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Household Income and Housing Price Movements in Malaysia: Reassessing the Role of Interest Rates and Inflation

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ABSTRACT

This study examines the influence of macroeconomic factors on housing prices in Malaysia, with particular emphasis on household income, interest rates, and inflation. Housing affordability has become an increasingly important socioeconomic concern due to the persistent increase in residential property prices relative to household income growth. Using annual time-series data from 2002 to 2022 obtained from the National Property Information Centre (NAPIC), Department of Statistics Malaysia (DOSM), and Bank Negara Malaysia (BNM), this study applies Ordinary Least Squares (OLS) regression analysis to evaluate the relationship between selected macroeconomic variables and housing prices in Malaysia. The findings indicate that household income has a significant positive influence on housing prices, suggesting that stronger purchasing power contributes to higher housing demand and property price appreciation. In contrast, interest rates and inflation were found to have statistically insignificant relationships with housing prices during the study period. These findings highlight the dominant role of income growth in shaping housing market dynamics in Malaysia. The study contributes to the existing literature by providing updated empirical evidence on the macroeconomic determinants of housing prices within the Malaysian context. The findings may assist policymakers, financial institutions, and housing developers in formulating more effective strategies to improve housing affordability and support long-term property market stability.

Keywords: House Price, Household Income, Housing Affordability, Inflation, Interest Rates

1. INTRODUCTION

Housing affordability has become an increasingly critical socioeconomic issue in Malaysia due to the persistent mismatch between residential property prices and household income growth. Over the past two decades, residential property prices have risen significantly faster than household incomes, particularly in major urban areas such as Kuala Lumpur and Selangor. This widening gap has reduced housing affordability and limited access to homeownership, especially among middle- and low-income households.

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This situation has intensified financial pressure among first-time homebuyers, many of whom continue to face difficulties in securing affordable housing despite various government housing initiatives. Programmes such as the National Housing Policy (2018–2025), People's Housing Programme (PPR), and Rent-to-Own (RTO) scheme were introduced to improve housing accessibility and support homeownership among vulnerable groups. Nevertheless, affordability concerns remain persistent due to rising property prices, increasing living costs, and imbalances between housing supply and effective demand.

The Malaysian housing market plays an important role in supporting economic growth, urban expansion, and social well-being. Rapid urbanisation, population growth, and economic development have contributed to stronger housing demand, particularly in highly developed urban regions (Abu Bakar et al., 2011). At the same time, developers have increasingly concentrated on higher-end residential projects, resulting in an oversupply of expensive housing units while affordable housing supply remains relatively limited (Hassan et al., 2021). Consequently, many middle-income households are trapped between housing eligibility limitations and unaffordable market prices, a condition commonly associated with the 'middle-income trap' in housing ownership (Yap & Ng, 2018). Although government intervention has expanded through financial assistance schemes and housing incentives, questions remain regarding the long-term effectiveness of these initiatives in stabilising housing affordability within Malaysia's increasingly complex property market.

Macroeconomic conditions are widely recognised as important determinants of housing market performance and residential property prices. Household income, interest rates, and inflation influence both housing demand and supply dynamics within the property market. Higher household income generally increases purchasing power and stimulates housing demand, which may subsequently contribute to rising house prices (Pinjaman & Kogid, 2020). Similarly, inflation may increase housing prices indirectly through rising construction costs, labour expenses, and property development expenditures (Lean & Smyth, 2014). However, the relationship between macroeconomic variables and housing prices remains complex and occasionally inconsistent across empirical studies. While several studies argue that income growth remains a key driver of residential price appreciation, others suggest that interest rates, inflation, and financing conditions exert stronger influences on housing market movements, particularly during periods of economic uncertainty and monetary policy adjustment (Pinjaman & Kogid, 2020; Yap & Ng, 2018).

Interest rates, particularly mortgage financing rates, are also frequently associated with housing market behaviour because borrowing costs directly influence homeownership affordability and housing demand. Lower interest rates generally encourage housing purchases by reducing financing costs, whereas higher interest rates may weaken property demand due to rising borrowing expenses (Yap & Ng, 2018). Nevertheless, several Malaysian studies have reported that interest rates may not always exert a strong influence on housing prices, particularly in markets where housing demand remains supported by demographic growth, speculative investment activities, foreign ownership, and housing supply constraints (Othman et al., 2024; Abdul Muttalib, 2022; Zulkarnain et al., 2025). Similarly, inflation is generally expected to increase residential property prices through higher construction and development costs. However, persistent inflationary pressures may simultaneously erode real household purchasing power, thereby weakening effective housing demand and reducing housing affordability (Ismail et al., 2023; Musaddad et al., 2025; Najihah & Ahmad, 2021; Bujang et al., 2010). These contrasting findings indicate that the relationship between macroeconomic fundamentals and housing prices may vary depending on market conditions, policy environments, and economic cycles.

Although numerous studies have examined housing affordability and property market performance in Malaysia, several limitations remain within the existing literature. Previous studies frequently focus on regional housing markets, short-term affordability indicators, or

isolated macroeconomic determinants, with limited emphasis on the combined long-term effects of household income, interest rates, and inflation on national housing price movements. Furthermore, recent economic uncertainties, including post-pandemic inflationary pressure, monetary tightening, and rising living costs, have increased the need to reassess the relationship between macroeconomic fundamentals and housing prices within the Malaysian context. Therefore, this study examines the influence of household income, interest rates, and inflation on housing prices in Malaysia using annual time-series data from 2002 to 2022.

2. LITERATURE REVIEW

2.1 Household Income and Housing Prices

Household income is widely recognised as one of the most important demand-side determinants of housing prices because income growth directly influences purchasing power, housing affordability, and consumer participation within the property market. As household income increases, individuals are generally more capable of securing mortgage financing and purchasing residential properties, thereby increasing housing demand and contributing to property price appreciation (Pinjaman & Kogid, 2020). In rapidly urbanising economies, rising income levels are frequently associated with stronger residential demand, particularly in urban regions where employment opportunities, infrastructure development, and population concentration continue to expand.

Several empirical studies have reported a positive relationship between household income and housing prices. Lean and Smyth (2014) found that income growth significantly contributed to rising residential property prices due to stronger housing demand and improved purchasing capability among households. Similarly, Hassan et al. (2021) argued that the widening gap between income growth and residential price appreciation has reduced housing affordability among middle-income households in Malaysia. Previous studies also suggest that increasing household income may stimulate speculative housing demand, particularly in urban areas where property ownership is often viewed as both a consumption necessity and an investment opportunity.

The positive relationship between household income and housing prices is also supported by the work of Case and Shiller (2003), who highlighted that rising income levels often strengthen consumer confidence and encourage property investment. In addition, Meen (1999) proposed the concept of the 'ripple effect', whereby economic growth and rising incomes in major urban centres contribute to housing price appreciation that subsequently spreads to surrounding regions. This phenomenon is particularly relevant in rapidly urbanising economies where economic opportunities and population concentration are unevenly distributed across geographical areas. Despite the strong empirical support for the income–housing price relationship, several studies have argued that income growth alone may not fully explain housing price movements. Housing supply constraints, speculative activities, demographic changes, and land availability may also influence residential property values. Therefore, while household income is generally expected to exert a positive influence on housing prices, the strength of the relationship may vary depending on broader housing market conditions and institutional factors (Gallin, 2006; Meen, 1999).

Nevertheless, the relationship between household income and housing prices remains inconsistent across several studies. While many researchers identify income growth as a major contributor to residential price appreciation, others argue that housing prices may continue increasing even when household income growth remains relatively stagnant. Pinjaman and Kogid (2020) reported that house price increases in Malaysia often exceed the rate of income growth, indicating that additional macroeconomic and structural factors may also influence housing market movements. Similarly, Yap and Ng (2018) highlighted that middle-income households

frequently experience financial pressure despite income improvements because residential property prices continue rising faster than wage growth. This situation weakens effective homeownership accessibility and contributes to affordability challenges within the Malaysian housing market. Overall, previous studies suggest that household income remains an important determinant of housing prices due to its influence on purchasing power and housing demand. However, existing findings also indicate that the relationship may vary depending on housing supply conditions, urban development patterns, financing accessibility, and broader macroeconomic conditions.

2.2 Interest Rates and Housing Prices

Interest rates are commonly regarded as one of the key macroeconomic determinants influencing housing market performance and residential property prices. In the housing sector, interest rates primarily affect borrowing costs, mortgage affordability, and financing accessibility. Lower interest rates generally reduce the cost of borrowing and encourage housing purchases, thereby increasing housing demand and contributing to residential price appreciation. Conversely, higher interest rates increase mortgage repayment burdens and may weaken housing demand due to reduced affordability among potential homebuyers (Yap & Ng, 2018). As a result, monetary policy adjustments implemented by central banks often exert significant influence on housing market activity and residential property movements.

In Malaysia, Bank Negara Malaysia (BNM) (2017) plays an important role in influencing housing market conditions through monetary policy instruments such as the Overnight Policy Rate (OPR). Changes in the OPR subsequently affect commercial lending rates and mortgage financing costs within the banking sector. According to Ismail et al. (2023), lower financing costs may stimulate housing demand by improving homeownership affordability and encouraging greater participation within the residential property market. Similarly, several empirical studies have reported that declining interest rates contribute to higher residential demand and stronger property price growth, particularly during periods of economic expansion and accommodative monetary policy.

The influence of interest rates on housing prices has also been widely documented in international housing market literature. Himmelberg et al. (2005) argued that lower interest rates reduce the user cost of housing, thereby increasing housing demand and contributing to property price appreciation. Similarly, Sutton (2002) reported that accommodative monetary policy and declining borrowing costs were among the key factors supporting housing booms across several developed economies. These findings suggest that interest rates play an important role in shaping housing market behaviour through their impact on financing affordability and borrowing decisions.

However, the magnitude of the relationship between interest rates and housing prices often varies across countries and market environments. Factors such as housing supply responsiveness, lending regulations, demographic changes, and investor behaviour may moderate the effectiveness of interest rate adjustments in influencing housing demand. Consequently, while interest rates are generally expected to affect housing market performance, their actual impact may differ depending on broader economic and institutional conditions (Himmelberg et al., 2005; McQuinn & O'Reilly, 2008).

Nevertheless, the relationship between interest rates and housing prices remains inconclusive across previous studies. While conventional economic theory suggests that rising interest rates reduce housing demand and weaken property prices, some studies report that residential prices may continue increasing despite higher financing costs. This situation may occur when housing demand remains supported by population growth, speculative investment activities, urban migration, or supply-side shortages. Yap and Ng (2018) argued that strict lending requirements

and financial constraints may weaken the direct influence of interest rates on housing demand, particularly among middle-income households that already face affordability limitations. In such situations, housing prices may be influenced more strongly by structural housing shortages and market expectations rather than financing costs alone.

Furthermore, prolonged periods of low interest rates may contribute to excessive housing demand and speculative property investment, potentially leading to overheating within the housing market. During periods of economic uncertainty, central banks frequently lower interest rates to stimulate borrowing activities and support economic recovery. Although such measures may stabilise housing demand in the short term, excessively accommodative monetary conditions may also intensify affordability pressure by accelerating residential property price appreciation (Ismail et al., 2023). Consequently, the relationship between interest rates and housing prices may vary depending on broader economic conditions, monetary policy environments, and housing market structures.

Overall, existing literature suggests that interest rates remain an important macroeconomic factor influencing housing market performance through their effects on borrowing costs and financing accessibility. However, empirical findings continue to show inconsistent results regarding the magnitude and direction of this relationship within different economic and housing market contexts.

2.3 Inflation and Housing Prices

Inflation is another important macroeconomic factor that influences housing market performance and residential property prices. In general, inflation refers to the continuous increase in the overall price level of goods and services within an economy. In the housing sector, inflation affects both the demand and supply sides of the property market through increases in construction costs, labour expenses, land prices, and household living expenditures. As inflation rises, developers often face higher development and operational costs, which may subsequently contribute to rising residential property prices (Pinjaman & Kogid, 2020).

Previous empirical studies commonly report a positive relationship between inflation and housing prices. Lean and Smyth (2014) found that inflationary pressure contributes to property price appreciation because housing assets are frequently viewed as a hedge against inflation during periods of economic uncertainty. Similarly, increases in the Consumer Price Index (CPI) are often associated with rising residential construction costs and higher selling prices within the housing market (Pinjaman & Kogid, 2020). As inflation increases, property developers may transfer higher production costs to consumers through increased housing prices, particularly in urban regions experiencing rapid development and stronger market demand.

However, several studies suggest that the relationship between inflation and housing prices may not always be straightforward. While moderate inflation may stimulate property investment and increase asset values, excessive inflation may weaken household purchasing power and reduce effective housing demand. Hassan et al. (2021) argued that rising living costs combined with stagnant wage growth reduce housing affordability among middle- and low-income households, even when nominal income levels continue increasing. In such circumstances, inflation may simultaneously increase residential prices while limiting the ability of households to participate actively in the property market.

Within the Malaysian context, inflationary pressure continues to raise concerns regarding housing affordability, particularly following periods of economic uncertainty and rising living expenses. Although government policies and financial assistance programmes have been introduced to support affordable housing development, persistent increases in construction costs and property prices remain significant challenges within the housing sector. Therefore,

understanding the influence of inflation on housing prices remains important for policymakers and housing market stakeholders.

Overall, previous studies indicate that inflation may influence housing prices through multiple transmission mechanisms involving construction costs, purchasing power, investment behaviour, and monetary policy responses. Nevertheless, existing empirical findings remain mixed regarding the direction and strength of this relationship.

2.4 Theoretical Framework

This study is underpinned by the Demand and Supply Theory of the housing market, which explains how housing prices are determined through the interaction between housing demand and housing supply. The theory suggests that residential property prices increase when housing demand exceeds available supply, whereas prices tend to stabilise or decline when housing supply exceeds market demand. Within the housing market, macroeconomic variables such as household income, interest rates, and inflation play important roles in influencing both demand-side and supply-side conditions.

From the demand perspective, household income is considered an important determinant of housing demand because higher income increases purchasing power and improves consumers' ability to obtain housing financing. As household income rises, more households are financially capable of purchasing residential properties, thereby increasing housing demand and contributing to rising property prices (Pinjaman & Kogid, 2020). In Malaysia, rapid urbanisation and population concentration in major cities have further intensified housing demand, particularly among middle-income households seeking homeownership opportunities within urban areas.

Similarly, Tsatsaronis and Zhu (2004) reported that inflationary pressures are often associated with rising housing prices through both demand-side and supply-side channels. On the supply side, inflation increases the costs of construction materials, labour, and land development, thereby raising the overall cost of housing production. On the demand side, expectations of future price increases may encourage households and investors to enter the property market earlier, further stimulating housing demand. Goodhart and Hofmann (2008) further observed that housing prices and macroeconomic conditions are closely interconnected, particularly in economies experiencing sustained economic growth. Their findings suggest that inflation may influence housing markets indirectly through monetary policy responses, financing conditions, and changes in household expectations. Therefore, the effect of inflation on housing prices may not always be direct but may operate through multiple economic transmission mechanisms.

Interest rates also influence housing demand through borrowing costs and mortgage affordability. Lower interest rates reduce financing costs and encourage greater housing market participation, while higher interest rates increase borrowing expenses and may reduce effective housing demand (Othman et al., 2024). Consequently, monetary policy adjustments implemented by central banks may significantly affect housing market activity and residential property movements. However, the responsiveness of housing demand to interest rate changes may vary depending on lending conditions, financing accessibility, and broader economic circumstances.

From the supply perspective, inflation influences housing prices primarily through increases in construction costs, labour expenses, and property development expenditures. Rising inflation increases the cost of housing development, causing developers to transfer higher costs to consumers through increased residential selling prices (Pinjaman & Kogid, 2020). In addition, housing supply within Malaysia often responds slowly to changes in market demand due to land limitations, regulatory constraints, and lengthy development processes. As a result, increases in

housing demand may lead to substantial residential price appreciation when housing supply remains relatively inelastic.

The Demand and Supply Theory provide an appropriate theoretical foundation for this study because it explains how macroeconomic conditions influence housing market behaviour and residential property prices through demand-side and supply-side mechanisms. Household income represents purchasing capability and housing demand, interest rates influence financing accessibility and borrowing behaviour, while inflation affects development costs and housing supply conditions. Therefore, the theory supports the examination of the relationships between household income, interest rates, inflation, and housing prices within the Malaysian housing market.

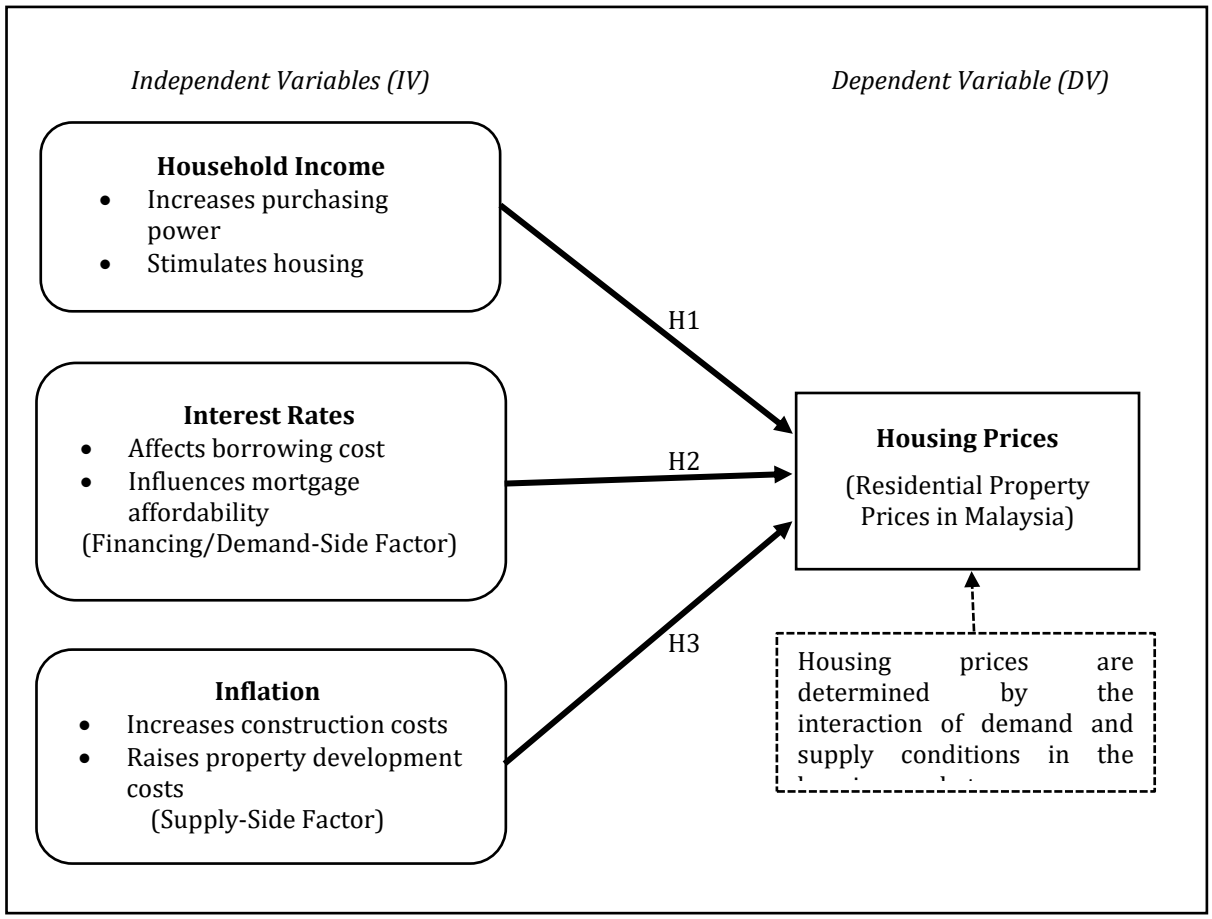

Figure 1. Conceptual Framework of the Study (Authors' own construction based on the literature review)

Figure 1 illustrates the conceptual framework of the study based on the Demand and Supply Theory of the housing market. The framework demonstrates the proposed relationships between household income, interest rates, inflation, and housing prices in Malaysia. Household income represents the demand-side factor that influences purchasing power and housing demand, while interest rates affect borrowing costs and mortgage affordability. Inflation, on the other hand, reflects the supply-side factor through its influence on construction and development costs. Collectively, these macroeconomic variables are expected to influence housing prices within the Malaysian property market.

2.5 Hypothesis Development

Based on the Demand and Supply Theory and previous empirical findings, household income is expected to positively influence housing prices because higher income levels increase purchasing

power and housing demand (Hassan et al., 2021; Pinjaman & Kogid, 2020). In contrast, interest rates influence borrowing costs and mortgage affordability, where lower financing costs generally stimulate housing demand and property market activity (Yap & Ng, 2018). Inflation may also contribute to residential price appreciation through increases in construction and development costs (Lean & Smyth, 2014). However, previous empirical findings regarding the effects of interest rates and inflation on housing prices remain mixed due to differences in market conditions and economic environments. Therefore, the following hypotheses are proposed:

H_1: Household income has a significant positive relationship with housing prices in Malaysia.

H_2: Interest rates have a significant relationship with housing prices in Malaysia.

H_3: Inflation has a significant relationship with housing prices in Malaysia.

3. METHODOLOGY

3.1 Research Design

This study employs a quantitative research approach to examine the influence of household income, interest rates, and inflation on housing prices in Malaysia. A quantitative approach is considered appropriate because the study focuses on examining relationships between macroeconomic variables using numerical data and statistical analysis. Specifically, the study applies time-series analysis to evaluate the long-term relationship between selected macroeconomic indicators and housing prices over the period from 2002 to 2022.

The study employs annual secondary data obtained from official Malaysian sources, namely the National Property Information Centre (NAPIC), the Department of Statistics Malaysia (DOSM), and Bank Negara Malaysia (BNM) (2017). These institutions provide data on residential property prices, household income, inflation, interest rates, unemployment, and other relevant macroeconomic indicators used in the analysis. Housing price data were obtained from NAPIC, household income data were collected from DOSM, while interest rate and inflation data were sourced from BNM. The use of secondary data from official institutions enhances the reliability and credibility of the study because the data are systematically collected and widely used in economic and housing market research.

To analyse the relationship between macroeconomic variables and housing prices, this study applies the Ordinary Least Squares (OLS) regression model. The OLS approach is commonly used in previous housing market studies to estimate the relationship between dependent and independent variables within a macroeconomic framework. In this study, housing prices represent the dependent variable, while household income, interest rates, and inflation are treated as independent variables.

In addition, several diagnostic tests are conducted to ensure the reliability and validity of the regression model. These include normality, multicollinearity, heteroscedasticity, and autocorrelation tests. Conducting these diagnostic procedures is important to verify whether the regression model satisfies the assumptions of classical linear regression and produces reliable empirical estimates. Through these analyses, the study aims to provide empirical evidence regarding the macroeconomic determinants of housing prices in Malaysia.

3.2 Data Collection and Sources

This study utilises annual secondary data covering the period from 2002 to 2022. Secondary data were selected because they provide reliable and publicly accessible macroeconomic information suitable for time-series analysis. The 21-year observation period allows for the examination of long-term trends and relationships between residential property prices and key macroeconomic variables in Malaysia.

Housing price data were collected from the National Property Information Centre (NAPIC), which provides official information regarding residential property market performance in Malaysia. Household income data were obtained from the Department of Statistics Malaysia (DOSM), while interest rate and inflation data were sourced from Bank Negara Malaysia (BNM) (2017). Interest rates were represented using the Overnight Policy Rate (OPR), whereas inflation was measured using the Consumer Price Index (CPI). These indicators are widely used in previous macroeconomic and housing market studies due to their relevance in reflecting economic and monetary conditions. Table 1 summarises the variables and data sources used in this study.

Table 1 Summary of Variables and Data Sources

Variables	Measurements	Sources
Housing Prices	Median house prices in Malaysia	NAPIC
Household Income	Average household income	DOSM
Interest Rates	Overnight Policy Rate (OPR)	BNM
Inflation	Consumer Price Index (CPI)	BNM

The collected data were carefully reviewed and organised prior to statistical analysis. Any inconsistencies in data formatting were standardised to ensure compatibility with the econometric analysis conducted using EViews software. The use of official macroeconomic and housing market data strengthens the reliability of the study and supports a more comprehensive examination of the relationship between macroeconomic variables and housing prices in Malaysia.

3.3 Model Specification

To examine the relationship between macroeconomic variables and housing prices in Malaysia, this study employs the Ordinary Least Squares (OLS) regression model. OLS regression is widely used in empirical economic and housing market studies because it allows researchers to estimate the magnitude and direction of relationships between dependent and independent variables (Gujarati & Porter, 2009). In this study, housing prices are treated as the dependent variable, while household income, interest rates, and inflation are considered independent variables.

The regression model developed for this study is expressed as follows:

$$HP_t = \beta_0 + \beta_1 HI_t + \beta_2 IR_t + \beta_3 INF_t + \varepsilon_t \quad (1)$$

Where:
HP_t = Housing prices
HI_t = Household income
IR_t = Interest rates
INF_t = Inflation
β_0 = Constant term
β_1 - β_3 = Regression coefficients
ε_t = Error term

Based on the Demand and Supply Theory as well as previous empirical findings, household income is expected to have a positive relationship with housing prices because higher purchasing power may increase housing demand (Pinjaman & Kogid, 2020). Interest rates are expected to influence housing prices through borrowing costs and mortgage affordability (Yap & Ng, 2018), while inflation is anticipated to affect housing prices through increases in construction and development costs (Lean & Smyth, 2014).

The regression analysis was conducted using EViews software to estimate the coefficients and evaluate the statistical significance of the independent variables. The significance level for hypothesis testing was set at 5 percent ($p < 0.05$), which is commonly adopted in social science and economic research to determine statistical significance (Gujarati & Porter, 2009). In addition, the coefficient of determination (R^2) was used to evaluate the explanatory power of the regression model in explaining variations in housing prices in Malaysia.

3.4 Diagnostic Tests

Several diagnostic tests were conducted to ensure that the regression model satisfies the assumptions of the Classical Linear Regression Model (CLRM) and produces reliable estimation results. Diagnostic testing is important in econometric analysis because violations of regression assumptions may affect the validity, consistency, and efficiency of the estimated coefficients (Gujarati & Porter, 2009).

First, the normality test was conducted to determine whether the residuals were normally distributed. The Jarque-Bera test was used to evaluate the normality assumption. A normally distributed residual indicates that the regression model is statistically reliable for hypothesis testing and inference. Second, a multicollinearity test was conducted to examine the relationships among the independent variables. The Variance Inflation Factor (VIF) and correlation matrix were used to assess multicollinearity among household income, interest rates, and inflation. Following Gujarati and Porter (2009), VIF values below 10 indicate that multicollinearity is not a serious problem.

Third, the heteroscedasticity test was conducted to determine whether the variance of the residuals remained constant throughout the regression model. The presence of heteroscedasticity may produce inefficient estimators and unreliable statistical inferences. The Breusch-Pagan-Godfrey test was employed in this study to detect heteroscedasticity within the regression residuals. Finally, the autocorrelation test was conducted because time-series data are frequently exposed to serial correlation problems. Autocorrelation occurs when residual terms are correlated across time periods, potentially affecting the efficiency of the regression estimates. The Durbin-Watson statistic was used to examine the presence of autocorrelation within the model. A Durbin-Watson value approaching 2 generally indicates the absence of serious autocorrelation problems (Gujarati & Porter, 2009). Conducting these diagnostic procedures helps ensure that the regression model satisfies the required econometric assumptions and strengthens the reliability of the empirical findings regarding the macroeconomic determinants of housing prices in Malaysia.

4. RESULTS AND DISCUSSIONS

4.1 Descriptive Statistics

Descriptive statistics were analysed to provide an overview of the variables used in this study, namely housing prices (HP), household income (HI), interest rates (IR), and inflation (IF). The analysis covers annual data from 2002 to 2022, comprising 21 observations for each variable. Table 2 presents the descriptive statistics, including mean, median, maximum, minimum, standard deviation, skewness, kurtosis, and Jarque-Bera probability values. The results show that housing prices recorded an average value of RM290,104.10, with prices ranging from RM148,201.00 to RM459,523.00. The substantial gap between the minimum and maximum values suggests considerable variation in residential property prices throughout the study period. In comparison, household income recorded an average monthly income of RM3,948.76, ranging from RM2,049.00 to RM6,334.00. These findings reflect notable changes in both housing prices and household earnings over the twenty-one-year period. Similar concerns regarding the

widening affordability gap between house prices and household income have been highlighted in previous Malaysian studies (Hassan et al., 2021; Yap & Ng, 2018).

Table 2 Descriptive Statistics of Variables

Variables	HP	HI	IR	IF
Mean	290104.1	3948.762	6.267143	111.4952
Median	286011.0	3626.000	6.500000	110.5000
Maximum	459523.0	6334.000	6.850000	127.8000
Minimum	148201.0	2049.000	5.000000	100.0000
Std. Dev.	116376.8	1470.631	0.552966	7.896232
Skewness	0.115384	0.158991	-0.927311	0.464096
Kurtosis	1.375440	1.479690	2.664172	2.041495
Jarque-Bera	2.355892	2.110897	3.108351	1.557737
Probability	0.307911	0.348036	0.211364	0.458925
Observations	21	21	21	21

The standard deviation values show that housing prices were the most volatile variable, recording a standard deviation of RM116,376.80, followed by household income (RM1,470.63). Meanwhile, interest rates (0.553) and inflation (7.896) exhibited relatively lower variability, indicating greater stability over the study period. The substantial fluctuations in housing prices may reflect the combined effects of housing demand, urbanisation, income growth, and property market dynamics (Abu Bakar et al., 2011; Pinjaman & Kogid, 2020).

Moreover, the skewness statistics reveal that housing prices, household income, and inflation are positively skewed, while interest rates are negatively skewed. However, the skewness values for all variables remain within an acceptable range, suggesting the absence of severe asymmetry in the data distribution. Furthermore, the kurtosis values are below the benchmark value of three, indicating relatively flat distributions and the absence of excessive concentration around the mean. According to Gujarati and Porter (2009), such characteristics generally do not present serious concerns for regression estimation.

The Jarque-Bera probability values for all variables exceed the 0.05 significance level, indicating that the null hypothesis of normality cannot be rejected. Therefore, the variables are considered approximately normally distributed and suitable for subsequent econometric analysis. Overall, the descriptive statistics suggest that the dataset exhibits acceptable distributional properties and provides a suitable basis for examining the relationship between household income, interest rates, inflation, and housing prices in Malaysia.

4.2 Diagnostic Test Results

Several diagnostic tests were conducted to ensure that the regression model satisfies the assumptions of the Classical Linear Regression Model (CLRM). These tests are important to verify the reliability, consistency, and validity of the estimated regression results (Gujarati & Porter, 2009). The diagnostic procedures performed in this study include the normality test and heteroscedasticity test. The results of the normality and heteroscedasticity tests are presented in Table 3.

The diagnostic test results indicate that the regression model satisfies the required assumptions for Ordinary Least Squares (OLS) estimation. The Jarque-Bera probability values exceed the 0.05 significance level, suggesting that the residuals are approximately normally distributed.

According to Gujarati and Porter (2009), normally distributed residuals improve the reliability of statistical inference and hypothesis testing within regression analysis.

Table 3 Diagnostic Test Results

Diagnostic Test	Statistics	Probability	Interpretation
Jarque-Bera Normality Test	2.355892 – 3.108351	> 0.05	Residuals are normally distributed
Breusch-Pagan-Godfrey Test	F-statistic = 1.921646	0.1644	No heteroscedasticity problem
Obs*R-Squared	5.317989	0.1499	Homoscedasticity assumption satisfied
Scaled Explained SS	3.910194	0.2713	No heteroscedasticity detected

Furthermore, the Breusch-Pagan-Godfrey test shows probability values greater than 0.05 for the F-statistic, Obs*R-squared, and Scaled Explained SS statistics. These findings indicate the absence of heteroscedasticity problems, implying that the variance of the residuals remains relatively constant across observations. Consequently, the estimated coefficients are unlikely to be affected by inefficient standard errors or biased statistical inference. Overall, the diagnostic test results suggest that the regression model is statistically reliable and suitable for examining the relationship between household income, interest rates, inflation, and housing prices in Malaysia. Therefore, the regression analysis can be interpreted with a reasonable degree of confidence.

4.3 Regression Analysis and Discussion

To examine the influence of household income, interest rates, and inflation on housing prices in Malaysia, the Ordinary Least Squares (OLS) regression model was employed. The regression results are presented in Table 4, while the overall model performance is reported in Table 5.

Table 4 OLS Regression Results

Variables	Coefficient	Std. Error	t-Statistic	Probability
Constant	4.868752	0.927171	5.251192	0.0001
Household Income (LHI)	1.110530	0.048829	22.74332	0.0000
Interest Rate (IR)	-0.021023	0.021869	-0.961315	0.3499
Inflation (LIF)	-0.288748	0.251203	-1.149457	0.2663

The regression results indicate that household income is the only variable that exerts a statistically significant influence on housing prices in Malaysia, whereas interest rates and inflation do not exhibit significant effects. These findings suggest that demand-side factors may play a more prominent role in explaining housing price movements than the selected macroeconomic variables.

Similar observations have been reported in previous studies, which found that household income remains one of the primary determinants of housing demand and residential property prices (Hassan et al., 2021; Pinjaman & Kogid, 2020). The individual effects of each explanatory variable are discussed in the following subsections.

Table 5 Model Summary

Model Statistics	Value
Observations	21
R-Squared	98.99%
Adjusted R-Squared	98.82%
F-Statistic	559.38
Prob(F-Statistic)	0.0000
Durbin-Watson Statistic	1.1476

The overall regression model demonstrates strong explanatory power, with an R-squared value of 98.99% and an adjusted R-squared value of 98.82%. This indicates that approximately 98.99% of the variation in housing prices can be explained by the combined effects of household income, interest rates, and inflation. Furthermore, the F-statistic of 559.38 is highly significant (p = 0.0000), confirming that the regression model is jointly significant and suitable for explaining housing price movements in Malaysia. Similar findings have been reported in previous housing market studies, where macroeconomic factors were found to collectively explain a substantial proportion of housing price variation (Adams & Füss, 2010; Oikarinen, 2009).

To provide a more comprehensive understanding of the findings, the effects of each independent variable on housing prices are discussed separately in the following subsections.

4.3.1 Effect of Household Income on Housing Prices

The regression results reveal that household income has a positive and statistically significant relationship with housing prices in Malaysia. As shown in Table 4, household income recorded a coefficient of 1.1105 and is significant at the 1% level (p = 0.0000). This indicates that higher household income is associated with higher housing prices.

From an economic perspective, the finding supports the Demand and Supply Theory, which posits that an increase in consumers' purchasing power leads to higher demand for goods and services, including housing. When housing supply does not increase at the same rate as demand, housing prices tend to rise (DiPasquale & Wheaton, 1992). The result also suggests that household income is an important factor influencing housing prices in Malaysia.

The finding is consistent with several previous studies that identified household income as one of the most influential determinants of housing prices. For example, Adams and Füss (2010) found that income growth significantly contributes to housing market expansion across developed economies. Similarly, Oikarinen (2009) reported that rising household income stimulates housing demand and subsequently increases residential property values. In the Asian context, Glindro et al. (2011) also concluded that income growth remains a key driver of housing price appreciation, particularly in rapidly developing economies where urbanisation and demographic expansion reinforce housing demand.

The present finding also aligns with evidence reported in Malaysia. Hassan et al. (2021) argued that the widening gap between house prices and household affordability has become one of the major housing challenges faced by Malaysian households. Similarly, Yap and Ng (2018) observed that rising household income often contributes to stronger housing demand, particularly in urban centres where residential properties are viewed not only as a basic necessity but also as an investment asset. More recently, Abu Bakar et al. (2011) highlighted that although household earnings have increased over time, housing prices have risen at a considerably faster rate, creating affordability pressures among middle-income households.

The significance of household income in this study may also reflect the structural characteristics of the Malaysian housing market. Over the past two decades, Malaysia has experienced continuous urbanisation, population growth, and economic development, particularly within major urban regions such as Kuala Lumpur, Selangor, Johor Bahru, and Penang. These developments have intensified housing demand while the supply of affordable housing has struggled to keep pace. Consequently, improvements in household income may increase purchasing capacity, but they may simultaneously contribute to higher housing prices as competition for available residential properties intensifies.

Interestingly, the magnitude of the coefficient suggests that housing prices are highly responsive to changes in household income. This finding implies that demand-side factors may exert a stronger influence on housing price movements than monetary variables such as interest rates and inflation. Similar observations were reported by Égert and Mihaljek (2007), who found that income growth often represents a more persistent determinant of housing prices than short-term macroeconomic fluctuations. Therefore, the Malaysian housing market may be characterised by strong income-driven demand, particularly during periods of economic growth and rising household earnings.

From a policy perspective, the findings suggest that improving housing affordability requires more than simply increasing household income. Although higher earnings improve purchasing power, they may also contribute to rising housing demand and subsequent price appreciation if housing supply remains constrained. Policymakers should therefore ensure that housing development keeps pace with income growth by expanding the supply of affordable housing, improving land use planning, and encouraging residential developments that cater to middle- and lower-income households. Such measures are essential to prevent further deterioration in housing affordability despite improvements in household income.

4.3.2 Effect of Interest Rates on Housing Prices

As presented in Table 4, interest rates recorded a negative coefficient of -0.0210. However, the relationship was found to be statistically insignificant at the 5% significance level ($p = 0.3499$). This finding indicates that changes in interest rates did not significantly influence housing prices in Malaysia during the study period. Although the coefficient suggests an inverse relationship between interest rates and housing prices, the effect is insufficiently strong to establish a statistically significant association.

The negative coefficient is consistent with conventional economic theory, which suggests that higher interest rates increase borrowing costs and reduce the affordability of mortgage financing. As housing purchases are often financed through long-term loans, an increase in interest rates is expected to discourage home purchases and subsequently reduce demand in the housing market. Lower housing demand would then exert downward pressure on property prices. Conversely, lower interest rates reduce financing costs, making housing loans more affordable and potentially stimulating housing demand.

Despite this theoretical expectation, the present study found that interest rates were not a significant determinant of housing prices in Malaysia. One possible explanation is that housing demand in Malaysia is influenced by a broader range of factors beyond borrowing costs. Population growth, urbanisation, household formation, and rising income levels may have contributed more substantially to housing demand than fluctuations in interest rates. During periods of rapid urban development, housing demand may remain strong even when financing costs increase, thereby reducing the overall influence of interest rates on housing prices.

The finding is consistent with several Malaysian housing studies that reported a limited or insignificant relationship between interest rates and housing price movements. Ismail et al.

(2023) argued that housing prices in Malaysia are often driven by structural demand factors, particularly household income growth and demographic changes. Similarly, Othman et al. (2024) highlighted that housing demand remains relatively resilient due to continuous urban expansion and the concentration of economic activities in major metropolitan areas. Under such circumstances, moderate changes in interest rates may not be sufficient to substantially alter housing demand or property prices.

Another plausible explanation relates to the relatively stable monetary policy environment in Malaysia throughout much of the study period. As shown in Table 2, interest rates recorded a mean value of 6.27% with a relatively low standard deviation of 0.553, indicating limited variation over the sample period. The relatively small fluctuations in interest rates may have reduced their explanatory power in influencing housing prices. Consequently, variations in housing prices were more likely driven by changes in household income and market demand rather than by changes in financing costs.

From a policy perspective, the findings suggest that monetary policy alone may not be sufficient to address housing affordability challenges in Malaysia. While adjustments to interest rates remain an important macroeconomic policy tool, housing price movements appear to be more closely associated with demand-side factors, particularly household income. Therefore, efforts to improve housing affordability should be complemented by policies aimed at increasing the supply of affordable housing, improving housing market efficiency, and addressing structural imbalances between housing demand and supply.

4.3.3 Effect of Inflation on Housing Prices

As presented in Table 4, inflation recorded a negative coefficient of -0.2887 and was statistically insignificant at the 5% significance level ($p = 0.2663$). This finding indicates that inflation did not exert a significant influence on housing prices in Malaysia during the study period. Although the coefficient suggests a negative relationship between inflation and housing prices, the absence of statistical significance implies that inflation was not a key determinant of housing price movements within the estimated model.

From a theoretical perspective, inflation is often expected to influence housing prices through its effects on construction costs, purchasing power, and investment behaviour. Rising inflation generally increases the prices of building materials, labour costs, and other development expenses, which may contribute to higher housing prices. Furthermore, property is frequently regarded as a hedge against inflation, encouraging investors to allocate funds into real estate during periods of rising prices. Consequently, many studies have reported a positive relationship between inflation and housing prices.

However, the findings of this study suggest that inflation did not play a dominant role in determining housing prices in Malaysia between 2002 and 2022. One possible explanation is that the impact of inflation on the housing market may have been indirectly captured through other variables, particularly household income. As household income was found to be highly significant in the model, changes in purchasing power may have exerted a stronger influence on housing demand and housing prices than general price level movements. This suggests that housing market participants may respond more directly to income conditions than to inflation itself when making homeownership decisions.

The present finding differs from several previous studies that reported a significant relationship between inflation and housing prices. Lean and Smyth (2014) found that inflationary pressure contributes to residential property price appreciation because housing is frequently perceived as a hedge against inflation. Similarly, Pinjaman and Kogid (2020) argued that rising inflation increases construction and development costs, which are often transferred to homebuyers

through higher selling prices. Furthermore, Nik Mohd Sukrri et al. (2019) reported that changes in consumer prices were associated with movements in housing prices within the Malaysian housing market.

However, the insignificant result obtained in this study suggests that the influence of inflation on housing prices may have weakened during the observation period. One possible explanation is that inflation affects the housing market through multiple transmission channels that may offset one another. While inflation tends to increase construction costs and property development expenses, it may simultaneously reduce real purchasing power when wage growth fails to keep pace with rising living costs. Consequently, higher development costs may place upward pressure on housing prices, whereas declining affordability may suppress housing demand, resulting in a weaker overall relationship between inflation and housing prices. Similar concerns regarding affordability pressures arising from rising living costs have been highlighted by Hassan et al. (2021).

Another possible explanation relates to the interaction between inflation and other macroeconomic variables. As highlighted by Ismail et al. (2023), inflation often influences housing markets indirectly through monetary policy adjustments and financing conditions. When inflation rises, monetary authorities may respond by tightening monetary policy, which increases borrowing costs and potentially weakens housing demand. Therefore, the effect of inflation may not be directly reflected in housing prices but may instead operate through interest rates, financing accessibility, and household purchasing power. This interaction may partly explain why inflation was not found to be a statistically significant predictor in the present model.

4.3.4 Overall Model Evaluation

As reported in Table 5, the regression model demonstrates strong explanatory power, with an R-squared value of 98.99% and an adjusted R-squared value of 98.82%. These results indicate that approximately 98.99% of the variation in housing prices can be explained by the combined effects of household income, interest rates, and inflation. The high explanatory power suggests that the selected variables collectively capture a substantial proportion of housing price movements in Malaysia during the study period.

Furthermore, the model recorded an F-statistic value of 559.38 with a probability value of 0.0000, indicating that the overall regression model is statistically significant. This finding confirms that the independent variables jointly contribute to explaining variations in housing prices and that the model is appropriate for investigating the relationship between macroeconomic factors and housing prices in Malaysia. Similar approaches have been widely employed in previous housing market studies to evaluate the influence of macroeconomic indicators on residential property prices (Pinjaman & Kogid, 2020; Yap & Ng, 2018).

The strong explanatory power of the model further supports the argument that housing price movements in Malaysia are closely associated with broader economic conditions, particularly household purchasing capacity. As discussed in the previous subsections, household income emerged as the most influential determinant of housing prices, while interest rates and inflation did not exhibit statistically significant effects. This finding suggests that demand-side factors may exert a stronger influence on residential property prices than financing costs and general price level movements during the study period.

Despite the strong overall performance of the model, the Durbin-Watson statistic of 1.1476 indicates the possibility of mild positive autocorrelation within the residuals. According to Gujarati and Porter (2009), a Durbin-Watson value closer to two generally indicates the absence of serial correlation, whereas values substantially below two may suggest the presence of positive autocorrelation. Although the model remains statistically significant and satisfies the normality

and heteroscedasticity assumptions, the relatively low Durbin-Watson statistic suggests that caution should be exercised when interpreting the results. Similar concerns are common in time-series studies employing annual macroeconomic data due to the persistence of economic variables over time.

Therefore, future studies may consider employing more advanced econometric techniques such as the Autoregressive Distributed Lag (ARDL) model, Vector Error Correction Model (VECM), or cointegration analysis to further examine the long-run dynamics between housing prices and macroeconomic variables. These approaches may provide a more comprehensive understanding of housing market behaviour while addressing potential serial correlation issues associated with time-series data. This recommendation is consistent with the limitations identified in previous Malaysian housing market studies that emphasised the importance of modelling long-term economic relationships more explicitly.

4.4 Hypotheses Testing Summary

This section summarises the results of the hypotheses tested in this study regarding the influence of household income, interest rates, and inflation on housing prices in Malaysia. The hypotheses were evaluated based on the significance level of the regression coefficients obtained from the OLS regression analysis.

Table 6 Summary of Hypotheses Testing

Hypotheses	Statements	Results
H_1	Household income has a significant positive relationship with housing prices in Malaysia.	Supported
H_2	Interest rates have a significant relationship with housing prices in Malaysia.	Not Supported
H_3	Inflation has a significant relationship with housing prices in Malaysia.	Not Supported

The findings indicate that only household income has a statistically significant relationship with housing prices in Malaysia. The positive coefficient suggests that increases in household income contribute to stronger purchasing power and higher housing demand, which subsequently lead to residential property price appreciation. This finding supports the Demand and Supply Theory and is consistent with previous empirical studies that identified income growth as an important demand-side determinant of housing prices (Lean & Smyth, 2014; Pinjaman & Kogid, 2020).

In contrast, interest rates and inflation were found to have statistically insignificant relationships with housing prices during the study period. Although both variables recorded negative coefficient values, the results suggest that fluctuations in financing costs and inflationary pressure did not exert substantial direct influence on residential property prices in Malaysia between 2002 and 2022. These findings imply that housing market behaviour in Malaysia may be driven more strongly by purchasing power, demographic expansion, urbanisation, and structural housing demand rather than macroeconomic cost factors alone.

Overall, the findings highlight the dominant role of household income in influencing housing prices within the Malaysian housing market. The results also suggest that the effects of interest rates and inflation on housing prices may vary depending on broader economic conditions, market expectations, and housing supply constraints.

5. CONCLUSION AND POLICY IMPLICATIONS

This study examined the influence of household income, interest rates, and inflation on housing prices in Malaysia using annual time-series data covering the period from 2002 to 2022. Drawing upon the Demand and Supply Theory, the study employed the Ordinary Least Squares (OLS) regression model to investigate the extent to which selected macroeconomic variables explain variations in residential property prices within the Malaysian housing market. Given the persistent concerns surrounding housing affordability and the widening gap between house prices and purchasing power, understanding the factors driving housing price movements remains important for policymakers, housing developers, and financial institutions.

The empirical findings reveal that household income is the most influential determinant of housing prices in Malaysia. The regression results indicate that household income has a positive and statistically significant relationship with housing prices, suggesting that improvements in purchasing power contribute directly to stronger housing demand and subsequent property price appreciation. Specifically, a 1 per cent increase in household income was associated with approximately a 1.11 per cent increase in housing prices. This finding supports previous Malaysian studies that identified income growth as a major driver of residential property demand and housing market expansion (Yap & Ng, 2018; Hassan & Singaravelloo, 2022). In contrast, interest rates and inflation were found to have statistically insignificant relationships with housing prices during the study period, indicating that financing costs and general price level fluctuations exerted a relatively weaker influence on housing price movements compared to household purchasing capacity.

The findings contribute to the existing housing literature by providing updated empirical evidence on the relative importance of macroeconomic determinants within the Malaysian housing market. While previous studies have frequently highlighted the roles of interest rates, inflation, and other economic indicators in explaining housing price behaviour (Pinjaman & Kogid, 2020; Nik Mohd Sukrri et al., 2019), the present study demonstrates that household income remains the dominant explanatory factor over the period examined. The insignificant effects of interest rates and inflation further suggest that housing prices in Malaysia may be driven more strongly by structural demand conditions, including urbanisation, demographic expansion, and purchasing power, rather than by macroeconomic cost factors alone.

From a policy perspective, the findings imply that addressing housing affordability challenges require more than monetary policy intervention. Although interest rate adjustments by Bank Negara Malaysia (BNM) (2017) remain important for maintaining macroeconomic stability, they may not be sufficient to moderate housing prices if household demand continues to expand in the presence of limited housing supply. Consequently, housing-related agencies such as the Ministry of Housing and Local Government (KPKT), state governments, local authorities, and the National Housing Department should focus on increasing the supply of affordable housing, improving housing market efficiency, and strengthening housing programmes targeted at low- and middle-income households. In addition, the National Property Information Centre (NAPIC) and relevant planning authorities should enhance housing market monitoring and data-driven planning to ensure that housing developments correspond with local demand conditions. Furthermore, housing policies should be aligned with regional housing market characteristics, as affordability pressures differ substantially across states and urban centres. Such coordinated efforts are essential to ensure that income growth translates into improved homeownership opportunities rather than further residential price escalation (Abu Bakar et al., 2011; Musaddad et al., 2023).

Several limitations should be acknowledged. First, the study utilised annual secondary data consisting of only 21 observations, which may restrict the generalisability of the findings. Second, the analysis focused exclusively on household income, interest rates, and inflation, while other potentially relevant variables such as housing supply, population growth, gross domestic product,

unemployment, and construction costs were not incorporated into the model. Third, although the OLS model provided strong explanatory power, the Durbin-Watson statistic suggests the possibility of mild serial correlation, which is a common concern in time-series analysis.

Future research may address these limitations by incorporating additional macroeconomic and housing market variables, extending the observation period, and employing more advanced econometric techniques such as the Autoregressive Distributed Lag (ARDL) model, Vector Error Correction Model (VECM), or cointegration analysis. Future studies may also consider state-level or regional analyses to capture geographical differences in housing market behaviour. Such approaches would provide a deeper understanding of housing price dynamics and contribute towards the development of more effective and evidence-based housing policies in Malaysia.

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