

THE DRIVERS OF OVERSEAS INVESTMENT IN THE AUSTRALIAN RESIDENTIAL PROPERTY MARKET

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ABSTRACT

This research focuses on the emerging overseas investor determinants for the Australian residential property market subsequent to Global Financial Crisis 2008 (GFC 2008). Savills (2014) revealed that there were two emerging trends in the world cross border real estate transactions subsequent to GFC 2008. Investment funds from the Asia Pacific region had emerged as the largest contender with increasing private wealth's participation. Empirical studies shed limited information on these new private wealth's investment characteristics and strategies. These relatively distinct and unique investment behaviours are set to impact on Australian residential property market significantly based on an entirely new perspective of global cross border investment strategy. Quantitative models built on secondary data were tested on the residential property markets covering Metropolitan Melbourne alongside a key suburb (Clayton) to examine their relationships with various leading economic indicators in Space, Property and Capital markets. Due to the increasing relevance of Asia Pacific private wealth's investments in Australian residential property market, a non-conventional factor which is Residential Tourism (RT) is introduced in the study to assess its significance and connectivity with other traditional property market determinants. The result of this research shall provide a better understanding on the relationships between the performance of the Australian residential housing market and its market determinants in terms of both existing and emerging factors. It is believed that this understanding will assist the policy makers to effectively manage the overheated residential property market without compromising a steady flow of Foreign Real Estate Investments into the country.

Keywords: Residential Property, Overseas Real Estate Investments, Residential Tourism (RT), Tourism, Foreign investments, Determinants, Key Drivers

1. INTRODUCTION

One after another Quantitative Easing (QE) policies introduced by the world leading economies subsequent to the shock of the Global Financial Crisis (GFC) had caused volatility in equity markets and low yield in bonds investments. Over the past 10 years international investors were disappointed with the investment returns from their traditional portfolios typically comprises of a mixture of equity and bonds. Global investors had intensified their efforts of seeking alternative investments as replacement of or hedge against their existing portfolios (McDermott, 2013).

In recognising the current investment challenges, Foreign Direct Investments (FDI) and Foreign Portfolio Investments (FPI) in seeking alternative investment options, had diversified into other recognised classes of assets of which real estate has emerged as one major option. The real estate sector had successfully attracted significant interest from the international investors due to its increasing level of liquidity, superior returns and improved opportunities for diversification (D'Arcy, 2009, Topintzi et al., 2008). Concurrent with the growth of importance in real estate as a major global investment portfolio, numerous real estate options include listed real estate securities were made available for the cross border investors facilitating their investment channels.

Consequentially, UNCTAD (2011) reported that FDI in real estate markets had experienced significant growth in many countries. This increasing trend was particularly apparent in China which observed FDI in real estate accounting for more than 20% of total inflows to China for the past decade. In 2012, inflows into real estate market went up to almost 50% of the total FDI in China. Similar growth trend was observed in other countries around the world. FDI in the real estate market represents nearly 40% of total FDI inflows in Spain and in India. Real estate ranked second only to India's computer software industry in 2007 FDI (Economist Intelligence Unit, 2008, Rodríguez & Bustillo, 2010). Evidently, cross border foreign real estate investments is on a rise in this global liberalization era (Topintzi et al., 2008, UNCTAD, 2009, D'Arcy, 2009, UNCTAD, 2013).

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Subsequent to GFC 2008, private investment had stepped up as a serious contender in the world cross border investments. UNCTAD (2013) reported a surge in alternative investments by Sovereign Wealth Funds (SWFs), covering the traditional investment classes, utilities companies (electricity, gas and water) and alternative asset classes that included real estates. The cumulative SWFs cross border investments leapt by almost 44% between 2011 and 2012. This phenomenon clearly signified the growing importance of alternative asset classes in the current global investment environment.

In the midst of a major global investment shift, Savills (2014) identified two emerging trends in foreign real estate investment that were expected to have significant impact on the world real estate market as follow:

- i) Overtaking the rest of the world, investors from Asia Pacific had emerged as the largest cross border real estate investors; and
- ii) Private Wealth had emerged as a serious contender in the global cross border real estate market traditionally precluded mainly to the large institutions.

Source: Savills 2014

According to Savills (2014), once dominating corporate and institutional acquisitions of the world real estate suffered a major setback in GFC 2008. During GFC 2008, the cross border activities in the world real estate market dropped significantly as a result of credit crunch with the availability of debt funding for property deals diminishing. A new trend emerged after the GFC 2008 whereby the SWFs, wealth management companies, private bankers and wealthy families had stepped into the cross border property market activities that were deserted by the corporate bankers. Figure 1 and 2 compare the trends and compositions between corporate investment and private investment in global real estates for the period of 2007 to 2012.

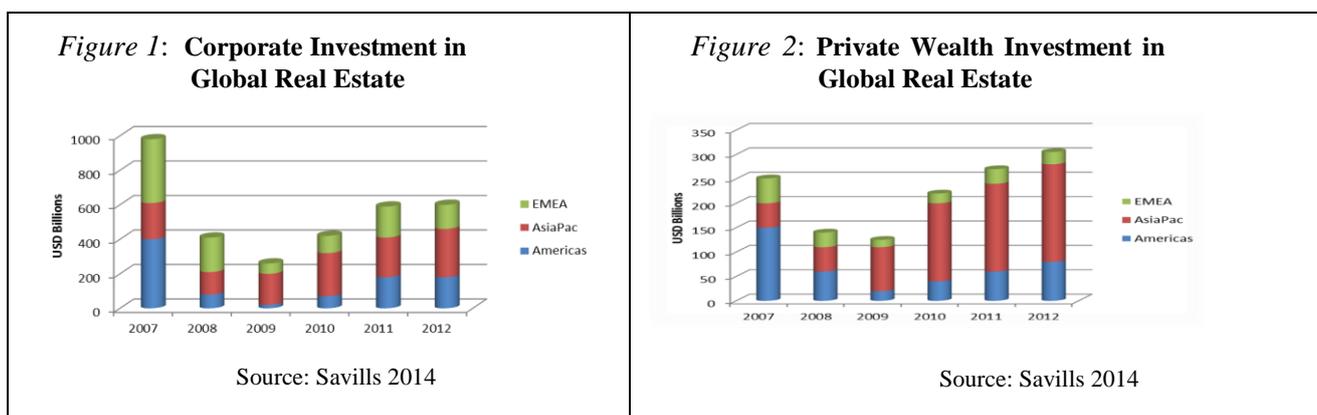
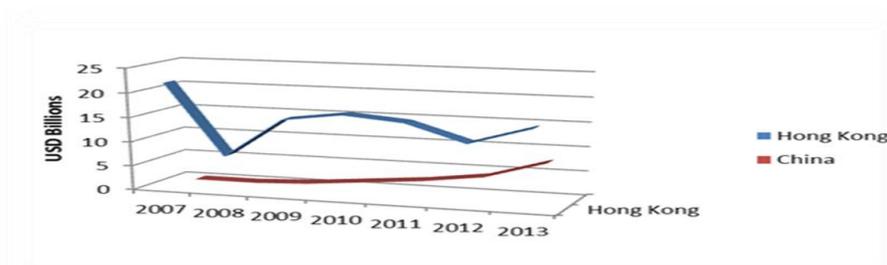


Figure 1 and 2 show that both corporate investment and private wealth investment in global real estate had recovered from the bottom since 2010. Corporate investment in global real estate was closed to USD600 billion in year 2012, sitting still far below the 2007 level of over USD900 billion. In contrast, from a low base, private wealth investment in global real estate had surpassed its highest level in 2007 to achieve USD300 billion in 2012. Asia Pacific investors had emerged as the most active players and replaced USA to become the biggest investors in global real estate market in both the corporate and private segments starting 2009.

Investors from Mainland China and Hong Kong led the rest of the Asia Pacific countries in the cross-border real estate transactions. Up to October 2013, USD23.7 billion had flowed from China and Hong Kong into cross-border real estate investments. Chinese direct investment was up almost 165% from the year 2012 (Savills, 2014). Figure 3 illustrates the cross-border capital originating from China and Hong Kong for the period between 2007 (before the GFC 2008) until October 2013.

Figure 3: Cross-Border Capital Originating From China and Hong Kong



Source: Savills 2014

Figure 3 shows Hong Kong cross-border capital outflow dropped drastically during GFC 2008. It recovered and breached above USD15 billion in 2010 before dropping to approximately USD12 billion in 2012. During the same period, cross-border capital flowing out from Mainland China had increased significantly from a low base in 2008. In 2013, capital flow from Mainland China surpassed USD7.0 billion and it was on an increasing trend. The combined cross-border capital outflow from Mainland China and Hong Kong totalled USD23.7 billion from January to October 2013 (Savills, 2014).

According to AFP (2014), Chinese private wealth had a more mature attitude toward investing. They preferred to undertake lower-risk investments while continuing to be active in diversified wealth management activities. Specific reference is made to the High Net Worth Individuals (HNWIs) who had been actively participating in alternative asset investments including real estates in recent years. The significant growth of HNWIs in Asia and the resultant fund flows investing into cross-border real estate transactions had resulted in a revolutionary change in the nature of world real estate investment (KPMG, 2014). Among all the cross-border HNWIs real estate transactions, there consisted significantly Chinese buyers who were seeking properties for their offspring (often bases for student /children study), or to achieve permanent residency. These private wealth funds seem to be more willing to take the place of debt financing and they are more comfortable with higher-risk development positions. Cross border real estate deals were closed in the hands of these private wealth funds which were rare previously.

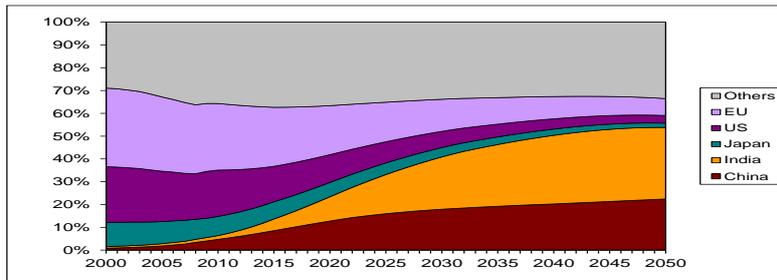
In an identical manner and perhaps in a different magnitude, the phenomenon of the global emerging middle class (income earners) is set to result in a shift in the world economy dynamic and consumption pattern. Goldman Sachs (2008) projected that:

- i) The rise of middle-income will shift the global consumption pattern moving away from the rich or developed countries to the middle-income economies. By 2050, this middle-income economies will be responsible for almost 60% of the world's GDP.
- ii) The major shift in spending power towards middle income people. A massive global middle-class growth is anticipated to shape new spending patterns, resource use, environmental and political pressures.

Source: Goldman Sachs 2008

China, India and to a lesser extent other emerging economies are at the centre of this phenomenon. The rise of the expanding middle class can drive a broad range of economic, social and political revolutions on a scale unseen of since the formation of the developed countries' middle classes in the second half of the 19th century. Numerous empirical studies had made similar prediction on the growth of middle class including Kharas (2010), Wilson (2008), TheEconomist (2011) and Ernst&Young (2013). Wilson (2008) projected the global middle class could breach 50% of the world's population by 2030, up from only 29% in 2008 and Kharas (2010) suggested that the global middle class could breach two third of the populations by 2050. The global income distribution gaps are narrowing due to the emergence of the Expanding Middle (Wilson, 2008). In 2000, Asia (excluding Japan) only accounted for 10 per cent of the global middle class spending. By 2040, this could reach 40 per cent and may continue to rise to 60 per cent in the long-term. The observation from OECD appeared consistent with Goldman Sachs' findings on middle class emergence. Figure 4 illustrates the shift.

Figure 4: **The Emerging Global Middle Class**



Source: OECD 2010

A significant proportion of the new Asian middle class is also expected to be at the upper end of the income bracket and boasts impressive spending power. The steep increase in Asian demand, and the replacement of US demand by Asian demand, is clearly seen as a trend that will deepen in the coming decade (Kharas, 2010). The rise of the middle class from Asian is set to impact global consumption patterns including global real estate market.

2. MAIN BODY

Janda (2014) reported that Chinese investors and newly arrived migrants would invest approximately AUD44 billion into Australia residential real estate market over the next seven years. Buying is set to concentrate in Australia's two largest cities, namely Sydney and Melbourne. Currently an estimated 18 % of new dwellings in Sydney and 14 % in Melbourne were purchased by foreign investors. In the first half of 2014, house prices in both Sydney and Melbourne were at record levels. Table 1 shows the Australian Bureau of Statistics (ABS) Australian housing index for the last quarter of 2013.

Table 1: **Australia Housing Price Index 2013**

	Sep Qtr 13 o Dec Qtr 13	Dec Qtr 12 to Dec Qtr 13
Residential Property Prices	% Change	% Change
<i>Weighted average of eight capital cities</i>	3.4	9.3
Sydney	4.7	13.8
Melbourne	2.6	7.9
Brisbane	2.8	5.7
Adelaide	2.5	3.4
Perth	3.3	8.7

Source: ABS 2014

Table 1 shows that between 2012 and 2013, residential property prices as measured by the Australian Bureau of Statistics rose unevenly across Australia. Growth was primarily in Sydney (+13.8%), Perth (+8.7%) and Melbourne (+7.9%). NAB (2014)'s survey reported that capital city house prices were impacted by foreign investments, with offshore buyers accounting for 11 % of new home purchases in the final quarter of 2013. This was the double of the amount two years ago. Figure 5 shows the trend of number of residential real estate approvals for foreign investors in Australia.

Figure 5: **Residential Real Estate Approvals for Foreign Investors**

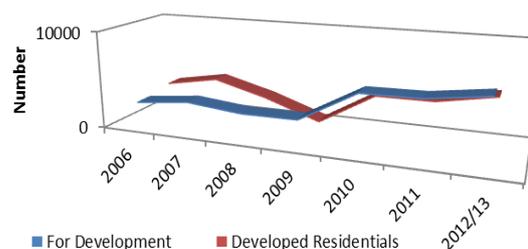


Figure 5 validates the significant lift in foreign investor interest in the Australian residential property market. Concern on the increasing offshore investment had led to a formal inquest by the Australian Treasurer to the Australian Foreign Investment Review Board in 2014. The FIRB was to investigate into the Australia’s foreign investment policy related to Australian residential real estate.

It was believed that the government’s attention on foreign buying came as a result of numerous news articles and publications highlighting the surge in house prices in Australian major cities such as Sydney and Melbourne (Economics, 2014). The Government was concerned about the recent spike in house prices and the inquiry was a clear indication for a need to research for new drivers that caused the price hikes in the Australian residential property market.

Among the drivers cited for Chinese investors buying into Australian residential property market were better investment fundamentals, availability of opportunity to acquire freehold property, higher yields, more stable economic environment and the ability to borrow up to 80 per cent of acquisition price in Australia. The other two main reasons were the provision of better education for children in Australia and as part of their future plan to migrate to Australia due to better living condition. CommonwealthBank (2014) tabulated some major factors that drove the housing market demand in Australia, these being:

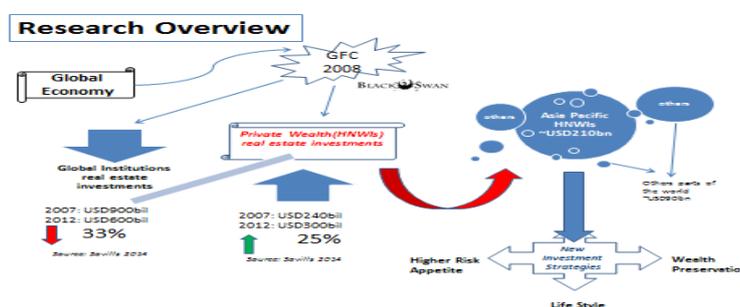
- i) The population growth attributable by the increased level of skilled migrant intake. The recent migrants were equity strong and they purchased residential properties sooner than many unskilled migrants.
- ii) Competition with mining and infrastructure for skilled labour and materials had limited the supply of residential properties.
- iii) Higher number of education visas was granted.
- iv) Real estate was proven attractive for self-managed super funds.

Source: CommonwealthBank 2014

In the same study, CommonwealthBank (2014) disclosed another significant finding that there were clearly some unknown and unusual factors contributing to the surge in housing demand in Australia in relation to foreign investors, *“The normal investment theory and law of demand and supply was perceived inadequate to confirm the reasons of offshore investors’ preference in Australia residential properties over other parts of the world”*.

A more extensive research into unknown factors causing the surge of housing demand in Australia cities has become desirable. There had been limited studies assessing the recent real estate investment decision models from a different perspective based on the emergence of new economic fundamentals subsequent to GFC 2008. These knowledge gaps constitute the main focus of this thesis. Figure 6 illustrates the conceptual framework for this research:

Figure 6: Conceptual Mapping of Private Wealth Real Estate Investments



Source: Author 2015

Reviews on market commentaries and empirical studies had exposed vital facts on the emergence of some unique characteristics on the investment choices, strategies and decision makings of foreign investors as per Figure 6. Rare and new investment strategies based on life style and wealth preservation seem to play a larger role in foreign investors’ real estate decision making than anticipated. These relatively unknown

investment patterns are believed to create an entirely new perspective to the Australian real estate market performance.

Building on the world development and literature reviews, the focus of this study is to determine whether

- i) There were historical evidences supporting a relationship between overseas investments and the residential housing markets performance in Australia.
- ii) On a deeper level, this study aims to explore the emerging determinants and the extent of these new drivers shaping the development of Australian residential housing market.

The study is expected to yield empirical evidence that will hopefully assist policies makers in making informed decisions when promoting foreign investment in the real estate market whilst not losing sight on maintaining the local affordability of housing market in Australia. The result of this study is also believed to yield findings that can assist the property market operators and investors in the evaluation on the Australia residential housing market for informed investment decision making.

Migration activities in Australia had become increasingly complex with greater flows of skilled migrants as well as refugees, students and even short term employment seekers (transient migrants). The diversity of migrant movements, (including an increased propensity for Australians to work overseas), had added to the complexity of the relationship between migration and tourism, both inbound and outbound (Coles and Timothy, 2002). It becomes even more complex if one were to examine the various motives for short-term travel (including visiting friends and relatives, leisure and business travel) and long-term migration. Though tourism and migration relationships were extensively documented in the earlier reports, studies did not explore some of the development that had risen over the last decade. One obvious happening was the addition of new sources of migration including those from troubled areas and countries such as the Horn of Africa, Afghanistan and Iraq (Boyne et al., 2002). Another was the rapid expansion of Australia's international student population. This phenomenon was in its infancy during the early 1990s, but by 2010 Australia had emerged as a leading exporter of education services (Hawthorne, 2010). At the time of writing, Australia is host to over half a million international students, with a significant proportion of these students contemplating migration upon completion of their studies and some even arrive in Australia as students but bearing the primary intention of attaining permanent residency.

In an effort to fill the gap of these "unknown" and "unusual" factors contributed to the latest surge in housing demands in Australian cities, this study explored an existing European tourism migration trend that closely resembled a new social development in Australia. Residential tourism (RT) is a term commonly used by estate agents, newspaper, academics and officials in Spain, refers to a phenomenon of coexistence between property ownerships and short to medium term residencies of the North-Europeans in Spain tourist areas. Residential Tourists (RTs) was referred to residences that fell short of full migration in Spain. According to O'Reilly (2007), it had been difficult to disentangle migration and tourism activities in Europe. This unique interaction between tourism and migration in Europe possesses direct resemblance to the Australian tourism-migration trend in recent time.

RTs' definition specifically distinguishes them as an affluent group that treats tourism as a way of life and construct fluid, leisure lifestyles betwixt and between places. They are also being characterized as tourists who had ostensibly try to settle, although they still remain in some ways outside or above the community they had moved to (O'Reilly, 2007, Rodríguez and Bustillo, 2010). Subsequent to GFC 2008, a similar social development was observed in Asia Pacific region. Wealthy private individuals from Asia are playing major roles in cross border residential properties transactions which observed Chinese buyers snapped up properties for their offspring who sought lifestyle improvement in world major cities (Savills, 2014).

Garnaut (2015) reported that Australia is set to issue more than five million visas in year 2015, something unseen of since World War II. He attributed the significant jump in the visas issuance to surging numbers of international students, tourists and workers on short-term visas. According to Michael Pezzullo, Secretary of the Department of Immigration, as many as 1.9 million foreigners are likely to be in the country at any one time over the period 2015. The number of Chinese born Australians has escalated more than triple to almost 450,000 in the space of two decades. Those born in India has risen more than fourfold to almost 400,000. These findings are consistent with the projection that countries from Asia Pacific, particularly China and India, will contribute significantly to the world middle class and HNWI.

Towards the middle of year 2015, Melbourne was again named the most liveable city for the fifth consecutive year by The Economist's (Lucas, 2015). Melbourne was ranked the world's most liveable city, Adelaide fifth, Sydney seventh, Perth eighth and Brisbane 18th. Australian cities were found to be a relative picture of stability. The rankings were the result of scores for "lifestyle challenges" in 140 cities worldwide. Lord Mayor Robert Doyle proclaimed that the latest ranking provided a very important sale point for Melbourne in a very competitive tourism and education market.

Changes to living standards among all upper middle class and HNWIs may influence immigration → tourism and tourism → immigration in both the source country and the destination. Fluctuating relativities in living standards had been confirmed by earlier researchers as driver of migrations. For example, migration from continental Europe to Australia had greatly diminished once European living standards rose to comparable or higher levels than those prevailing in Australia. The rising living standards and the emergence of an affluent middle class in the newly industrialising countries of North East Asia has increased the numbers of those who are able to afford to visit Australia as tourists or take advantage of the skilled migration category for the purposes of emigration. (Williams and Hall, 2002, Dwyer et al., 1993, Dwyer, 2010, King, 1994).

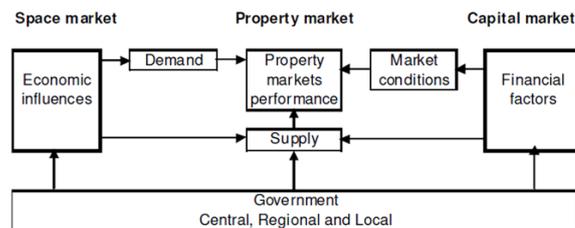
A model proposed by Williams and Hall (2002) depicted tourism activity as a stimulus for migration and migration as an inducement to tourism flows. Such relationships were explored in the context of a geographical extension of friendship, ethnic and kinship networks. Dwyer et al. (1993) suggested that permanent migration and tourism were linked and the link operated in both directions. Visiting Friends and Relative (VFR) tourism is an important element of what they called "chain migration". These links were analysed in the Australian context in a study commissioned by the Bureau of Immigration and Population Research, which used immigration and tourism data as its key information source (Dwyer et al., 1993). Boyne et al. (2002) argued that migration is a prerequisite for VFR tourism.

Family reunion migration to Australia may stimulate VFR related travel, which then promotes further migration. Chain migration had created a pool of Australian residents who had stimulated tourist visits from their relatives and friends. Travel would seem most likely in cases where kinship bonds had been particularly strong. Another form of the migration-tourist linkage has been described as 'transient' migration. This phenomenon is prevalent in cases where professionals and managers move internationally for the purposes of career development (Richmond, 2002). Review on the literatures validated that the permanent migration and tourism are connected and that the links extend in both directions. Tourism has a close relationship with migration: tourism can generate permanent migration, and in turn, permanent migration can generate a demand for tourism, particularly for the purpose of visiting friends and relatives (Murphy and Watson, 1994, Burnley et al., 1998, King, 1994, Dwyer et al., 1993, Dwyer, 2010, Wilson, 1998, Huong and King, 2002, O'Reilly, 2007).

Whilst the earlier reports clearly indicated that there was a close relationship between migration and tourism, their comparative patterns and strengths had not been studied on a consistent basis over time. It had been difficult to track and explain the fluctuating trends over time and to be definitive about which determining factors were due to tourism or migration specific or was it a combination of factors relating to inbound and outbound tourism activities. It appears likely that Asians, who have formed an increasing share of recent migrant intakes, are in a better position to stimulate more frequent travel activities because of their greater proximity to the country of origin. To date there has been little empirical investigations of the relationship between current migration and tourism in the case of earlier (e.g. from continental Europe) and more recent migrants.

This study was conducted based on the Ling and Archer (2007) three-market model. The model proposes instead of linking solely space (demand) and property markets (supply) in both short and long run setting, it should be expanded to a three-market model by separating specific property investment (Property Market) and funding risk components (Space Market) from the general capital market (Capital Market). While quantitative correlation analysis can determine the relationship of individual economic variables to the house prices, it tends to overlook that most factors interact simultaneously with varying intensity and at different time periods to the house prices (Higgins, 2010). Various cost and benefit aspects specifically refer to the monitoring and controlling of foreign investment in property market can be assessed in a systematic manner using this model. Figure 7 illustrates a simplified Archer and Ling model.

Figure 7: Archer & Ling Property Market Structure



Source: Archer & Ling 2007

Alongside with the analysis of Melbourne Metropolitan residential property market, this study involved analysing and determining one key suburb in Melbourne that had successfully attracted the most significant number of overseas settlers based on a decade of ABS census data between 2001 and 2011. The sample of Melbourne residential property markets constitutes a smaller subset inferring the larger population of Australian residential property market accordance with inferential statistics. Quarterly median house prices starting from year 2002 to 2013 from REIV were gathered and analysed alongside with Australia traditional economic indicators and tourist arrivals data. Three statistical tests were applied to analyse the strength of the relationships between the dependent variables (House Prices) and independent variables (Australian Leading Economic Indicators, Non-traditional factor) to confirm the validity of the model, namely:

- i) **Descriptive Analysis** – to provide summaries on the secondary data collected from various sources with simple graphics analysis. This analysis forms the basis of the quantitative research in this study.
- ii) **Correlation Matrix Pearson Correlation Coefficient (R²)** – this methodology was applied to analyse the nature and relationship between the key economic factors of Australia (Independent variables) and the house prices of the selection area of interest (Dependant variables). RT, represented by both Tourist Arrival Long Term and Toursit Arrivals Short term, formed the non-traditional factor in the analysis. The strength and direction of the correlations between the house prices and significant influencing economic indicators shall be identified for both current and lagged eight quarters period. To determine whether individual correlation coefficients are significantly different from zero, a ‘t’ test at the 95% and 99% confidence level was applied to the correlation results.
- iii) **Multiple Linear Stepwise Regression** - to fit a linear regression line using ordinary least squares method. This method is used to model the relationship between the predictor (indicators from Space, Capital and Property Markets), and dependant variables (House Prices) with a single linear relationship equation. The single regression equation used to assess the correlations between the house prices and various independent variables can be expressed as:

Regression Model	Equations
<i>(MELBOURNE METROPOLITAN HOUSE PRICE MOVEMENT)_t</i>	$= f(\text{Space datasets } t-1, t-2, \dots) + (\text{Capital datasets } t-1, t-2, \dots) + (\text{Property datasets } t-1, t-2, \dots)$
<i>(CLAYTON'S HOUSE PRICE MOVEMENT)_t</i>	$= f(\text{Space datasets } t-1, t-2, \dots) + (\text{Capital datasets } t-1, t-2, \dots) + (\text{Property datasets } t-1, t-2, \dots)$

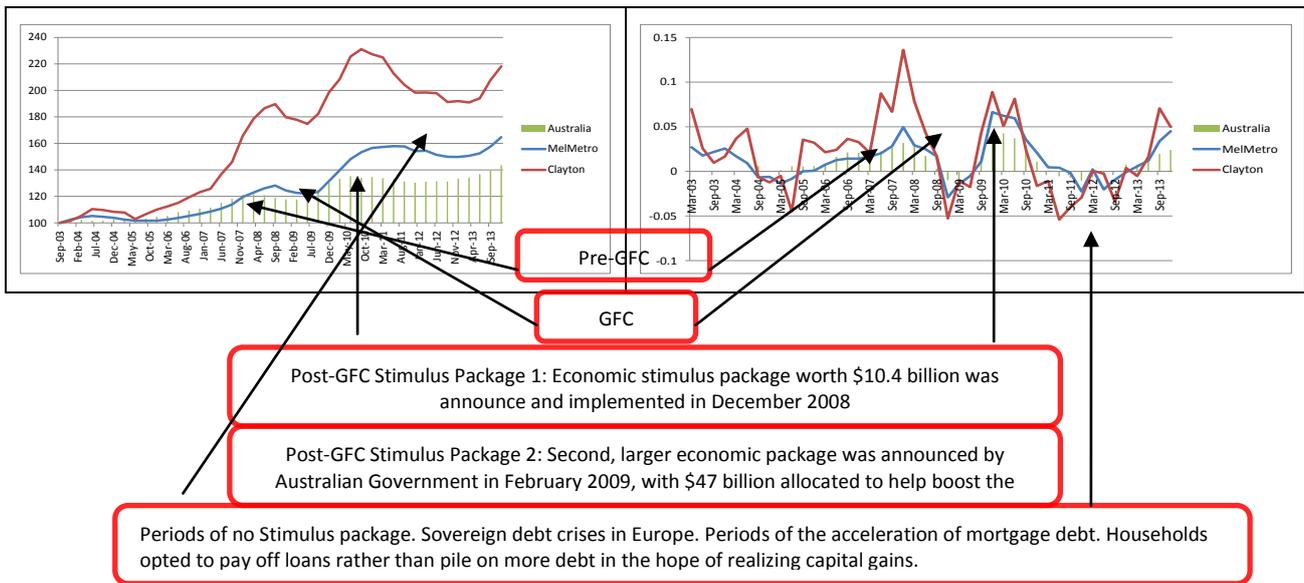
Review of literature provided three key statistical tests to confirm the validity of the residential property forecast model:

- i) **Coefficient of determinant (R²)** – an indication of how close a fit the regression equation is to the dependent time series
- ii) **Statistical test for bias (t-test)** – a measure to determine if there is no bias and the errors are normally, or nearly normally, distributed.
- iii) **Durban Watson statistics (DW)** – a test to detect patterns in series of errors.

The main statistical software for this analysis was the SPSS software. The subprogram ‘Multiple regression: stepwise forward model’ was used to provide an acceptable regression equation to assess the correlations and predicting future residential property performance. A significance of level of 0.05 with a non-zero intercept

was chosen as the model parameter. Figure 8 depicts the median house prices movements of Clayton, Melbourne Metropolitana and Australia for the period 2003 to 2013:

Figure 8: House Prices Movements in Australian, Melbourne Metropolitan and Clayton



House prices across Australia, Melbourne Metropolitan and Clayton demonstrated consistent trends from 2003 to 2013. House prices climbed steadily since 2003 and reached the peak in 2008. House prices in all locations suffered a short period of setback from the mid-year 2008 to the mid-year 2009 due to the GFC 2008 and rebounded strongly from mid-year 2009 to mid-year 2010. House prices for all locations trended downwards in mid-2011 to mid-2012, before it staged another rebound at beginning of 2013. Noteworthy that house prices in all locations trended upwards subsequent to 2013 without any stimulus or major events. This period observed the escalation of overseas investment in residential property market in Australia.

Correlation Matrix

Figure 10 provides the SPSS analysis results. All the leading economic indicators from the respective Space, Capital and Property markets with their correlations readings (r) were analysed and ranked accordance with the strength of the correlations. These correlation readings (r) were further broken down according to significance at the 0.01 level and significance at the 0.05 level. Significant correlations between the leading economic indicators and Melbourne Metropolitan, Clayton house prices as r-value were classified according to the lagged periods and summarized in Figure 9 as below:

Figure 9: Correlation Matrix – Leading Economic Indicators

A Pearson's Correlation was calculated to measure the strength of the linear relationship between Melbourne Metropolitan house prices and the below economic indicators.				A Pearson's Correlation was calculated to measure the strength of the linear relationship between Clayton house prices and the below economic indicators.			
Leading Indicators	Market	r	Periods	Leading Indicators	Market	r	Periods
The correlation is statistically significant, $r \neq 0$, at the 0.01 level (2-tailed) with a 99% Confidence Interval (CI) are:				The correlation is statistically significant, $r \neq 0$, at the 0.01 level (2-tailed) with a 99% Confidence Interval (CI) are:			
1 House Price Index	Property Market	0.887	Current	1 House Price Index	Property Market	0.839	Current
2 10-year Government Bonds Yield	Capital Market	0.761	Current	2 10-year Government Bonds Yield	Capital Market	0.639	Current
3 Exchange Rate	Capital Market	-0.703	15 months	3 Exchange Rate	Capital Market	-0.631	15 months
4 Building Planning Approvals	Property Market	0.668	Current	4 Net Overseas Migration	Space Market	0.572	15 months
5 Mortgage Rate	Capital Market	-0.65	9 months	5 Building Planning Approvals	Property Market	0.507	Current
6 90-days Bank Bills Yield	Capital Market	-0.619	9 months	6 Mortgage Rate	Capital Market	-0.48	9 months
7 Population Growth	Space Market	0.509	9 months	7 Building Activity-Value of Building Work Done(Residential-Vic)	Property Market	-0.458	18 months
8 Net Overseas Migration	Space Market	-0.506	Current	8 90-days Bank Bills Yield	Capital Market	-0.456	9 months
9 Total Employed Labour Force	Space Market	0.476	Current	9 New Housing Supply	Property Market	-0.432	24 months
10 GDP per Capita	Space Market	-0.463	12 months	10 Total Employed Labour Force	Space Market	0.431	Current
11 ASX 200 Index	Capital Market	0.46	9 months	The correlation is statistically significant, $r \neq 0$, at the 0.05 level (2-tailed) with a 95% Confidence Interval (CI) are:			
12 New Housing Supply	Property Market	-0.384	24 months	11 GDP per Capita	Space Market	0.392	24 months
The correlation is statistically insignificant in:				12 ASX 200 Index	Capital Market	0.359	9 months
13 Building Activity-Value of Building Work Done(Residential-Vic)	Property Market	-0.278	18 months	The correlation is statistically insignificant in:			
14 Net Saving - Current Prices	Space Market	-0.255	Current	13 Population Growth	Space Market	0.318	9 months
15 Rent Growth	Property Market	0.195	18 months	14 Net Saving - Current Prices	Space Market	0.297	12 months
				15 Rent Growth	Property Market	-0.219	18 months

Based on the significance level depicted by r-value, House Price Index had the most significant correlation value of above 0.8 range in both property markets. House Prince Index in this study was used as a validation measure to ensure data validity and not for establishing determinant for the model.

10-Year Government Bonds Yield and Foreign Exchange Rate provided the highest r-value of above 0.6 in Clayton and above 0.7 in Melbourne Metropolitan. Net Overseas Migration (NOM) emerged as the third most significantly correlated indicator in Clayton property market. This finding was consistent with the fact that Clayton had attracted the most overseas settlers in Victoria (ABS, 2014). Other leading economic indicators that demonstrated significant correlation and ranked above 0.5 r-value were Building Planning Approvals and Mortgage Rate. In the second part of the Correlations Matrix analysis, correlations were measured in Melbourne Metropolitan and Clayton residential property markets with the inclusion of a non-traditional factor RT. RT is represented by ABS secondary data of both Long Term Visitor Arrivals (LTVA) and Short Term Visitor Arrivals in Victoria (STVAV). Figure 10 provides the SPSS analysis results.

Figure 10: Correlation Matrix – Residential Tourism

A Pearson's Correlation was calculated to measure the strength of the linear relationship between Melbourne Metropolitan house prices and the below economic indicators.				A Pearson's Correlation was calculated to measure the strength of the linear relationship between Clayton house prices and the below economic indicators.			
Leading Indicators	Market	r	Periods	Leading Indicators	Market	r	Periods
The correlation is statistically significant, $r \neq 0$, at the 0.01 level(2-tailed) with a 99% Confidence Interval(CI) are:				The correlation is statistically significant, $r \neq 0$, at the 0.01 level(2-tailed) with a 99% Confidence Interval(CI) are:			
1 House Price Index	Property Market	0.887	Current	1 House Price Index	Property Market	0.839	Current
2 10-year Government Bonds Yield	Capital Market	0.761	Current	2 10-year Government Bonds Yield	Capital Market	0.639	Current
3 Exchange Rate	Capital Market	-0.703	15 months	3 Exchange Rate	Capital Market	-0.631	15 months
4 Building Planning Approvals	Property Market	0.668	Current	4 Net Overseas Migration	Space Market	0.572	15 months
5 Mortgage Rate	Capital Market	-0.65	9 months	5 Building Planning Approvals	Property Market	0.507	Current
6 90-days Bank Bills Yield	Capital Market	-0.619	9 months	6 Mortgage Rate	Capital Market	-0.48	9 months
7 Population Growth	Space Market	0.509	9 months	7 Building Activity-Value of Building Work Done(Residential-Vic)	Property Market	-0.458	18 months
8 Net Overseas Migration	Space Market	-0.506	Current	8 90-days Bank Bills Yield	Capital Market	-0.456	9 months
9 Total Employed Labour Force	Space Market	0.476	Current	9 New Housing Supply	Property Market	-0.432	24 months
10 Long Term Visitor Arrivals	Non-traditional	0.474	21 months	10 Total Employed Labour Force	Space Market	0.431	Current
11 Short Term Visitor Arrivals - Victoria	Non-traditional	0.463	3 months	11 Long Term Visitor Arrivals	Non-traditional	0.427	12 months
12 GDP per Capita	Space Market	-0.463	12 months	The correlation is statistically significant, $r \neq 0$, at the 0.05 level(2-tailed) with a 95% Confidence Interval(CI) are:			
13 ASX 200 Index	Capital Market	0.46	9 months	12 GDP per Capita	Space Market	0.392	24 months
The correlation is statistically significant, $r \neq 0$, at the 0.05 level(2-tailed) with a 95% Confidence Interval(CI) are:				13 ASX 200 Index	Capital Market	0.359	9 months
14 New Housing Supply	Property Market	-0.384	24 months	The correlation is statistically insignificant in:			
The correlation is statistically insignificant in:				14 Population Growth	Space Market	0.318	9 months
15 Building Activity-Value of Building Work Done(Residential-Vic)	Property Market	-0.278	18 months	15 Net Saving - Current Prices	Space Market	0.297	12 months
16 Net Saving - Current Prices	Space Market	-0.255	Current	16 Rent Growth	Property Market	-0.219	18 months
17 Rent Growth	Property Market	0.195	18 months				

LTVA was statistically significant correlated in both residential property markets at the 0.01 level(2-tailed); suggesting LTVA was a relatively strong indicator in both property markets. STVAV demonstrated strong correlation with the house prices in Melbourne Metropolitan but not for Clayton. LTVA as a significance correlated indicator with the house prices in Melbourne Metropolitan came in 10th placing and STVAV came in 11th position after Total Employed Labour Force and above 12th placed GDP per Capita. LTVA ranked higher than some traditional indicators such as GDP per Capita, Population Growth, Net Saving and Rent Growth in terms of significance level in both housing markets.

Stepwise Regression Analysis

Melbourne Metropolitan

The result of stepwise multiple regression analysis presented a meaningfully complex interactions among all the leading economic variables in process to provide an acceptable econometric model forecasting future house prices in Melbourne Metropolitan. The application of a stepwise multiple regressions on the lagged significant leading economic variables against the house prices in Melbourne Metropolitan was employed and a non-traditional social economic factor i.e. RT was incorporated in the second phase to provide the comparison between the two models. The results of the forecasting models are presented in Figure 11:

Figure 11: Single Equation Regression Model for Melbourne Metropolitan Residential Property Market

Melbourne Metropolitan Variables in Model		R ² = 97.2%						
Variables	Description	Lagged	B-value	Coefficient	T-test	Sig.	DW test	
1 10BondCurr	10-year Government Bond Yield	Current	0.311	0.614	13.566	0		
2 BuiltCurr	Building Plannings Approval	Current	0.203	0.391	8.279	0		
3 Forex5	Foreign Currency Exchange	15 months	-0.18	-0.249	-5.23	0		
4 GDP6	GDP Growth	18 months	-1.404	-0.167	-3.552	0.002		
5 10Bond8	10-year Government Bond Yield	24 months	0.082	0.124	2.57	0.016		
6 ASXCurr	ASX 200 Index	Current	-0.05	-0.171	-4.446	0		
7 NewHse5	New Housing Supply	15 months	-0.085	-0.141	-3.486	0.002		
8 NOM5	Net Overseas Migration	15 months	0.074	0.231	3.376	0.002		
9 Built3	Building Plannings Approval	9 months	0.076	0.146	3.261	0.003	2.595	

Multiple Linear Regression Equation =
 $2.38+0.311(10BondCurrent)+0.203(BuiltCurr)-0.18(Forex5)-1.404(GDP6)-0.05(ASXCurr)-0.085(NewHse5)+0.074(NOM5)+0.076(Built3)$

Melbourne Metropolitan Variables in Model		R ² = 97.7%						
Variables	Description	Lagged	B-value	Coefficient	T-test	Sig.	DW test	
1 10BondCurr	10-year Government Bond Yield	Current	0.311	0.615	14.459	0		
2 BuiltCurr	Building Plannings Approval	Current	0.218	0.421	9.027	0		
3 Forex5	Foreign Currency Exchange	15 months	-0.16	-0.221	-4.744	0		
4 GDP6	Population Growth	18 months	-0.72	-0.086	-1.45	0.16		
5 10Bond8	10-year Government Bond Yield	24 months	0.084	0.128	2.82	0.009		
6 ASXCurr	ASX 200 Index	Current	-0.047	-0.162	-4.425	0		
7 NewHse5	New Housing Supply	15 months	-0.075	-0.124	-3.181	0.004		
8 NOM5	Net Overseas Migration	15 months	0.087	0.272	4.044	0		
9 Built3	Building Plannings Approval	9 months	0.073	0.141	3.339	0.003		
10 STVAV2	Short Term Visitor Arrival (Vic)	6 months	0.266	0.111	2.078	0.049	2.595	

Multiple Linear Regression Equation =
 $1.934+0.311(10BondCurrent)+0.218(BuiltCurr)-0.16(Forex5)-0.6(GDP6)-0.047(ASXCurr)-0.075(NewHse5)+0.087(NOM5)+0.073(Built3)+0.266(STVAV2)$

The adequacy of the equations was reflected in the high “R²” readings (above 97%) and the significant t-values for every significant economic variable. Notably there had been an improvement in the R² readings in second model that incorporated the non-traditional factors of RT. As per Figure 11, RT represented by STVAV2 was fitted as one of the determining variables provided an improved “R²” reading from 97.2% to 97.7%. Figure 12 shows the graph plotted for the comparing the regression equations of (1) only the traditional leading economic factors were included, (2) an addition of RT as new variable in Melbourne Metropolitan residential property market:

Figure 12: Melbourne Metropolitan House Prices Calculated Based on Regression Equation

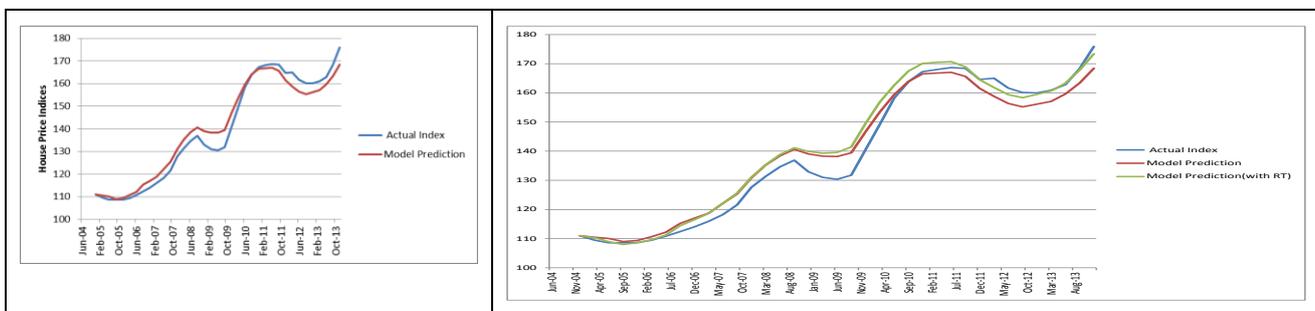


Figure 12 exhibits the comparative results subsequent to the inclusion of RT in the regression model. The effect of RT, as a new determinant of house prices in Melbourne Metropolitan, had improved the accuracy of the fitted regression line and its significance was particularly noticeable towards the later path of the data series. The new fitted line had moved the fitted line closer to the actual Melbourne house price index starting from year 2012 till the end of the time series. House prices surge observed in Melbourne Metropolitan towards the later part of the time series, which was unable to model relying on traditional economic indicators, was partly explained in this new equation after the incorporation of RT as a new determinant.

To validate the second regression model, the forecasted house prices were compared with the actual house price index of Melbourne Metropolitan up to the second quarter of 2014 as shown in Figure 13:

Figure 13: Validation of Melbourne Metropolitan Regression Model

Period	Actual	Model Prediction	Difference
Jun-13	162.82	163.31	0.30%
Sep-13	168.33	167.82	-0.30%
Dec-13	175.88	173.38	-1.42%
Mar-14	182.34	177.91	-2.43%
Jun-14	189.94	182.23	-4.06%

The forecasted house prices for Melbourne Metropolitan demonstrated a slower growth from June 2013 to June 2014 compared to the actual house price in Melbourne. The model prediction derived at a 8.94% growth and the actual index grew more than 11.99%. However, the difference between the actual index and the model predictions were at the range of less than 5% for the 12 months period. This regression equation has provided a better prediction model compared to the model developed without the RT variable.

Clayton

A stepwise multiple regressions analysis on the lagged leading economic variables against the house prices in Clayton was performed to explore the interactions among all the leading economic variables and a non-traditional social economic factor of RT. This analysis strived to provide an acceptable econometric model forecasting future house prices in Clayton. The results of the forecasting models are presented in Figure 14:

Figure 14: Single Equation Regression Model for Clayton Residential Property Market

Clayton Variables in Model		R ² = 93.8%						
Variables	Description	Lagged	B-value	Coefficient	T-test	Sig.	DW test	
1 10BondCurr	10-year Government Bond Yield	Current	0.552	0.579	8.699	0		
3 NOM3	Net Overseas Migration	9 months	0.352	0.572	6.005	0		
4 Built\$1	Building Activity-Residential Built(\$)	3 months	1.177	0.551	7.719	0		
5 GDPCurrent	GDP pe Capita	Current	6.585	0.35	5.918	0		
6 Save1	Net Saving - Current Price	3 months	-0.038	-0.206	-3.601	0.001		
7 MRate3	Mortgage Rate	3 months	-0.35	-0.343	-5.655	0		
8 NewHse8	New Housing Supply	24 months	0.287	0.245	4.021	0		
9 Forex7	Foreign Exchange	21 months	-0.208	-0.156	-2.393	0.024	2.464	
Multiple Linear Regression Equation =								
"-1.219+0.552(10BondCurr)+0.352(NOM3)+1.177(Built\$1)+6.585(GDPCurr)-0.038(Save1)-0.35(MRate3)+0.287(NewHse8)-0.208(Forex7)								

Clayton Variables in Model		R ² = 94.8%						
Variables	Description	Lagged	B-value	Coefficient	T-test	Sig.	DW test	
1 10BondCurr	10-year Government Bond Yield	Current	0.514	0.549	8.927	0		
3 NOM3	Net Overseas Migration	9 months	0.344	0.505	5.578	0		
4 Built\$1	Building Activity-Residential Built(\$)	3 months	1.067	0.515	7.761	0		
5 GDPCurrent	GDP pe Capita	Current	7.131	0.383	6.925	0		
6 Save1	Net Saving - Current Price	3 months	-0.053	-0.277	-4.697	0		
7 MRate3	Mortgage Rate	3 months	-0.455	-0.413	-6.704	0		
8 NewHse8	New Housing Supply	24 months	0.313	0.266	4.76	0		
9 Forex7	Foreign Exchange	21 months	-0.430	-0.273	-3.643	0.001		
10 LTVA2	Long Term Visitor Arrival	6 months	0.508	0.259	2.547	0.017	2.464	
Multiple Linear Regression Equation =								
"-1.805+0.514(10BondCurr)+0.344(NOM3)+1.067(Built\$1)+7.131(GDPCurr)-0.053(Save1)-0.455(MRate3)+0.313(NewHse8)-0.43(Forex7)+0.508(LTVA2)								

The adequacy of the equation is reflected in the high “R²” readings and the significant t-values for each economic variable. Notably the “R²” reading has improved to 94.8% from 93.8% in the latest predictive model. RT was included in this latest equation reflected as LTVA2 and Figure 15 shows the graphs plotted for the forecasting models for Clayton comparing the two regression models:

Figure 15: Clayton House Prices Calculated Based on Regression Equation

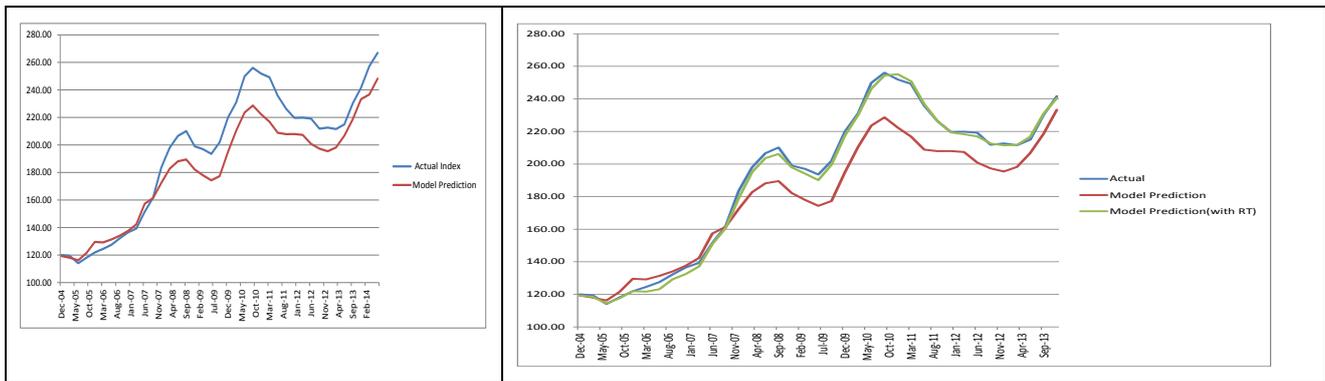


Figure 15 exhibits the regression forecasts subsequent to the incorporation of the non-traditional factor of RT. The effect of RT, as a new determinant of house prices in Clayton, has improved the accuracy of the fitted regression line in a significant manner. House prices surge observed in Clayton that was unable to be forecasted accurately relying on traditional economic indicators, was better explained in this new equation with RT as a new driver for the entire time series.

To validate the second regression equation, the forecasted house prices in Clayton were compared with the actual house price index in Clayton up to the second quarter of 2014 as in Figure 16:

Figure 16 : Validation of Clayton Regression Model

Period	Actual	Model Prediction	Difference
Jun-13	214.99	216.74	0.81%
Sep-13	230.16	230.97	0.35%
Dec-13	241.61	240.44	-0.48%
Mar-14	257.29	244.85	-4.83%
Jun-14	266.99	249.42	-6.58%

The forecasting model fitted well with model's result closely resembled the actual house prices in Clayton. It registered less than 1% variance until December 2013 with RT as a new determinant, validating the model prediction as per figure 16. The model had also successfully predicted the significant growth in Clayton house prices for the 12 months period from June 2013 to June 2014 with a significant growth rate of 15.08% predicted. This represents a significant improvement from the model developed with only the traditional economic indicators.

3. CONCLUSION

The aim for this study is to examine evidences of a relationship between overseas investments and the residential housing markets performance in Australia, particularly in areas that had experienced significant growth subsequent to GFC2008. In addition, an emerging determinant of RT was introduced to determine the extent this new driver shaping the development of Australian residential housing market. Three statistical tests were applied to analyse the strength of the relationships between the dependent variables (House Prices) and independent variables (Traditional Economic Indicators and RT) to confirm the validity of the model, namely:

- i) Descriptive Analysis
- ii) Correlation Matrix Pearson Correlation Coefficient (R^2)
- iii) Multiple Linear Stepwise Regression

Relationships between the Australian leading economic indicators and the median house prices in Melbourne Metropolitan and Clayton were explored using the above techniques. The non-traditional factor RT was incorporated in the second phase to assess its interaction with other traditional economic indicators using the Ling and Archer (2008) three-market model. The correlations and regression equations were tested for statistical reliability and visually examined.

Quantitative analysis on secondary data had successfully provided two regressions equations modelling the house prices for Melbourne Metropolitan and Clayton. Based on the correlation matrix and the two regressions equations, factors associated with offshore investments had predominantly shaped the models and emerged more significant among all the traditional economic indicators. For example, 10-year

Government Bonds Yield (10Bond), Foreign Currency Exchange (Forex) and Net Overseas Migrations were significantly correlated and formed the crucial components of the regression equations and correlation matrix; surpassed the importance of other traditional residential market determinants such as rent growth, GDP per capital growth and net saving rates. RT was established as a new key driver and the inclusion of this new determinant in the regression equations had improved the forecast accuracy of the house prices in Melbourne Metropolitan and Clayton subsequent to the GFC 2008.

According to Boyne *et al* (2012), Australia's second largest export was actually the Australian Commonwealth Government Bonds (ACGBs). In the 12 months until June 2012, Australia sold AUD58 billion worth of ACGBs to foreign investors, exceeding the AUD48 billion worth of coal exported and is second only to the AUD85 billion of iron ore exports over the same period. As at June 2015, Australian Office of Financial Management (AOFM, 2015) reported that approximately 65.2% of the Australian Government Securities (Treasury Bonds, Treasury Indexed Bonds, and Treasury Notes) were in the hands of foreign investors. As foreign investors keenly pursue an alternative asset class as part of their diversified portfolio, real estate had emerged as a crucial asset class alongside with ACGBs with similar investment trend observed.

Net Overseas Migration (NOM) has long been recognised as a driver on Australian residential property market according to various empirical studies. The highlight in this study was the interaction between ACGBs, Net Overseas Migration and residential market performance which can be explained by the recent development in Australian Immigration policies. The recent Business Innovation and Investment (Provisional) visa (subclass 188) requires visa holders to own and manage a new or existing business in Australia, or to invest in Australia in the form of designated investment in a state or territory government security using unencumbered fund.

The significant negative correlated relationship between the Foreign Exchange Rate (Forex) is consistent with the overseas investment stratagem. Australian assets became more economically affordable when Australian currency was devalued against other foreign currencies. The foreign exchange factor is particularly relevant in terms of holding long terms assets such as properties from the investors' perspective.

The effect of RT, as a new determinant of house prices in Melbourne Metropolitan, had improved the accuracy of the fitted regression line and its significance was particularly noticeable towards the later path of the data series. The new fitted line had moved the fitted line closer to the actual Melbourne house price index starting from year 2012 till the end of the time series. House prices surge observed in Melbourne Metropolitan towards the later part of the time series, which was unable to model relying on traditional economic indicators, was validated in this new equation after incorporated the new determinant of RT.

In Clayton, the final regression model provided an accurate predictive model subsequent to RT being added as a new determinant into the equation. The "R²" readings improved from 93.8% to 94.8% and the improved accuracy was validated by the visual representation of the plotted charts comparing actual house price index and the forecasted results. The effect of RT, as a new determinant of house prices in Clayton, had improved the accuracy of the fitted regression line in a significant manner. House prices surge observed in Clayton was better explained in the new regression equation validating the significance of RT impacting Australian residential property market performance.

In summary, drivers that were associated with offshore investments had contributed significantly in shaping property market's performance in places that had experienced significant price hike subsequent to GFC 2008. It is crucial that factors carrying offshore investment characteristics such as ACGBs and Forex to be included in future valuation on Australian residential property markets performance. As Australia continue its path as a major tourist and high standard of liveability destination, offshore private affluent investors will form an emerging factor in shaping the performance of Australian residential property market in the form of Residential Tourism.

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