Speculation Or Rational Bases For Real Estate Pricing : Understanding Condominium Values In Penang Before The Financial Crisis Using A Hedonic Price Approach

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Abstract

This study investigated whether valuation of condominiums during the "value boom" prior to the Asian financial crisis was based absolutely on buyers' speculation, or on the buyers' evaluations of the housing attributes. To achieve this, the hedonic price model was used to investigate the effects of locational, structural, and neighbourhood attributes on the price of condominiums, and to examine whether buyers are willing or unwilling to pay for desired (or undesired) housing attributes. The sample comprised 177 actual condominium sales transacted in the year of 1996. The transaction records were randomly selected from six major estate development areas on Penang island. Using the semi-natural logarithmic functional form and the Ordinary Least Squares method, 10 independent variables were regressed onto the exchange price of the condominiums. Square terms were added for the continuous variables of distance to CBD, floor area and floor level to examine if the respective degree of change in these variables occur at an increasing or decreasing rate. The results revealed that buyers were rational and that the valuation of condominiums in Penang is attribute-driven. Cemetery view and distance to CBD registered negative coefficients, while all other attributes influenced the price positively. Proximity to shopping centres was statistically insignificant.

Key words:Hedonic price model; Asian financial crisis; condominium valuation; Penang.

Introduction

The financial crisis in Asia that began with the devaluation of the Thai bath in July 1997, had significant economic and social impacts throughout the region. In particular, many newly industrialised countries, particularly Indonesia, Taiwan, Hong Kong, Korea and Malaysia, suffered from currency devaluations that had a devasting effect on their economics. For example, the economy in Malaysia which on average had grown at 8.7% for the 10 years prior to the crisis, slumped to a negative growth of –4.8% (Usilappan, 2000).

The construction and property boom that took place in the 1980s came to an abrupt halt during the crisis. In Penang, Malaysia records showed that there was a massive increase of over 600% in the number of condominiums built between 1995 and 1996 (Geh, 2000). However, during the crisis many developers of these luxurious condominiums could not find buyers. According to records, Penang was the worst hit state during the crisis in 1998 (Usilappan, 2000), and there were thousands of unsold units of condominium in that year. Abandoned projects were also common. The situation became so serious by the first quarter of 1998 that the government made the unprecedented move of holding a "Home Ownership Campaign" nationwide to stimulate growth in the home ownership sector.

This scenario is in stark contrast to the situation before the Asian financial crisis. Prior to the crisis, prices of condominiums soared to such unprecedented levels as to give the impression that valuation of properties in Penang during that period was purely speculative, and property prices were insensitive to the housing attributes.

Literature on the hedonic price approach reviewed below indicated that it is generally understood that prices of properties are linked to the preference for particular housing attributes. A review of extant literature also revealed that numerous empirical studies have been conducted to examine the relationship between attribute preference and the price of properties. However, to date, no empirical work specific to Penang has investigated attribute preference for properties with respect to locational, structural and neighbourhood attributes, whether before, during or after the financial crisis.

Hence, the aim of this study was to apply the hedonic price model to examine the relationship between the price of condominiums and the attributes of the condominium units prior to the property market crash during the Asian financial crisis. Implicit prices of the locational, structural and neighbourhood attributes of the condominiums in Penang were analysed to ascertain if the valuation of the condominiums were based purely on buyers' speculation or on their rational judgement of the housing attributes.

The Hedonic Price Model

The hedonic price model, developed from the works of several scholars, including Lancaster (1966), Rosen (1974) and Freeman (1979) has hitherto been extensively used to assess the attributes affecting the price of a product, as well as the marginal contribution of each attribute.

The hedonic price approach views individual properties as composite commodities, comprising a bundle of attributes. Typically, the housing attributes are classified into locational traits (L), structural traits (S), and neighbourhood traits (N). The market price (P) of the property is expressed as:

$$P = f(L, S, N) \qquad (1)$$

The Partial derivative of the above hedonic function with respect to any attribute is the marginal change in the valuation of the

property, ceteris paribus (Rosen, 1974). This implicit price of the housing attribute is revealed in the regression coefficient, as the hedonic pricing approach employs the regression technique to measure the implicit prices of the property (Freeman, 1979; Rosen, 1974). Under the assumption that there is an equilibrium of demand and supply for the housing attributes, the implicit prices that are revealed indicate the buyers' valuation of each of the attributes. The price of the property, then, is the sum of the implicit prices for its attributes.

Locational Attributes

Locational attributes, such as distance to the central business district (CBD) and job accessibility, have been found to affect house prices. In most studies, accessibility to the CBD has been operationalised in terms of travelling time, cost of travel, convenience and availability of different transport modes (e.g., Chau, Ng & Hung, 2001; So, Tse & Ganesan,1996). Savings in transportation cost and frequency of transport services appear to have a positive impact on house prices. However, Kain and Quigley (1970) found that higher income households with higher education tend to live farther away from the CBD, suggesting that house price is determined not only by accessibility or travel costs, but possibly also by air pollution and other environmental attributes of the location.

View is also associated with the location of a dwelling site (Benson, Hansen, Schwartz & Smersh, 1998; Mok, Chan & Cho, 1995). Properties endowed with a view usually command higher premiums. Mok ital year for example, found the coefficients positive for sea-view as buyers are willing to pay for a view of the sea. There were also studies that indicated a strong positive correlation between view and floor level (So ital., 1996). Besides, units located on higher levels are comparatively less noisy and cleaner.

Tse and Love (2000) found that cemetery view has a negative impact on house prices. It is plausible to surmise that many buyers would not favour such morbid views, particularly those who are superstitious and who prefer good feng shui (geomancy).

Structural Attributes

Structural attributes previously studied include floor area (Carroll, Clauretie & Jensen, 1996; Mok ital., 1995), number of rooms, bedrooms and bathrooms (Fletcher, Gallimore & Mangan, 2000; Garrod & Willis, 1992; Linneman, 1980; Mok, 1995; Rodriguez & Sirmans, 1994). Generally, buyers are willing to pay more for more space, thus bigger units in terms of actual floor area or number of rooms, usually fetch higher premiums.

Researchers also surmised that building age is negatively related to property prices. Kain and Quigley's (1970) study showed that a new structure sold for $3,150 more than an identical unit that was 25 years old. They found that this was due to the fact that, ceteris paribus, older houses are worth less because they incur more costs in maintenance and repair, and also have decreased usefulness due to changes in design, electrical and mechanical systems (Clapp & Giaccotto, 1998).

Neighbourhood Attributes

Linneman (1980) found that about 15 to 50 percent of the standardised variation in site valuations is attributed to neighbourhood attributes and for structurally identical sites, as large as 100 percent of the difference in site valuations is induced by neighbourhood attributes. Goodman (1989) argued that neighbourhood attributes cannot be explicitly valued. They can only be implicitly valued through hedonic pricing by comparing properties with differing neighbourhood qualities. Factors that enhance neighbourhood

quality will have a positive impact on house prices whereas negative externalities will depress the value.

Mok ital. (1995) and Tse and Love (2000) found that the provision of facilities in large housing estates, such as private clubhouse, swimming pool, landscaped garden, gymnasium and various kinds of sports facilities would increase the prices of such properties.

Haurin and Brasington (1996) report that the quality of public schools, measured in terms of expenditures per pupil (Ketkar, 1992) and student achievement levels (Clauretie & Neill, 2000; Jud & Watts, 1981; Ketkar, 1992; Walden, 1990) has a significant influence on property prices. Clark and Herrin (2000) assert that attributes of schools have a greater impact than either crime or environmental quality.

Past studies also indicate that proximity to shopping complexes and the size of shopping centres affect the value of residential properties (Des Rosiers, Lagana, Theriault & Beaudoin, 1996; Sirpal, 1994). Proximity to shopping centres reduces travelling costs and makes shopping convenient. Des Rosiers et al, however, commented that shopping centres could be associated with some negative externalities such as congestion and noise pollution.

In summary, there is a strong body of hedonic price literature that links housing attributes to property prices.

Method

Population and sample

In this study, data from private residential condominium sales were used due to the fact that the market prices for public housing are determined both by market factors and government housing policies, where the government subsidises the final price for social reasons. Moreover, only low-income earners are qualified to purchase the properties.

The population was the total sales transacted for the condominiums from 1 January to 31 December in the year of 1996 (3221 records). The year 1996 was selected because it was the period prior to the crisis during which property sales were particularly brisk and the prices were relatively high but stable. These data were derived from the sales records randomly selected from six major estate development areas on the island. The areas were the Northern Coast, Georgetown, Air Itam/Paya Terubung/ Farlim, Greenlane/Jelutong, Gelugor/Batu Uban/Sungai Nibung, and Bayan Baru/Bukit Jambul/ Relau/Sungai Ara. Although the data were derived from the six major areas of development, the condominium units basically shared similar attributes and variations in building qualities were negligible. The homogeneous feature of the condominiums within similar price ranges complies with underpinning assumptions of the hedonic price model.

The 3221 transactions were scrutinised. Repeated records and records with incomplete information were not taken into consideration. The vital information required was the transaction price, transaction date, address of the unit, actual floor area (in square feet), and all the attributes that will be included in the regression analysis. After vetting through the transaction data, usable data were 776 records. The actual sample that was used in the hedonic price analysis, comprised 177 records that were randomly chosen from these 776 records.

Data Collection

The data for the study were sourced from Raine and Horne International Zaki & Partners Sdn. Bhd., one of the Professional real estate agents in Penang. Information on all property transactions is usually acquired from the government through the Valuation and

Property Services Department by the real estate agents, such as Raine and Horne International Zaki & Partners Sdn. Bhd. These official data are then made available to members of the public.

To verify the attributes of the units in the sample, two visits to the condominiums were carried out. The first time us distance visit was to measure the actual road distance from the sampled condominiums to the city centre of Georgetown (Penang's CBD). The second trip was undertaken so that on-site observations could be conducted to ensure there was homogeneity in the sample. Homogeneity in structural and neighbourhood quality is vital as it satisfies the basic assumptions of the hedonic price model, thus enabling the application of the model to the study of properties in Penang.

The dependent variable was the resale price of the condominiums as stipulated in the Sales and Purchase Agreement expressed in Ringgit Malaysia (Note: Since the Asian financial crisis, the government of Malaysia has pegged the exchange rate at US$1 = RM3.80. To date, this rate remains). Only transaction prices in the resale market were used as these depict the true market prices. Developers frequently sell above or below the market prices, hence sale prices during the launching of new condominium units are often distorted.

The Variables

There were many potential attributes that could have influenced property prices. However, Butler (1982) contended that only attributes that are costly to produce and yield consumer utility should be considered. According to Butler, models that use a small number of key variables will suffice because, to some extent, all estimates of hedonic price models are mis-specified. Mok ital. (1995) also justified economizing on the number of variables because biases due to missing variables are small and have negligible prediction and explanatory power on the equation. Thus, only variables that had a major influence were used. Decision on the choice of these variables was based on the formal qualitative survey on housing attributes conducted by the real estate agent.

A total of 10 independent variables selected a priori were regressed against the exchange price of the condominium units. The variables were selected so as to capture a range of potential locational, structural, and neighborhood influences that are relevant to local conditions. These variables are listed in Table 1 while Table 2 summarises the descriptive statistics of the sample.

Table 1

Housing Attributes

Attributes	Definition	Variable	Expected sign
Locational (L)	Distance to Central Business District (in km)	DCBD	-ve
	Sea-view	SEA	+ve
	Cemetery view	CEM	-ve
	Tenure of land	TEN	+ve
Structural (S)	Actual floor area (in ft^2)	AFA	+ve
	Floor level	FLO	+ve
Neighbourhood (N)	Facilities	FAC	+ve
	Environmental quality	QUA	+ve
	Shopping centres	SHOP	+ve
	Premier school	SCH	+ve
Dependent variable	Selling Price (RM)	P	

Table 2

Descriptive Statistics (n = 177)

Variable	Minimum	Maximum	Mean	Standard Deviation
Price (RM)	108 000.00	486 000.00	195 509.32	73 936.95
DCBD (km)	1.7	20.5	10.5	5.2
AFA (ft^2)	683	1737	924.4	221.8
FLO	1	27	7.5	5.8

Locational variables

Distance to Central Business District (DCBD) was operationalised as the actual distance in kilometres from the condominiums to the focal point of business activities in the city centre of Georgetown, Penang. Since distance to CBD is associated with accessibility and convenience, the coefficient was predicted t o be negative. It was expected that the farther away the condominium units were from the CBD, the lower would be the price of the units.

Sea-view was treated as a dummy variable in this study. Any condominium unit that could view the sea (SEA) from any angle was assigned a value of 1, with a value of 0 assigned if this was not the case. Usually, condominiums with a panoramic view of the sea fetch a higher price. Hence, a positive regression coefficient was expected for the attribute of sea-view.

Views of the cemetery (CEM) were expected to connote a negative coefficient as cemeteries typically generate feelings of morbidity and gloom. Superstitious buyers and feng shui believers particularly would be unlikely to place a high value for units that view the cemetery. Thus, it was predicted that prices of condominiums that face cemeteries would not be as high because buyers would not favour such units. Any condominium unit that could view the cemetery from any angle was assigned a value of 1, and 0 otherwise.

Any building with freehold title (TEN) was assigned a value of 1 and with leasehold title, a value of 0. Generally, buyers are willing to pay more for properties that are built on freehold land compared to leasehold buildings because freehold is viewed to be more permanent whereas leasehold implies ownership for a stated period of time. Therefore, TEN was expected to be positively related to the price of the condominium units.

Structural variables

Buyers usually take the physical characteristics of the condominiums, such as size, floor level and number of bedrooms and age of the building into account. However, number of bedrooms was not included in the model. This was to avoid the overlapping effect of size and number of bedrooms. Age of the condominiums was also not included because the comdominiums in the sample were relatively new. Even if there were variations in building age, the differences were not excessively large to create a significant effect on buyers' judgement.

The size of the condominium was measured by its actual floor area (AFA) in square feet. For this variable, a positive regression coefficient was expected because extra space, particularly functional space, adds value to the condominiums.

The floor level (FLO) included the car park level (if car parks provided were on the same block

of the condominium units). The coefficient for the floor level on which the unit is located was expected to be positive, implying that the higher the floor, the more expensive the unit. This is because higher levels usually get better views and are relatively quieter and cleaner.

Neighbourhood variables

Neighbourhood variables define the quality of the neighbourhood. As provision and availability of facilities (FAC) would enhance the value of condominiums, a positive coefficient was expected. Condominiums with a swimming pool and at least three other -types of facilities, such as gymnasium, tennis court, community hall, and security services were assigned a value of 1 and 0 otherwise.

The environment quality (QUA) was measured by on-site observation of the existence of or the provision of a garden, landscaping and children's playground. Any condominium with a garden, landscaping or children's playground was assigned a value of 1, and 0 otherwise. Since gardens, landscaping and children's playground are often viewed by buyers as attributes that enhance the quality of the environment, QUA would have a positive regression coefficient, which means that property prices will increase when these features are in the vicinity of the condominiums.

The availability of shopping centres (SHOP) was measured by on-site observation of the existence of big shopping centres within a radius of 2 kilometres. The big shopping centres selected a priori were KOMTAR (Tun Abdul Razak Complex), Penang Plaza and Sunshine Square. Any condominium unit within the vicinity of any of these shopping centres was assigned a value of 1 and 0 otherwise. The sign of the coefficient for SHOP was expected to be positive because of shopping convenience.

Quality of public schools is inevitably an important aspect to consider, especially for buyers with school-going children. Proximity to elite or reputable schools was hypothesised to increase the value of residential properties, therefore the regression coefficient was expected to be positive. The attributes school (SCH) was measured by the distance within 2 kilometres from the premier schools, namely, Penang Chinese Girls' High School, Chung Ling High School, St. Xaviers' Institution, St. George's Girls' School, Convent Greenlane and the Methodist Girls' School. These are very established school and have over the years known to produce excellent results in the public examinations. Condominiums within 2 kilometres of any of the schools were assigned a value of 1 and 0 otherwise.

Functional Form

In this study, the semi-natural logarithmic model was employed. According to Mok et al. (1995), the adoption of this functional form in housing market analysis is not uncommon as theory is ambiguous about the appropriate functional form. The semi-natural logarithmic specification provides a reasonably close approximation to the best fitting non-linear model. Furthermore, the semi-log specification may remove the problem of heteroscedasticity (Fletcher et al., 2000). Thus, the condominium unit prices were expressed as a vector of continuous and dummy variables, as shown below:

$$\begin{aligned}\text{Log}(P) = {} & \beta 0 + \beta 1\,(\text{DCBD}) + \beta 2\,(\text{DCBD})2 + \beta 3\,(\text{SEA}) + \beta 4\,(\text{CEM}) + \beta 5\,(\text{TEN}) \\ & + \beta 6\,(\text{AFA}) + \beta 7\,(\text{AFA})2 + \beta 8\,(\text{FLO}) + \beta 9\,(\text{FLO})2 + \beta 10\,(\text{FAC}) + \beta 11\,(\text{QUA}) \\ & + \beta 12\,(\text{SHOP}) + \beta 13\,(\text{SCH}) + \mu \qquad (2)\end{aligned}$$

Where Log (P) is the natural logarithm of the transacted price, $\beta 0$ is the constant, βi (for i = 1, 2, , 13) is the regression coefficients, and μ is a random element that indicates the unobserved variations in the condominium unit prices (P). The continuous variables are the price of the condominium (P), distance to the central business district (DCBD), actual floor area (AFA), and floor level (FLO). The remaining variables in the equation are dummy variables. The estimators of the continuous variables indicate the corresponding price elasticity.

The square terms were added for the continuous variables so as to capture any potential non-linear effects that increase at an increasing or decreasing rate (Chau, Ma & Ho, 2001; Tse & Love, 2000).

Results and Discussion

Multicollinearity was not detected among the independent variables while White's (1980) test also revealed that the model did not have the problem of heteroscedasticity. The results of regressing the data by Ordinary Least Square method (Table 3) indicated an adjusted R2 of 0.866 ($F = 88.416, p<0.01$). Thus, the explanatory power of the model is quite satisfactory.

Table 3

Regression Results

Variable	Coefficient	Standard	t-statistic	Probability
(Constant)	10.573	0.181	58.388	0.000
DCBD	-4.388E-02	0.017	-2.530	0.012*
$DCBD^2$	1.462E-03	0.001	2.220	0.028*
SEA	6.177E-02	0.028	2.194	0.030*
CEM	-0.144	0.046	-3.133	0.002*
TEN	0.206	0.029	7.215	0.000**
AFA	1.876E-03	0.000	6.211	0.000**
AFA^2	-5.226E-07	0.000	-3.893	0.000**
FLO	1.622E-02	0.006	2.699	0.008*
FLO^2	3.051E-05	0.000	0.129	0.898
FAC	7.033E-02	0.034	2.053	0.042*
QUA	0.144	0.060	2.407	0.017*
SHOP	3.591E-02	0.036	0.997	0.320
SCH	0.121	0.051	2.373	0.019*

Dependent Variable: Log (Price)
$R^2 = 0.876$
Adjusted $R^2 = 0.866$
F-statistic = 88.416 (p = 0.000)
Standard error of the estimate = 0.1195
Number of observations = 177 *p<0.05 *p<0.01

The signs of the regression coefficient for all the locational, structural, and neighbourhood attributes were as surmised. All the coefficients were also statistically significant at the $p < 0.05$ level, except for proximity to shopping centres. This could be attributed to the only occasional need for shopping as opposed to the everyday effect of other variables, or that the negative impacts associated with shopping centres, (noise, pollution, etc.) were strong.

It is apparent from this research that distance from the CBD is an important attribute that buyers look for when they invest in properties. The results revealed a 4.4% drop in the price of the condominiums for every 1 km increase in the distance from the CBD. This means that buyers were willing to pay a higher premium for condominiums located in the areas that are close to the city centre of Georgetown compared to areas that are in the outskirts of the city.

However, the negative impact of increasing distance from the CBD on the condominium prices decreases as the overall distance increases. It can be inferred that the disadvantages of living in condominiums farther from the city-centre tends to decrease due to a combination of alternative positive locational attributes (proximity to beaches, for example) tends to counterbalance the loss of utility from the distance from the CBD.

As hypothesised, the coefficient for sea-view (SEA) was positive. Condominiums with views of the sea are worth approximately 6% more in price than those condominiums that do not have a sea-view.

The coefficient for FLO reveals an increase of 1.62% for each floor level. This lends support to the notion that buyers prefer higher floors in order to get better views of the sea and other sites. Those seeking peace and quiet might also opt to stay at higher floors.

As expected, buyers did not favour a cemetery view, with results indicating that cemetery views cause a price reduction of as much as 14.4%. The coefficient for the dummy variable (CEM) generated was negative and statistically significant ($p - 0.002$).

Both freehold tenure of land and actual floor area, showed a positive relationship with price. It is likely that buyers prefer freehold land titles mostly because these units have better resale values. Buyers were also willing to pay 0.19% more premium for an increase of 1 ft in the floor area. However, an increase in AFA will raise the real price of condominiums at a decreasing rate. This may be because after a minimum required size has been attained, buyers tend not to emphasise size, unless the units are sold at a discounted price.

The provision of facilities such as swimming pool, gymnasium, tennis court, community hall and security services by the management increases the price by 7%. Condominiums with good environmental quality such as a garden, pleasant landscaping and a playground for children were also positively correlated with price ($p<0.05$). The results revealed that environmental quality raised the prices by 14%. Proximity to premier schools appeared to be a desirable attribute, too, with price increases of 12% as indicated.

While the reasons for the relationship between price and individual variables is not always clear, it is reasonable to conclude that the valuation of condominiums in Penang prior to the Asian financial crisis was not based on sheer speculation. The buyers were rational and sensitive towards housing attributes, thus the prices were market-driven.

Implication and Limitations of the Study

The results of the investigation into whether the property market before the Asian financial crisis is purely speculative or market driven has some important implications.

Since the results empirically proved that the property market in Penang is not completely speculative, housing developers can harness information on the implicit prices for better planning and construction of private condominiums. Planning should take into consideration the desired housing attributes such as freehold land tenure, sea-view, proximity to CBD, and premier schools, as well as environmental quality, floor area and floor level, which are all valued by the prospective buyers.

Knowing which attributes that negatively affect the value of the condominiums will also help these developers launch feasible projects with attractive housing attributes that meet the customers' needs. For instance, developers should well take heed of the negative influence of cemetery view on the valuation of properties. This matching of housing attributes to buyers' preference will not only enhance customer satisfaction, but would help the developers in making better and informed pricing decisions.

Policy-makers and urban planners too should reevaluate their practice of formulating plans and decision-making. Specifically, decisions pertaining to where to locate cemeteries and schools should take into consideration the housing attributes that influence the valuation of the residential properties.

Although the research study generated some important and interesting findings, it has some limitations . This study was confined to residential properties, specifically condominium units. Industrial, retail and office as well as recreational properties were not considered. It is thus unknown whether buyers manifest the same rational behaviour in regard to commercial properties.

Also, only locational, structural and neighbourhood attributes that were though to have a significant impact on the valuation of condominiums were examined. As well, the study focused on distance to the city-centre of Georgetown alone. Proximity to other focal points was not considered. Variables such as quality of sea-view or actual distance from the cemetery and structural quality of the units were not included in the model. Hence, the generalisability of these findings may be somewhat limited.

Futhermore, this research only used sales transactions that occurred in the year of 1996 and the sample was restricted to the island side of Penang. It may therefore, be difficult to generalise the findings to other parts of Malaysia or South East Asia.

Conclusion and Suggestions for Future Research

The hedonic price analysis undertaken in this study clearly revealed that prices of condominiums in Penang are determined by the preference for certain locational, structural and neighbourhood attributes. Although, investment in condominiums may still entail the element of speculation, it is unlike investments in the share market. This is because in purchasing residential properties, buyers are rational and are unwilling to pay a high premium for undesired housing attributes. Thus, this study concludes that the valuation of condominiums in Penang is market-driven and that variations in the condominium prices even during good times, is not a result of pure speculation.

Further research is required to confirm that the same findings hold true for commercial properties. Studies investigating other focal centres are also recommended, as the employment centre is no longer confined to the city-centre of Georgetown. Other focal centres, for examples, the industrial park or industrial free trade zone may be equally attractive because many penangites work in the factories, thus proximity and easy access to the factories may be a pertinent attribute

that influences the price of condominiums near the industrial park.

Other housing attributes may also be added as the current study revealed that only 87% of the variance in the price were explained by the variables specified. Specifically, attributes such as the layout design, structural quality, different types and quality of views, actual distance of the condominiums from the cemetery, the size an range of merchandise of the shopping centres, and so forth could be investigated. Variables not related to locational, structural and neighbourhood attributes could also be examined to ascertain their influence on the valuation of properties.

Studies could also be designed to look at the different market segments. For examples, the attribute preference of buyers from various religious backgrounds might differ. Also, as there are variations in the stipulated duration of ownership for leasehold land, the significant influence of the differing duration of leasehold tenure on the valuation of condominiums merits investigation.

Perhaps, interested parties should replicate the study in the other less developed states in Malaysia, so that the results can be compared and a more concrete inference can be made about the valuation of properties in Penang.

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