

BASE LENDING RATE AND HOUSING PRICES: THEIR IMPACTS ON RESIDENTIAL HOUSING ACTIVITIES IN MALAYSIA

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Abstract

The construction sector, which had grown rapidly in the early 1990s, encountered slower growth after the financial crisis. The decline in the construction industry, however, is cushioned by the residential property construction. This paper examines empirically whether the increasing trend in residential property construction is related to changes in base lending rate and house prices. Pooled EGLS model (Cross Section Seemingly Unrelated Regression) is used to analyze the impact of lending rate and housing price upon the trading volume of residential housing activities. The results show base lending rate is the key determinant of residential housing activities. However, changes in housing prices may not necessarily influence residential housing activities in the country when there is a mismatch between current and desired housing for all. In view of the substantial number of housing left unsold, several recommendation and precautionary measures for housing provision should be made before it leads to a property glut. This study is crucial to housing developers and policy makers as any housing decisions not always should be made just on the basis of interest rates and house prices, but should pay more attention to the efficiency and effectiveness of housing delivery system in the country.

Field of Research: Residential Housing Activities, Base Lending Rate, Housing Price Index

1. Introduction

Many economists view the construction industry as a kind of subordinate industry whose purpose is to serve the requirements of the agriculture and manufacturing sectors. There are other researchers who hold different viewpoints. They believe that the role of construction activity is fundamental to the economic growth process at the local and international levels. Field and Ofori (1988) pointed out that the construction industry should not be perceived as simply providing infrastructure and solutions to the problem of shelters, but also as a major catalyst in the change process. As defined by Wells (1985), the construction industry comprises all civil-engineering work and all types of new residential and non-residential projects, as well as the maintenance and repair of existing facilities. In developing countries, more than half of total construction output may be in civil-engineering projects, such as transport facilities, power projects, irrigation, drainage, and water supplies.

The importance of the construction industry to the national economy can be verified from the percentage of contribution to Real Gross Domestic Product (Real GDP). According to the Department of Statistics Malaysia (2005), the contribution of the construction industry to Real GDP in Malaysia increased from 3.5% in 1990 to 4.8% in 1997. The construction sector in Malaysia, which had grown rapidly in the early 1990s, however encountered problems during the financial crisis. The share of construction industry in Real GDP decreased gradually to 2.9% in 2004. The contraction in the construction industry was due to restraints in civil engineering projects. Department of Statistics Malaysia figures showed that the increased rate of construction investment was much lower than that of GDP growth rate and manufacturing growth rate after the Asian Financial Crisis in 1998. For example, the growth rate of construction decreased significantly to around -1.9% in 2004. The crisis that hit Asia in July 1997 had significant negative impacts on the economy throughout the region. For example, the economy in Malaysia, on average, had grown 8.7% annually for the ten years prior to the crisis, experienced a negative growth of -7.4% during 1998. It is interesting to note that the decline in infrastructure and utilities projects in the construction industry is cushioned by residential property construction. Residential property construction has mitigated further contraction in the construction industry since 1998. Residential housing construction contributes significantly to overall production activities as it can strengthen economic performance through the construction of houses. Residential housing construction is very closely linked to the macro-economy. The number of housing starts is the first leading indicator of economic growth (Tiwari, 2001). An increase in housing starts indicates an upward swing in economic growth and a downward trend precisely the reverse. In Malaysia, residential housing activities have been identified as a key driver for growth in line with the government's objective to shift the nation's growth strategy to domestic sources (Eight Malaysian Plan, 2001). Residential housing always remains the driver of the property market with its more than 60% share of the volume market transactions from 1990 to 2007 (Property Stock Report, 2008).

The boom in the residential housing market in Malaysia is generally caused by an adjustment to mortgage liberalization from 1999 to 2004. Loan disbursements by the banking system to the property sector are important to the purchase of residential properties. Based on reports from the Central Bank of Malaysia, the property sector accounted for 33.6 percent of total commercial banks' loans in 1996. The share of the broad property sector in total bank loans has further increased from 34.9 percent in 1997 to 44.8 percent in 2003. The mortgage loan wars between commercial banks have brought interest rates to an all-time low. The average base lending rate (5.98%) in 2004 was the lowest in the history, which reduced the constraints that households faced in obtaining home financing. Given the nature of home financing, variable short-term and long-term interest rates significantly affect households' cash flow position. Furthermore, many homeowners refinance their mortgages with the falling interest rates, leaving additional spending money to purchase another house. The relative prices of owning may appear to be an important determinant of the increasing trend of residential housing activities. An increase in house price should, all else equal, reduce residential housing transactions by increasing user costs and cash-flow

constraints on house buyers. But if price increase help trade-up homeowners secure the down payment needed for a new house, then the price effect might work in the opposite direction. With this background this paper aims to examine empirically whether the changes in residential housing activities are significantly affected by changes in lending rate and house prices in Malaysia.

2. Residential Housing Activities, Base Lending Rate and House Prices

In studies of what determine residential housing activities, several researchers over the past two decades have asserted that house price is one of the motivations explaining residential housing activities. Traditional theoretical and empirical evidence shows that the quantity demanded by consumers increases as the price falls for most goods and services. If the quantity demanded for housing behaves like other demand relationships, holding all of other factors constant, lower prices should increase the quantity demanded of housing which has resulted in an increase in residential housing activities. The drop in price has both a substitution effect and an income effect. The substitution effect captures the changes in housing consumption associated with a change in the price of housing, with the level of utility held constant; whereas the income effect shows the changes in housing consumption brought about by the increase in purchasing power, with the price of housing held constant. Thus, if the price of housing falls, we would expect more housing activities in the country.

However, some researchers document the positive relationship between changes in housing consumption and changes in prices. Stein (1995) found a positive relationship between the level of housing consumption and the change in house prices for existing single-family homes between 1968 and 1992 using American data. The explanation behind the positive relationship is resulted from the amount of liquidity constraint that households face. As defined by Maki (1993), liquidity constraint is the amount of present net worth for housing purchase, which made up of the housing down payment, repayment period and amount, and consumption of goods and service other than housing. Stein (1995) demonstrated that falling house prices mean liquidity constrained households are less likely to be able to repay their mortgage debt, and the same time, to be able to transfer sufficient equity to meet the down payment on a new house. Hence, the ability to move to a new house depends on the selling price of the existing home. Once the mobility of households decreases, it will generate the positive relationship between house prices and housing transactions. Using aggregate time-series data, Andrew and Meen (2003) also found a strong positive relationship in Britain.

In addition to house prices, variations in interest rates may affect the decision of the household to relocate to a new house. Quigley (1987) analyzed the effect of interest rate upon householder mobility using the Panel Study of Income Dynamics (PSID) in the United States from 1979 to 1981. Results reveal that there are effects of interest rate changes on household mobility in the housing market as an increase in the interest rate will increase the value of an existing mortgage contract. There is an extensive literature documenting the implicit and explicating costs of relocating. Householders, who like to relocate to a new house, require paying penalties under the existing mortgage contract, as well as up-front payments associated with new mortgages for a new house. As a result, householders have an incentive to postpone moving to a new house in periods of high interest rates. In this case, the decrease in mobility will generate a negative relationship between interest rates and housing transactions. Quigley (1987), Potepan (1989) analyzed the effects of interest rate variations on homeowner behavior during a period of high interest rates using the PSID data for 1979. Their analysis suggested that during periods of high interest rates, householders are more likely to renovate existing house rather than to move to a new house. In addition to the effects of interest rate variations upon homeowner mobility, several researchers have asserted that the government, who are interested in reducing overheating in the housing market, would like to tighten monetary policies by increasing base lending rate. The implication of such policies is that an increase in

the lending rate or cost of borrowing can curb speculation activities in the housing industry (Fama and Schwert, 1977).

3. Data and Methodology

The purpose of this section is to apply the conceptual discussion and quantitative data to econometric tests of determinants of the residential housing activities. Pooled EGLS model (Cross Section Seemingly Unrelated Regression) is used to analyze the impact of base lending rate and housing prices upon residential housing activities. In modeling the relationships, several hypotheses are established. These hypotheses are to assess whether house prices and base lending rate exhibit relationships with the total volume of residential housing activities in Malaysia.

The quarterly data collected are base lending rate (BLR), housing price index (HPI), and volume (in units) of residential housing activities in Malaysia for the period 2000 - 2006. The base lending rate is taken from the statistical yearbook from the Central Bank of Malaysia. The housing price index is based on the average price index published by the Ministry of Finance, Valuation and Property Service Department. The source of volume of residential housing activities is published in the annual property report from the Ministry of Finance's Valuation and Property Service Department. The quarterly data from 13 states (Kuala Lumpur, Selangor, Johor, Penang, Negeri Sembilan, Perak, Melaka, Kedah, Pahang, Terengganu, Kelantan, Perlis, and Sabah) in the country are used to estimate determinants of residential housing activities.

3.1 Variables used in the Model

In this study, the dependent variable is residential housing activities. The independent variables are house price index and base lending rate. For panel data analysis, this study uses the equations below:

$$TR_{it} = \beta_0 + \beta_1 BLR_{it} + \beta_2 HPI_{it} + \varepsilon_{it} \quad (1)$$

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \cdot \\ \cdot \\ \cdot \\ Y_m \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ \cdot \\ \cdot \\ \cdot \\ X_m \end{bmatrix} \cdot B_{k \times l} + \begin{bmatrix} e_1 \\ e_2 \\ \cdot \\ \cdot \\ \cdot \\ e_m \end{bmatrix}$$

where

TR_{it} = Volume of residential sub-sector housing activities

BLR_{it} = Base Lending Rate, measured in percent

HPI_{it}	=	House Price Index
β_0	=	Intercepts for TR
β_1, β_2	=	Coefficients to be estimated
ε_{it}	=	Error terms for TR.

The equations above show that TR_{it} is the volume of property transactions. i represents cross-section and t represents time. BLR and HPI represent base lending rate and house price index respectively. β_0 is the intercepts. β_1 and β_2 are the coefficients to be estimated. ε_{it} is the error terms. TR_{it} is expected to have a positive relationship with house price index and a negative relationship with the base lending rate.

4. Discussion of Results

Table 1: Variance Inflation Factor (VIF)

Parameter	Explanatory Variable	R ²	VIF
β_1	BLR_{it}	0.364012	1.57
β_2	HPI_{it}	0.532352	2.14

In order to assess whether the equation suffers from the problem of multicollinearity, VIF is computed. Table 1 shows that all VIF values are less than 5, indicating there is no multicollinearity problem in the model.

This following section presents results of the partial effect of HPI and BLR on the volume of residential housing activities. In this model, the total pool (balanced) observation is 364.

Table 2: Results on volume of residential housing activities (Model 1)

Variables	Model 1	
	Coefficient	Std. Error
C	52.33496*	2.731439
BLR	-2.958496*	0.410597
HPI	-0.000888	0.003286
Weighted Statistics		
R-squared	0.940104	
Adjusted R-squared	0.933079	
S.E. of regression	1.611942	
F-statistic	133.8264	
Prob(F-statistic)	0.000000	
Durbin Watson statistics	1.745537	
Redundant Fixed Effect	461.070900 (F statistics)	
Cross-section F	0.0000 (p-value)	

* < 0.05

The findings of Model 1, drawing data for the period 2000 – 2006, show that base lending rate is significantly related to residential housing activities. As indicated earlier, the demand for residential property is encouraged by the low interest rates and attractive loan packages. The mortgage loan wars between commercial banks have brought interest rates to an all-time low. Based on the figures from the various issues of reports of the Central Bank of Malaysia, average base lending rate decreased from around 11% in 1998 to 5.98% in 2004. Low and stable interest rates (average base lending rate) amidst ample liquidity continued to support the financing needs of the households during that time.

In contrast to the findings of Stein (1995) and Andrew and Meen (2003), the negative relationship between housing prices and housing activities is reported. However, the relationship is not statistically significant at 5% level. The insignificance level of house price suggests that the changes of house price do not appear to have a strong influence on residential sub-sector housing activities in Malaysia, which is not in line with the findings of Stein (1995). The insignificance relationship is mainly a result of property overhang in the country. The residential industry, which had grown rapidly in the 1990s, however encountered property overhang of residential properties recently. The Malaysian government defines property overhang as residential housing, industrial and retail shop units have been issued with the certificate of fitness for occupation (CF) and have remained unsold for more than 9 months (Property Market Status Report, 2005). As reported in Property overhang (2002), the total number of unsold residential properties was 59,750 in December 2002, rising by 10.1% from 54,265 units in the third quarter of 2002. Similarly the overhang value was increased by 14.5% from RM6.89 billion in the third quarter of 2002 to RM7.88 billion in the fourth quarter of 2002. Additionally, most of the overhang units surprisingly are affordable to most households (price at RM 150, 000 and below). It is reasonable to believe that property overhang distorts the efficiency and effectiveness of the housing provision for all in the country.

Additionally, Redundant Fixed Effect has been performed to test for specification errors in Model 1. As reported in table 2, there is a specification error in the model ($p=0.0000$; reject H_0 : there is no specification error for cross-section fixed effects). A potential problem in Model 1 is the presence of serial correlation. It is more likely for quarterly data to exhibit serial correlation between errors that are likely to be highly correlated. It makes sense to suspect that the error of the present quarter is correlated with the error of the same quarter last year.

If errors are serially correlated, many alternative assumptions can be made to represent the dependence in the errors. One of the simplest assumptions is that the errors are autoregressive of order 1, also known as the AR (1) process:

$$\varepsilon_{it} = \rho \varepsilon_{it-1} + \eta_{it} \quad \text{with} \quad |\rho| < 1 \quad (2)$$

Note that η_{it} satisfy assumptions that errors have equal variance and they are uncorrelated. It can be shown that the correlation structure implied by the AR (1) assumption is:

$$\text{Corr} (\varepsilon_{it}, \varepsilon_{it-1}) = \rho \quad (3)$$

Note that (3) can be generalized to an AR (k) process:

$$\text{Corr} (\varepsilon_{it}, \varepsilon_{it-k}) = \rho^k \quad (4)$$

Hence, (3) is obtained by setting $\rho = 1$

The regression model with AR (1) errors is

$$\begin{aligned} TR_{it} &= \beta_0 + \beta_1 BLR_{it} + \beta_2 HPI_{it} + \varepsilon_{it} \\ \varepsilon_{it} &= \rho \varepsilon_{it-1} + \eta_{it} \quad \text{with} \quad |\rho| < 1 \end{aligned} \quad (5)$$

Table 3: Results on volume of residential housing activities (Model 2)

Variables	Model 2	
	Coefficient	Std. Error
C	41.82272*	3.868854
BLR	-1.279869*	0.599658
HPI	-0.000359	0.003195
AR(1)	0.426101*	0.048615
Weighted Statistics		
R-squared	0.943778	
Adjusted R-squared	0.941260	
S.E. of regression	1.010410	
F-statistic	374.8997	
Prob(F-statistic)	0.000000	
Durbin Watson statistics	2.054450	
Redundant Fixed Effect Cross-section F	-1.933116 (F statistics) 1.0000 (p-value)	

* < 0.05

Table 3 also shows the result of autoregressive of order 1. The coefficient associated with lending rate is highly significant, indicating that cost of borrowing has an influence on housing transactions. However, housing price index still remains insignificant with autoregressive term of order 1. It is interesting to learn that there is no evidence of autocorrelation in the residual (Durbin Watson test statistics = 2). Again, Model 2 would be more appropriate to determine the housing activities as there is no specification error (p=1.0000; do not reject H0: there is no specification error for cross-section fixed effects).

5. Conclusions and Implications

The following section highlights the main policy implications from this study before conclusions are drawn. From the analysis, housing decision makers should notice the lending rate is the significant driving force to the increasing trend in residential transactions in the country. Generally, house buyers have an incentive to buy a new house using borrowed money in periods of low interest rates.

No doubt financial institutions are unlikely to need reminding that they need to remain competitive on mortgage packages. However, a significant degree of control by the government in releasing mortgage loans is needed. The historically low interest rate in the late 1990s and early 2000s was a major contributor to the UK and USA rise in house prices (Coleman IV et al 2008; Sanders, 2008). The spectacular rise in house prices also made Collateralized Debt Obligations (CDOs) an attractive investment for UK and USA

banks simply because the collateral backing the CDO was rising in value. CDOs start out life as a mortgage, in the USA many Saving and Loan (S&L) institutions sold their mortgage debt on to the main Wall Street investment bank in turn, these investment banks bundled together a group of mortgages and sold them on the money market as an investment bond to other banks and organizations (Foote et al, 2008). Unfortunately, problems with CDO started in US when large number of people started to default on their mortgages. The decreased value of any CDO based mortgages, later has led to recent credit crisis in the world financial market. Even though the Malaysian housing market is in adequate position to withstand the recent global financial crisis, it is still important to make sure all Malaysian financial institution are insulated against the financial meltdown.

As mentioned by Tan (2009), the efficiency and effectiveness of housing provision in the country requires housing developers to exercise caution in launching new housing projects in order to avoid further supply-demand mismatch in the housing industry. Once there is a mismatch between current and desired housing of all households, changes in house prices may not exert significance influence upon housing activities. As mentioned earlier, the insignificance relationship is mainly a result of property overhang in the country.

In view of the substantial number of housing left unsold, several precautionary measures for housing provision should be made before it leads to property glut. As indicated by Tan (2009), the majority of unsold houses are situated in poor location with no adequate amenities and facilities. As such, housing developers are urged to do their homework before constructing houses, particularly location decisions. In addition to a project site location, they are required to undertake research to ascertain market needs. For example, they should provide quality self-contained housings within a functional residential development where householders can find the place within the new residential township to work, shop, school, and fulfill recreational needs.

Besides precautionary efforts by housing developers, the government should formulate policies aimed at improving the efficiency and effectiveness of the housing delivery system in the country. Changes must be made to revamp the country's housing delivery system as the improved delivery system can streamline process prior to construction concerning land, planning and building plan approval. A drawn up work-flow chart details working processes with a time frame must be spelt out for the action to be taken by each and every technical department involved in the housing delivering process.

In conclusion, base lending rate is the key determinant of the residential housing activities in most of the states in Malaysia for the year 2000 - 2006. However, changes in house prices may not necessarily influence residential housing activities in the country when there is a mismatch between current and desired housing of all households. Housing developers and policy makers must consider that any housing decisions not always should be made just on the basis of interest rates and house prices, but should pay more attention to the efficiency and effectiveness of housing delivery system in the country.

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