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**THE INFLUENCE OF INTEREST RATE AND
GOVERNMENT DEVELOPMENT EXPENDITURE ON
HOUSE PRICE AND IDENTIFICATION OF HOUSING
BUBBLE IN MALAYSIA**

CLEMENT CHEN KHANG-QING



UUM
Universiti Utara Malaysia

**MASTER OF ECONOMICS
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DEVELOPMENT EXPENDITURE ON HOUSE PRICE AND
IDENTIFICATION OF HOUSING BUBBLE IN MALAYSIA**

By

CLEMENT CHEN KHANG-QING



UUM
Universiti Utara Malaysia

**Thesis Submitted to
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Pemeriksa Dalam : **Assoc. Prof. Dr. Lim Hock Eam**
(Internal Examiner)

Tandatangan
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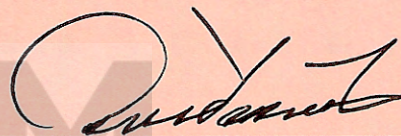
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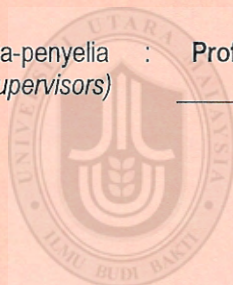
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ABSTRACT

House prices in Malaysia have recorded higher levels every year. Many scholars argue that there might be housing bubble in Malaysia. This study investigates the housing prices in Malaysia. In particular, the objective of this study is to explore the effect of interest rates and government development expenditure on house price in Malaysia in the long run; to examine the effect of interest rates and government development expenditure on house price in Malaysia in the short run; and to identify the existence of bubble in Malaysian housing market. The methodologies used in this study are Vector Error Correction Model (VECM) and Price Stability Model (PSM) to investigate house price in Malaysian over the past 34 years from 1985 to 2018. The variables in empirical analysis used house price, interest rates, and government development expenditure are house price index, base lending rates, and government spending in developing the infrastructure and facilities. The findings show that development expenditure has a significant positive relationship with Malaysian house price. However, interest rates show a positive result due to some of the reasons such as houses are a necessity for the people and the influences of other variables are more significant in the housing market. The finding also shows that the short run Malaysian house price converges to its equilibrium in the long run. The result of PSM analysis shows that housing bubble have significantly existed in Malaysian housing market. The policies proposed to address the issue of house prices and housing bubbles include establishing suitable asset-liability management and liquidity management, adopting suitable measurement in credit screening process and monitoring housing market to prevent housing bubbles. The implication of these policies keep investment activities away from speculation as well as preventing low credit borrowers from getting high loans to avoid risks.

Keywords: house price, interest rates, development expenditure, housing bubble

ABSTRAK

Harga rumah di Malaysia telah mencapai tahap yang semakin tinggi setiap tahun. Ramai sarjana berhujah bahawa terdapat kemungkinan wujudnya gelembung perumahan di Malaysia. Kajian ini mengkaji harga rumah di Malaysia. Secara khusus, objektif kajian ini meneroka impak kadar bunga dan perbelanjaan pembangunan kerajaan ke atas harga rumah di Malaysia dalam jangka masa panjang; memeriksa impak kadar bunga dan perbelanjaan pembangunan kerajaan ke atas harga rumah di Malaysia dalam jangka masa pendek; dan mengenal pasti gelembung perumahan di Malaysia. Metodologi yang digunakan dalam kajian ini ialah Model Vektor Pembetulan Ralat (*VECM*) dan Model Kestabilan Harga (*PSM*) bagi mengkaji harga rumah Malaysia selama 34 tahun dari 1985 hingga 2018. Pembolehubah yang digunakan dalam analisis empirik untuk harga rumah, kadar bunga, dan perbelanjaan pembangunan kerajaan ialah indeks harga rumah, kadar pinjaman asas, dan perbelanjaan kerajaan dalam membangunkan infrastruktur dan fasiliti. Keputusan kajian menunjukkan perbelanjaan pembangunan mempunyai hubungan positif yang signifikan dengan harga rumah. Namun demikian, kadar bunga menunjukkan keputusan yang positif disebabkan oleh beberapa sebab seperti rumah amat diperlukan oleh rakyat dan kesan faktor-faktor lain yang lebih signifikan dalam pasaran perumahan. Keputusan juga menunjukkan harga rumah dalam jangka masa pendek memusat kepada keseimbangan jangka masa panjangnya. Keputusan analisis *PSM* menunjukkan gelembung perumahan telah wujud secara signifikan dalam pasaran perumahan. Polisi-polisi yang dicadangkan untuk mengatasi isu harga rumah dan gelembung perumahan termasuklah menubuhkan pengurusan aset-liabiliti dan kecairan yang sesuai, mengamalkan pengukuran yang sesuai dalam proses tapisan kredit dan memantau pasaran perumahan bagi mengelakkan gelembung perumahan. Implikasi polisi-polisi tersebut dapat memastikan aktiviti-aktiviti pelaburan bebas daripada spekulasi dan peminjam-peminjam kurang berkemampuan daripada pinjaman yang tinggi bagi mengelakkan risiko.

Kata kunci: harga rumah, kadar bunga, perbelanjaan pembangunan, gelembung perumahan

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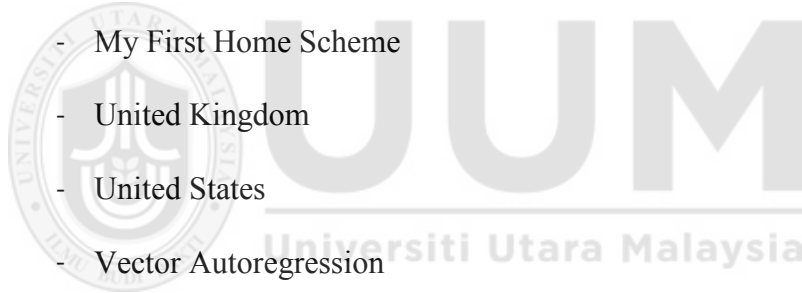
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LIST OF ABBREVIATIONS

AFC	- Asian Financial Crisis
AIC	- Akaike Information Criterion
ARDL	- Auto Regressive Distributed Lags
ARM	- Adjustable Rate Mortgage
BIS	- Bank of International Settlement
BNM	- Bank Negara Malaysia
BSN	- Bank Simpanan Nasional
CCRIS	- Central Credit Reference Information System
CTOS	- Credit Tip-Off Service
DEX	- Development Expenditure
ECT	- Error Correction Term
GDP	- Gross Domestic Product
GFC	- Global Financial Crisis
GPG	- Global Property Guide
HPI	- House Price Index
HPM	- Hedonic Price Method
HSG	- Housing Scheme
IMF	- International Monetary Fund
INT	- Interest Rate
JB	- Jarque-Berra
JPPH	- Valuation and Property Service Department
KLIA	- Kuala Lumpur International Airport
LRT	- Light Rapid Transit
MFHS	- My First Home Scheme

MRT	- Mass Rapid Transit
NAPIC	- National Property Information Center
OECD	- Organization for Economic Cooperation
OFHEO	- Office of Federal Housing Oversight
PPR	- People's Housing Project
PR1MA	- 1 Malaysia People's Housing Programme
PSM	- Price Stability Model
RAMCI	- RAM Credit Information Sdn Bhd
RPGT	- Real Property Gain Tax
SIC	- Schwarz Information Criterion
SPP	- Skim Pinjaman Perumahan
SRP	- My First Home Scheme
UK	- United Kingdom
US	- United States
VAR	- Vector Autoregression
VECM	- Vector Error Correction Model



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

House price represents as one of the most important indicators for economists and policy makers to evaluate housing market condition. Its importance is reflected by playing certain key roles such as investment component and goal of monetary policy in a financial system. Besides, house price always reflects a large picture in a country which portrays several economic components such as banking system, construction sector, prosperity of a nation, and others. There are a lot of economic consideration for policy makers and bankers to make decision when it comes to housing market. For instance, the government implements its policies to control the house price, housing loan, and housing affordability. The methods of making policies are not only affecting the housing sector, but also related to the country's development up to the extent of reducing poverty, monitoring inflationary pressure, and the interrelation between banking sectors as well as exchange rate.

House price can be defined as the cost of owning a house. Similar to other goods and services, house price can be very fluctuated based on many factors such as demand and supply for houses. House price is a necessary cost in daily life, it could influence the household wealth easily. This is especially significant during the time when house price is being too high until it is beyond the affordability. House price has to be staying at a balance extend where it is not too high nor too low. This is because higher house price will cause people getting harder to own a house, while lower house price will end up capital losses for investors and homebuyers (Hoynes & McFadden, 1994).

Similar to a stable politic environment in a country, a stabilized house price and housing sector are also very important to strengthen most of the economic activity in a

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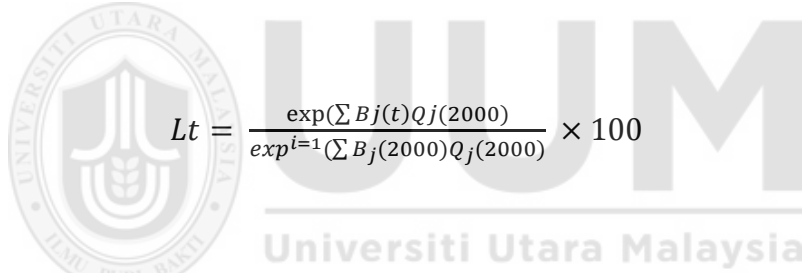
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APPENDIX

A. Derivation of Malaysian House Price Index

The Malaysian HPI is generated by using Laspeyres weighted formula (NAPIC, 2017). The data chosen is developed from 86 separate price models that represent 86 house category-index areas. It is derived from 46 models for terraced houses, 11 models for high-rise units, 13 models for detached houses, and 16 models for semi-detached houses. These indices are fixed-weight Laspeyres indices that used to estimate average house price of current period. The value of current house price will be used to compare to actual house price of base year (2000). NAPIC works out on those values and make revaluation each period so that the index presents pure price changes on a basis where the variations in housing characteristics are kept constant. Therefore, Laspyeres index is generated in the Equation [A.1].


$$L_t = \frac{\exp(\sum B_j(t)Q_j(2000))}{\exp^{\sum B_j(2000)Q_j(2000)}} \times 100 \quad [A.1]$$

where $\exp$ = exponent

L_t = Laspyeres index

$B_j(t)$ = the hedonic model regression coefficient of current period

$B_j(2000)$ = the hedonic model regression coefficient of the base year 2000

$Q_j(2000)$ = the characteristic averages for houses sold in 2000

In Equation [A.1], the denominator refers to actual house price in 2000 while the numerator is the current period. Therefore, for each Laspyeres index in a given time period that NAPIC obtains from Equation [A.1], a linear regression estimation of the natural logarithm is generated to form adjusted current house price base on base year (2000). To be specific, the linear regression is presented in Equation [A.2].

$$\ln P_{it} = \beta_0(t) + \beta_1(t)X_{1it} + \beta_2(t)X_{2it} + \dots + \beta_m(t)X_{mit} + \varepsilon_{it} \quad [A.2]$$

where $\ln P_{it}$ = natural logarithm of house price at time t

$\beta_0(t)$ = constant term

$\beta_m(t)$ = coefficient for the numerical and quality variable m for period t

X_{mit} = the observed value of the quantitative values for house i in period t

ε = error term

Each annual house price index is calculated by the regression coefficients. Its computation sets the price indices 2000 equals to 100.00 as base year. According to NAPIC (2017), the index is a weighted average that derived from 14 state-All Houses indices in Malaysia. The annual house price index being important in terms of summing up the state-terraced, state-high-rise, state-detached, and state-semi-detached indices.

B. Affordability Index

The affordability index describe the power of homebuyer to own a house. Theoretically, higher affordability index presents higher purchasing power on houses. In equations below, there are several key factors used to construct affordability index (Hashim, 2010). This index was developed by the National Association of Realtors (NAR) in order to measure the purchasing power of median income group to purchase median priced properties. The calculation of affordability index takes several factors into account, which include mortgage interest rate, down payment, and household income. In short, government policies that affect any of these factors will eventually influence the affordability index of the whole model. In

this case, higher affordability index reflects easier for homebuyer to purchase houses and vice versa.

$$\text{Monthly Payment} = \text{Median House Price} \times 0.8 \times \left(\frac{R}{12}\right) \div (1 - (1 + \frac{R}{12})^{-360}) \quad [\text{B.1}]$$

$$\text{Necessary Monthly Income} = ((\text{Monthly Payment} \times 12) \div \text{Median Family Income}) \times 100 \quad [\text{B.2}]$$

$$\begin{aligned} \text{Qualifying Income} &= \text{Income Necessary to Qualify for a Loan for Median House Price} \quad [\text{B.3}] \\ &= \text{Monthly Payment} \times 4 \times 12 \end{aligned}$$

$$\text{Housing Affordability Index} = (\text{Median Family Income} \div \text{Qualifying Income}) \times 100 \quad [\text{B.4}]$$

