The Research on Factors Influencing House Price-Taking Perth as an Example

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Abstract. This article aims to identify the factors that have an impact on house prices. Using the method of Multiple Linear Regression to analyze the important factors with samples of Perth. Based on assumption, 8 variables were chosen to find the correlation of the price of house in the suburbs of Perth. This article also considers the interaction effects between the area of the parts of the house which contains the area of the land, the area of the room and number of some types of rooms includes garage, bedroom, living room and the date the house was sold, the distance to nearest public facilities such as station and school and the distance from the house to the central business district and the rank of the nearest school. In order to test the effectiveness of the operation, the research consider the significance of those variables, it turns out the longitude and latitude of the house and the year of building and selling and the postcode of the house. Overall, the fluctuation of the price of house in Perth can be considered by the extent to which these factors affect them.

Keywords: House price; influencing factors; linear regression.

1. Introduction

The dynamics of the real estate market are shaped by a complex interplay of various factors that influence house prices. In recent years, the city of Perth, Australia, has experienced significant fluctuations in its housing market, making it a compelling case study for understanding these dynamics. This research delves into the key factors that impact house prices in Perth, including house prices, the number of the rooms, the land area of the house and others. By analyzing these factors, the study aims to provide a comprehensive understanding of how they contribute to the rise and fall of house prices.

According to a 2023 study, the relationship between Perth's house prices and interest rate changes is not significant, but the overall trend shows that Perth's house prices may maintain the current momentum in the future and then reach a platform period next year [1]. This shows that despite the limited impact of interest rate changes on Perth housing prices, the long-term trend still exists.

The impact of land supply on Perth housing prices cannot be ignored. A 2010 study pointed out that although there is a view that housing affordability can be improved by large-scale release of land on the edge of cities, in fact, the relationship between land supply and house price growth is not strong [2]. This may mean that in addition to the land supply, there are other factors affecting the housing price in Perth.

Policy adjustments also have a significant impact on Perth housing prices. A 2006 study showed that the stamp duty reduction policy implemented by the Western Australian state government for first-time homebuyers immediately significantly affected the demand of the Perth housing market [3]. This shows that policy adjustment can effectively affect the relationship between house prices and market supply and demand.

In June, Perth's median house price experienced a notable surge of +2.0 percent, continuing a trend of steady growth that has defined the city’s real estate market. This increase contributed to a robust quarterly change of +6.4 percent, reflecting the sustained demand and strong market conditions. Over the past year, Perth's housing market has demonstrated remarkable resilience and strength, with annual growth reaching an impressive 23.7 percent. These figures underscore the city’s position as one of the most dynamic and rapidly appreciating housing markets in Australia, attracting attention from investors and homebuyers alike [4]. The real house prices in Perth have increased by 20 per cent or less [5].

2. Methods

2.1. Data Source

The dataset used in this paper is scraped from the Kaggle website (Perth House Prices). School ranking data was obtained from better education. This dataset includes data from 322 Perth suburbs, resulting in an average of about 100 rows per suburb [6]. The original dataset remained in .csv format.

2.2. Variable Selection

The original dataset includes a large quantity of statistics, and there are a lot of nulls for variables which containing the building and selling year, the postcode of the house, the latitude and the longitude of the house, this paper choose to remove these variables. The data contains 8 variables (Bedroom, Bathroom, Garage, Land, Floor, Distance to the city center, Nearest station, Nearest school) and one dependent variable (the price of the house). The specific description and meaning of the dataset are shown in Table 1.

Table 1. List of variables

Variable	Meaning
Bedroom	Number of bedrooms
Bathroom	Number of bathrooms
Garage	Number of garages
Land	Land area
Floor	Floor area
Distance to city center	Distance to the central business district
Nearest school	Distance and rank of the nearest school
Nearest station	Distance to the nearest station

2.3. Method Introduction

This paper mainly uses the multiple linear regression model to find the relationship between these variables and the price of the house. The Multiple Linear Regression model is a linear regression model with multiple explanatory variables. It can be used to explain the linear relationship between the explained variable and multiple other explanatory variables. In this situation, it can be used to explain the relationship between these variables and the price of the house in Perth [7].

3. Results and Discussion

3.1. Economic Factors

Economic factors play a crucial role in shaping the housing market dynamics in Perth. The mining boom and recession cycle has historically influenced Perth's economy, with fluctuations in mineral resource prices directly impacting local economic conditions and employment opportunities, thereby significantly affecting housing prices. During periods of mining prosperity, an influx of capital tends to elevate property values; conversely, during downturns in the mining sector, economic slowdowns can exert downward pressure on house prices [8].

Furthermore, recent years have witnessed a gradual recovery of the global economy that has revitalized Perth’s economic landscape. The implementation of diversified development strategies has mitigated reliance on any single industry while enhancing overall economic resilience. This steady growth provides robust support for the real estate market and fosters consistent increases in housing prices.

Thirdly, the policy environment is pivotal; Australian government policies regarding housing, taxation, and immigration substantially influence property values in Perth. For instance, initiatives such as first home buyer subsidies and stamp duty concessions are designed to encourage young individuals and first-time buyers to enter the market—indirectly contributing to rising house prices. Additionally, adjustments to immigration policies affect population flows which subsequently impact real estate demand [9].

Land supply constraints also play a significant role; limited land resources within Perth restrict availability within the property market-particularly in central urban areas—and scarcity leads to fewer new residential developments exacerbating supply-demand imbalances that drive up pricing further. Moreover, urban planning regulations and environmental considerations further limit land development potential.

3.2. Market Demand

Market demand is driven by several factors: Population Growth: Natural population increase alongside foreign immigration continues to escalate housing demand-especially within regions rich in educational amenities and accessible transport links [10].

Investment Demand: As an internationally recognized livable city, Perth attracts considerable investment interest from both overseas investors and local residents alike; this investment-driven demand constitutes a key factor propelling upward trends in housing costs.

Infrastructure development remains essential for enhancing urban appeal while promoting price appreciation within real estate markets. Recent investments across transportation networks as well as education facilities-including plans for new subway lines or expansions of high-quality schools-not only improve resident quality of life but also bolster property value retention.

International influences cannot be overlooked either; global economic conditions along with exchange rate fluctuations impact house pricing dynamics within Perth's marketplace significantly-for example changes in Australian dollar valuation may alter purchasing costs for foreign investors thus influencing overall market demand patterns. Furthermore, instability stemming from international political climates could lead shifts capital flows affecting real estate sectors adversely.

3.3. More Deeply Results

First, housing supply policy. The City of Perth Government is committed to increasing housing supply by increasing land supply and diversifying housing construction. The government actively plans and releases land for new development areas, while encouraging and supporting public-private partnership projects (PPP) and medium and high-density residential construction to meet the housing needs of different groups of people. In addition, the government encourages the use of green building and energy-saving technologies to improve housing quality and environmental sustainability.

Second, the first house purchase guarantee. To help young people and first home buyers solve their housing problems, the City of Perth has implemented a number of support policies. This includes loan guarantees for first-time buyers, loan schemes that lower the threshold for buying a home, and tax incentives and subsidies for first-time buyers. These measures are aimed at easing the economic pressure on home buyers and increasing their ability to buy homes, thereby stabilizing market demand.

Tax incentives and exemptions. The government regulates the real estate market through tax means, providing tax incentives and deductions for home buyers and developers. For example, stamp duty relief or rebates for first-time buyers; Provide tax credits for eligible housing construction projects to encourage housing construction and supply. These measures are aimed at stimulating market demand while promoting the healthy development of the property market.

Interest rate regulation and forecasting. While the Central Bank of Australia (RBA) is responsible for the overall setting of monetary policy, including the adjustment of the benchmark interest rate, the City of Perth Government also closely monitors market interest rate changes and takes measures to mitigate the impact of interest rate fluctuations on the property market. By working with financial institutions to provide stable lending policies and interest rate forecasts, the government helps home buyers and developers make rational market decisions.

Vacancy rate management. The Perth City government attaches great importance to the management of vacancy rates and takes measures to improve the efficiency of housing use and reduce resource waste. Through the implementation of the vacancy tax, encouraging the development of the housing rental market and other measures, the government has reduced the housing vacancy rate, increased market supply, and stabilized the rent level. At the same time, the government has strengthened supervision of the real estate market to prevent the vacancy rate from rising due to speculation.

Market monitoring and intervention. The City of Perth government has established a sound market monitoring system and regularly releases real estate market reports to analyze market trends and trends. When abnormal market fluctuations or potential risks are found, the government will take necessary intervention measures, such as adjusting land supply policies and restricting speculative home purchases, to maintain the stability and healthy development of the market.

Population and immigration policy. Population growth is one of the important factors affecting the demand of the real estate market. The Perth City Government has injected new vitality into the real estate market by formulating reasonable population and immigration policies to attract talent and labor inflows. The government also pays attention to the changes in population structure and distribution and meets the housing needs of different groups by optimizing urban planning and the layout of public service facilities.

Long-term planning and development. The City of Perth government pays attention to the long-term planning and development of the real estate market and defines the development direction and objectives of the real estate market by formulating urban development strategies and planning blueprints. The government will incorporate the real estate market into the overall framework of urban development, and comprehensively consider economic, social, environmental and other factors to promote the sustainable development of the real estate market. At the same time, the government also strengthened communication and cooperation with communities, enterprises and residents to jointly promote the healthy development of the real estate market.

3.4. Discussion

In a real estate market full of variables, the factors that affect the housing price have been concerned. The researchers conducted an in-depth analysis of the influencing factors of Perth house prices through multiple linear regression methods and examined the validity of these factors. Through careful interpretation of the sample data, the researchers drew many meaningful conclusions but also realized the limitations of the study.

First, the researchers used multiple linear regression analysis, taking into account a variety of factors that could affect housing prices, such as land size, room size, house type, distance from public facilities and schools. This approach allows researchers to more fully understand the underlying mechanisms of house price fluctuations and provide more targeted guidance for the real estate market. For example, when analyzing land area, the researchers found that houses with larger land area generally had a higher potential value. This is because the land area reflects the potential use and future growth potential of the house.

In variable selection, the researchers adopted the hypothesis based variable selection method and carried out rigorous testing and analysis of the hypothesis. This method ensures that the variables selected by the researchers are targeted and valid, helping to improve the accuracy and reliability of the study. For example, the researchers chose as variables the year the house was built and the year it was sold, factors that reflect the quality and market acceptance of the house. By in-depth analysis of these factors, researchers can better understand the causes and trends of house price fluctuations.

The researchers also took into account temporal and spatial factors, such as latitude and longitude and zip codes. These factors provide more background information on house price fluctuations and further help researchers understand the specifics of house price fluctuations. For example, by carefully analyzing the distance to the nearest public facilities such as stations and schools, researchers can gain a deeper understanding of how house price fluctuations relate to the surrounding environment.

However, there are some limitations to the researchers' study. First, the study was limited to data analysis in the Perth region, which may limit the generalizability of the study. The factors influencing house prices may vary between regions, so the results of this study may not be applicable to other regions. However, this also provides more opportunities and challenges for future research. Researchers can further validate and refine the results of this study with more data and more sophisticated statistical methods.

Still, the researchers can see potential advantages of the study. Their analysis not only comprehensively considers multiple factors that may affect housing prices but also ensures the validity and pertinence of the selected variables through rigorous hypothesis testing and analysis. At the same time, the study also pays attention to the mining of details, such as latitude and longitude, postal code and other spatial factors and time factors, which provide more background information and potential explanations for the price fluctuations.

In the future, the researchers hope to further explore other factors that may influence house prices. For example, policy factors and market supply and demand relations may have an important impact on housing prices. They will also try to use more advanced statistical methods to dig deeper into the internal mechanism of house price fluctuations and provide more targeted suggestions and references for home buyers, investors and policy makers through practical applications.

4. Conclusion

The trajectory of house prices in Perth results from multifaceted interactions among various determinants including sustained recovery efforts coupled with diverse developmental approaches alongside ongoing infrastructure enhancements fueled by demographic growth expectations-all suggesting continued stable price growth moving forward despite inherent risks posed by global uncertainties or policy shifts necessitating vigilant monitoring by prospective investors or home buyers who must analyze prevailing trends judiciously before making informed decisions.

Authors Contribution

All the authors contributed equally, and their names were listed in alphabetical order.

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