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Affecters on Housing Prices: An Initial Review in Malaysia

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Abstract: This research delves into the intricate dynamics of the Malaysian housing market. Due to the issue of constantly high and expensive house prices, the study aims to integrate the possible macroeconomic causes as well as the integrity issue by focusing on three vital independent variables: Gross Domestic Product (GDP), Foreign Direct Investment (FDI), and Corruption Index (CRP). The research uses quantitative methods, the Ordinary Least Squares (OLS), to reveal nuanced correlations between these economic variables and house prices in Malaysia. The intriguing findings show that both FDI and CRP significantly influence house prices positively, aligning with existing literature. However, the unexpectedly insignificant correlation between GDP and house prices suggests a potential gap in understanding, adding a layer of intrigue to the research. These results and significant findings offer valuable insights for decision-makers and emphasize the importance of ongoing research to better grasp the complex factors shaping housing markets in different economic situations.

Keywords: *Housing price, Gross Domestic Product (GDP), Foreign Direct Investment (FDI), Corruption Index*

1. Introduction and Background

The housing market in Malaysia is a significant and dynamic sector in the country's economy. As the country experiences economic growth and urbanization, the housing market becomes increasingly complex, shaping the livelihoods of its citizens. Housing is not just a commodity but a basic human need for social and economic stability. A well-functioning housing market plays a crucial role in the overall economic development of a country. Housing prices, in particular, reflect the affordability, accessibility, and stability of the housing sector. Therefore, a comprehensive understanding of the various factors that affect house prices in Malaysia, given the intricate and multifaceted nature of the housing market, is of utmost importance.

Housing prices are affected by many variables, and among the most important are Gross Domestic Product (GDP), Foreign Direct Investment (FDI), and Corruption (Catte et al., 2004). GDP serves as a macroeconomic indicator that records the overall economic performance of a country. On the other hand, FDI represents the inflow of foreign capital and investment, which can significantly impact the housing market. Furthermore, corruption creates uncertainty, distorts market dynamics, and potentially affects housing prices. Thus, these variables have a significant impact on housing market dynamics. Although the connection between economic indicators and house prices has received much attention, the unique correlations and interactions in the Malaysian context deserve more investigation. Furthermore, due to its potential to produce inefficiencies and distortions in the housing market, the function of corruption as an independent variable is of significant relevance.

This paper is organized into several parts. Section 1 introduces the background analysis, Section 2 highlights the literature review from previous analyses, Section 3 describes the analysis methodology, Section 4 presents the results and discussion, and Section 5 discusses the findings and overall conclusion.

2. Literature Review

Recent data from Malaysia shows that the country's population growth and house construction rates are converging. In recent years, home price discussions have gained much attention. Home prices in Malaysia can range from reasonably priced to expensive, depending on factors such as square footage and neighborhood. Housing costs have been a significant factor influencing Malaysia's GDP since the 1970s (Alpha Kabine, 2023). Residential property rates have been steadily rising since technological advancements caused mortgage rates

to drop significantly in 2000 (Baharuddin et al., 2019).

According to National Property Information Centre (NAPIC) (2023) Data, the number of unsold residential properties has increased since 2011, reaching a notable milestone in 2017. Many elements affect housing prices in Malaysia. A growing House Price Index (HPI) is often used as a dependent variable in academic studies, which shows that many factors affect home costs. There is a consensus in the academic literature that changes in population and the rate of urbanization are the primary drivers of housing demand and, by extension, housing costs.

Malaysia is one of the world's most urbanized nations, and its high-yield, high-impact economy is well-known worldwide. This situation aligns with the nation's growing population (World Bank, 2023). From 10.2 to 15 million people, Malaysia's population surges at a rate of 4% per year, placing it among Southeast Asia's fastest-growing and most urbanized nations. Policymakers and the general public in Malaysia have elevated the issue of housing, a fundamental necessity for shelter, to the forefront of their concerns. The steadily rising cost of housing, making it less affordable, is a major cause for concern. In recent years, home prices have soared by 20% to 80% in both large cities and smaller villages, with the exact percentage changing by area. (Hong, 2012).

A large portion of the increase in the HPI can be attributed to the high demand for housing in urban areas and the low supply. Property prices in Kuala Lumpur, Selangor, Johor Bahru, and Penang, four of Malaysia's main cities, are skyrocketing due to rising demand and a lack of suitable land for new homes, as pointed out by Hassanudin & Chandra (2016). This mismatch reduces the buying power of would-be homeowners, which means Malaysians need to adjust their housing goals based on what they can afford.

Numerous studies have investigated the factors that influence home values using a wide range of criteria, including GDP. Petros (2018), and Li et al (2022), whereas interest rates were used by Sviatlana (2021) and Lu & Bo (2014). Jeffrey (2022) and Sefa et al. (2021) used population size for their research. Research by James M. et al. (1991), Abraham & Hendershott (1992) and Lu et al. (2022), among others, has shown that income levels have a substantial effect on property values. Mortgage rates were also named by Baffoe-Bonnie (1998) as an important economic component impacting home values.

The previous research shows that many financial, demographic, and economic variables impact Malaysia's increasing housing price index (HPI). These investigations highlight the multifaceted nature of the housing market and the impact of macroeconomic conditions and policy choices on it. Policymakers and stakeholders in Malaysia's real estate market would do well to remember the literature's insistence that the country's rising HPI is highly dynamic and subject to change based on a wide range of interrelated economic and demographic factors. This research focuses on GDP, FDI, and corruption, while other studies have used various variables simultaneously.

Gross Domestic Product (GDP)

According to Bayraktar-Sağlam & Yetkiner (2014), GDP is an essential indicator of economic activity and production since it shows how financially healthy a nation is. Investment, consumption, net exports, and government spending are all part of it. There may be both positive and negative links between GDP and house prices, which can make the link complicated and indirect at times.

In most cases, rising home prices directly result from GDP growth, a critical factor in the housing market. The result is based on a plethora of exploratory research that was conducted from 2000 to 2019 by Zulkifli et al. (2022), which used the Autoregressive Distributed Lag (ARDL) model to study the long-term and short-term impacts of these variables on the Housing Price Index (HPI) in Malaysia. Recursively, home prices climb as GDP rises, a measure of economic prosperity. During the pandemic, this pattern became even more apparent, showing how property values are affected by larger economic changes (Azmi et al., 2023). These results show how important it is to consider the situation of the economy as a whole when looking at real estate market patterns.

Real estate market trends can be best gauged by looking at the situation of the macroeconomy, due to the interconnected nature of GDP, housing demand, and property prices. Along with important variables, including

foreign direct investment (FDI), unemployment rates, and inflation, Awan & Latif (2020) acknowledge GDP as a basic component impacting housing prices. During the pandemic, the close relationship between GDP and home prices became increasingly apparent, highlighting how susceptible the housing sector is to larger economic changes (Azmi et al., 2023).

The two-way causation between economic growth and the HPI has been the subject of substantial research covering the period from 2000 to 2020. Evidence from research by Zulkifli et al. (2022) shows that communication between the two goes both ways. According to their research, a rise in property prices is a key component of a healthy economy. On the other hand, falling home prices can be a sign of and a factor in Malaysia's economic progress. A focused investigation confirmed this interactive relationship using the Toda-Yamamoto Granger causality test. According to the results, there is a two-way street: rising property prices in Malaysia are a direct result of economic growth, and rising house prices, in turn, impact economic growth. These findings highlight how the housing sector is a key engine that drives economic growth.

Although GDP does affect home values, it is not necessarily a positive or direct effect. If the housing market were to suddenly collapse, it would have a domino effect on the whole economy, causing GDP to decrease. The government of Malaysia could run out of housing demand if it implemented a large-scale increase in residential credit, which would hurt residential investment.

Moreover, studies show that there is sometimes a negative correlation between GDP and home prices, even though the housing market is a key driver of economic activity. Specifically, Alpha Kabine (2023) and Pillaiyan (2015) highlight that there is no significant relationship between GDP growth and house prices. Also, Trofimov et al. (2018) found that the two factors were negatively correlated with each other. They go on to say that if the economy keeps growing rapidly, it could stimulate too much house building, leading to an overstock and lower property prices.

The entire economy might feel the effects of a sudden collapse in the housing sector, which would lower GDP. For example, this may happen if the government of Malaysia suddenly raised home loans, which would flood the market with homes yet cause investors to pull back on their spending. We need a thorough knowledge of these dynamics because these varied findings and consequences show how GDP and home prices interact in complex ways. Last but not least, Gholipour (2020) pointed out that although foreign real estate investment (FREI) plays a big part in home price appreciation, it doesn't matter in the countries they look at. This shows that the relationship between GDP and housing prices isn't always linear.

Foreign Direct Investment (FDI)

Foreign Direct Investment, or FDI, refers to the injection of capital into domestic corporations by foreign entities, as defined by Graham & Spaulding (2005). FDI offers manifold advantages: It establishes robust markets and avenues for marketing, catalyzes the development of more cost-effective infrastructures, and paves the way for greater access to progressive technologies. Moreover, FDI contributes to augmenting human capital and ensures businesses have the financial wherewithal to pursue sustained growth.

While FDI generates numerous employment prospects, housing affordability remains a pressing concern for Malaysian residents. According to the majority of past studies, housing affordability is the principal challenge faced by citizens in Malaysia. Numerous research efforts have shown that FDI can positively influence economic growth in host countries by facilitating technology transfer, developing human resources, integrating global markets, increasing competition, and promoting business expansion and organizational restructuring (Ong, 2020). This evidence highlights the perception of FDI as a substantial force in steering a host country's economic progress. Nevertheless, there is a persistent need to address Malaysian residents' housing affordability issues despite FDI's effectiveness in boosting the country's economy.

The research posits that FDI, by injecting capital and potentially heightening the demand for housing, may contribute to an increase in house prices. Furthermore, FDI has been found to decrease homeownership rates, which suggests that residents may be priced out of their housing market in regions where foreign investors are particularly active. Consequently, these residents are left with the option to rent rather than own their homes. A separate study, encompassing data from 2010 through the first quarter of 2019, discovered sustained

correlations between the House Price Index (HPI) and specific factors, including GDP and population size (Jehani et al., 2020). The study, however, did not explicitly recognize FDI as an influencing factor. Nevertheless, the research still needs to negate the potential role of FDI in affecting housing prices, particularly considering its bearing on GDP and the broader economy.

In a study by Zull & Masron (2017), the long-term estimations revealed that from 1999 to 2015, FDI inflows hurt house prices in Malaysia. However, the effect reverses when a liberalization policy is accounted for. When such policies are in place, FDI inflows increase house prices in the long run, particularly in economically dynamic states such as Kuala Lumpur and Penang. The positive influence of FDI inflows on housing prices is also evident in slower-progressing states like Pahang and Kedah. It demonstrates that liberalization policies nationwide impact house prices, irrespective of a state's economic standing. Furthermore, these effects are less apparent for more expensive housing but are more noticeable for lower-priced properties, as the supply for these properties tends to be less elastic.

Bonis (2006) Explored whether FDI plays a crucial role in understanding the fluctuations in house prices in major US cities. This relationship was found to be significant but negative. In contrast, Gauder et al. (2014) Observed that an increase in foreign investment in the housing market does not necessarily lead to a net growth in housing demand or a surge in housing prices. Gholipour (2020) Investigated the long-term co-movement between FDI, economic development, and housing prices. Their results indicate that FDI does not contribute to a rise in housing prices or encourage short-term and long-term economic growth in OECD countries.

The available literature points to the connection between FDI and Malaysia's House Price Index, primarily due to FDI's contribution to economic growth and its subsequent influence on housing demand. As foreign property purchases have liberalized in alignment with FDI inflows, house prices have risen, consequently impacting housing affordability for Malaysians (Zull & Masron, 2017). This suggests that FDI fuels economic growth and inflates housing prices due to heightened demand from foreign investors. Such occurrences are not exclusive to Malaysia; similar patterns have been observed in various emerging economies where foreign investments considerably affect local real estate markets. The reviewed literature presents varied perspectives; while some studies support the positive influence of FDI on housing prices, others indicate insignificant or negative impacts. As a result, the effect of FDI on housing prices requires further clarity within the context of the literature.

Corruption Index

Jain (2008) Explains corruption as an act in which the power of public office is used for personal gain in a manner that contravenes the rules of the game. The literature on the relationship between the Malaysia House Price Index and crime, particularly corruption, indicates that crime risk impacts housing prices. The study of corruption's impact on house prices remains an important direction for future research since the effects of corruption on house prices in Malaysia have yet to be a deeply studied topic. However, it can infer potential relationships based on general evidence from other countries and the nature of corruption.

A study that examined this relationship from 1988 to 2016 found that the elasticity of housing prices concerning crime risks ranges from −0.141 to −0.166, suggesting that as crime risk increases, housing prices tend to decrease. (Wong et al., 2020). It aligns with the general literature, which states that higher crime rates can lower property values due to the increased risk perceived by potential homeowners. While this does not establish a direct relationship between corruption and house prices, it does indicate that crime, potentially correlated with corruption, can impact house prices.

It is essential to mention that corruption affects economic growth (Fungáčová et al., 2014). Indirectly, corruption might affect the housing market through its broader impact on economic growth and public trust, influencing investment decisions and property values. For instance, corruption can stifle economic growth by deterring foreign and domestic investment, misallocating resources, and reducing efficiency. Slower economic growth can lead to reduced demand for housing, subsequently impacting house prices. In a thriving economy, housing demand and prices typically increase, but if corruption undermines economic growth, this upward trend in housing demand and prices might be hindered. It also can exacerbate income inequality, affecting overall housing affordability. Suppose corruption leads to wealth being concentrated among a small population

segment. In that case, it can create disparities in housing affordability, with the wealthy driving up prices in specific market segments while the majority may struggle with housing affordability.

On the other hand, direct impacts could include inflated costs due to corrupt practices in property development, influencing housing prices. Corruption in the housing sector can lead to higher development costs. It is often due to the need for bribes or kickbacks to obtain necessary permits or approvals or through inflated contract prices. These increased costs can then be passed on to buyers, raising housing prices. Eventually, corruption can also affect land allocation and zoning decisions, potentially leading to the overvaluation of specific properties. If corrupt practices favor the development of properties in certain areas, they can artificially inflate property values in those locations while potentially neglecting others. Given the complex nature of these relationships, understanding the full spectrum of the impact of corruption on the housing market requires comprehensive analysis considering various economic and social factors.

Corruption practice has proven to have a trickle-down impact on the average Malaysian consumer, according to research conducted by the Institute for Democracy and Economic Affairs (IDEAS, 2019). The "Corruption in the Supply Chain: Forms and Impacts on Consumers" report, which was jointly prepared by the Institute for Democracy and Economic Affairs (IDEAS) and Coalition for Business Integrity (CBI), featured an in-depth study on how corruption in three sectors: construction, healthcare, and education took place, found that corruption not only marked up the prices of goods but also incurred a 14.8% increase in costs in property developments, which was then absorbed by homebuyers (IDEAS, 2019).

Overall, the impact of corruption on economic growth, which in turn can affect housing prices, has been studied using the autoregressive distributed lag (ARDL) method, highlighting the relevance of corruption in macroeconomic performance (Ali, 2023). Although direct literature on corruption's impact on house prices in Malaysia is limited, the overall influence of corruption on the economy can indirectly affect housing markets. (Muhamad & Gani, 2020). It is essential to consider that while the direct relationship between corruption and house prices may not be thoroughly explored, the indirect impact through economic growth is documented, and the same may apply to house prices as economic growth is a known determinant of housing market dynamics (Alpha Kabine, 2023).

3. Research Methodology

The macro data for this study are obtained from the World Development Bank, except for the house price and corruption indexes. The house price index statistics are collected from the Macromicro platform, while the corruption index is obtained from the Malaysia Corruption Index of the Trading Economics website. This study will employ time series data covering 28 years, specifically from 1994 to 2022.

This study will log the model to mitigate the presence of heteroskedasticity in the analysis (Gujarati, 2004). Next, the data will be transformed into variances and analyzed as proportions. Subsequently, the data will undergo a unit root test to determine its stationarity. This test aims to verify the mean and variance consistency. The presence of non-stationarity will lead to an inaccurate regression analysis characterized by a high R-squared value and a limited number of statistically significant correlations between variables. The Augmented Dickey-Fuller (ADF) and Philips-Peron (PP) tests will be performed to assess stationarity (Kwiatkowski et al., 1992; Philips & Perron, 1988; Rehman, 2019).

A further robustness assessment involves the multicollinearity test, which utilizes the variance inflation factor (VIF). This test mitigates the strong correlation among the variables, which could impact their importance in the p-value and t-statistics. Eliminating the variables that strongly correlate with each other resolves the issue of multicollinearity (Skiera et al., 2018).

This study will assess the model for particular characteristics based on the Ordinary Least Squares (OLS) result. The goal is to showcase that the model is the most suitable choice for the analysis. The F-statistics value, which has a p-value of less than 5%, will be examined. Then, the R-squared. The high R-squared value indicates a strong relationship between the variables with a maximal confidence level. Furthermore, the residuals must exhibit no serial correlation or heteroskedasticity and follow a normal distribution. However,

heteroscedasticity can be ignored as this study employs a time series dataset. The optimal model for the analysis possesses all of the aforementioned qualities (Mohamed et al., 2022).

For this analysis, the estimation equation model involved is as follows,

$HP_t = \beta_0 + \beta_1 GDP_t + \beta_2 FDI_t + \beta_3 CRP_t + \mu_t$

Where,

HP_t denotes house price, the dependent variable, in the period 't'
GDP_t denotes the gross domestic product in the period 't'
FDI_t denotes the foreign investment in the period 't'
CRP_t denotes the corruption index in the period 't'
β_o denotes intercept
β_1, β_2, β_3 are the respective coefficient terms
μ_t denotes the error term
t denotes the monthly time series data spanning 28 years, from 1995 to 2022

4. Results and Discussion

The analysis of this model begins with the stationarity test. All variables will be transformed into log form to capture their dynamic over time, and the unit root test will be used for this test.

Table 1 shows the results of the ADF and PP stationarity tests of 'with intercept and trend.' Accordingly, the null of having a unit root is rejected for LHP and LGDP based on the ADF and PP tests in the first-order integrated, I (1). However, LFDI and LCRP rejected the null hypothesis in level I (0) for both the ADF and PP test with intercept and trend. The results show that the LHP and LGDP variables are stationary at the first difference, while the LFDI and LCRP are stationary at the level. To synchronize the analysis, the model is transformed to the first difference. Then, the estimation could further OLS analysis.

Table 1: Stationary Test

	ADF		PP	
	Level	**1 Diff.**	**Level**	**1 Diff.**
LHP				
Intercept and Trend	-1.7684	-4.1385***	-1.9086	-4.0994***
LGDP				
Intercept and Trend	-1.9182	-4.9555***	-1.9182	-4.9542***
LFDI				
Intercept and Trend	-5.2616***	-6.0497***	-5.3931***	-23.2125***
LCRP				
Intercept and Trend	-5.5592***	-5.4480***	-3.0778	-5.6687***
Note: *, **, *** imply 10%, 5%, 1% level of significance				

Table 2: Diagnostic test

Test Statistic	**Obs. R-squared**	**p-value**	**Variable**	**VIF**
Serial correlation (lag 2)	5.2411	0.0728		
Heteroscedasticity	1.8454	0.6051		
Normality Test		0.5062		
Multicollinearity			LGDP	1.3168
			LFDI	1.3031
			LCRP	1.0137

Table 3: Results of the OLS model

Variable	Coefficient	S.E	t-statistic	p-value
Intercept	-0.0217	0.0134	-1.6282	
LGDP	0.1413	0.1195	1.1831	0.2489
LFDI	0.0269	0.0092	2.0943	0.0073**
LCRP	0.5154	0.2058	2.5039	0.0198**
R^2	0.5270			
Adj R^2	0.4653			
Prob (F-statistic)	0.000541			

Notes: * indicates a statistically significant p-value ($p < 0.1$);**indicates $p < 0.05$; *** indicates $p < 0.01$.

For the robustness of the model, this study has passed all the requirements needed to justify whether the study is fit to run the analysis. (Mohamed et al., 2022). Table 2 shows the details of the robustness analysis result. It shows that the model has passed the serial correlation test of order 2, where the p-value is larger than 5 percent of the Breusch-Godfrey LM test. For the heteroscedasticity, the model signifies that it is out of the hetero problem, where the p-value is more than 5 percent of the rule of thumb. It also passed the normality test, where the p-value exceeded 5 percent of the analysis, which signifies the model is normal. The last is the multicollinearity test, where analysis shows all the variables are under the variance inflation factor (VIF) rule of thumb, which is less than 5. Thus, it concludes that this study has a niche to be run.

Table 3 shows the model's results. It shows that the model is suited for conducting all the variables. (Gouda & El-Hoshy, 2020). The R-squared shows that the model has a 53% (0.5370) LHP variant, which is explained by all three variables. The F-statistics has a p-value of 0.000541, which means the model rejects the null hypothesis and suggests that the variables involved could influence the HP.

The results also suggested that LFDI and LCRP are significantly associated with LHP. In contrast, the variable LGDP is insignificantly associated with LHP. This analysis proves that LCRP influences LHP, the housing price. A percent increase in the corruption index will initiate a potential increase in the housing price at about 51 percent, which could depress the borrower's ability to buy a house, exploiting the market of the youngsters to buy a house.

Interestingly, in this case, two variables, CRP and FDI, show such a connection, thereby providing valuable insights into factors influencing housing prices.

5. Conclusion & Recommendations

Housing markets are intricately interwoven with various aspects of the economy, making them complex structures shaped by numerous interconnected factors. Stabilizing these markets while ensuring affordability and fairness requires a multifaceted approach. A recent study about the Malaysian context lays down three critical recommendations centered around bolstering anti-corruption initiatives, regulating foreign direct investment (FDI), and diversifying the economy. The necessity to amplify anti-corruption efforts is the first recommendation's crux (Siddiquee, 2005). This need is rooted in the apparent connection between the degree of corruption prevalent in Malaysia and house prices in the country. One example of strengthening these efforts is by launching periodic audits of housing projects to instill a sense of integrity and ensure lawfulness. Such audits, much like a timely health check-up, can preemptively diagnose issues of non-compliance or discrepancies in the process, avoiding the long-term adverse impacts of dishonest practices on housing prices. Moreover, it is critical to protect whistleblowers and encourage them to shed light on corruption. This issue can be comprehended by envisioning a society where individuals fearlessly bring illicit activities to light without worrying about personal safety or backlash. Such an environment discourages corruption and promotes accountability. Creating an independent authority to oversee and prohibit corruption in the housing sector further embellishes anti-corruption efforts. It is analogous to having a dedicated watchdog keeping tabs on any corrupt activities within the housing sector, with the power to take punitive action, thereby concerning potential violators.

The second recommendation addresses the effects of foreign direct investment (FDI) on housing prices. FDI is

a double-edged sword that can spur growth or cause the market to overheat, requiring judicious regulation. A practical method to regulate FDI's impact involves periodically analyzing its effects on the housing market, like constantly tracking the weather to prepare for any sudden changes. This proactive stance allows for the adaptability of rules to maintain economic stability (Wen, 2021).

Furthermore, cultivating sustainable investment practices that value steady, long-term growth over immediate gains can cushion against market volatility resulting from short-lived FDI. This approach mirrors a marathon runner's strategy, focusing on maintaining a consistent pace for the duration of the race instead of sprinting at the very start and then running out of steam. Additionally, nurturing collaborations between the government and the private sector can enable a harmonious blend of FDI and domestic investments focusing on affordable housing (Kim, 2020; Pinjaman & Kogid, 2020). This approach is akin to creating a balanced diet combining different food groups, ensuring holistic growth and development.

While for the GDP, even the research might not have established a direct correlation between GDP and housing prices, steering the economy towards a diverse set of activities is undeniably essential (Pinjaman & Kogid, 2020; Zulkifli et al., 2022). Spreading economic reliance across various sectors, rather than concentrating predominantly on a few, creates a more robust and stable economic climate, akin to not placing all the eggs in one basket. The diversified economic landscape fosters a versatile job market, powering a more secure housing economy. Reflect on an economy that places its bet on a singular industry; a decline in that sector could reverberate dramatically, and it could trigger widespread job losses, diminishing housing demand, which, as a result, pulls down housing prices. In contrast, the sort of economic shock would be lessened considerably in a diversified economy. Other prosperous industries within the economy possess the capacity to compensate for this downturn, effectively keeping unemployment under control and facilitating continuous demand for housing.

In conclusion, a comprehensive strategy articulated with surgical precision, which centers on enhancing anti-corruption initiatives, prudent regulation of foreign direct investment inflows, and stimulating economic diversification, serves as a roadmap for Malaysia to cultivate a balanced, inclusive, and equitable housing market.

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