



Real Estate Investment: An indicator of economic growth in Australia

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ABSTRACT

Over the period of time boom in the real estate market is visible quite obviously. Real estate investment has become one of the key indicators of the economic growth. The studies in the past have show the relation between real estate investment and economic grow but still there are many differences in their conclusions. Here in this paper an attempt has been made to examine whether or not the real estate have any role in the growth of economy in context to Australia. The main source for data used in the empirical analysis of this paper is the OECD and Australian Bureau of Statistic from 2006 to 2020. The findings of the study suggest the economic growth have a negative relation with both the dependent variable to real estate investment i.e. real estate activity and real house price.

KEYWORDS: real estate investment, economic growth, Australia, real house prices and real estate activity.

I. INTRODUCTION

All over the world real estate industry has been booming since last few decades. Investment in real estate can mean getting involved in any of the many venture related to this industry; from buying and/or leasing a residential or commercial property, to buying land or other real estate assets, everything can be considered an investment. It is one of the sturdiest sectors. People investing in this industry hardly incur any losses as property prices don't usually depreciate even during the economic downturn and inflation. Real estate is one of the most sought after sectors in the world due to the tax benefits, stable cash flow, and other tangible benefits. As an important part of household spending, real estate investment become important pillar of macroeconomy. The stock of real estate in America is close to annual average GDP [1]. The house price-to-income ratio increased in the North American and European countries [2]. A study conducted on long term interaction between the

housing market and macroeconomic variables [3]. Over the period the world economy has seen the contribution of real estate investment in the GDP of different countries economy [4].

Real estate investment in Australia contributes strongly to growth in the past decade contribution to the economy expand significantly. It can be noted that it very easy survived the economic depression of late 90's. The real estate industry helped in fast recovery of Australian economy. The gross value added (GVA) of the rental, hiring and real estate services industry amounted for over 53 billion Australian dollars for the country in 2020. In state and local government infrastructure projects public investment showed the increase of 7.4% and on the other hand private investment rose by 2.0%. Both housing and business investment increased, supported by government initiatives and increased confidence. Ownership transfer costs increased by 10.0%, the fourth consecutive rise, reflecting low interest rates and confidence in the housing market. High levels of construction activity on renovations and detached housing, coinciding with the federal government's Home Builder scheme continued to raise the dwelling investment in the country by 1.7 %.

In the construction sector the change was brought of 8 % percent between 2020 –2021; contributing to 1 % to Australian GDP in the first quarter of 2021. This rise was mostly driven by 1.9% rise in Heavy and Civil Engineering Construction wherein electricity generation and the construction of roads and highways across the country contributed largely. 1.6% rise in Building Construction with continued strength in residential construction and an increase in non-residential construction and lastly 0.4% rise in Construction Services as it supported dwelling construction activity.

The Australian real estate market has transformed considerably over the past decades. The home-ownership dream has become increasingly



difficult to achieve for many in the urban area. The rising population in urban area is many due to migration often causing shortage of houses to live in [5]. Today, housing affordability has become affects almost every Australian and is an issue that has been highlighted in many governmental policy debates. In the present time economic constraints and changing lifestyles have changed the buying and renting habits of households. The latest census data of Australian reveals homeowners with a mortgage made up the largest share of household occupancy in Australia. Not even one third of Australian households own their property outright. In 2019, the median value of residential houses was the highest in Sydney compared to the other major Australian cities (16 percent of household income in financial year 2018). Similar is the case with Melbourne also; both the two cities have consistently topped pricing markets for real estate across the country. From March 2020 to March 2021 there was an increased by 7.5 percent in residential house prices across the capital cities in Australia. Housing affordability in Australia remains a highly political topic with many prospective home buyers feeling priced out of the market. Increasing value of property across the country has remained strong excluding periods of economic uncertainty reaching new heights. House values are significantly higher in larger cities, with the median value of residential houses across Australia ranging from almost a million Australian dollars in Sydney, to less than half of that in Perth. In the last quarter of 2020, improvements in housing market indicators such as new lending commitments and auction clearance rates supported the rise in property prices.

The business cycle dynamics and the performance of the financial system often influenced by the behavior of house prices; regarding activity in the housing market as a potential indicator of economic performance. The housing market is a source of financial crises and vulnerabilities in the banking sector. On the one hand rising housing prices encourage consumer spending and lead to higher economic growth but at the same timethose who do not have a house are affected adversely [4]. The mortgage lending market in Australia is dominated by four of its big banks, of which a quarter of the lending value attributed to Commonwealth Bank alone. The value of mortgage debt outstandingreached a new peak (1.9 trillion Australian dollars, 2020) indicating a strong demand for purchasing homes from both owner-occupiers and investors. On residential dwellings average value of outstanding mortgages also continues to increase over the past 20 years causing a decadal debate

about Australia entering property bubble as rising house prices have undoubtedly been an issue for many potential homeowners.

II. LITERATURE

The study conducted on return to housing capital is about half that to non-housing capital [6]. Using wide variety of time-series specifications it was found out that housing investment causes the growth of GDP, but is not caused by it, while on the other hand reverse is the case with non-housing investment. Non-housing investment does not cause the growth of GDP, but is caused by it. Housing leads and other types of investment lag the business cycle. Results of the study suggest that policies should be designed to avoid channeling capital away from housing into plant and equipment sectors, or severe short run dislocations may occur [7]. In the same pattern using multivariate vector autoregression model tested housing and non-housing investment on GDP and its components[8]. It was observed that Green (1997) does not consider the influences that components of GDP other than housing investment might have on it when trying to assess the importance of housing investment in the determination of GDP. Their finding suggested thathousing investment shocks are more important in the determination of GDP than non-housing investment is consistent with that of Green (1997).

Public and private housing investment effects on GDP in Hong Kong from 1973 to 1999 both in short run as well as in long run was also investigated [9]. Their examination presented a positive long run economic growth as there is growth in public housing investment on the other hand private housing investment is influential in determining short run economic output.

Using the postwar U.S. data, it was showed that it is the capital formation in the household sector that unambiguously and unilaterally causes GDP growth, which in turn causes capital formation in the business sector [10]. A pooled of cross section and time-series analysis of 18 OECD countries over the period from 1950 to 1999, finds that growth predominantly is caused by investment in machinery and equipment [11]. He suggests that policies that seek to enhance investment in equipment and machinery are effective means of promoting economic growth.

Endogenous growth model used in a study, concluded that housing plays a role as consumption and an investment good for households. It also act as an input to production for the production sector. The government's attempt to achieve a high GDP growth rate, the Chinese government



encouraged housing construction which acted as the blessing for real estate development. There the bureau in charge of housing investment relaxed standards of examination and approval and that banks provided easy credit for housing development projects. As a result, commercial housing investment, which emerged as a viable alternative to government housing investment, has reached a very high growth rate in recent years. The GDP growth rate of 7.3% in 2001, of which 1.3 percent was directly contributed by the real estate sector and 1.9-2.5% was directly or indirectly contributed by the real estate sector was revealed by Monetary Policy Analysis Group of People's Bank (2002) in China. Implying the contribution of the real estate sector accounted for 30% of the GDP growth rate in 2001 [13].

Persistent price run-ups recently observed in several cities and countries in Asia and North America may be due to the persistent economic growth in these regions and concluded that a long-term increase in housing prices can result from a persistent economic growth [14].

Using Generalized Autoregressive Conditional Heteroskedastic (GARCH) and the Vector Autoregressive (VAR) models, it was found that housing price volatility is affected significantly by gross domestic product (GDP) growth rate, housing price appreciation rate and inflation in Canada [15]. A study using Nonlinear Auto Regressive Moving Average with exogenous inputs (NARMAX) found that most notably mortgage rate, producer price, broad money supply, and real effective exchange rate effect on housing price dynamics in China [16].

A cross-country analysis suggested that house prices to increase in long-run by 0.6% in response to a 1% increase in economic activity while construction costs and the long-term interest rate show average long-term effects [17]. Many empirical studies conducted have examined the factors like changes in real income, long-run interest rates [3]; [18]; [19]; [20]; [21], stock prices, bank credit rate [22]; [23] and inflation [24], the latent component has a significant role in explaining real house prices [25]. [26] A study on housing marketing in Greece pointed out that long run the retail sector and mortgage loans emerge as the most important variables for housing, using a VECM framework. [27] Expected to have positive effect of urbanization

on housing prices as it increases house demand specifically in the urban housing market.

A study on macroeconomic determinants of housing prices states that business cycle dynamics and the performance of the financial system persuade the behavior of real estate pricing. He called activity in the housing market is regarded as a potential indicator of economic performance leads to financial crises and vulnerabilities in the banking sector. Rising housing prices encourage consumer spending and lead to higher economic growth but it affects adversely, by reducing the living standards for those who do not have a house [4].

Although the relationship between real estate investment and economic growth has long been paid much attention to by researchers, there are many differences in different conclusions. Here in this paper an attempt has been made to examine whether or not the real estate have any role in the growth of economy in context to Australia.

III. METHODOLOGY

In order to explore the causal relationships between real estate investment and GDP the study through its literature review exercise have marked the indicators affecting the relation between real estate investment and GDP. Indicators identified for the study were price-to-income ratio, price-to-rent ratio, rent, urbanization, retail sale, GDP per capita, real interest rate, inflation rate, real estate activities and GDP growth. The indicators selected pass through a regression model to see the effect of real estate investment on GDP. The study uses annual data on macroeconomic variables to explain real house prices. The main source for data used in the empirical analysis of this paper is the OECD and Australian Bureau of Statistic from 2006 to 2020. The data was analysis using SPSS version 25.

IV. FINDINGS AND DISCUSSION

Table 1 presents the summary statistics of each variable used in the regression models. The coefficient of variation (CV) measures the dispersions of data points in a data series. Rent, urbanization, GDP per capita, retail sale and price-to-income ratio have lower values of a CV, which indicates that little differences in their means, implying a more symmetrical distribution. However, it is not the case for inflation, interest rate, and GDP growth rate.



Table 1: Descriptive Statistics for the selected indicators

| | Minimum | Maximum | Mean | Standard Deviation | Coefficient Variation |
|------------------------------|---------|---------|---------|--------------------|-----------------------|
| Real House Prices | 75.1 | 111.8 | 92.8 | 11.8 | 11.3 |
| Rent | 67.4 | 102.4 | 91.1 | 11.9 | 7.0 |
| Price to Income ratio | 73.0 | 124.2 | 93.7 | 16.1 | 7.3 |
| Urbanization | 84.5 | 86.1 | 85.4 | 14.0 | 12.1 |
| Real Interest Rate | 1.4 | 6.3 | 4.1 | 2.1 | 71.0 |
| GDP Growth | -0.3 | 3.9 | 2.5 | 1.0 | 26.8 |
| Inflation Rate | 0.9 | 3.6 | 2.2 | 0.7 | 51.1 |
| Retail Sale | 17142.9 | 27408.6 | 22543.3 | 3381.0 | 5.5 |
| Real Estate Activity | 48141.6 | 77293.4 | 64902.0 | 8791.0 | 6.7 |

Source: OECD and Australian Bureau of Statistic, 2006-2020

Table 2 presents the raw correlation coefficients. The estimated values of correlation coefficients quantify the direction and strength of the linear association between the variables. The results show that real house prices have a positive association with a price-to-income ratio, price-to-rent ratio, rent, urbanization, retail sale and GDP per

capita. In contrast, real house prices are negatively correlated with real interest rate, inflation rate and GDP growth. Similarly, real estate activity showed a positive correlation with real house price, rent, price to income ratio, urbanization, inflation rate, GDP per capita and retail sale. it presented a negative relation with real interest rate, and GDP growth.

Table 2: Correlation coefficient of the variables used in regression model

| | Real House Prices | Rent | Price to Income ratio | Urbanization | Real Interest Rate | GDP Growth | Inflation Rate | Retail Sale | Real Estate Activity | GDP Per capita |
|------------------------------|-------------------|------|-----------------------|--------------|--------------------|------------|----------------|-------------|----------------------|----------------|
| Real House Prices | 1.0 | | | | | | | | | |
| Rent | 0.7 | 1.0 | | | | | | | | |
| Price to Income ratio | 0.6 | 0.6 | 1.0 | | | | | | | |
| Urbanization | 0.7 | 0.7 | 0.5 | 1.0 | | | | | | |
| Real Interest Rate | -0.3 | -0.2 | -0.3 | -0.3 | 1.0 | | | | | |
| GDP Growth | -0.4 | -0.4 | -0.5 | -0.3 | 0.1 | 1.0 | | | | |
| Inflation Rate | -0.6 | -0.6 | -0.8 | -0.8 | 0.0 | 0.6 | 1.0 | | | |
| Retail Sale | 0.9 | 0.9 | 0.8 | 0.7 | -0.3 | -0.4 | -0.8 | 1.0 | | |
| Real Estate Activity | 0.4 | 0.4 | 0.4 | 0.4 | -0.1 | -0.2 | 0.5 | 0.9 | 1.0 | |
| GDP Per capita | 0.7 | 0.6 | 0.5 | 0.9 | -0.4 | -0.4 | -0.8 | 1.0 | 0.3 | 1.0 |

Source: OECD and Australian Bureau of Statistic, 2006-2020



The value R^2 in the given set of model was found to be 0.84 and adjusted R^2 was 0.9, which means that the independent variable (real estate activity) explains 90% a very large variability in the

dependent variable, whereas in case of real house price it was also found to be highly explaining its dependent variables (74 %).

Table 3: Diagnostic tests for choosing the right panel data model

| | Real Estate activity | Real house price |
|---|----------------------|------------------|
| R | 0.94 | 0.97 |
| R Square | 0.84 | 0.94 |
| Adjusted R Square | 0.99 | 0.74 |
| Std. Error of the Estimate | 233.04 | 5.17 |
| F-test for model specification. Null hypothesis: Pool versus FE (pvalue) | 133.33 (0.06) | 4.57 (0.14) |

Source: OECD and Australian Bureau of Statistic, 2006-2020*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The F-test done for real estate activity was found to be 133.33. The set of variables used in regression model indicated the statistical significant at where p was 0.06 (5% level) for real estate and 0.1 (10% level) for real house price.

Table 4 present regression results for dependent variables real estate activity and real house prices. GDP per capita showed significance at

5% level with real estate activity (p value- 0.06) and 10% level of significance with real house price (p value-0.12). Similarly the p value for GDP growth rate experiences significance at 10% for both the dependent variables (p value- 0.18). However, negative relationship has been depicted with both the dependent variables.

Table 4: Regression results for dependent variables: real estate activity and real house prices

| Variables | Model for real estate activity | Model for real house price |
|---------------------------|--------------------------------|----------------------------|
| Rent | -9.97(0.84) | -0.41 (0.63) |
| Price Income ratio | -4.68 (0.76) | 0.14 (0.75) |
| Urbanization | 8.37(0.22) | 109.52 (0.59) |
| Real interest rate | 9.26 (0.11) | -0.81 (0.52) |
| GDP growth | -2.31 (0.18) | -0.08 (0.18) |
| Inflation Rate | -4.89 (0.13) | -3.64 (0.01) |
| GDP per capita | 0.05 (0.06) | -0.01 (0.12) |
| Real house Prices | 5.48 (0.35) | |
| (Constant) | -66.94(0.51) | -89.77(0.59) |

Source: OECD and Australian Bureau of Statistic, 2006-2020

Inflation has a positive (as expected) and statistically significant effect (at 10% level) on real house prices whereas with real estate activity. It was found to have a negative relationship with real estate activity (at 10% level). Real rate of interest was also having a negative relationship with both the dependent variable. Price Income ratio does not present a statistically significant relation with both

real estate activity and real house price. Urbanization shows a moderate significant level with real estate activity and a weak one with real house price.



V. CONCLUSION

The paper examined the microeconomics determinants of real house prices and real estate activity. Macroeconomic variables are rent, price-to-income ratio, urbanization, GDP per-capita, GDP growth rate, inflation and real interest rate. The findings of the study present a significant relation between real house price and GDP per capita and GDP growth rate. Urbanization is required for a county to become developed which involve construction of houses and infrastructure providing community safe and secure housing. As the inflation increases real house price decreases. The lesser the real house prices the better for it's the buyer. Real interest rate too should a negative relation with the real house prices.

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