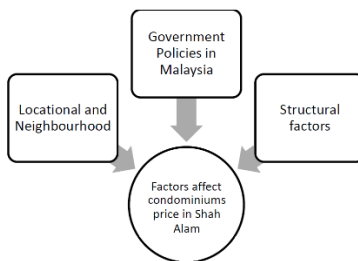# DETERMINANTS OF CONDOMINIUM PRICES IN SHAH ALAM

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Graphical abstract

Abstract

Property prices have significantly been increased over the past few years, notably in the rapid developed state such as Selangor. Most of the low-to-mid range income households could not be able to follow the trend of upsurging housing prices, subtly causing housing unaffordability, potential of property bubble and low successful rate on accepted house loans in Malaysia. With all these constraints in property purchasing, low-to-mid range income households are having difficulties in purchasing a good and value property due to the lack of guidance and references in current market. Therefore, this paper aims to study the determinants of property prices in Selangor. As a state capital of Selangor, Shah Alam is selected as the study area in this research while condominium prices are studied and analysed in this research since condominiums are the most famous type of property for low-to-mid range income households in Malaysia. The determinants influencing condominium prices are categorised into locational and neighbourhood factors, structural factors as well as governmental policies. Multiple linear regression analysis is carried out in this research to study determinants of condominium prices in Shah Alam. This research finding indicates that significant determinants affecting the price of condominiums are built-up area, strata titles ownership and number of storeys. The finding of this paper serves as a good reference for low-to-mid range income households in purchasing condominiums in Shah Alam.

Keywords: Multiple Linear Regression, Price, Condominium, Determinant

Abstrak

Harga hartanah telah meningkat sejak beberapa tahun kebelakangan ini, terutamanya di negeri pesat seperti Selangor. Kebanyakan isi rumah berpendapatan rendah dan sederhana tidak dapat mengikut trend peningkatan harga rumah dengan ini menyebabkan keadaan tidak mampu membeli, potensi gelembung harga hartanah dan kadar rendah berjaya ke atas pinjaman rumah diterima di Malaysia. Dengan semua kekangan ini dalam pembelian hartanah, isi rumah berpendapatan rendah dan sederhana menghadapi masalah membeli rumah yang kualiti and bernilai kerana kekurangan bimbingan dan rujukan dalam pasaran semasa. Oleh itu, Kajian ini bertujuan untuk mengkaji penentu harga hartanah di Selangor. Sebagai ibu negeri Selangor, Shah Alam telah dipilih sebagai kawasan kajian manakala harga kondominium telah dikaji dan dianalisis dalam kajian ini sebab kondominium adalah jenis hartanah yang paling sesuai untuk isi rumah berpendapatan rendah dan sederhana di Malaysia. Penentu harga kondominium boleh dikategorikan kepada beberapa factor seperti faktor struktur, factor dasar-dasar kerajaan dan sebagainya. Analisis regresi linear dijalankan dalam kajian ini untuk mengkaji penentu harga kondominium di Shah Alam. Analisi kajian ini menunjukkan bahawa penentu harga kondominium yang menjejaskan harga kondominium adalah luas rumah, tajuk strata pemilikan dan bilangan tingkat. Analisi kajian ini berfungsi sebagai rujukan yang baik untuk isi rumah berpendapatan rendah dan sederhana untuk membeli kondominium di Shah Alam.

Kata kunci: Analisis regresi linear, harga, *kondominium,* penentu

1.0 INTRODUCTION

Development of the housing industry plays an important role in urban economy especially to developing country such as Malaysia. It provides employment opportunities as well as motivates the local and oversea investors. Many households and investors see residential properties as an attractive form of investment and residential property prices have been indirectly increased due to high demands from household and investors. In another words, the evolutions of house prices are always affected by the households, investors and housing economists.

Housing markets tend to keep a fast pace in major cities, such as Selangor which has being well developed during the years especially with good infrastructure. Moreover, the demographic changes in Selangor also bring up the housing industry. Furthermore in recent years, high-rise residential had gained popularity among Malaysians and it also become the mode of living for the country"s middle and upper class families (Zarin, 1999) [22]. Despite the high rise unit price in Selangor has experienced in an increasing growth, people still often invested in this development. This can be due to the pertinent attributes of high-rise properties such as the sharing of facilities and co-ownership of common properties (Hoon & Science, 2008) [7].

Malaysia house prices have significantly expanded over the past few years which the increase in house prices in the country can bring serious impacts such as issues of unaffordability, potential of housing bubble and effects on domestic economy (Ong, 2013) [17]. In fact, Malaysia had experienced a dramatic upswing in housing prices during the period of years 2009 to 2012. Moreover, the rapid growth of Kuala Lumpur and Selangor has also caused the property prices to increase drastically (Suhaida et al., 2011) [19]. Figure 1 shows that the house price in state Kuala Lumpur and Selangor experienced upscale and more valuable than average house price in Malaysia.

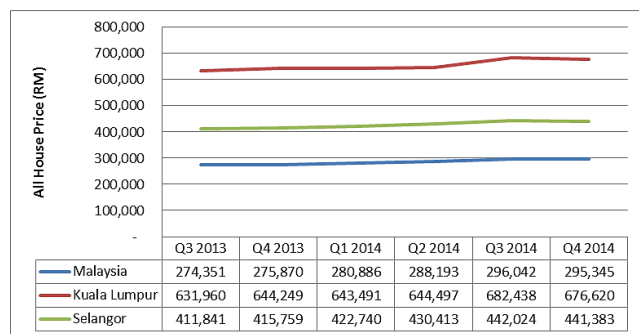|	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014
Malaysia	274,351	275,870	280,886	288,193	296,042	295,345
Kuala Lumpur	631,960	644,249	643,491	644,497	682,438	676,620
Selangor	411,841	415,759	422,740	430,413	442,024	441,383

Figure 1 Average House Price of Malaysia, Kuala Lumpur and Selangor

Furthermore, referring to a finding by US-based urban development researcher Ng, (2014) [16] reveals Malaysia's residential housing market is "severely unaffordable", even more out of reach than residents in Singapore, Japan and the United States. Zainal Abidin Hashim (2010) [21] argued that the unsustainable of housing can be caused by fluctuation in house prices which do not synchronise with income and the price of house is too high where owners not able to afford monthly mortgage payments. Moreover, the continuously upswing of housing price may lead to housing bubble where if the bubble burst, house market will experience losing persistent rise in house price (Liew & Haron, 2013) [13].

How to control the current situation of high properties price effectively? If the house prices increase continuously, this may leads to issues such as affordability of homeownership and housing bubble? The fluctuation of property price can be caused by various factors including locational and neighbourhood factors, structural factors and government policy. Factors influencing housing prices have to be identified in order to control the housing price and house market before it grow into an unhealthy condition. As such, it is important to determine which factors that causing the upswing of house prices.

Over the past decade, the factors affecting property prices has been attracting interest and concern of buyers or investors. According to (Azmi et al., 2012) [1] property values are subjected to various factors and hence making it difficult to be derived. Several factors have been identified which making up housing price increases. Among the factors are locational and neighbourhood factors, structural factors as well as government policies and economic factors. Each of these factors contributes differently to the property prices. It is important for buyers or investors to determine and study these factors before buying a property.

Good location and neighbourhood characteristic are one of the key factors that determine the prices of real estate (Szczepańska, Senetra, & Wasilewicz-Pszczółkowska, 2015) [20]. Home buyers will priorities the public amenities and environment offered by the house"s neighbourhood while determining the location of their residence as stated by (Lee & Lin, n.d.) [12].Generally, locational and neighbourhood can be categorised into accessibility to local amenities, transportation infrastructure and environment quality.

Distance is always describing as a key factor that affect the preference of home buyers while deciding to buy a property (Sean & Hong, 2014) [18]. Accessibility towards local amenities such as school, recreational parks, places of worship and shopping mall will significantly influence the price of houses. Besides, parks also had a positive effect on house prices even the ability to view the park may have effect on property price too. Hui et al. (2012) [8] point out house prices positively increase with the accessibility to green living and nature space. (Jim & Chen, 2006) [10] mentioned that most developers believe that price of apartments can increase

positively with a pleasant green environment and garden view. Additionally, places of worship are found to have positive effects on neighbouring condominium price within certain distance (Brandt, Maenning, & Richter, 2015) [3]. Likewise, accessibility towards healthcare facilities and shopping mall surprisingly appears significantly and negatively effect on house prices due to noise and traffic (Brennan, Olaru, & Smith, 2014) [4].

Transportation infrastructure has impact directly to the condominium prices and rents. Real estate prices have always been closely related to the availability of public transport where the homeowners often willing to pay more to stay at a location accessible to public rail transit (Moorthy, 2014) [15]. This is supported by Liew & Haron (2013) [13] who mentioned house price can be risen once updated with public infrastructure such as public transport nearby. Indeed, rail transit can have both positive and negative impact towards properties price. Efthymiou & Antoniou (2013) [6] mentioned that transaction price increases to a property which is less than 500m from a tram or less than 50m from a bus stop. Furthermore, there will have significant impact on property prices of the area that announced to build the new rail facilities even before the station was opened. Developers will generally forecast the potential property prices of that area by considering factors that may contribute to the values, thus caused the increases of property prices. Conversely, housing prices that located too close and too far from the highways are low, while those situated in a moderate distance are higher in price (Efthymiou & Antoniou, 2013) [6]. In some cases, prices of properties situated nearby the transit reduce due to privacy and security concerns.

However, (Kilpatrick, Throupe, Carruthers, & Krause, 2007) [11] claimed that with accessibility to transportation infrastructure also comes with negative externalities of pollution. This is due to the pollution produced by the transportation infrastructure which bring negative affects to the neighbourhood, especially rail stations, airport and ports. Generally, air pollution are caused by increasing of human and industrial activities, thus houses that is near to the rail station which suffering from traffic congestion will have higher levels of air pollution (Efthymiou & Antoniou, 2013) [6]. (Chau, Wong, Chan, Lam, & Zealand, 2006) [5] suggested that buyers are willing to pay more for less polluted environment, particularly apartment prices which are found to be more sensitive to air quality in more polluted areas. In addition, noise pollution is another key determinant of real estate prices (Szczepańska et al., 2015) [20]. For instance, (Efthymiou & Antoniou, 2013) [6] indicated that house prices are discounted up to 0.63% per decibel of noise around the highways and noise generated from the taken off and landing by airplane result the dwelling prices drop around the International Airport of Athens. This is because either air or noise pollution will contribute to serious health problems to the residents.

Structural factors refer to all physical conditions and the quality of the property (Sean & Hong, 2014) [18]. Common structural factors including building age, floor level, number of storey, built-up area and number of rooms which each factors bring significant effects to the property prices either positively or negatively.

Floor level refers to the vertical distance between a property and the landscape factor (Sean & Hong, 2014) [18]. It is believed that condominium on higher floor levels usually are priced higher compare with those on lower floor levels due to less noise disturbance and better air quality by considering the proximity to avenues and streets. The preferences of residents toward landscape views are noticeably different when a condominium is above certain floor levels. For instance, (Hui et al., 2012) [8] suggested the sea view is the most important landscape factor in contributing to a better transaction prices for condominiums with floor level below 20th floor.

Furthermore, number of storey, rooms and built-up size are significantly affect housing price too (Sean & Hong, 2014) [18]. Higher construction costs is incurred and longer construction time is required to building with higher number of storey, rooms as well as larger built-up, therefore the property prices will generally higher because developers will generally forecast the potential risk he may face during the constriction and also to cover the cost incurred. Additionally, building age has directly brought negative effects to the house prices.

In Malaysia budget 2014, the latest version of RPGT is announced where there is a significant increase to the current RPGT rates to further curb speculative activities in the local real property market. The new RPGT rate will be 30% for properties sold within the first three years, 20% for properties sold in the fourth year, 15% for properties sold in the fifth year and in sixth and subsequent years, no RPGT is imposed on citizens or permanent residents. In order to reduce the speculative activities, the RPGT rate has increased from 15% to 30% and extending the period from two years to three years. This is due to the past RPGT have leads to many speculators who buy and sell properties for short-term gain have distorting real demand.

Strata titles ownership is believed to affect house prices and also parties' interests in buying a property (Hussin & Pardi, 2003) [9]. Malaysian Strata Law has always been commented as outdated and inadequate compare to countries like Singapore and Hong Kong. Fortunately, Strata Titles (Amendment) Act 2013 and Strata Management Act 2013 finally enforced on 1st June 2015. The amended Strata Titles Act has injected clarity and security in the sales and purchase as well as management of subdivided.
Recent government policies and rapid economic growth making Malaysia as an emerging property market among foreign investors (Sean & Hong, 2014)

[18]. In fact, lending, GDP and property prices are interrelated to one another. Particularly GDP play an important role in influencing the house price. During the period of high growth in GDP, income of the citizen have been increased, demand of houses tend to increase which causing short shortage of supply directly increase the price of property.

2.0 METHODOLOGY

The determinants influencing condominium prices are categorised into locational and neighbourhood factors, structural factors as well as governmental policies. As a state capital of Selangor, Shah Alam is selected as the study area in this research while condominium prices are studied and analysed in this research since condominiums are the most famous type of property for low-to-mid range income households in Malaysia. Multiple linear regression analysis is carried out in this research to study determinants of condominium prices in Shah Alam.

Property transacted price is required in the research in order to carry out a valid analysis to achieve the objectives. The transactions data in year 2013 & 2014 is collected from JPPH in Shah Alam branch. JPPH is set up and act as a property information center in Malaysia to provide accurate, comprehensive and timely information to all parties involved in the property industry. Property transacted prices plays an essential role for studying the property price trend in the current market. Besides that, property transacted price also the key component to measure the hedonic price in comparing the housing price in particular area and years. One of the classical goals of price statistics is quantification of the "true price change" in a certain quality (Brachinger, 2003). [2]

Figure 2 Factors affecting condominium prices
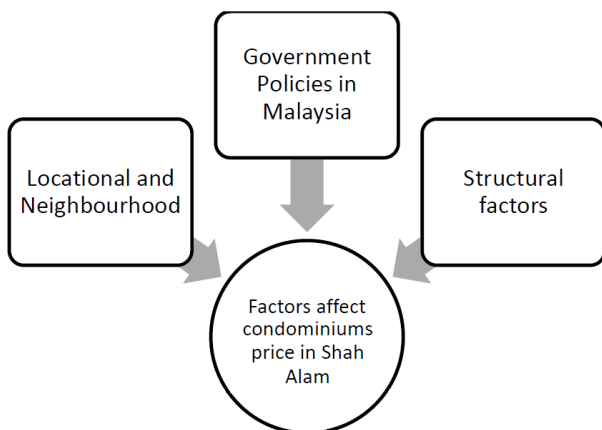
Locational and neighbourhood factors, structural factors and government policies are the potential factors that contribute to the changes of high rise properties' price. Tenure, strata titles ownership, built-up area, number of storey, number of rooms, age of building, locational facilities, GDP growth rate and

RPGT data are collected and tested by using hedonic regression analysis. Besides, several locational and neighbourhood factors has been analysed in this research. Nearest walking distances between each property to the locational and neighbourhood variables are measured by using Google map.

3.0 RESULTS AND DISCUSSION

A total of 14 variables are inserted into the model of condominiums which includes tenure (jenis lot), strata titles ownership (pegangan), built-up area (luas ibu), number of storey (tingkat atas tanah), number of rooms (bil bilik tidur), age of building, GDP growth rate, RPGT, distance to Setia City Mall, blue mosque, Taman Botani Negara, MAZ International School, nearest KTM station and Kesas highway.

Table 1 Enter Method Model Summary of Condominiums

R Square	Adjusted R Square	Sig. F Change	Durbin-Watson
0.764	0.728	0.000	2.157

The Sig. F Change of the analysis is 0.000 which is below 0.050. Furthermore, the Durbin-Watson value of 2.157 for condominiums which is near to 2.000. It indicated that correlation is not significant in this model.

R Square is used to define the percentage of the response variable variation that is explained by the linear model. It is also known as the coefficient of multiple determinations for multiple regressions. According to table 1, model of condominiums has R Square value of 0.764 or 76.4% which indicates the variables entered into the model is reasonably well fitted and significantly affecting the house prices.

Table 2 Coefficients of the independent variables for Condominiums in Shah Alam

Model	Unstandardized Coefficients, B	Sig.
(Constant)	-31313.026	0.859
Jenis Lot(Strata title ownership)	68326.528	0.000*
Pegangan (Tenure)	-13163.097	0.267
Luas Ibu (Built up area)	2273.443	0.000*
Tingkat Atas Tanah (Floors above ground)	3989.933	0.010*
Bil Bilik Tidur (Number of rooms)	6618.200	0.805
Age of Building	1306.243	0.365
Setia City Mall	-3186.087	0.470
Blue Mosque	-89.452	0.988
Taman Botani Negara	-2375.437	0.515
International School	3895.809	0.065
Kesas Highway	998.308	0.655
KTM Station	8079.070	0.272
GDP Growth Rate	2365.438	0.889
RPGT	4616.354	0.887

Dependent Variable: Price

The independent variables are significant and bring substantial impact to the dependent variable if the significant value is below 0.05. Strata titles ownership, built up area and floors above ground are the significant variables affecting condominium prices in Shah Alam.

Besides that, B value indicates the degree the independent variables affecting dependent variable, either positively or negatively. Built up area in table 2 has the Sig. value of 0.000 and B value of 2273.443, this explains that the price of condominiums will be increased by RM 2273.44 for every square meter added to the built up area. This is supported by previous similar study that conducted by Management & Taxes (n.d.) [14] which mentioned that the larger the built-up area, the higher the value of the property. With the same method of interpretation, the price of condominium will be increased by RM 3989.93 for every storey added. This result aligns with condominium selling prices in the market as most of the developers will sell higher condominium units in higher prices.

Strata title ownership has the Sig. of 0.000 and B of 68326.528 in the table 2. The result indicates that condominiums with developer titles are averagely RM 68, 326.53 more expensive. In Malaysia, transfer strata title ownership is always a buyer's concern, particularly to the high-rise residential properties. In short, condominiums with strata title theoretically should be more expensive compared to condominiums with developer titles. However, this phenomenon may be caused by the massive price gap between newer condominiums and older condominiums. This result indirectly shows that newer buildings with developer titles are averagely higher in selling price compared to older buildings with strata titles. The price gap between older buildings and newer buildings are vast and it may be caused by the upsurge of the property prices in recent years.

4.0 CONCLUSION

Hedonic regression analysis has been used to study the relationship between each factor to the condominium prices in Shah Alam. The significance factors affect the price of properties have been discovered. Structural factors such as number of storey, number of room and strata titles ownership are significantly influencing the price of condominium in Shah Alam. Surprisingly, neither government policy factor nor locational and neighbourhood factor is significantly affecting the condominium property price in Shah Alam.

However, the scope of study for this research is only limited to the condominiums located in Shah Alam. This research can be further expanded by adding more structural factors, government policy factors, locational and neighbourhood factors into the hedonic regression model. Additionally, a qualitative approach or another quantitative approach is recommended to analyse the condominium prices in Shah Alam to increase the accuracy of the findings as well as cover the externalities which missed out in this quantitative analysis

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