

ANALYSIS OF ECONOMIC DETERMINANTS OF AFFORDABLE HOUSING PRICES

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There is high possibility that the housing shortage in Malaysia will remain for a long time. However, while the existing housing stock is insufficient, constraints on income distributions have created affordability gaps by creating an imbalance between demand and supply. To increase housing supply, the government is providing homes directly as well as providing tax reliefs and subsidies to the developers, contractors and prospective home buyers. However, despite the measures the housing supply and distribution gaps are growing persistently. Therefore, there is the need to provide answers to a number of questions. It is the aim of this current study to examine the economic determinants of affordable housing. Through a cross sectional survey questionnaire, involving 71 homeowners, 13 cost determinants were established for affordable housing. The study provides insight into cost determinants of affordable housing. The results will be useful to policy makers, developers towards and the prospective home buyers.

Keywords: Subsidy, Functional cost modeling, Micro-determinants, Income, Malaysia.

1 INTRODUCTION

Housing serves as both capital and consumption goods depending on the stakeholders involved. Housing price is known to be the major priority of homebuyers. The price is often determined in the market. The literature on housing price determinants is very extensive and enormous. Literature cited various complex determinants for housing prices (Zou and Chau 2015, Gokm and Keceli 2015). The determinants include construction costs, availability of credit facility, topology, land use regulation, gestation period, weather, neighbourhoods, and types of housing, housing characteristics, the performance of the construction industry, household income, location, population and culture. Due to the complexities of the price determinants, the determinants have been grouped into different classifications by various authors and writers. For instance, while some studies focus on the housing demand side some addressed the supply side (Ball *et al.* 2010). Yet, some classified the determinants into economic, social and environmental dimensions. In fact, while some have discussed the micro-determinants, some have attended to the macro-determinants (Panagiotidis and Printzis 2015). At the micro level, housing prices were determined in terms of housing characteristics. The housing characteristics include housing size, housing quality, number rooms, toilets, and kitchens. For the households and developers, addressing the housing characteristics appears meaningful. The concerns on the increase in the housing prices and the future volatility are very high among homebuyers, especially as the housing price is outstripping inflation. The homebuyers use the micro-determinants to measure

the affordability of the house. The theme of the study reported in this paper is similar to this. However, this study focused on the price determinants of the 'affordable housing'. Although some studies in Malaysia focused on demand and supply sides and even developing pricing model, no-one examines the price determinants of affordable housing. In other words, the aim of this study is to determine the cost determinants of affordable housing. The determinants of affordable housing are expected to be different from other types of housing. For instance, housing affordability is usually a function of income; house price – income ratio. The smaller this ratio becomes, the higher the possibility (i.e., affordability) of the householders to own a house. This reasoning is consistent with microeconomics theories, because the poorer a family the higher the proportion of their income to house price/rent. However, to emphasise, affordability does connote poor minimum standards or cheap house. Rather, it aims primarily to obtain best value at the desired level of expenditure. Therefore, the main responsibilities and duties of the providers (public and private) are to provide value for money for the prospective householders or homebuyers that money is economically allocated to the various building functions. In the past 20 years, Malaysia's housing prices have steadily outstripping residents' incomes. A survey conducted by the Department of Statistics, Malaysia, revealed that the Malaysian homeownership rate is decreasing by approximately 1% annually. Importantly, those in the low and medium income groups are losing their homes and renters are increasingly unable to pay rent. Debts on utility bills are also on the increase. While the household debt has increased to 89.1% of the GDP, 63% of the debt is for property and finance investment (Yong 2016). The increasing in wages and salaries of those in low and medium has done less to cushion their housing cost burden. Primarily because, as income increase costs of other goods and services like, utilities, transportation, foods, education and hospital bills also increase in tandem. The main aim of the theory of the economic determinants of affordable housing is to explain the costs that limit the housing demand. Householders' knowledge of the determinants of housing price has a significant impact on the strategies and measures to procure and operate the house. The broader insight of this research is to stimulate an existing situation in the housing marketplace to generate information that is useful for household decision making as well as policy makers.

2 BACKGROUND TO THE STUDY

“One of Malaysia's long standing development objectives is the provision of affordable housing for Malaysians in both rural and urban areas, with a focus on lower-income groups” (Government of Malaysia 2010). To achieve this objective, many schemes were introduced. The schemes include: People's Housing Program, MyHome Scheme, Civil Servants Housing Program and Perumahan Rakyat 1Malaysia. These schemes aim to address the housing need for the Bottom 40% (B40) and Middle 40% (M40). Approximately 80% of the households fall into this group. There are many interpretations for affordable housing (Gyourko and Tracy 1999, Jewkes and Delgadillo 2010). But the two most cited are briefly illustrated next. According to the “30/40” rule, housing is affordable if it does not cost more than 30% of the household disposable income. This principle evolved from the United States National Housing Act of 1937 (Schwartz and Wilson 2008). For rental purposes, the 30% includes rental cost and, utilities bills. But for mortgage, the amount includes the actual payment, tax, insurance, utilities and maintenance costs. Spending more than 30% implies “cost-burdened”. In Malaysia, the monthly expenditure for the rental for the low and middle income earners is 35% (Department of Statistics 2011). The ‘median multiplier’ method is also common. Demographia compares the median house price to median household income (Demographia 2015). In this method housing affordability is classified

into 5 categories. The computation involves the accumulation of the median income for 3 years. In 2014 the median income in Malaysia was RM4, 585 (Department of Statistics 2014). But, considering the annual growth rate of 11.7% experienced from 2012 to 2014, the median income in 2016, would increase to some RM 5720. Therefore, to contextualise, the median multiplier principle with the statistics, the total median income for three years would be about RM 205,945. Therefore, based on this figure, a question that might follow is what type of a house can this amount procured in the housing market? The answer is probably none considering the associated legal charges, interests and fees. However, the prices of properties have increased by 94% for condominium and by 80% for low cost house (Table 1). Prices have increased twice during the period, but without a corresponding increase in household incomes. Medium income only increased by 11.7% from 2012 to 2014. But, it is to those in low and medium income group that the 30% ratio is and income multiplier is an indicator of true affordability problems. Therefore, the question of the affordable housing price determinants requires demonstration.

Table 1. Median sales price of residential properties for selected cities (RM/unit).

Location	Condominium/Apartment		Low-Cost House	
	2003	2013	2003	2013
Johor	180,000	253,000	50,000	60,000
Penang (PP)	216,250	472,000	83,000	138,800
Selangor	140,000	260,000	74,500	112,500
WP Kuala Lumpur	230,000	500,000	120,000	278,000

(NAPIC 2014)

3 DETERMINANTS OF AFFORDABLE HOUSING PRICE

Like any other good or service, house has a price tag. The price denotes its economic value. But the price of a house depends on many factors (Abelson *et al.*, 2005, IMF 2010, Abelson *et al.* 2005, Balázs and Dubravko 2007, Abelson, *et al.* 2005, Andrews 2010, Galati *et al.* 2011, Borowiecki 2009, Pillaiyan 2015, Xu and Tang 2014, Zou and Chau 2015, Zhang, *et al.* 2012., Aziz 2011, Glindro *et al.* 2011, Panagiotidis and Printzis 2015). These factors are called determinants of housing price. Each of the determinants has a differentiated impact on the price of the house in given time. For instance, the impact of the determinants could be positive or negative and high or low. Collectively, the academic literature suggests that a number of determinants for housing price determinants are enormous. On one part, the many determinants are also a source of the complexities in the accurate modelling of the housing costs. However, the review of the literature suggests that the main focus of the previous studies on housing markets was on the advanced economies. Also, most of the research focused on both the demand and supply sides. The focus of the previous studies is concerned with the macroeconomic determinants, with the exception of a few (*i.e.*, Peek and Wilcox 1991, Zietz *et al.* 2007) that focus on the building characteristics or configuration. However, studies on the housing price determination in Malaysia are scanty. The examples of the studies that focused on Malaysian housing price determinants include: Aziz's (2011), Ong's, (2013), Osmadi *et al.*'s (2015) and Pillaiyan's (2015) but yet, are mainly concerned with the macroeconomics determinants. Importantly, these studies are not concerned with the affordable housing. But the determinants are useful references for defining the determinants of affordable housing. Hence some were adapted to suit the affordable housing context. The salient aspect of this study is to model the price function for affordable housing. In other word, it seeks to provide a statement of the relationship between the price for affordable housing and the factors that influence its price.

However, price for affordable housing is the price the owners paid for the finished houses. This price excludes payment for utility bills and other expenditure incident to the operation of the houses. The determinations of the prices are attributable to both monetary and nonmonetary dimensions. Also the determinants could be internal or external dimensions. The internal dimensions are those that are specific to the buildings while the external dimension are factors that have an impact on the price of the house, but not explicit to the building or their owners/users directly. With this background in mind, it is very unlikely that the determinants of the housing development in general will be useful for. For example, affordable housing development, is commonly funded partly by the federal government, and though, requires a larger state and local commitments. Household income, housing price and locations are some of the major determinants that increase affordability gaps. Affordable housing owners or users have constrained in term of a portion of their disposable incomes they use to finance their homes.

4 RESEARCH DESIGN

The primary data was based on survey questionnaire. The survey was based on the convenience sampling method. Convenience sampling is appropriate when respondents are not easily accessible and the population size is not available or accurate. The survey was administered through hand delivery. Respondents were asked various questions, but with regards to housing price determinants, respondents were asked based on their current experience of the housing market, to place a tick on the extent to consider the factors will determine housing price. The different variables included in the survey were adopted from what was outlined in the previous section and the authors' experiences. The survey was administered on homeowners/users of a low cost housing estate consisting of 500 units in Pulau Pinang. Households use the housing price to measure performance of their house or its affordability. The levels of their importance are measured on a Likert scale of 1 to 5. Where 1 represents not important and 5 denotes extremely important, 3 denotes important and 2 and 4 fall in between. The surveyed was administered to existing householders using hand delivery in a housing estate. The housing estate is located in Penang. Each of the low cost housing consists of 2 bedrooms and 1 bathroom with a total built up area of 550 square feet. About 300 units were surveyed. All the questions on the surveyed were positively worded. The ranking of these factors was determined by mode and Average Relative Index (ARI). The index is based on the cumulative weighting of the initial frequency score of each of the roles.

5 ANALYSING THE RESULTS

Altogether 71 valid survey forms were returned and analysed for this study. Most (63.2%) of the respondents were parents. Three percent have no 'formal' education. The percentage of those with a Diploma or Bachelor degree is 36.6. 85.9% of the surveyed respondents have been occupying the houses for more than five years. 76% of the houses are occupied by more than two occupants and about 19.7% have more than 5 occupants. None of the occupants' family income is less than RM4, 000. More than 80% earned between RM6, 000 to RM9, 999. 67.6% owned their units. The monthly utility bills for some 80% of the respondents exceed RM100 but many pay more than RM300 monthly. The results to the questions about housing determinants costs were broadly consistent with our expectations. The determinants have high validity and reliability scores. The KMO of 0.718 indicates that the factors are a very good measure of housing cost and the results is equally significant. Furthermore, t-test was performed to determine inclusion of each of determinant in the survey. For each factor, the null hypothesis was the factor was unimportant ($H_0: U=U_0$) and the research hypothesis was the factors important (H_r).

$U > U_0$). U_0 is the population mean. A 3.5 importance level was set. In other words, a determinant must be significant to justify its inclusion. The results of the t-test were displayed in Table 2. As may be seen all of the determinants are significant. The findings on the determinants are very interesting, albeit not surprising. Location factors and housing size are the main dominants. The energy cost and commuting to place of works and children's schools are possible indications of the respondents' decisions. In fact, access to means of transport is also crucial. Despite the relative family income of the respondents and considering that most of units housed more 3 occupants can be alluded to the fact that the proximity or access to places of works and children's schools are critical issues due to their economic implications.

Table 2. Distribution of One-Sample Test and Descriptive Statistics.

Factor	Test Value = 3.5						Std. Error Mean	Weightage mean
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference			
					Lower	Upper		
Strategic (e.g: School, Hospitalities, Place of Job, Market & etc.)	6.131	70	0.000	0.5423	0.3659	0.7186	0.088	0.792
Size of the House	7.508	70	0.000	0.6127	0.4499	0.7754	0.082	0.778
Location – Urban/Rural	7.407	70	0.000	0.7535	0.5506	0.9564	0.102	0.749
Leasehold / Freehold House	8.359	70	0.000	0.7676	0.5844	0.9508	0.092	0.747
Recreational facilities	14.50	70	0.000	1.2747	1.0994	1.4499	0.088	0.645
Layout of the House	14.14	70	0.000	1.2747	1.0948	1.4545	0.090	0.645
Transportation	11.04	70	0.000	1.3028	1.0674	1.5382	0.118	0.639
Land Acquisition	13.71	70	0.000	1.5423	1.3179	1.7666	0.113	0.592
Levy	22.83	70	.0000	1.7254	1.5746	1.8761	0.0756	0.555
Permit Fees	22.05	70	0.000	1.7394	1.5821	1.8968	0.079	0.552
Stamp Duty	24.56	70	0.000	1.7394	1.5982	1.8807	0.071	0.552
Government Policy	25.72	70	0.000	1.8944	1.7475	2.0413	.0737	0.521
Workmanship (eg: Finishing)	24.47	70	0.000	1.9507	1.7917	2.1097	0.080	0.510

Cronbach's Alpha reliability = 0.743; Validity = 0.641- 925Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.718, Bartlett's Test of Sphericity = 491.707; Significance =0.000,

6 CONCLUSIONS AND FURTHER RESEARCH

The housing cost is a major concern for households and developers due its economic impact. This study has found that 13 cost determinants are significance household decision making in affordable housing delivery. Government needs to reduce her charges/fees on the developers to increase home ownership. Implicit in the findings is that the households make choices to reduce their financial burden. The more than 50% of loan rejection rate by the banks is critical. Future work on this topic might increase the sample size and various housing units with multiple compositions should be included to provide broader findings.

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