

Foreign Investment in Residential Real Estate in Australia, Housing Prices and Performance of Real Estate-Related Sectors

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Abstract

The purpose of this study is to examine the long-term impact and short-term dynamics of foreign investment in residential real estate in Australia (FIRRA) on housing prices and performance of real estate-related industries (real estate and construction). We use annual data from Australian states and territories over the period 1990-2013. Applying a panel cointegration analysis, our empirical results indicate that FIRRA causes housing price appreciations in the long-run but not in the short-run. Moreover, we find that FIRRA does not have a significant impact on growth of real estate and construction sectors in the short-run and the long-run.

Keywords: Foreign Real Estate Investment, Housing Prices, Construction, Panel Data, Australia

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1. Introduction

We study the impact of foreign investment in residential real estate in Australia (FIRRA) on housing prices and performance of real estate-related industries (real estate and construction). Over the last three decades, Australian economy has experienced large capital inflows into the real estate sector, particularly in residential real estate. The value of FIRRA in Australia increased, rising from about \$6 billion annually in the 1990s to more than \$17 billion in 2012/13 (Gauder et al., 2014).

In recent years, there have been some concerns about the impact of FIRRA on the Australian real estate and construction sectors and has attracted media and policymakers' attention (e.g. Bowden, 2013; Hyam & Janda, 2014). Some observers have noted that the foreign residential investment has led to an increase in housing prices, especially for first home buyers, and has caused the decline in housing affordability in Australia. Another critic is that housing purchases and development by foreign investors can increase the exposure of the Australian housing market to international business cycles. In addition, foreign-financed residential investment may increase the value of the Australia dollar which in turn reduce export competitiveness. In contrast, some commenters have argued that FIRRA is not a significant driver of increased housing prices in Australian because the share of foreign investment in the residential sector is only around 5-10 per cent of the value of national housing turnover. In addition, foreign investment is not causing the market distortions for first home buyers because foreign investors mainly operate at a different price bracket from first home buyers and buy different types of properties. Moreover, foreign investors in housing sector are generally long-term investors and don not have short-term speculative purposes (which can create volatility in housing market). Observers have also noted that foreign demand for residential real estate has provided a stimulus to the local real estate-related industries (e.g. construction and real estate

brokerage) through an increase in the supply of housings and larger number of real estate transactions. Finally, it is argued that foreign residential developers may introduce technology and skills to the Australian market and increase competition (for a review see Gauder et al., 2014; Commonwealth of Australia, 2014).

Although the conversation on the impact of FIRRA on housing prices is ongoing, reports provided by the Parliament of the Commonwealth of Australia and Reserve Bank of Australia in 2014 concluded that foreign investment in Australia's residential real estate brings benefits to the housing market (for a review see Gauder et al., 2014; Commonwealth of Australia, 2014). However, the direction and magnitude of the link between FIRRA and real estate market is unresolved empirically. Studies that were conducted by the Parliament of the Commonwealth of Australia and Reserve Bank of Australia tend to be descriptive and lack econometrics analyses. They supported their arguments using descriptive statistics and graphs. The purpose of this paper is to fill the empirical gaps in the literature by applying panel cointegration approach to examine the long-term impact and short-term dynamics of FIRRA on housing prices and performance of real estate-related industries (real estate and construction). We use data from six Australian states (New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia) and two mainland territories (the Australian Capital Territory and the Northern Territory) over the period 1990-2013.

There is a large literature on the bidirectional relationship between capital inflows (e.g. aggregate capital inflow, foreign direct investment, foreign portfolio investment, hot money) and asset prices including real estate prices (e.g. Kim & Yang, 2011; Guo & Huang 2010) as well as between capital inflows and economic growth (e.g. Borensztein et al., 1998; Baharumshah & Thanoon 2006). In recent years, there has been a growing interest in examining the linkage between more specific capital flows

namely foreign real estate investment, housing prices and economic growth in developed and emerging economies. For example, Gholipour et al. (2014) found that foreign real estate investment does not cause property price appreciations and also does not contribute to economic growth in the OECD countries (excluding Australia) in the short-run and the long-run. In contrast, using data from a set of emerging economies over the period 2000-2008, Gholipour (2013) showed that foreign real estate investment contributes to increases in housing prices and economic growth.

The above mentioned studies have mainly used housing prices and national economic growth in their analyses. Relying on their work as a firm foundation, this paper makes two contributions to the literature on the effect of FIRRA on real estate sector. First, we disaggregate the FIRRA into two categories: developed residential real estate and residential real estate for development. Since foreign investment in developed properties and foreign investment for development have different impact on demand and supply sides of real estate market, it is crucial that the analysis of the effects of FIRRA on real estate market is conducted for each type differently. Second, our analysis focuses on a performance of real estate-related industries (real estate and construction), which are expected to be more closely linked to FIRRA than is aggregate economic growth.

The remainder of the paper is structured as follows: Section 2 describes the data. Econometric methods and empirical findings are provided in Section 3, followed by conclusions in Section 4.

2. Data

We use annual data from six Australian states (New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia) and two mainland territories

(the Australian Capital Territory and the Northern Territory) over the period 1990-2013. We use a panel data due to inadequacy and low frequency of national time series data for FIRRA. Pooling the observations across states and territories over time allows us to overcome the data restrictions which otherwise we would face when testing long-term relationships among national time series.

The annual data for FIRRA was obtained from the *Foreign Investment Review Board* (FIRB)². The FIRB data cover three broad groups: foreign developers of new residential projects; foreign purchases of new dwellings; and temporary resident purchases of new and established dwellings (Gauder et al., 2014). The FIRB publishes disaggregate total FIRRA into developed residential real estate (FIRRA_Developed) and residential real estate for development (FIRRA_Developing)³.

As a measures of housing prices (House_Price), we use median house prices (\$'000s) that are obtained from the *Real Estate Institute of Australia*. Data are available for eight Capital cities of states and territories (Sydney, Melbourne, Brisbane, Adelaide, Perth, Hobart, Darwin and Canberra).

As measures for real estate-related industries, we use gross value added of Rental, Hiring and Real Estate Services (GDP_RealEstate) and Construction (GDP_Construction) in states and territories. Data for these variables are obtained from the *Australian Bureau of Statistics*.

3. Method and Findings

We apply a panel cointegration analysis to examine the long-term impact and short-term dynamics of FIRRA on housing prices and performance of real estate-related

² Foreign investors and temporary residents require approval from the FIRB prior to purchasing a dwelling or site for development.

³ For more details about definition of each category, see pages 27 and 28 of Annual Report 2013/2014 of FIRB.

industries. The main reason to use the panel cointegration analysis is that it deals with the possible simultaneity between the variables of interest, which is the main feature of our study. Moreover, this approach has the attractive property that restricts the long-run behaviour of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics.

Panel cointegration analysis is conducted in three steps: First, we test the variables for stationarity using panel unit root test. Then, we apply panel cointegration tests to detect the long-term equilibrium relationships, and finally we estimate the short-term dynamics.

3.1 *Panel unit root tests*

In this study we apply the panel unit root test developed by Levin, Lin and Chu (2002, LLC), that is widely utilized in panel cointegration studies. The test assumes the null hypothesis of non-stationarity while the alternative hypothesis suggests that the series in the panel data are assumed to be stationary. The panel unit root test results are reported in Table 1. The results do not show a conclusion that the null of unit root can be rejected for the levels of the variables. However, the test statistics for the first-differences strongly reject the null hypotheses, which imply that the variables are stationary in the first-difference form. From the unit root analysis, we therefore conclude that the variables are integrated of order one, indicating a possible long-run cointegrating relation among the FIRRA, housing prices and performance of real estate-related industries. Thereby, what follows is testing for cointegration in the next step of empirical analysis.

Table 1. Results for panel unit root tests.

<i>Variable</i>	<i>LLC statistic</i>
	<i>Individual intercept and trend</i>
lnHouse_Price	-0.916 [0.179]
lnGDP_Construction	-1.811 [0.035]
lnGDP_RealEstate	0.084 [0.533]
lnFIRRA_Developed	-0.744 [0.228]
lnFIRRA_Developing	-3.391 [0.000]
Δ lnHouse_Price	-3.716 [0.000]
Δ lnGDP_Construction	-6.236 [0.000]
Δ lnGDP_RealEstate	-3.596 [0.000]
Δ lnFIRRA_Developed	-2.285 [0.011]
Δ lnFIRRA_Developing	-8.283 [0.000]

Notes: Δ is the first difference operator. Numbers in brackets are p-values. Newey-West bandwidth selection with Bartlett kernel was used for the LLC test.

3.2 Panel cointegration analysis

To analyse the existence of the long-run equilibrium relationship among the variables in question, we conduct the panel cointegration tests developed by Pedroni (1999, 2004). For testing for null hypothesis of no cointegration against the cointegration in the panel, Pedroni proposes seven cointegration tests that allow for heterogeneous intercepts and trend coefficients across cross-sections. Results for the panel cointegration tests are presented in Table 2. Four of the seven Pedroni tests suggest that there is panel cointegration among the variables. Given these results, we can conclude that housing prices are cointegrated with the FIRRA and performance of real estate-related industries.

Table 2. Results for panel cointegration tests

Test	Statistic	Prob
Panel v -statistic	-0.003	0.501
Panel rho-Statistic	-0.220	0.412
Panel PP-statistic	-2.160	0.015
Panel ADF-statistic	-1.445	0.074
Group rho-Statistic	0.717	0.763
Group PP-statistic	-2.790	0.002
Group ADF-statistic	-2.210	0.013

Notes: Null hypothesis: No Cointegration; Newey-West automatic bandwidth selection and Bartlett kernel

3.3 *Panel causality analysis*

Since a long-run relationship between the variables is found, the last step is to estimate the panel vector error correction model in order to examine the Granger causal relationship between the variables. The Granger causality test allows us to investigate both the short-run and long-run causality. The short-run causality, for example, from FIRRA_Developed to House_Price, is tested with a Wald test. The long-run causality is examined by statistical significance of the t-statistics on the error correction parameter (ECT). Table 3 presents the results from panel Granger causality analysis. The long-run causality analysis shows that (i) GDP_Construction, GDP_RealEstate, FIRRA_Developed and FIRRA_Developing Granger cause House_Price, (ii) House_Price, GDP_Construction, GDP_RealEstate, FIRRA_Developed cause FIRRA_Developing, and however (iii) there is no long-run causality linkage among variables when we use GDP_Construction, GDP_RealEstate and FIRRA_Developed as a dependent variable. The long-run causality results suggest that foreign investment in residential real estate in Australia (for development and investment in existing properties) have a positive and significant impact on house prices in the long-run. However, foreign investment in residential real estate in Australia (for development and investment in existing properties) do not have a significant impact on real estate and construction activities in the long-run.

The short-run causality analysis indicates uni-directional causal from GDP_RealEstate to House-Price meaning that higher level of activities in rental, hiring and real estate services increases housing prices in Australia. Moreover, the short-run causality analysis shows that foreign investment in residential real estate in Australia (for development and investment in existing properties) do not have a predictive power to forecast the housing prices in the short-run. The results also indicate that there is an uni-directional causal relationship running from House_Price to

FIRRA_Developed meaning that heightening housing prices in Australia attract foreign investors to the developed residential properties in the short-run. Finally, the findings show that there is an uni-directional causal relationships running from GDP_Construction and GDP_RealEstate to FIRRA_Developing implying that higher level of activities in construction and real estate sectors in Australia attract foreign real estate developers to residential real estate in the short-run.

Table 3. Results for panel Granger causality

	Short-run causality					Long-run causality
	$\Delta \ln \text{House_Price}$	$\Delta \ln \text{GDP_Construction}$	$\Delta \ln \text{GDP_RealEstate}$	$\Delta \ln \text{FIRRA_Developed}$	$\Delta \ln \text{FIRRA_Developing}$	ECT [Prob]
$\Delta \ln \text{House_Price}$		0.954 [0.387]	2.655 [0.074]*	0.430 [0.651]	1.010 [0.367]	-0.021 [0.014]**
$\Delta \ln \text{GDP_Construction}$	2.032 [0.135]		1.256 [0.288]	0.522 [0.594]	0.850 [0.429]	0.038 [0.102]
$\Delta \ln \text{GDP_RealEstate}$	0.656 [0.520]	4.241 [0.016]**		1.746 [0.178]	0.809 [0.447]	0.026 [0.000]
$\Delta \ln \text{FIRRA_Developed}$	3.515 [0.032]**	0.147 [0.863]	0.918 [0.401]		1.354 [0.261]	0.124 [0.153]
$\Delta \ln \text{FIRRA_Developing}$	1.284 [0.279]	3.707 [0.026]**	2.756 [0.066]*	0.124 [0.882]		-0.316*** [0.006]

Notes: *, ** and *** indicate statistical significance at 10%, 5% and 1% level of significance, respectively.

4. Conclusion

The last three decades have witnessed a growth in FIRRA. It is argued that FIRRA can improve economic activities in real estate and construction sectors. On the other hand, some observers believe that FIRRA is one of the main driving forces of high housing prices in Australia. Using data from Australian states and territories over the period 1990-2013 and applying a panel cointegration analysis, we investigate the long-term impact and short-term dynamics of FIRRA on housing prices and performance of real estate-related industries (real estate and construction). The empirical results provide evidence on the positive impact of FIRRA on housing prices in the long-run. However, we did not find a significant link between FIRRA and growth of real estate and construction sectors in the short-run and the long-run. Our results do not support the

reports provided by the Parliament of the Commonwealth of Australia and Reserve Bank of Australia in 2014 that concluded FIRRA brings benefits to the housing market.

Therefore, any policy targeting long-run housing price stability in Australia should take foreign investment in residential real estate into account.

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