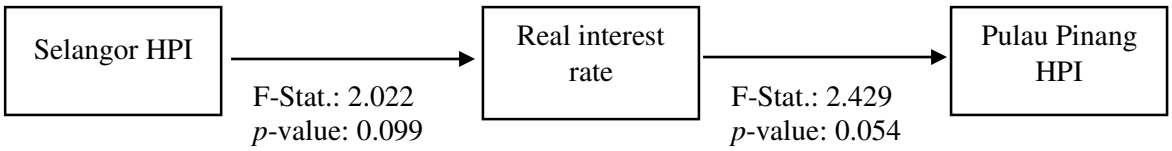
A favour quote from Granger (1969 and 1988), "*cause comes before effect"* for time series analysis is relevent for this analysis. The Granger causality approach is employed to describe the extent to which the past values of a specified variable (let say, *Y*) and extra variables (*Xs*) can be used to improve explanation on its current value of it, *Y*. Table 3 reports the causality test for between interest rate and MHPI.[5] The low *p*-value of the first null hypothesis, 0.087 supports a unidirectional causality runs from real interest rate to MHPI. But, no reversed causality except Johor, which support bidirectional causality. The inter-linkages between interest rate and house prices of the six states are demonstrated in Figure 1. Interestingly, interest rates have a causal impact on house prices only in Pulau Pinang. Meanwhile, house prices in Selangor do Granger cause real interest rate, but not the other way round. It is consistent with the currently proposed monetary policy to curb the speculative activities resulting extremely high prices in the Malaysian housing market. Hence, interest rate(s) may be considered an ineffective monetary tool for the six states of Peninsular Malaysia, except for Kuala Lumpur. Rising interest rates should theoretically and practically drives down home prices, but other 'stronger' economic factors (also, from the perspective of behavioral economics) may generally reduce the interest rates' *net* effect on house prices.

[5] The pairwise Granger causality tests are based on VAR(5) from VAR(12) as recommended by a set of selection criterions - LM (Lagrange Multiplier), SC (Schwarz Criterion), AIC (Akaike Information Criterion), FPE (Forecast Prediction Error), and HQ (Hannan-Quinn).

Table 3 Granger causality between real interest rate, and MHPI growth

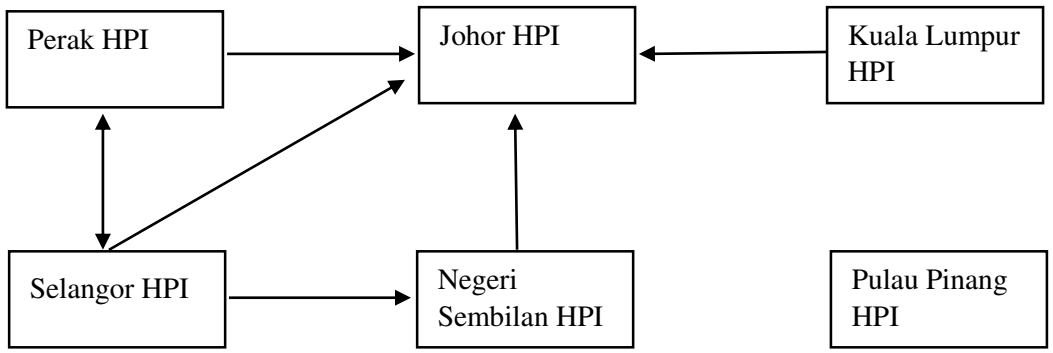
Null Hypothesis:	*F*-Statistic	Probability
Real interest rate does not Granger Cause *MHPI*	2.108	0.087
MHPI does not Granger Cause *Real interest rate*	1.680	0.165

Figure 1 Granger causality between real interest rate, and state's MHPI growth



This section also calls for an investigation of the so-called ripple effect. With the states' HPI data, Figure 2 presents the Granger causality patterns among the six states.[6] Clearly, there is a ripple effect - a particular state's house prices index growth has a predictive power (information) of the house prices in other states. Their linkages are meaningful. For example, an identified transmission of ripple effect is originally from Selangor to Negeri Sembilan or Perak, then Johor. Either Selangor or Kuala Lumpur HPI does Granger-cause Johor HPI. The ripple effect is *ended up* in Johor's house prices. Interestingly, the house prices in Pulau Pinang is *independent* from ripple effect.

Figure 2 Granger causality among the state's MHPI growth



[6] The illustrated directions of causality tests are based on at least, 0.10 level. The computed test statistics and *p*-values for the respective hypotheses are not reported here, but they are available upon request.

4. Conclusion

This study aims to investigate the impact of rising interest rates (real) on house prices growth in Malaysia. Using the available quarterly data between 2001 and 2013, the empirical results support the conventional view that interest rates reduces house prices growth in Malaysia only for the case of Kuala Lumpur. The Granger causality tests support a uni-causation from real interest rate to MHPI. Further analysis demonstrates ripple effect among the four of six reported states – Johor, Negeri Sembilan, Selangor, and Perak. These findings have the following implications. First, the interest rates can be considered as a monetary tool which effectively drives down the Malaysian house prices, in particular, Kuala Lumpur. Both monetary and fiscal policies in lowering the expected inflation rate (higher the real interest rate) may *insufficient* to contribute in reducing the house prices. Second, the evidence of ripple effect and the early results tells that the housing market in Malaysia is inefficient, at least, in weak form. Households, and investors (speculators) can technically predict the house prices movements and actualize their planned expenditure or investment. Of course, with other factors taking into concern, this model is at preliminary stage. A more 'predictable' model is needed for future study with additional relevant variables other than real interest rates.

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