



THE INDIRECT IMPACT OF LIBERALIZATION ON DETACHED (LUXURY) HOUSING MARKET IN MALAYSIA

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ABSTRACT

Local demand for houses in Malaysia is different than by the international buyers due to the macroeconomic factors. The growing number of international buyers might also be caused by the liberalization policy in the real estate sector. By acknowledging the possible influence of external investment, the research objective of this study includes foreign direct investment (FDI) as a determinant for housing affordability in Malaysia. This study intends to estimate the long-run effect of FDI and house price on housing affordability by employing the Johansen Cointegration approach. The extension of this study is the inclusion of liberalization using the Channel Method. We observe the impact of liberalization on housing affordability in the presence of FDI. The results of this study i) suggest that liberalization has negatively affected housing affordability; clearly the openness of the real property sector has caused an influx of foreign buyers, pushing house prices beyond the locals' affordability level; and ii) suggest that through FDI, liberalization has changed its sign to positive, signifying the presence of FDI has caused a higher degree of liberalization to influence a higher affordability level. It shows that the openness of the real estate sector has elevated the affordability level among Malaysians for the average house but not for the luxury segment. The results imply that those who benefit from buying luxury houses are not Malaysians. Locals who might previously afford to buy luxury houses were no longer able to do so due to affordability issues. As for financial institutions, unaffordability problem has caused them to offer credit facilities to the locals. Central authorities such as housing ministries are suggested to check whether the luxury segment is largely pushed by locals or foreigners.

JEL Classification: F23, R310

Key words: FDI, House price, Detached home, Malaysia, Liberalization

1. INTRODUCTION

Residential properties in Malaysia are sought after by international buyers and investors due to their higher competitiveness compared to the ASEAN neighborhood (Global Property Guide, 2018). The residential sector is attractive given Malaysia's good economic performance and steady foreign direct investments (FDIs) flowing into the country (Boey, 2015). The FDIs have caused certain areas (mainly the urban areas) to develop due to the technological and managerial spillover (Dogan, Wong, and Yap, 2017; Fadhil and Almsafir, 2015). The spill over effects, although believed to have contributed to the significant growth of the country, are not known to have elevated the fundamental standard of living of the population. The fundamental standard of living refers to the capability of the host country's population to own a home.

In Malaysia, the home ownership issue is crucial when the country's average house price level has been increasing dramatically (Ismail, Khairuddin, and Ali, 2016). It is believed that the increase is due to liberalization that allows foreign buyers to buy houses in the country (Kepili and Masron, 2017). However, the direct link could not be justified since we could not obtain the details of the foreigners buying houses in Malaysia. This is due to the Personal Data Protection Act 2010 as well as some foreigners having bought houses using Malaysians as their proxies. Nonetheless, the drastic increase in prices of detached houses (bungalows) may indicate that there are demands for this type of houses which would normally be demanded by the rich—in which only 20% of the country's population is categorized as high-income earners. Thus, drastic increase in detached house prices is significant when there is large demand for this type of house, which possibly come from the foreign buyers who earn in relatively more valuable currencies and have higher incomes than the locals.

This study, therefore, would like to analyze whether liberalization has affected the housing affordability level. If it is found that the effect is negative, we would suggest that liberalization benefits foreign buyers more than the locals. Through the indirect impact, we would also see whether FDI plays a significant role in the affordability issue. Putting them together, this study intends to empirically examine the relationship between liberalization and a vector of explanatory macro variables using the housing affordability model. This study intends to ascertain whether liberalization, together with the FDI inflows, support the detached housing model

in Malaysia. This study differs from other housing studies in three aspects: (1) it examines whether the liberalization move that was put forward to create a dynamic real estate sector impact on locals' affordability, (2) it introduces the external factor, FDI inflows, into the housing model, and (3) it examines the indirect impact of liberalization.

2. LITERATURE REVIEW

Finding the definition of housing affordability is not straightforward since it is normally viewed from various perspectives. Stone (2006) proposed affordability as the challenge of households in facing the housing and non-housing expenditures, which later was conceptualized through the residual income approach. In crafting the approach, two principal issues must be considered: the selection of a normative standard for non-housing items and the treatment of taxes. In Australia, Yates and Milligan (2007) suggested that the primary components of all measures of housing affordability include house prices, household incomes, and/or interest rates. According to Yates and Milligan (2007), each of them has its own demand and supply factors that could be structural or cyclical, which cause these variables to influence affordability in the long run. The housing market behavior also reacts to macro factors such as the cost of home financing, economic growth, population dynamics, and changes in government policy and tax incentives.

Following the various definitions of housing affordability is the measurement. Housing affordability could be measured using various approaches. A popular approach is by comparing median house prices with median household income. The National Association of Realtors (US) uses the median-income family and median-priced home to calculate the housing affordability index. The Local Realtors (US) uses the percentage of households that can afford to purchase a median-price home to represent the Variant Housing Affordability Index. The National Association of Home Builders and Wells Fargo (US) uses the percentage of affordable homes to the median-income family to calculate the NAHB-Wells Fargo Housing Opportunity Index.

Some other housing affordability calculations do not use median income and median house price as the factors; for instance, the Price Index of New One Family Sold which uses changes over time in the sale price of new single-family houses with the same characteristics, the Federal Home Loan Bank of Atlanta Lower-

Income Housing Affordability Index which uses the ability of lower-income households to qualify for mortgage on a modestly-priced home, and the Housing Affordability Mismatch which utilizes the ratio of housing units potentially affordable to households of a certain income to the number of households in that income range.

Abelson (2009) criticized that the housing cost variable that is always used to measure housing affordability uses the nominal rather than the real terms. He also commented that the measure does not take into consideration the household choice over the type of house or household composition. Abelson (2009) proposed that the measure should be based on real housing user costs or rents. He mentioned that housing affordability is essentially a household income problem worsened by government restrictions on housing supply. According to him, high housing costs do not reflect the housing market failures, but to mitigate the problem and reduce housing costs, the government should allow more housing in established and Greenfield areas. The government may also improve housing affordability by subsidising housing for low-income households. However, subsidies for urban infrastructure always raise the price of land rather than reduce the price of housing.

Despite the differences in the measurements, house price is a core factor in determining housing affordability. Worthington (2011) suggested that the main contributor for the worsening housing market condition in Australia between 1985 and 2010 was the escalation of house prices because of the continuing strong demand arising from strong economic and population growth, the availability of cheaper and more accessible finance, and tax and other incentives for home and investor housing ownership. An additional contributor was unresponsive housing supply resulting from an extensive governmental role in land release and zoning, infrastructure charges, and building and environmental regulations.

Nwuba, Kalu, and Umeh (2015), however, suggested housing affordability determinants have different roles depending on the country and economic system. Their roles are different between the two contrasting systems of buying homes with formal mortgages in developed economies and building with household incomes and savings as practised in many developing countries. Moreover, some factors may be important to one system but not to the other. In their paper which investigated homeownership affordability in Nigeria's urban market, Nwuba et al. (2015) suggested that household income, savings, construction period, and education are determinants of

homeownership affordability with positive impact. Conversely, household size, cost of land, building cost inflation, current housing rental expenditures, non-housing expenditures, and building cost relative to income are determinants of affordability with negative impact.

Regarding the relationship between house price and the cost of borrowing, Pavlov and Wachter (2011) studied the link by using the aggressive mortgage lending instruments, such as interest-only, negative-amortization, or subprime mortgages in determining the house price. The easiness of offering loans with lower cost of borrowings existed through innovation or financial deregulation. This situation resulted in more borrowings allowed than under the previously regulated financial framework. Pavlov and Wachter (2011) demonstrated that the supply of aggressive lending instruments temporarily increases the asset prices in the underlying market because agents find it more attractive to own or because their borrowing constraint is relaxed, or both. This implies that the availability of aggressive mortgage lending instruments magnifies the real estate cycle and the effects of fundamental demand shocks. They found that the regions receiving a high concentration of aggressive lending instruments experience larger price increases and subsequent declines than areas with a low concentration of such instruments.

3. METHODOLOGY

Multiple types of housing affordability measures exist. Some approaches compare median house prices and median household income to define the housing affordability in communities. This article focuses on measures that account for an individual household's ability to afford a home. Therefore, the dependent variable is the house affordability ratio which is derived from the income to mortgage payment calculation. This calculation is based on the National Association of Realtors (US) measurement, but has been altered since Malaysia does not have published median price statistics. Mortgage payment is calculated based on a 4% interest rate (the average lending interest rate between 2000 and 2017) and 30 years mortgage tenure. The 30-years tenure is the normal duration of payment in Malaysia. A higher ratio reflects high affordability level of the potential house buyers. Other variables are detached house price, liberalization, FDI, and market size. All data are collected from the Valuation and Property Services Department (VPSD) and

Bank Negara Malaysia based on quarterly series from Q1: 2000 to Q4: 2017. Unit root tests were performed on the logarithm form of housing affordability ratio, detached house price, interest rate (the proxy for liberalization), FDI, GDP, and other control variables. The test used is the Augmented Dicky Fuller and Phillips-Perron test procedure. In essence, the basic model (Model 1) for this study is,

$$(1) \quad lHAD_t = \beta_0 + \beta_1 lLib_t + \beta_2 lFDI_t + \beta_n X_n + \varepsilon_t$$

where HAD is detached housing affordability level, Lib is liberalization (proxied by 1/interest rate). Since high interest rate would represent lower liberalization, it would confuse the interpretation if direct sign is used, thus a reciprocal measure is used for clear interpretation. FDI is net foreign direct investment, and X represents the control variables. All variables are in the log form. In Model 1 we hypothesize that liberalization will have a negative impact on affordability while FDI will have a positive impact on affordability. However, to capture the effect of FDI as an interaction variable, this research employs the Channel Method which allows us to calculate the indirect impact of property liberalization on housing affordability through the FDI channel, following Wacziarg's (1999) Channel Method and Masron and Yusop (2006), who worked on measuring the indirect impact of trade on private domestic investment, government spending, manufacturing value added, and FDI.

In accommodating the Channel method, two sets of the model (Model 2 and Model 3) are estimated:

$$(2) \quad lHA_{jt} = \gamma_0 + \gamma_1 lFDI_t + \gamma_2 lHPR_{jt} + \gamma_3 lGDP_t + \varepsilon_t$$

$$(3) \quad lFDI_t = \delta_0 + \delta_1 lLib_t + \delta_2 lRGDP_t + \varepsilon_t$$

where FDI is net foreign direct investment, Lib is liberalization proxied by 1/interest rate, $RGDP$ is real GDP , HA is housing affordability, HPR is house price, and j represents the type of house (either average house price or terrace price). All variables are in the log form. In Model 2 we maintain the positive relationship hypothesis between FDI and HA . However, we expect house price would have a negative relationship with housing affordability level. In Model 3 we postulate that a higher degree of liberalization would increase FDI .

3.1 ESTIMATION PROCEDURE

The detached housing affordability model in the presence of external influence, FDI, is assessed empirically by the cointegration methodology. The Johansen Juselius (1990) and vector error correction model (VECM) techniques are applied. The cointegration technique examines whether a set of variables has a common trend in such a way that the stochastic trend in one variable is related to the stochastic trend in some other variable(s). The Johansen-Juselius approach is used to test for cointegration among the variables.

The Johansen cointegration analysis involves the estimation of the following reduced form of VECM (Model 4):

$$(4) \quad Az_t = \sum_{t=1}^k \Gamma_t Az_{t-1} + \Phi z_{t-1} + \Psi_d + \varepsilon_t$$

where z_t is a vector of the nonstationary variable; the matrix Φ has a reduced rank equal to r and can be decomposed to $\Phi = \alpha'\beta$, where α and β are $p \times r$ full rank matrices and represent adjustment coefficients and cointegrating vectors respectively; and d is the vector of the deterministic variables which may include a constant term, linear trend, seasonal dummies, and impulse dummies.

Two tests are available, namely trace and maximal eigenvalue tests, to find the number of cointegration relationships among the variables. The main importance of these two tests is that both tests have no standard distributions under the null hypothesis, although approximate critical values are tabulated by Oswald-Lenum (1992). However, Johansen and Juselius (1990) suggested that the maximal eigenvalue test is more powerful than the trace test.

Trace test model (Model 5):

$$(5) \quad \lambda_{trace}(r) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_i)$$

Maximal eigenvalue test model (Model 6):

$$(6) \quad \lambda_{trace}(r, r+1) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_{r+i})$$

where r is the number of cointegrating vector, $\hat{\lambda}$ is the estimated values of the characteristics roots obtained from the estimated Π matrix, and T is the number of usable observations. However, this approach faces at least two major problems. First, the small sample

properties of this approach remain unknown and second, this approach is only applicable in the situation in which all variables are integrated at the order of 1 or $I(1)$.

Once we obtained the long-run relationship results, we observed the indirect impact of liberalization on housing affordability through FDI. Following Wacziarg's (1999) Channel Method and Masron and Yusop's (2006) work on measuring the indirect impact of trade on private domestic investment, government spending, manufacturing value added and foreign direct investment, this study believes that housing affordability is impacted indirectly by foreign direct investment. The indirect impact is expected to be negative; however, the magnitude is of importance for us to see the role of FDI in influencing the liberalization effect. Table 1 summarises the calculation of the indirect impact.

TABLE 1
The Calculation of Indirect Impact via the FDI Channel

| Affordability Channel (AC) | Impact of FDI on Affordability | Impact of Liberalization on FDI | Indirect Impact |
|----------------------------|--------------------------------|---------------------------------|-----------------------|
| FDI | γ_1 | δ_1 | $\gamma_1 * \delta_1$ |

The result for the indirect impact is expected to be negative. However, the magnitude is important in order to see how FDI influences the effect of liberalization on housing affordability. Later, we will compare the coefficients of β_1 and $(\gamma_1 * \delta_1)$.

4. RESULTS

The ADF test of stationarity suggests that our variables are all stationary at first difference, $I(1)$ (Table 2). The correlation results in Table 3 provide us with a preliminary idea of the bivariate relationship between the variables. We could see that liberalization and affordability levels are negatively correlated ($\rho_{LIB|HA} = -0.205$; $\rho_{LIB|HA_D} = -0.379$), signifying that the higher the liberalization, the lower the affordability level. The relationship between net FDI and housing affordability is also negative ($\rho_{NFDI|HA} = -0.109$; $\rho_{NFDI|HA_D} = -0.298$), signifying higher FDI would reduce the affordability levels. The preliminary relationship, however, is quite large between FDI and detached affordability. The

inverse relationship is also suggested between house price and affordability level ($\rho_{RHPM|HA} = -0.652$; $\rho_{RDPR|} = -0.158$), reflecting the higher the house price, the lower the affordability level. The long-term relationship, however, will be provided based on the Johansen Cointegration test and VECM.

TABLE 2
ADF Unit Root Test Results

| | Level | First difference | Result |
|-------------|------------------|-------------------|--------------|
| <i>HA</i> | -1.278 (0.63) | -3.111 (0.03) | <i>I</i> (1) |
| <i>RHPM</i> | 0.902 (0.99) | -8.493 (0.00) | <i>I</i> (1) |
| <i>HA_D</i> | -2.624 (0.93) | -8.947 (0.00) | <i>I</i> (1) |
| <i>RDPR</i> | -0.102 (0.95) | -10.607 (0.00) | <i>I</i> (1) |
| <i>NFDI</i> | -1.844 (0.36) | -10.829 (0.01) | <i>I</i> (1) |

Note: HA = Housing affordability for average house price in Malaysia, RHPM = Real house price in Malaysia, HA_D = Housing affordability level for detached price, RDPR = Real detached price and NFDI = Net foreign direct investment

TABLE 3
Correlation Results

| | <i>HA</i> | <i>HA_D</i> | <i>LIB</i> | <i>NFDI</i> | <i>RHPM</i> | <i>RDPR</i> | <i>RGDP</i> |
|-------------|-----------|-------------|------------|-------------|-------------|-------------|-------------|
| <i>HA</i> | 1.000 | | | | | | |
| <i>HA_D</i> | -0.453 | 1.000 | | | | | |
| <i>LIB</i> | -0.205 | -0.379 | 1.000 | | | | |
| <i>NFDI</i> | -0.109 | -0.298 | 0.434 | 1.000 | | | |
| <i>RHPM</i> | -0.652 | -0.176 | 0.728 | 0.545 | 1.000 | | |
| <i>RDPR</i> | -0.516 | -0.158 | 0.819 | 0.584 | 0.959 | 1.000 | |
| <i>RGDP</i> | -0.264 | -0.474 | 0.843 | 0.628 | 0.898 | 0.952 | 1.000 |

Note: HA = Housing affordability for average house price in Malaysia, HA_D = Housing affordability level for detached price, LIB = Liberalization, NFDI = Net foreign direct investment, RHPM = Real house price in Malaysia, RDPR = Real detached price and RGDP = Real GDP

Table 3 provides the cointegration results for the three models (Model 2, Model 3). In this test, the results show that the trace and max-eigen values are higher than the critical values given. Models 1, 2, and 3 reject the null hypothesis of no cointegration and suggest that there is at least one cointegrating relationship in the respective models. To justify the short-run dynamics and the long-run relationship, we run the VECM on these models, and the results are shown in Table 4.

TABLE 4
Johansen Cointegration Test

| Null Hypothesis | Trace | 5%/1% CV OL ^a | Max-Eigen | 5%/1% CV OL ^a |
|---|---------|-----------------------------|-----------|-----------------------------|
| Panel A (Model 2a): Housing affordability (Malaysia) ratio, FDI, Malaysia house price | | | | |
| r=0 | 37.204* | 29.791 | 23.631* | 21.131 |
| r ≤ 1 | 13.573 | 15.492 | 13.275 | 14.264 |
| r ≤ 2 | 0.298 | 3.842 | 0.298 | 3.842 |
| Panel B (Model 2b): Detached housing affordability ratio, FDI, detached price | | | | |
| r = 0 | 37.985* | 29.791 | 27.719* | 21.131 |
| r ≤ 1 | 10.266 | 15.492 | 14.264 | 14.264 |
| r ≤ 2 | 0.273 | 3.842 | 3.842 | 3.842 |
| Panel C (Model 3): FDI, Liberalization, GDP | | | | |
| r = 0 | 38.317* | 29.791 | 23.804* | 21.131 |
| r ≤ 1 | 14.514 | 15.492 | 14.399* | 14.264 |
| r ≤ 2 | 0.114 | 3.842 | 0.115 | 3.842 |

Note: *, ** indicates level of rejection of the hypothesis at 5% and 1% respectively.
^aOsterwald-Lenum critical value.

VECM: Model 1

Model 1 comprises housing affordability, liberalization, FDI, and house price and the maths equation is $HA_i = f(Lib, NFDI, HP)$; i is Malaysia housing affordability vs detached housing affordability.

Model 1a looks at the influence of liberalization and FDI on Malaysian housing affordability, while Model 1b looks at its effect on the affordability to purchase a detached house. The error correction coefficients show a negative sign, and the results are highly significant in both models (-0.05 and -0.239 respectively). The results indicate the disequilibrium in the detached house affordability corrected faster than the disequilibrium in the overall housing market.

While we postulated a negative relationship between liberalization and housing affordability, our results suggest only Model 1a followed the hypothesis. The positive coefficient between liberalization and detached affordability (1.152) suggests that a higher degree of liberalization increased the affordability level of people intending to buy a house; a higher house price lowers the affordability level.

VECM: Model 2

Model 2 tests the influence of FDI and house price on housing affordability level without considering the effect of liberalization. Thus, the maths equation is $HA_i = f(NFDI, HP, RGDP)$; i is Malaysia housing affordability vs detached housing affordability.

Model 2a tests the independent variable's influence on the affordability level of the average Malaysian housing market, while Model 2b tests them on the affordability level to own a detached house. The error correction coefficients show negative signs and the results are highly significant in both models (-0.132 and -4.201 respectively). It identifies that 1.3 percent of the disequilibrium was corrected within one quarter or 5.2 percent within one year in the Malaysian housing affordability model, while 42.01 percent disequilibrium was corrected quarterly in the detached housing affordability model.

Again, the impact of FDI on the respective affordability is different here. FDI impacted Malaysia's housing market positively, but not the detached segment. FDI might have a small negative (nearly zero) influence on the affordability to purchase detached houses. The results might indicate that FDIs have been helping in increasing the affordability level of buyers of terrace, semi-D, and high-rise, but not the potential bungalows and luxury home purchasers.

VECM: Model 3

Model 3 examined whether liberalization and market size affect FDI, and the maths equation is $HA_i = f(Lib, RGDP)$; i is Malaysia housing affordability vs detached housing affordability.

The error correction term in this model shows a negative sign and is significant, justifying the relationship within the variable. Liberalization impacted FDI positively as expected and was significant at 1%. The market size, however, did not affect FDI as anticipated. The negatively significant result signifies that a lower market size increased the FDI into the country.

Following the results obtained from Table 5, we calculated the indirect impact of liberalization on housing affordability through FDI. Model 2 is chosen to extract the impact of FDI *in silo*, without the presence of liberalization. If Model 1 was chosen, the liberalization calculation would be double counted. As mentioned in Section Three, the indirect impact ($\gamma_1 * \delta_1$) is expected to be negative, however, the magnitude is of importance for us to see the role of FDI in influencing the liberalization effect.

TABLE 5
VECM and Long-Run Relationships

| Model | <i>DV=HA</i> 1a | <i>DV=HAD</i> 1b | <i>DV=HA</i> 2a | <i>DV=HAD</i> 2b | <i>DV= FDI</i> 3 |
|-------------------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
| <i>LIB</i> | -3.918** (-5.00) | 1.152* (2.11) | | | 2.840*** [3.22] |
| <i>NFDI</i> | 0.286 (1.28) | 0.547** (4.05) | 0.500** (5.12) | -0.088** (-17.14) | |
| <i>House Price</i> | 1.971** (4.12) | -1.631** (-3.89) | 0.955** (3.69) | -0.859** (-68.97) | |
| <i>RGDP</i> | | | -1.094** (-4.26) | 0.791** (89.19) | -2.211* [-5.78] |
| <i>C</i> | -35.891 | 5.936 | 6.139 | -11.919 | 39.166 |
| <i>Error correction term</i> | -0.050** (-2.40) | -0.239* (-1.96) | -0.133** (-2.34) | -4.201** (-3.29) | -1.444** (-3.31) |
| <i>R²</i> | 0.274 | 0.789 | 0.414 | 0.855 | 0.713 |
| <i>Adjusted R²</i> | 0.100 | 0.336 | 0.210 | 0.545 | 0.559 |

Notes:

1. **, * indicate level of significance at 1% (2.33) and 5% (1.65), respectively.
2. () denotes the *t*-value.

In Table 6, the result for the indirect impact is positive on the affordability level of the average house price (Malaysia: 1.420). It suggests that the indirect impact of liberalization on housing affordability is positive through the FDI channel, and hence, the higher the liberalization the higher the housing affordability when FDI is considered.

TABLE 6
Indirect Impact of Liberalization on Housing Affordability
through FDI

| | FDI on Housing Affordability (From Model 2) | Liberalization on FDI (From Model 3) | Indirect Impact |
|----------|---|---|-----------------|
| Malaysia | 0.500 | 2.840 | 1.420 |
| Detached | -0.088 | | -0.250 |

However, the indirect impact is negative on the affordability level of the detached house. FDI changed the expected direction of the liberalization-housing affordability relationship (-0.088). The result suggests that a higher degree of liberalization has reduced the affordability level among potential luxury house buyers when FDI is present. Briefly, FDI played a good role in increasing the average housing market price but caused deterioration in the affordability level of the potential bungalow purchasers.

5. CONCLUSION

The residential sector in Malaysia is sought after by international buyers and investors as it is supported by Malaysia's good economic performance and steady foreign direct investments (FDI) flowing into the country. The FDI spill over effects are believed to have contributed to the significant growth of the country, but it is unknown whether FDI has helped the population of the host country's affordability to own a home. The research objectives sought to find if liberalization affected detached housing affordability negatively so it could provide a justification that liberalization benefits foreign buyers more than the locals. To ascertain whether FDI plays a significant role in the affordability issue, this study examined the relationship between liberalization and a vector of explanatory macro variables using the housing affordability model.

Thus, does liberalization affect housing affordability negatively as postulated? The answer is yes and no. Yes, liberalization affects the housing affordability level of the average house price negatively, which proves that the policy benefits international buyers more than the locals in the overall housing market that has various house types including terrace, detached, semi-D, and high-rise. The impact of liberalization on this

affordability may have been due to the use of interest rate. The result was similar to the findings by Pavlov and Wachter (2011). However, interest rate as a measurement may not necessarily be the ultimatum variable for housing affordability, as Nwuba et al. (2015) suggested that the determinants of housing affordability could also be depending on the system and other factors as well. Our findings and the Nwuba et al. (2015) suggestion have shed the light away from the need to use interest rate to determine affordability level. Researchers have been suggesting rental rates as a determinant as it is more stable and has a strong foundation. Since the use of interest rate is forbidden by Islamic *Shari'ah* principle, Islamic Financial Institutions might refer to rental rate for a better alternative. With the support of Bank Negara Malaysia (Central Bank of Malaysia), the use of rental might mitigate the inflation issues surrounding house price by preventing the drastic increase in house price. This would help the potential homeowners in owning a home.

In our study the results suggest that a higher degree of liberalization reduces the affordability level among detached house buyers. Therefore, it supports the notion that liberalization discourages the local buyers and is in favor of the international purchasers. We then looked at how the FDI's role fits in the picture. Our results suggest the presence of FDI has caused positive impact of liberalization on housing affordability, which means FDI has helped to elevate the locals' affordability level for the average house price. However, FDI did not help to increase the affordability, in fact it reduced the affordability level among potential luxury house buyers.

Although this research has achieved its aim, there were some unavoidable limitations. First, the classification of the detached house may have changed since liberalization. If previously a bungalow house was simply a two-storey house with a somewhat standard design, today, luxury homes have expanded in terms of definition and perspective. Second, the disparity in the luxury house prices between urban areas could be large, and hence, it is suggested for future researchers to do studies based on districts to see the impact of liberalization on housing affordability.

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