The Relationship between Macroeconomy and Property Price on Housing Mortgage in Indonesia

Anastasia, Njo; Diyanto, Ferry
anas@petra.ac.id
Finance Program, Petra Christian University, Surabaya

Abstract. The growth of housing mortgage (HM) value displays a flourishing annual trend in line with the number of house purchase using the named credit facility. The amount of HM given by the bank to the buyer is affected by macroeconomic condition. The high inflation rate causes the people's buying power to weaken and triggers the interest rate to drop. Buyer receives benefit in a condition of reduced HM cost, as well as in the contrary condition, causing the proportion of HM to go up. This research aims to examine the relationship between macroeconomic growths toward the proportion of HM in Indonesia. Macroeconomic variables reviewed are Gross Domestic Product (GDP), inflation level, residential property price, and interest rate. The research period extends between the years 2005-2016 through Auto Regressive Distributed Lag (ARDL) bound test model technique in order to see the relationship between each variable. As a result, the test reveals a significant long-term relationship between the variables of GDP, inflation level, and residential property price with the HM proportion. However, no relation is found between the amount of interest rate and HM proportion.

Keywords: Macroeconomic, Property Price, Mortgage Proportion.

1 Introduction

On a survey done in 2015, Bank Indonesia described that 75.50% of Indonesian purchased a house through property credit [1]. The huge amount of enthusiasm on Housing Mortgage (HM) causes its proportion, that is the amount of HM released compared to the amount of bank release credit, also show an escalation. Indonesian Banking Statistic Report year 2013 – 2017 states that since the first and second quarter of year 2013, HM proportion escalates from 7.94% - 8.1%, then stabilized on 8% until the fourth quarter of 2016. A rise on HM proportion occurs on the first quarter of 2017 reaching 8.51% and is reduced insignificantly on the second quarter to 8.49% [2].

The growth of HM is closely related with property price and macroeconomic condition. This relationship is important for the economy and the future of a country. The policy designed by the government would become the basic of the monetary development in Indonesia. For example, when the interest rate and inflation rate are set too high, the people would lose their interest in applying for HM, therefore there would be a decline in HM demand when their purchasing power weakens. As a result, cases of loan problems would be reduced and as a long-term result, economic crisis could be prevented. In other words, the increase or decrease in HM proportion is adjusted with the current macroeconomic condition. HM fluctuation is related to Gross Domestic Product (GDP), inflation [3], interest rate [4], and property price [5]. Rising

GDP level will result in a rise on HM proportion vice versa. [3][6]. On the other side, the rise of inflation will cause the HM proportion to decline [3]. The rise of interest rate as well as the rise of property price will cause in a declining HM proportion [4][5]. This shows that the changes in GDP, inflation, interest rate, and property price are complementary with the amount of HM.

GDP is defined as the market value of goods or services produced with resources in a country within a certain amount of time [7]. The rise of GDP determines the advancing purchasing power of the people including the investment activity in the property market and results in a higher demand in property credit. A research done in Kenya displayed a relation between GDP and HM [7]. Inflation is another macroeconomic indicator that is used to determine the value of an asset. Higher inflation number causes costs to rise and demands to decline, and consequently reduces income. The dropping number of income is a sign of degrading purchase power that results in a decline on property loans demand. Sutandi Purnomosidi, the marketing director of Pakuwon Group stated that a controlled inflation is able to improve increase the demand of HM [8]. During the period from March 2012 until March 2013, inflation rate of 6.75% per year is able to give a positive impact on property business in East Java. Controlled inflation indicates the people's property purchasing power is able to stay, therefore the bank is able to provide this demand with a bigger number of property loan. In effect, HM proportion would also increase, agreeing with [3] which show that there is a relation between inflation and property loan.

Research [4] shows a relation on interest rate and HM realization in Indonesia The drop of interest rate in Bank Indonesia would also reduce the interest rate in property loan, which would improve the amount of property loan as well as HM proportion. Hidayat, the vice of Real Estate Indonesia in Central Java, affirms the statement through his statement: there is a decrease in HM interest rate from 10% fix 2 years into 9% fix 5 years that effects on the rise of house sales from 40 units on February 2017 to 56 units in March 2017 [9]. Also, property loan is bound with the property price itself. Property price in Indonesia is measured through Residential Property Price Index (RPPI) which has a negative relationship with HM proportion. Residential Property Price Survey (RPPS} done by Bank Indonesia shows that the rise of RPPI would lower HM proportion [10]. A research done by [5] that applies cointegration test displays a relationship between property price and property loan. Therefore, this research aims to test the relationship between macro economy and property loan with HM proportion as its indicator. The period that will be examined is the third quarter of 2005 until the fourth quarter of 2016. This research also uses ARDL (*Autoregressive Distributed Lag*) cointegration model because macroeconomic is a time series data that runs with time.

2   Literature Review

2.1 Demand Theory

Each individual in effort to fulfill their needs would make a choice on the required goods and service at the first place. Moreover, they would consider if the price is in agreement to their capability or else they would choose other goods and service. This behavior is in accordance to the demand theory: when the price of a certain goods or service rises, the number of the goods or service would decrease. On the other hand, when the price drops, the number of goods and service on demand would rise. This phenomenon is called as *ceteris paribus* [11]. This theory underlies

the demand of individuals or families housing need. However, this demand is not easily fulfilled because it is influenced by several factors, including macroeconomy.

2.2 Macroeconomy

Macro economy is a study on the world economy phenomena such as government regulation, inflation, and economic growth [12]. Macro economy is a branch of economic science that focuses on economic behavior and policy that influence the level of consumption, investment, trade, and payment of a nation. It heeds the connection between the level of labor, turnover of goods, and a number of economic assets of a country that results in trade transaction in the personal or national level [13]. Macroeconomic factor used in this research covers Gross Domestic Product (GDP), inflation, and interest rate.

Gross Domestic Product (GDP) is a tool to measure the national income of a country through its depiction on the amount of goods or service produced in a certain area and period of time. GDP is found in two forms: nominal and real GDP. Nominal GDP is the price or value that uses the current value, while real GDP is on a certain year and is constant. When the value used is the value applied at the time, each year the GDP would rise because of inflation and not because of the increase in the number of the production volume.

Inflation is a process of price increase on goods in the economy. The rise differentiates from period to period, which means that its value is volatile. However, inflation does not apply to all kind of goods. To measure inflation level, Consumer Price Index (CPI) is used. CPI itself is derived from items that are always used by consumers [14].

Interest rate is the number of interest set in the form of capital percentage [14]. Reference [15] defines interest as the cost of loan that has been made by the debtor and also as a rate of return over the investment made by the lender. Two different kinds of interest rate are saving and loan interest rate [16]. Macroeconomic factor also influences the mortgage market designed by the bank. The choice of loan interest rate is affected by availability factors. A certain price setting could affect the demand of a certain interest rate. The risk of the interest rate interacts along with loan risk, for a change in interest rate could cause a failure in payment and a rise of debt [17].

2.3 Property Price

Residential Property Price Index (RPPI) is one economic indicator that supplies the information on the development of residential property both on the ongoing and the future quarter [2]. RPPI represents a price of a residential property derived from Residential Property Price Survey (RPPS) done quarterly to retrieve information regarding residential property development both on the current quarter and the future quarter. The survey is done on developers on 14 big cities: Jabodebek-Banten, Bandung, Semarang, Surabaya, Medan, Padang, Palembang, Bandar Lampung, Yogyakarta, Banjarmasin, Denpasar, Manado, Makassar and Pontianak. RPPI data is in the form of price shown through an index, while the other on the form of respondent number percentage who answers the most.

Several researches show that there is a distinct relationship between property price and bank loan. When the bank strengthens its policy on loans, it would influence the feasibility of house buyers to receive financial help as well as directly reducing the demand on housing. The property market activity would also then slow down and indirectly the property price would be

affected. In countries with banking financial system, the system would be affected when the bank policy on loan is altered.

2.4 Credit

In Latin, credit is called "*credere*" which literally translates into trust. This means that the creditor trusts the borrower that the channeled loan would be returned as agreed. As the borrower who receives trust, one has the obligation to pay the loan according to the time period [18]. In a household, spending would be made to time to time. A household would choose to save when the income level is high, and tends to spend more when the income level is lower. This is reason is sustained through one's hope that the household income would increase in the future. Lending becomes an option as a household sacrifice their future income in order to pay for current spending. According to Bank Indonesia, loan given for household for residential property purchase is called Housing Mortgage (HM). This mortgage is used to fund personal real estate transaction while being guaranteed by real estate value. Bank or other financial institution that offers funding to house owners or prospective house buyers through mortgage is called mortgage initiators [20]. While mortgage loan is the type of loan that uses a warranty called property mortgage. Also, a loan facility obtained by a bank customer from the bank is the customer's right to make loan to buy or renovate a house. This facility is given individually [2].

2.5 Relationship between Macroeconomy, Property Price, and Property Mortgage

Research [3] tests the relation between GDP, inflation, and HM in Kenya. The results show a particular connection between GDP and HM. The property sector of the industry especially residential contributes to the growth of GDP through investment activity such as house renovation, house extension in order to fulfill the need of space for more family members, as well as the fee for property brokerage. The other side is the consumption activity that includes rent and utility fee paid by both the leaseholder and owner. One of the components in GDP calculation in computing national income is the cost spent to rent the unit occupied by the owner. If a rent designated for the owner is not taken into account, it would effect on house ownership level and cause GDP to decrease. All GDP components would be adjusted with the inflation level. When the GDP level is low, the people's purchase power weakens, causing the buyer and investor to spend less money. However the low level of demand caused by the weakening purchase power would trigger the decline in interest rate. For the prospective home buyer, this condition is advantageous because HM cost decreases. The demand on property mortgage and HM proportion would also rise. In other words, GDP has a negative relationship with property mortgage [19][5]. When inflation inclines, market share on new loan with a high interest rate would drop, because the borrower would choose a more affordable loan. This also shows a negative relationship between inflation and mortgage [3]. This relationship shows that when inflation rises, the people's purchasing power would decrease. With the diminishing number of transaction, the demand on housing credit would also decrease. Research [5] tests the relation between interest rate and housing credit show that there is indeed a particular connection. When interest rate increases, the people would choose to save money rather than making investment or consumption. In a certain period of time, the bank would reduce the amount of loan made because of the reducing loan demand. Housing price increase has a certain impact on real income. A demand on housing property, however, does not give a greater impact than a cheaper mortgage, since interest rate changes easily. The rise of property price would create a competition and growth in mortgage market, so the borrower tends to find a loan with a cheaper charge. In the rise of property price, the people's purchasing power weakens, triggering them to

reduce house purchase transactions. The demand on credit would also decreases together with the rise. In contrast, when housing price is cheap, the demand on credit rises, together with the rise of the people's ability to purchase a house.

H_1 : There is a relationship between GDP, inflation interest rate, and property price with property mortgage.

3   Methodology

In order to test the presence or absence of a relationship, the method of research chosen is cointegration. The closeness of between each variable with one another would be tested [21]. Cointegration model or long-term balance relationship has the condition in which each variable moves together towards equilibrium. If all the data of the variable is not stationary, deviations would be found. Theses deviations that occur from the equilibrium point (ddisequilibrium) on each variable are called short-term relationship. In this phase of the research, if no deviation is found, the research will continue with *Autoregressive Distributed Lag* (ARDL). However, if any deviation is found, *Vector Error Correction Model* (VECM) with Johansen model would be applied to correct the deviation from the equilibrium point.

The period of research is the third quarter of 2005 until the fourth quarter of 2016 in order to analyze the relationship between the independent variable macro economy and property price in Indonesia, as well as the dependent variable property credit with the indicator of housing mortgage proportion. The sample is decided through purposive sampling method, with a certain criteria [23] as stated:

1. Macro economy data in Indonesia published by the Central Statistical Agency (CSA) and Bank Indonesia (BI) during the 2005-2016 periods, in the form of quarterly data.

2. Property price in Indonesia published by Bank Indonesia (BI) during the 2005-201 periods, in the form of quarterly data and with the indicator of Primary Market Residential Property Price Index (PM-RPPI).

The analysis technique used to test the relationship between macro economy, property price, and property credit is time series regression analysis through the software *eviews 9* with the *Autoregressive Distributed Lag* (ARDL) method.

Table 1. Variable and Indicator Variable

Variable	Indicator
Dependent Varaible	
Property Credit	The comparison between Housing Mortgage (HM) on Total Mortgage
Independent Varaible	
Gross Domestic Product (GDP)	Log GDP comparison to Indonesian Population (= GDP per capita)
Inflation (I)	Persentage of change in Consumer Price Index in Indonesia
Interest Rate (IR)	REPO rate Bank Indonesia.
Property Price (PP)	Log Residential Property Price Index – Indonesia Primary Market

ARDL is an approach to estimate the relation within one time series data with another. ARDL analysis is applied when stationary data is mixed, with some variable stationary on the level and the remaining on the first difference. Stationary on the level variables are treated with the VAR method and first difference variable with VECM method. The first step is to test the stationary by using a common method that adds lag to the variable called Augmented Dickey-Fuller. While the Philip-Peron method uses a non-parametric statistic method, so the problem of correlation serial does not add lag. If the result of the Philip-Peron method does not consist of unit root, the data is considered not stationary and requires a unit root test. To continue, classic assumption test covering multicolinearity, heteroscedasticity, normality, dan autocorelation is done. The ecnometric model in this ARDL test is being denoted:

$$Y = \alpha_0 + + \beta\, X_{pdb} + \beta\, X_{inflasi} + \beta\, X_{sukubunga} + \beta\, X_{ihpr} + e_t \tag{1}$$

Note:
Y   = Housing Mortgage (HM) Proportion
X_{pdb} = Gross Domestic Product (GDP) per kapita
$X_{inflasi}$ = Inflation Rate
$X_{sukubunga}$ = Interest Rate
X_{ihpr} = Residential Property Price Index (RPPI)

4 Analysis and Discussion

The development of macro economy including property credit, inflation, interest rates, GDP, and RPPI described in Table 2 that displays an overview of macro economy factors as follows:

Table 2. Descriptive Analysis

	Mean	Median	Maximum	Minimum	Std. dev
HM (%)	0.079581	0.081009	0.123466	0.057080	0.009391
GDP (log)	6.460484	6.587022	6.981061	5.533002	0.419852
Inflation (%)	0.068748	0.064500	0.171100	0.027800	0.035479
Interest Rate (%)	0.076707	0.075000	0.127500	0.057500	0.018215
RPPI (log)	2.187350	2.169056	2.289009	2.104931	0.057358

HM proportion during the researched period has a maximum value of 12.35% in 2010-I and degrades until 8% level during 2016-IV. The maximum inflation level reached 17.11% and the minimum level is 2.78%, with the average interest rate of 7.61%. Before testing the relationship of these variables, stationary test is done upon each variable in 2 (two) stages, i.e. on the level and 1st difference as shown in Table 3.

Table 3. Stationarity Test

Variables	Stationary on level	Stationary on 1st *difference*
HM Proportion	0.0000	0.0000
GDP	0.0004	0.0000
Inflation	0.0030	0.0017
Interest Rate	0.0007	0.0000
RPPI	0.8924	0.0000

If the probability is bigger than alpha 5%, the variable is considered as not stationary, and therefore must be re-tested on 1st difference. The result shows that the variable proportion HM, GDP, inflation, and interest rate are stationary on level, while the RPPI is stationary on 1st difference. This research aims to reveal a result of mix stationarity test, therefore a classical assumption test followed by co-integration and long-run test and bounds test is done according to the ARDL model.

Table 4. Classical Assumption Test

Test	p-value	Describe
Prob. Jarque-Bera (normality test)	0.0000	Normal data
Prob. Chi Square (heteroscedasticity test)	0.1180	No Heteroscedasticity
Prob. Chi Square (auto-colinearity test)	0.2016	No Auto-colinearity

The classical assumption test has fulfilled the qualification, therefore no data bias occurs. Bounds test on the variable of HM proportion, inflation, interest rate, GDP, and RPPI reveals F-statistic 10.57285 and co-integration occurrence on I1 *bound* 3.49. This displays that there is a relation between the variable with HM proportion. Table 5 shows co-integration and long-run test that shows a significant relation between GDP, inflation, and RPPI towards HM proportion with an alpha less than 5%, except for interest rate.

Table 5. *Cointegration and Long-run test*

Variable	t-stat	Note
GDP	-3.949350	H_0 reject*
Inflation	-1.201550	H_0 reject*
Interest Rate	-3.656528	H_0 accept
RPPI	-3.499708	H_0 reject*

*) comparison level 1,98

Discussion

Household loan plays an important role on the economy by affecting GDP through aggregate demand as it stirs economic growth. Preceding research shows that the change on banking loan policy would bring a significant impact on housing financial system of a country [24][25]. In order to achieve the status of a country with high income, policy makers should design a regulation on credit market as an economy growth booster.

GDP per capita has a negative relationship with HM proportion: when GDP rises, HM proportion would drop. A low GDP indicates the people's weak purchasing power in which investment and consumption activity reduces. This leads to the lowering of demand, including property demand. With the lessening demand on consumption, the government would release a policy of lowered interest rate that is expected to reduce the cost of HM. This gives the consumer who wishes to buy a house a benefit through HM application and would therefore lead to the climb of HM demand, which is the comparison of HM proportion and the total amount of loan released by the bank. However, research [26] found the contrary: that there is a positive relationship between real GDP and real bank loan in the long term.

The same relationship occurs between inflation and property price, which is also related to HM proportion. According to the demand theory, when inflation rises, HM proportion would drop, and vice versa. A weak people's purchasing power causes the consumption and investment to be reduced, and would result on a dropping HM proportion. In contrast, a low inflation level leads to a strong purchasing power, enabling the people to use the money on consumption and investment activity. This empowers the people to purchase property, leading to a rise of HM demand and property loan released by the bank for the consumers who needs HM. The data from the year 2005 until 2008 shows an average inflation level above 10% and HM proportion level around 7% as an impact from the monetary crisis. Afterwards and until the year 2016, inflation level is reduced to the average of 5% and HM proportion rises to 8%.

Housing price has a negative relationship with property credit, because when property price rises, the amount of credit for house purchase decreases, and vice versa. A rising property price makes it difficult for the people to make immediate transaction in relation to their personal financial condition. Other daily living necessities are more prioritized and house purchase is postponed. When house price drops, the people take the chance to buy a house. This leads to the increasing number of credit process application in the bank. Research [5] states that property price has a significant long-term relationship with bank credit. However, research [27] about the relation of housing price and bank credit in Hong Kong shows that the adjustment made on bank credit influences property price, and not the other way around. This finding states that bank credit is the main factor in house price adjustment.

Interest rate in Indonesia does not show any significant relationship with property credit. As shown on research [22], the interest rate has no significant long-term relationship with the credit released by the bank. Whether the level of interest rate is in a high or low level has no relationship with the amount of credit released by the bank. Although this may be true, research [26] shows one distinct short-term relationship, that a change on interest rate would give a negative respond towards real bank credit. The limitation of this research is the use of interest rate variable from Bank Indonesia, which has no direct relation with the determination of credit interest on each bank.

5   CONCLUSION AND RECOMENDATION

By using ARDL, it is proved that house price variable with Primary Market Residential Property Price Index (PM-RPPI), regional GDP, and inflation has a long-term relationship towards property credit, that is, the amount of disbursed HM proportion. However, the amount of interest rate has no meaningful long-term relationship with property credit. The income escalation in property sector is supported by the level of inflation and a low interest rate, which boosts property credit expansion, regardless being constrained by upcoming residential developments. Governmental control in relation to financial deregulation and inflation level would create an aggregate demand, mainly on the rise of land price in areas with limited supply. It also gives a greater contribution on nominal income through residential property sector. Nevertheless, in the non-property sector, a change in capital income on financial companies also occurs. Most of the income that flows to the financial sector has the probability to relate with the growth of intermediation service; a service that traditionally relies on house warranty and finally on land price. For the people, it would be wiser and more beneficial to pay attention to the right timing of purchasing a house by watching the development of macro economy in Indonesia. On the long run, the decision to purchase a house immediately would bring a notable impact on the development of property market. The people's enthusiasm on buying a house through credit contributes to the macro economic growth. This research, however, has a limitation in its relation with interest rate. In future research, it is suggested to use a base interest rate that is able to represent the interest rate indicator.

References

[1]   Alexander, H.B.: Survei Terbaru 75 Persen Konsumen Beli Rumah Secara Kredit. Retrieved March 22 2017, from http://properti.kompas.com/read/2015/11/13/170000121/Survei.Terbaru.75.Persen.Konsumen.Beli.Rumah. Secara.Kredit. (November 13, 2015).

[2]   Bank Indonesia: Metadata SHPR. Retrieved October 20, 2017 from https://www.bi.go.id/id/statistik/metadata/ survei/Documents/3MetadataSHPR2012.pdf. (November 13, 2015).

[3]   Mogaka, A.J.: The Influence of Macro Economic Factors on Mortgage Market Growth in Kenya. Journal of Finance and Accounting, Vol. 3(40), pp.77-85. (2015).

[4]   Olyviolani, N. and Khairani, S.: Pengaruh tingkat suku bunga dan nilai angsuran terhadap realisasi Kredit Pemilikan Rumah (KPR) pada PT. Bank Tabungan Negara Palembang, pp.1-11. (2015).

[5]   Setianto, R.H.: Harga Properti Residensial Dan Kredit Perbankan Di Indonesia; Analisis Agregat Dan Dis-Agregat. Jurnal Manajemen Indonesia, Vol. 15(1), pp.39-50. (2015).

[6]   Levisauskaite K. and Varanauskiene, J.: Macroeconomic Factors'Influence On Mortgage Interest Rate Type Demand. Taikomoji Ekonomika: Sisteminiai Tyrimai, pp.101-112. (2013).

[7]   McEachern, W.: Ekonomi Makro: Pendekatan Kontemporer, Jakarta: Salemba Empat. (2000).

[8]   "Inflasi Terkendali Tingkatkan Permintaan Pasar KPR". Retrieved April 15, 2017, from http://id.beritasatu.com/home/inflasi-terkendali-tingkatkan-permintaan-pasar-kpr/58182. (May 5, 2015).

[9]   Widiastuti, A.W.: REI: Bunga KPR Turun Penjualan Terdongkrak. Retrieved April 18, 2017, from http://www.antarajateng.com/detail/rei-bunga-kpr-turun-penjualan-terdongkrak.ht. (February 15, 2017).

[10] Sumedi, D.P.: Indeks Harga Properti Residensial Jawa Timur Naik. Retrieved September 7, 2017, from https://bisnis.tempo.co/read/news/2014/05/16/090578241/Indeks-Harga-Properti-Residensial-Jawa-Timur-Naik. (May 16, 2014).

[11] Samuelson, P.A. and Nordhaus, W.D.: Ilmu Makroekonomi. Media Global Edukasi. Jakarta. (2004).

[12] Mankiw, G.: Teori Makroekonomi. Edisi Keempat Terjemahan. Jakarta: Erlangga. (2006).

[13] Dornbusch, R. Fischer, S. and Startz, R.: Macroeconomics. Singapore: McGrawHill. (2004).

[14] Sukirno, S.: Pengantar teori makroekonomi. (2ed.). Jakarta: PT Rajagrafindo Persada. (1998).

[15] Kasmir: Bank dan Lembaga Keuangan Lainnya. Edisi Revisi. Jakarta: PT.Rajagrafindo Persada. (2012).

[16] Ismail: Manajemen Perbankan: Dari Teori Menuju Aplikasi. Jakarta: Kencana. (2010).

[17] Posey, L.L., and Yavas, A.: Adjustable and Fixed Rate Mortgages as a Screening Mechanism for Default Risk. Journal of Urban Economics. Vol. 49(1). pp. 54-79. doi:10.1006/juec.2000.2182. (2001).

[18] Kasmir: Dasar-dasar perbankan. Edisi Pertama. Jakarta: PT. Raja Grafindo Persada. (2006).

[19] Hubbard, R.G. and Mayer, C.J.: The Mortgage Market Meltdown and House Prices. The B.E. Journal of Economic Analysis & Policy, Vol. 9(3). (2009).

[20] Culp, C.L.: A Review of The Academic Literature on the Causes and Evolution of the Credit Crisis. Studies in Applied Finance. Johns Hopkins Institute for Applied Economics, Global Helath, and the Study of Business Entreprise. (2018).

[21] Arikunto, S.: Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: Rineka Cipta. (2006).

[22] Ujuju, L.E. and Etale, L.M.: Macroeconomic analysis of the relationship between interest rate, economic growth and bank lending in Nigeria. European Journal of Business and Innovation Research, Vol. 4(3), pp.29-37. (2016).

[23] Sugiyono: Metode Penelitian Kuantitatif, Kualitatif dan R&D. Bandung: Alfabeta. (2013).

[24] Greef, I.J.M. and De Haas, R.T.A.: Housing Price, Bank Lending and Monetary Policy. Paper presented At The Financial Structure, Bank Behaviour and Monetary Policy In The EMU Conference, Groningen. (2000).

[25] Hilbers, O., Qin Lei, P. and Lisbeth, Z.: Real Estate Market Developments and Financial Sector Soundness, IMF Working Paper No. 01/129, Washington: International Monetary Fund. (2001).

[26] Mansor, H.I. and Mohamed, E.S.: Bank lending, macroeconomic conditions and financial uncertainty: Evidence from Malaysia, Review of Development Finance, Vol. 2(3–4), pp.156-164. (2012).

[27] Gerlach, S. and Peng, W.: Bank Lending and Property Prices in Hong Kong. Journal of Banking & Finance, Vol. 29(2), pp.461–481. (2005).