

---

# Importance of Risk Analysis and Management – The Case of Australian Real Estate Market

---

Gurudeo Anand Tularam and Gowri Sameera Attali

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/50669>

---

## 1. Introduction

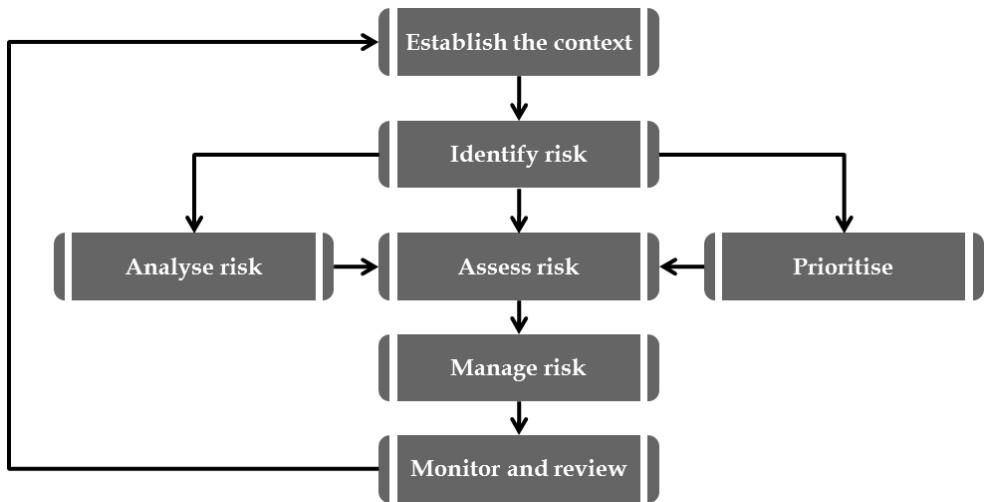
Life is full of risks for example risk is involved in simple things like turning on the gas at home or when dealing with life threatening medical emergency decisions. Risk plays an important role in the way we manage our economy, organization or our family. Risk can be rather complex when household money is involved; such as for individuals or families – for example, mums and dads stand to either gain or lose large sums of money. The types of risks involved influence decisions on how to manage or invest money in shares, bonds or property. When faced with risks, the challenge is how well prepared are we to overcome risks. Risk awareness may be limited in which case there is a high likelihood of risk turning into hazard -leading to disastrous outcomes. Successful businesses make constant efforts to change or update their in house administrative polices and frameworks to allow for possible risks in their business requirements. Some decisions that are likely to have been factored into the component of risk are: rigid corporate governance requirement, human resource planning, succession planning, training and development, merger and acquisitions, adapting to different cultures, foregoing or discontinuing some existing products, outsourcing, new market development etc. No matter how important a decision is made, strategic alignment is critical in business decision making. New ideas should be implemented according to the business needs a company. The introducing of novel ideas should involve all personnel particularly during the decision making processes of development and setting of targets. A well-managed business is also well prepared one and thus able to confront challenges of the modern dynamic business environments.

Yet managing risk is rather challenging for the world is mostly unpredictable. The processes are continuously changing and evolving in terms of resources that are available -

technology, innovation, human resources and time to name a few. In order to adequately address an impending risk, it is important to gather as much factual information as possible for analysis to help manage and thus minimize risk.

Risk can be classified into both voluntary and involuntary [1]. This classification depends on how an individual or an organization judges the situation. For example, a person with a habit of smoking or drinking fails to associate the habits as involving risks; yet often the habit becomes hazardous and they can significantly affect a person’s quality life. Involuntary risk places a person or the organization in a state of ambiguity, where the people involved in the decision making process have not been exposed to a particular circumstance or they lack knowledge and awareness of the particular risk situation. The ability to deal with such risks is a crucial factor in determining successful outcomes irrespective of the stature of an individual or an organization.

For some individuals, the ability to deal with risk appears to be built in their character but for the rest of us it seems, it is knowledge that can be acquired through training. In order to gain the skill set required so that one to deal with risk, it is important to step out of one’s comfort zone and be willing to change, learn, develop new skills, or be challenged to manage risk. Risk management is a methodical approach that could be taught and learnt by most. The general process and steps involved is presented in Figure 1.



Source: Adapted from ISO Guide 73

**Figure 1.** The process of risk management

This paper is organized in the following manner: In the next few sections risk is defined and risk management explored focusing on types of risks associated with real estate market. The Australian real estate market is then reviewed and possible risks involved are explored in some depth particularly in terms the global financial crisis. The paper compares the market

with the rest of the world and summaries investor risks and rewards in Australian real estate market.

### **1.1. Definition of risk**

In the international context, the ISO 31000/ISO Guide 73: 2009 [2] defines risk as the “effect of uncertainty on objectives” (p. 1). When there is a lack of knowledge or exposure to a certain event then such a situation can be termed uncertain. Taking decision on an uncertain event or situation may or may not be successful, which is what risk is about. Many definitions of risk exist in common usage [3-4]; however the ISO definition of risk was developed by an international committee representing over 30 countries and is based on the input of several thousand subject matter experts.

Risk is defined in Australia by the Australia/New Zealand standard for risk management [2] as “the possibility of something happening that impacts on your objectives. It is the chance to either make a gain or a loss. It is measured in terms of likelihood and consequence...” (p. 2). Risk can also be defined as the uncertainty of future events that might influence the achievement of one or more objectives such as an organization’s strategic, operational and financial objectives [3]. Risk management may produce positive opportunities for developers although the negative aspects of risk are usually the once that are emphasized [4].

Likelihood of risk occurring varies from industry to industry and how complex a job maybe. Some areas where there is a high chance of risk are construction, transport, mining, health care, sports, finance and banking, insurance and superannuation.

Risk can be broadly understood and explained in three different scenarios [5]: risk versus probability; risk versus threat; and all outcomes versus negative outcomes. It is believed that any risk can be managed through the engagement of a proper risk management process.

### **1.2. Risk management**

There seems to be an increasing demand of organizations to meet and exceed the financial expectations of shareholders. In the pursuit of growth, many organizations (for example: Toyota) have adapted and responded to expectations of the shareholders by becoming lean and efficient. It is always easy to think that risks and their potential consequences could have been predicted and managed. This is clearly not true when it comes to success in a business. Business success usually requires some acceptance of risk and, as such any risky strategy undertaken may lead to a failure.

In large organizations and corporations there are designated personnel; namely, risk managers. Hillson [6] argued that risk is mostly managed “continuously, both consciously and unconsciously, though rarely systematically” (p. 240). Risk manager’s main role is to be

aware of the market, collect data and predict forthcoming threats so that a company can manage the risks in a successful manner. Risk manager duties include developing and communicating risk policies and process, building risk models involving market, conducting credit and operational risk analysis, coordinating with concerned stakeholders involved in the process and creating a risk awareness culture in the organization.

Risk management not only prevents organizations from entering a dangerous and uncertain territory, which could lead to a catastrophic failures, but also ensure the development and growth of the business. The depth and clarity with which a risk is defined is critical for risk management. In an event where an organization has a low risk situation at hand and decides to postpone rather than resolve the issue involved for financial or other reasons, the risk may eventually become a threat of moderate to high level and this could prove to be disastrous for management. Ignoring the risks that apply to the business activities or the events that have been planned could impact on the following:

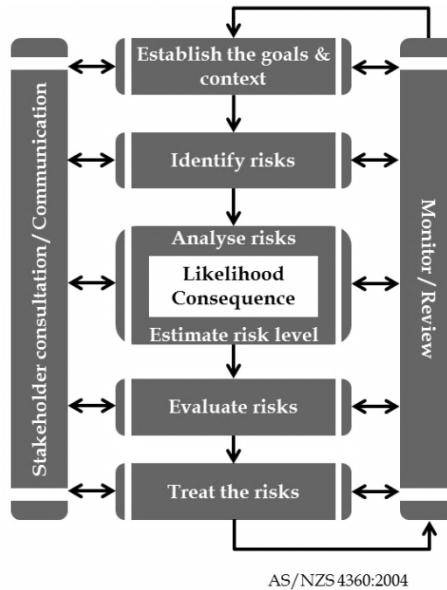
- customer and public confidence in the organization;
- credibility, reputation and status;
- equipment and the environment;
- financial position of the concerned; and
- health and safety of employees, customers, volunteers and participants.

A systematic approach to managing risk is now regarded as best management practice. The approach taken almost always benefits the organization irrespective of type of risk involved. Once the risk is identified it is documented in detail; subsequently the concerned stakeholders undertake possible risk management and mitigation processes. A comprehensive review of the situation and critical feedback are usually required that may ultimately lead to changes in the organizational policies and structures; particularly in case of a major events.

Organizations that thrive to be successful constantly monitor themselves and willfully undertake only calculated risks. In doing so, they enjoy a competitive advantage in addition to meeting their business objectives. In era of globalization, companies are often expanding their business opportunities and in the process, they may undertake challenging and ambitious projects. In most cases, they need to take a number of risks. In this regard, businesses such as Microsoft, Google, and Wal-Mart appear to have been successful global players mainly because they were able to manage risk in a timely manner.

Risk management decisions should be a part of business objectives. Every new project, policy or invention should include all the possible anticipated risks that one may possibly confront. Decision making process needs to consider threats identified, its impact and reaction on the business. By making a careful analysis, companies will have fewer surprises and thus may in the end spend less time recovering from the losses that may be inevitable at times. When companies do not have “a keen eye on the kind of risk”, risk retention can become a legitimate way of managing the risk. Figure 2 shows the six steps involved in the risk management process: establish the context, identify the risk, analyze the risk, evaluate the risk, and manage and review the risk.

### 1.3. The steps involved in managing risk



Source: AS/NZS 4360:2004

**Figure 2.** The steps in risk management

#### 1.3.1. Establish goals and context

To establish context and define goals is an important step. Once the context is established it is critical that the risk is defined and the objectives are set. Also important is to know the limitations of the risk strategies proposed. An effective risk management team understands the needs of the organization and the way it operates. Once the goal is defined there is a need to identify the scope of the context. In general, these factors can be classified into strategic and operational risks. Strategic risk management includes economic, social, environmental, political, legal and public issues; while operational risk management includes technological, human resource, financial, reputation and other relevant strategic issues. Clearly, management may not be able to totally control the many factors but the risks posed by them could indeed be minimized.

The process of risk management has to be simple, precise and effective. For it to be effective, organizations should consider strength, weakness, opportunities and threats (SWOT) type analysis of the situation. By conducting SWOT analysis, the management can identify and analyze different situations [7]. Once threats are identified, appropriate measures and decisions may then be taken to convert the threat into an opportunity. The organizational context provides an understanding of the organization, its capability and goals, objectives and strategies. In establishing the context the identification of stakeholders is critical; these

are individuals who may affect, or be affected by decisions made by the risk management team. For example, stakeholders may be employees, volunteers, visitors, insurance organizations, government agencies or suppliers etc. Each stakeholder will have different needs, concerns and opinions; therefore it is important to communicate with the stakeholders involved in the process of addressing risks.

### 1.3.2. *Identify risks*

Identification of risk involves a systematic process of examining situations and finding solutions. The process includes stages such as group discussions and brainstorming sessions to generate a variety of ideas. While all the ideas or issues generated may or may not be relevant, it is important to document all problems, possible impacts and solutions identified. There are four primary areas in which risk can occur in a general business environment:

- financial: this could mean loss of funding, insurance costs, fraud, theft, fees etc.;
- physical: this involves physical assets of the organization, personal injuries and environmental;
- ethical or moral: involves a perpetuated, actual or potential harm to the reputation or beliefs of an individual or organization; and
- legal: this includes responsibilities and adherence to the law, rules and regulations of governing bodies such as the federal, state or local governments.

Risks can be identified by examining records of previous activities or events. Other ways in which risks could be identified are results from past experiences (personal, local or overseas) [8], through conduction interviews of stakeholders (example: Susilawati and Armitage [8]) or by analyzing specific real life or generated scenarios.

### 1.3.3. *Analyse risks*

This step determines and addresses the impact of threats that have been documented. Threats identified are rated according to the likelihood of occurrence. The potential of an identified risk can be estimated by the effect it has on financial and other resources. When analyzing a risk, one decides on the relationship between the likelihood of a risk occurring and the consequences of the risk identified. The level of risk is then defined and management of it is then explored. Managing risk can be done in several ways such as contingency planning, using existing assets or making an investment in new resources. The levels of the risks can be classified into

- extreme: an extreme risk requires immediate action as the potential could be devastating to the enterprise;
- high: a high level of risk requires action, as it has the potential to be damaging to the enterprise;
- moderate: allocate specific responsibility to a moderate risk and implement monitoring or response procedures; and
- low: can manage a low level of risk with routine procedures.

The tools most commonly employed to measure risks include qualitative techniques [10]. Melton [11] described the tools as probability and impact analysis tools and Webb [4] called these likelihood and consequences tools. A risk matrix presentation tool (qualitative technique) can provide better insights to the nature of a risk. Risk matrix is often used as a tool to display different risks once they have been analyzed. It allows an organization to mark a threshold above which risks will not be tolerated; or will receive additional treatment from the board or delegated staff. In Figure 3 the threshold is set at risks score of 5 or above. It is then important to ask the following questions in relation to each of the identified risks:

- What is the likelihood of the risk occurring?
- Are there any controls currently in place to manage the risk - if yes then, are there any remaining risks?
- What are the consequences if the risk should occur? and
- What is the level of the risk?

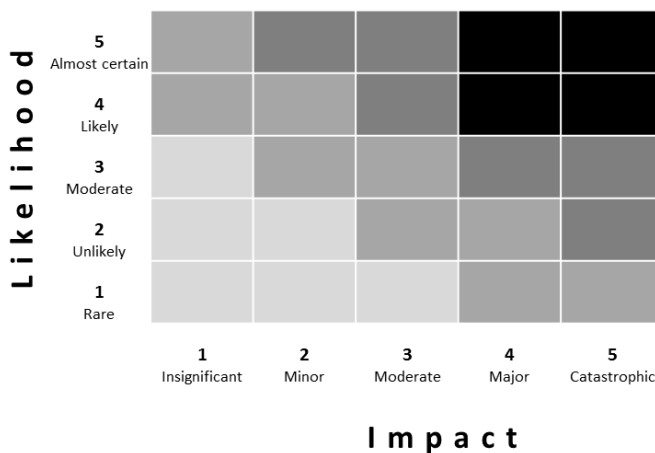


Figure 3. Risk matrix Source: adapted from Austrac

### 1.3.4. Evaluate risks

In this step the tolerance of the risk is determined; that is, whether the identified risk is acceptable or unacceptable. The evaluation takes into account the following:

- importance of risk management and possible outcomes of a risky activity;
- potential and actual losses that may arise from the risk;
- benefits and opportunities presented by the risk; and
- degree of control one has over the risk.

An acceptable risk is a type of risk that that a business can tolerate; a loss for example- the risk does not have major impact on business. An acceptable risk has to be constantly monitored, reviewed and documented so that it remains tolerable. A risk is deemed to be an acceptable risk because of following reasons:

- risk level is low and the benefits presented by the risk outweigh the cost of managing it;
- risk level is so low that it does not warrant spending time and money to manage it; and
- risk presents opportunities that are much greater than the threats posed by it.

A unacceptable risk is when a business is bound to experience significant losses and such losses cannot be tolerated. In such an event it is important to address and treat the risk in an appropriate manner.

### 1.3.5. *Treatments of risks*

Risks may be dealt with in several ways; it can be avoided, reduced, shared or retained. Risk is avoided when appropriate decisions are taken to eliminate all possible pitfalls thereby preventing the situation from occurrence. In most decision making processes, calculations are made and ideas are contemplated to strike a balance between the cost and effect. In such situations calculated risks are accepted and a high risk situation may be reduced by:

- identifying options to treat the risk;
- selecting the best treatment option;
- preparing a risk treatment plan; and
- implementing a risk treatment plan.

In other cases, risk is shared between the stake holders in terms of how profits and losses are shared. This is done mainly to share the impact of a risky event when it occurs. For example, in the era of globalization it is challenging for the companies to enter new markets and countries. In order to minimize uncertainty and exploit business situations that may exist, companies often decide to share risk; careful consideration and research undertaken by the companies often suggest risk sharing. Risk sharing develops opportunities while engaging all partners in achieving strategic goals and the gains and loss are then shared accordingly. The nature of strategies to mitigate risk often depends on the experience of the risk manager who may consider one or more of the following [3]:

- avoid the risk by deciding not to proceed with the activity or choosing another way to achieve the same outcome;
- control the risk by reducing the likelihood of the risk occurring, the consequences of the risk or both;
- transfer the risk by shifting all or part of the responsibility of the risk to another party who is best able to control it; and
- retain the risk after accepting that the risk cannot be avoided, controlled or transferred.

It seems the simplest of all methods of addressing a risk is by retaining an identified risk that may not potentially impact upon the operations of a business. It is important to continuously monitor such risks for in the absence of careful monitoring, the risks may become threats in due time.

A dedication towards risk management often projects a wiser professional image to the community. In doing so, the stake holders recognize the fact that the concerned organization



has a keen interest in safeguarding its assets as well as that of its employees, visitors and volunteers among others. In the process of identifying, analyzing and evaluating risks an organization improves its management team’s ability to make educated decisions.

1.3.6. Monitor and report effectiveness of risk treatments

Every organization irrespective of size clearly strives to reduce the risks involved. In order to reduce risk organizations have to align their policies and structures in a consistent manner and constantly monitor business activities. Also, there is a need to allocate resources (financial, human resource, technology etc.) efficiently to improve performance and to win the approval of all stake holders. It is also important to ensure personnel working at different levels in the organization report to the appropriate authorities when a risk is identified. Such a culture enables an organization to document and then undertake suitable and timely measures to avert risks. In the risk management process, data capture and reporting can provide valuable insights into the risk management process. A sample risk management planning template is shown in Table 1. As discussed, risk management team play a vital role in identifying and addressing risks.

Risk Assessment Plan						
Business name:						
ABN:						
ACTIVITY STEPS (Step 1)	POTENTIAL HAZARDS/RISKS (Step 2)	RISK RATING (Step 3)	RISK CONTROL MEASURES (Step 4)	RISK RATING (Step 5)	PERSON RESPONSIBLE (Step 7)	TIME-FRAME Monitor & review (Step 8)
List the steps required to perform the activity in the sequence they are carried out.	Against each activity step list the hazards that could cause emission of refrigerant and describe the risk these hazards pose.	<ul style="list-style-type: none"> <li>• Rare;</li> <li>• Unlikely;</li> <li>• Likely;</li> <li>• Almost certain</li> </ul>	Describe the identified Risk Control measures.	<ul style="list-style-type: none"> <li>• Rare;</li> <li>• Unlikely;</li> <li>• Likely</li> <li>• Almost certain</li> </ul>	Document the name of the person responsible for implementing risk controls	Document when step 3 was conducted and when step 6 is planned
	•		•			
	•		•			
	•		•			
	•		•			
	•		•			
	•		•			
	•		•			

Table 1. Risk management planning template

It is necessary to constantly monitor and evaluate the strategies that are employed to manage risks. This is because risks do not remain the same - new risks are created, existing risks are increased or decreased, some risks may no longer exist and previous or existing risk management strategies may no longer be effective. In the end risks can originate from accidents, legal liabilities, natural causes and disasters, uncertainty in financial markets, credit risk, project

failures (at any phase in design, development, production, or sustainment life-cycles), or events of unpredictable root-cause. Several risk management standards exist including those from the Project Management Institute, National Institute of Science and Technology, Actuarial Societies, and ISO standards. The risk management definitions, methods and goals vary widely according to the context of project management, security, engineering, industrial processes, financial portfolios, actuarial assessments, public health and safety and real estate.

An important aim of the paper is to study and review the real estate market in Australia to identify risk and rewards as well as compare the Australian market conditions and performance with the rest of the world. Therefore, the focus of the next section is on risks in the real estate market.

#### 1.4. Types of risk associated real estate market



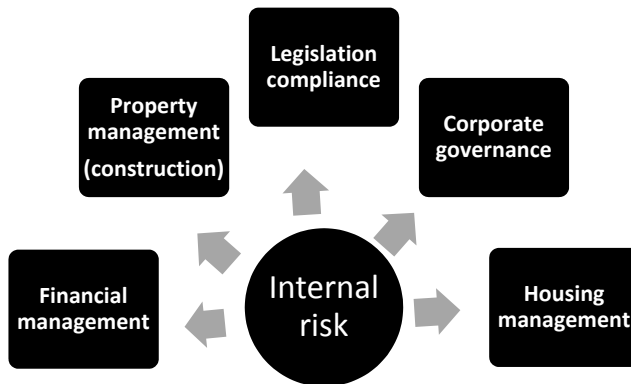
**Figure 4.** Types of risk in real estate market

As is the case with every other industry, there are several risks in the real estate market. For example, there exists a risk factor in land procurement; housing development; asset management; property management; tenancy management to name a few [13]. The risks may be classified as internal or external risks (Figure 4 ). In turn, the internal and external risks can be divided into various other risk categories shown in Figure 5 and Figure 6 [14]. Builders, project managers, owners and investors who plan to make an investment or hold an investment in the property market may need to consider one or more of the following risks and then implement appropriate strategies for their projects to be successful.

##### 1.4.1. Internal risk

Internal risk can be divided into financial management, human resources, property management, legislative compliance, corporate governance and housing management as shown in Figure 5.

**Financial management:** A detailed analysis of any proposed or existing projects need to be conducted for project viability. It is also important to plan the cash flow and management of the same. A poor cost control may lead to a budget over shoot and the project may run into un-chartered territories. When it comes to servicing the debt due care needs to be given to income streams - to take into account either reduction or loss of future income streams. In this regard, banking organisations need to be diligent in testing the capacity to repay the loans that are being offered. Fraud often occurs in real estate market mainly involving the use of false documents regarding number of properties, outgoing fees or rates, income streams and so on.



**Figure 5.** Internal risk Source: adapted from Sheryl and Adam [14]

Insurance also plays a vital role in financial management of a project or investment. Adequate insurance is needed to cover the various risks that may be involved such as the type of property, its location, exposure to natural calamities etc. to name a few. Insurance also need to be updated with the changes in conditions.

**Property management of a construction project:** During the construction of a new project the builders needs to plan their inventory and keep control of their stocks irrespective of the size of the project. Stock control starts from buying goods to using and maintaining them, and also reusing or reordering as required. Quality of the stock also plays a vital role in real estate business. To maintained quality several techniques are adapted. Just in time technique (where items are ordered when necessary and used immediately), minimum stock level technique and stock review technique.

Contractors play an important role in success of a construction project. They are responsible for recruitment and supervision of employees working on the project. Contractors are also responsible for material management coordinating with suppliers thus acquiring necessary goods in time for the construction phases. Poor response from the contractors or failure to perform their duties will delay the project and overshoot budgets.

**Legislation compliance:** Often a property holder has to disclose his personal and financial information to third party. Protecting information plays a key issue in this business. Once all the parties are ready to proceed it is necessary to have a privacy act is in place so that all information is secure. The corporation act provides the guidelines for conflicts or issues arising in construction or maintenance of a property. There are several agencies that provide comprehensive legal services to better understand the litigations involved. Anti-discrimination law and disability service act also play an important role in real-estate. Property owners are liable for any discriminatory acts.

Occupational health and safety (OH&S) also arises in real-estate and a number of OH&S compliance officers are usually assigned to monitor the safety and health; for example, conditions provided to the workers at construction sites. OH&S officer duties include

inspecting construction sites and providing support to internal clients. It is important to report any hazard or incident and all incidents should be attended to and documented for future reference.

**Corporate governance:** Corporate governance plays an important role in risk management in the real estate industry. It is important to properly align the ideas, interests and decisions of managers to the interests of both internal and external shareholders. For example, failure to recruit appropriate personnel may lead to conflicts of interest. If the conflicts are not managed effectively they may have a substantial impact on the company bottom line. It is required and expected of the managements or boards of construction companies always carefully analyze performance in terms of the market so that they are able to keep track of their company’s performance and progress in a dynamic environment. It is also expected that the managements re-inspect and update their policies and procedures to meet the market trends and demands of all concerned stakeholders.

**Housing management:** A holistic management of the investment made in real estate can be defined as housing management. Housing management includes keeping track of maintenance and financial arrangements. As a common and popular practice the management of an investment property is outsourced to property management companies who appoint property managers to manage and oversee duties as required. Property managers on a daily basis are responsible for taking maintenance requests, collecting rent, dues or other fees and are responsible for the overall upkeep of the property. They also perform routine property inspections and organize inspections for the owners. Poor performance of the property managers leads to more grievances for the tenants as well as the owners.

1.4.2. External risk

External risk depends on a number of factors such as economic risk, funding, regulation, environment, reputation, competition, partnerships and natural disasters (Figure 2.6). Each of the factors noted are discussed briefly in turn.

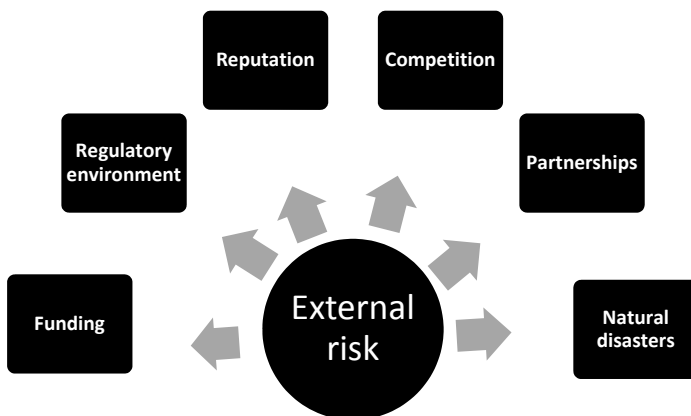


Figure 6. Eternal risks Source: adapted from Sheryl V and Adam W, 2008

**Funding:** The availability of funding depends on a number of aspects such as the economic situation in general, market performance, and credit based upon any future cash flow. Some factors that influence economic performance are: change in political regime, rise in the price of raw materials, emergence of a new competitor and disruptions in production process. Market performance usually depends on changes in interest rates, changes in laws, and political and financial market factors. The risk of loss of principal or loss of a financial reward stemming from a borrower's failure to repay a loan or otherwise meet a contractual obligation falls under the funding risk. It is important to take into consideration as many of the previously mentioned factors while undertaking an investment decision, even when one already has an investment portfolio. Investors often anticipate future cash flow situations while borrowing money to pay a current debt. The failure of the anticipated cash flow leads to credit risk. However credit risk can be considered less likely since most often the investors are compensated by way of interest payments made by the borrower in end.

**Regulatory environment:** Investors in real estate projects should be aware of the local, state and federal laws and regulations. These laws depend on economic, credit and market risk as explained above. Failure to comply with the rules and regulation often leads to delays or in the worst case - complete scrapping of the project; all of which may lead to a complete or partial loss of capital invested.

**Reputation:** The reputation of a project developer often attracts investor attention and also provides favorable environment for investments. Joint ventures and partnerships are possible if the reputations are well known and have been built over time - providing partners the opportunities to win potentially new clients and investors, as well greater opportunities for new investments. An investor has to study the "people" perception of the organization and the credit history and rating of the project developer. An investment made into a company with poor credit history may end up losses of the principle amount invested. It could also be wise for an investor to know the value of the tangible and intangible assets and the market value of the organization into which an investment is being planned.

**Competition:** Property market plays an important role in the economy. There are several players in the market who usually try to attract investors. While a healthy competition is good for growth in the industry, it is important for the investors to research exactly what they are being offered because the agents often utilize high pressure selling strategies to gain client's cash. It is possible that in the process the investors may receive inappropriate financial advice. For example, consumers may not be aware of non-disclosed information pertaining to advice they receive.

**Partnership:** Partnership plays an important role in investing, as it reduces the impact of potential risk on the individual or company investment. For an investor to be successful in a real-estate partnership it is important to know the partner well and therefore trust plays a vital role. The role of each partner does need to be well defined and documented. Having a clear legal document will protect the interest of all partners. It also important to plan and document an exit strategy for all involved, because personal situations may change over time. Clearly, before a partnership agreement is made it is necessary to conduct a detail research to become self-confident about the deal.

**Natural disasters:** In the real real-estate market, location plays an important factor in the investment decision. A property purchased at an appropriate location is expected to provide a good return on the investment. One of the main factors affecting location is the potential exposure to natural calamities such as bushfires, floods, sea level raise and erosion to name a few. If the location has a history or is likely to be exposed to a natural disaster it can be expected that the property prices will eventually be exposed to the risk. Therefore, it is wise to not be enticed into such toxic locations. Other factors that need to be accounted for are the costs of maintenance of properties and the nature and level of insurance required for risky locations, if chosen.

### 1.5. Risk and reward

The nature of risk definition and management process is such that it should be integrated into “the philosophies, practices and business plans” of any individual investor or large organization’s culture (Hillson [5], p.240). It is certain that there are many risks involved in real-estate market as mentioned. While real-estate provides variety of investment options every investor has to find their comfort level upon taking risks involved. It is not easy to decide if a selected property for investment is appropriate, but the decision should be made based on the consideration of all the factors discussed earlier. In the end however, the willingness to take risks largely depends upon individual preferences and circumstances.

The elements that usually determine the scale of risk or reward are the amount of money that is invested, length of time investment, rate of return or property appreciation, depreciation, fees, taxes, inflation etc. While it is natural for the individual and organizations to invest and expect returns it is important the investors make the informed choice to reduce the odds of losing the principle invested. The potential risks and rewards in investing in the Australian real estate market are investigated next.

## 2. Real estate scenario in Australia

The speculation about Australian housing market has been intense since 2003. First it was the international monetary fund (IMF) which warned of the housing bubble in Australia “would bust” [15]. In mid-2008, IMF stated that the Australian property market was overvalued by about 25% [16]. In more recent times (April 2010), “The Economist” house price indicators estimated Australian house prices were the most overpriced in the world (56.1% overpriced - against long-run average of price to rents ratio) [17]. The US based analysts Jeremy Grantham (Boston-based hedge fund GMO analysts co-founder) and Heather Hagerly (Fidelity Investments), were also speculating whether or not the Australian residential market is experienced a housing bubble, after the US housing crisis. According to Edward Chancellor [18], a US-based investment strategist and financial author, Australia was “in the midst of an unsustainable housing bubble that could burst at any time” and the “house prices are more than 50% above their fair value - a once in 40-year event.” (p.1). In 2011 Morgan Stanley’s global strategist Gerard Minack said that “we’ve had 20 years where the Australian consumers have been willing to borrow more to buy an asset that they believe always goes up in value. The classic sign of an asset bubble.” and that “home prices are 30 to 40% above fair value [p.1, 19].

The house price-to-income ratio has been the main focus in Australia. The house price-to-income ratio is comparatively high when compared to other countries. Also, the price-to-income ratio in Australia since has been more than 40% higher than the long term average. In the next sections a discussion of the fundamentals that govern the house prices in Australian residential housing market is examined. Also, the potential risks and rewards to the investors are explored in terms of the risk analysis framework presented earlier.

## 2.1. Introduction: How Australian real estate compares to the rest of the world.

Since the U.S. housing crisis, analysts have been speculating about the potential housing bubble in the Australian residential property market. A report by Real Estate Institute of Australia (REIA) argued that analysts primarily focused their attention on the higher house price-to-income ratio in Australia as compared to other countries (REIA 2010). Moreover, it is observed that the house price-to-income ratio levels are at levels that are similar to that in the US before the housing market there crashed in 2008. The raise in the price-to-income ratio in Australia since 2003 by over 40% higher than the long term average adds fuels the speculation. However, it is important to analyze the fundamentals that govern Australian residential market price growth against the rest of world.

### 2.1.1. Some aspects of the residential finance system in the U.S. and Australia

In the US, the residential finance system played a significant role in the housing bubble of 2008. The regulation, residential finance institutional arrangements, and mortgage characteristics aided the excessive demand for housing finance. Housing finance was available and offered to borrowers with poor borrowing capacities. Consequently, excessive borrowing led to the housing bubble and the collapse of the financial system in the U.S in 2008. There are some fundamental differences in the lending practice in Australia when compared to the US [21].

In Australia the lending process is highly regulated by the institutional arrangement. The lending practices enforce the regulatory provisions on financial institutions forcing them to avoid excessive risk taking behavior. Table 2 outlines the characteristics of housing loans both in the U.S and in Australia. The table highlights the systemic susceptibility to riskier mortgages in the US and that availability of such funds to finance the mortgages were more common than in Australia.

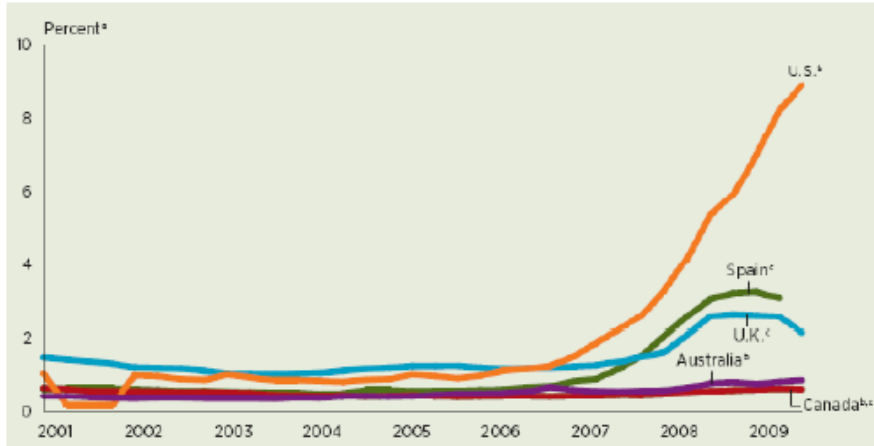
Australia	US
Regulation is high on mortgage loans	No full recourse of mortgages
No negative amortisation of loans	yes
Securitization is low in housing finance	Securitization is high in housing finance
Non-conforming loans	Subprime loans
Full recourse of mortgages	No full recourse of mortgages

Source: RBA [21]

**Table 2.** Mortgage characteristics of Australia as compared to US

In the US, the non-conforming housing loans represent 13% compared to 1% in Australia [21]. Negative amortization loans are common in the US but no such loans existed in Australia at the time of the crisis. In Australia the mortgages are “full recourse” lenders and hence the incentive that is offered to households to take out loans they cannot repay is reduced. This is also deters financial institutions from offering risky loans. These primary differences stand out to support and contribute to a relatively strong performance of the housing loans in Australia when compared to the US. It is important to note that the share of non-performing loans in Australia were less than 1.5% even during the financial crisis.

Another fundamental difference is that there is no government sponsored enterprise (GSE) in Australia while they exist in the US. The GSE in the US holds a guarantee of the loans that are offered. This potentially provides an impression that bad loans offered to borrowers with poor repayment capacity would be covered by the Federal Government [23]. This is not so in Australia where commercial banks provide 90% of all housing loans. The commercial banks are mainly funded by the bank deposits, short term and long-term wholesale debt [24]. The absence of the so called Federal guarantee restricts Australian banks from any excessive risk taking behavior. In 2007, at the beginning of the financial crisis, GSE’s possessed 90% of these securities. The shadow banking system in which the financial institutions have a greater participation and the GSE’s can be said to have led the excessive risk taking behavior and practices in the US [21]. In addition, according to the RBA [21], the regulation level of financial institutions in Australia is about 80% while in the US only 50% of all the financial institutions are regulated [21].



**Figure 7.** Non-performing housing loans Source: Real estate Institute of Housing America

The Loan to Value Ratio (LVR) refers to the amount of money borrowed against the total value of the property in a home equity loan. For example, a \$50,000 loan against a home worth \$200,000 has a Loan to Value Ratio of 25%. In Australia, loans with an LVR exceeding 80% require mortgage insurance - the risk of the borrower defaulting is far too great for the lender. The value of the property is determined by the lender and is often significantly less



than the purchase price, which often surprise first-time borrowers. Typically, the amount that lenders have been prepared to lend for housing has been restricted by one or both of the following:

- scheduled repayments should not exceed some fixed share of the borrower's income – the repayment-to-income, or serviceability, constraint; and
- the loan should not exceed a certain proportion, most commonly 80% [21] of the property's purchase price – the LVR constraint.

## 2.2. Australian real estate market compared to the rest of the world

The analysis presented in the previous section shows that Australia is fundamentally different to the US when it comes to the residential housing market. But, how does Australia compare to the other countries in the world? New research conducted by Lloyds TSB [27] - International Global Housing Market Review, shows that Australia just made it into the top 10 list of countries with the highest house price increases over the past decade (Table 3). Four of the six top performing housing markets since 2001 were in the emerging economies of the world. India with a booming real estate market tops the list - house prices rise by 284% over the last decade; Russia coming second - house price increase of 209% over the same period. China faired only marginally when compared to other major economies - ranked 14th with a 47% growth rate since 2001.

Country	Real house price change % 1 year	Real house price change % 10 year	Real house price change % 10 year per annum
India	8.7	284	14.4
Russia	-24.3	209	12
South Africa	-1.1	161	10.1
Lithuania	-1.3	143	9.3
Hong Kong	13.6	125	8.4
Bulgaria	-10	106	7.5
France	4.3	82	6.2
New Zealand	-2.1	79	6
Australia	-5.7	76	5.8
Norway	6.9	72	5.5
Belgium	0.4	69	5.4

Source: Lloyds TSB International [27]

**Table 3.** Real house price changes – A global comparison.

According to the findings of the report Australian house prices increased by 76% and had the ninth fastest growing house prices during 2001-2011. During the same period house price declines were seen in the world's largest economies such as Germany, Japan and the

United States. Japan registered the largest house prices fall of 30%, while house prices in Germany and US were down 17% and 2% respectively during the same time. Other major findings of the research include:

- housing markets have typically risen fastest in countries with the fastest growing economies. On average, the countries with the biggest rises in house prices since 2001 have seen GDP increase by more than 100%. Countries that had large rises in pre-crisis times lost the most after the GFC affected their economies; and
- house prices within countries that form part of the Euro have climbed an average of 23 percent since 2001. France saw the largest increase with 82%, Belgium rose 69%, Spain 26% and Italy was up 31%. But Spain has seen a major decline in 2012.

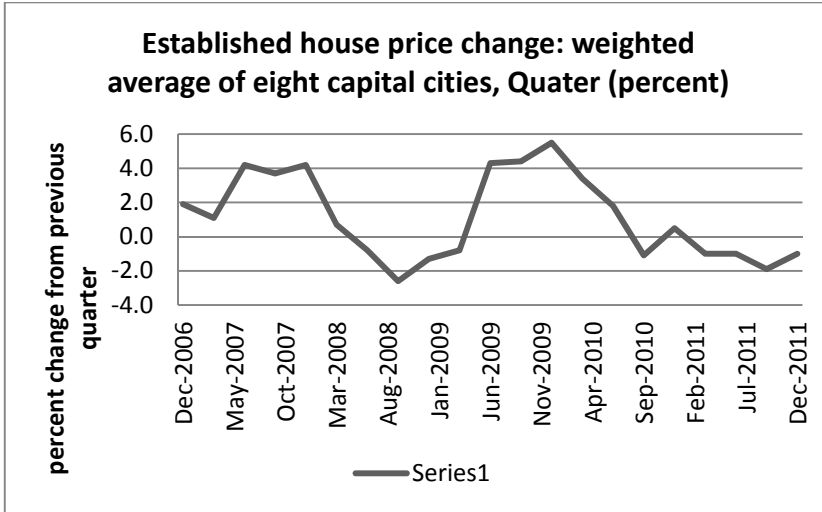
The performance of the established house prices in Australian housing market provided by the Australian Bureau of Statistics (ABS) is presented in Figure 8. The Australian housing over the past five years has seen some corrections. The period can be divided into pre-global financial crisis (GFC), during GFC and post GFC. Prior to GFC, there has been a considerable growth in the established housing prices. This growth pattern however changed course and reached the worst levels in August 2008 when the GFC was setting in. However, the prices of established homes climbed steeply during the peak of the GFC when markets around the world were playing havoc. This defiance could be mainly attributed to the management initiatives taken by the RBA [21] and government of Australia. The RBA drastically reduced the interest rates to a record low of 3.25% supported by the federal government incentives such as economic stimulus plan, which included substantial increase in first home grants among others.

This financial incentive was “too good to miss” for anyone considering their first home purchase. This led to flood of first home buyers entering the market that drove the prices up against all odds. Since the time the incentives have been wound back, and the market and investor sentiment took over. This led to a fall in the growth when compared to the preceding three years and has been mostly in the low sentiment in the past two years. Therefore, although Australian market prices are influenced by the global events, a collapse similar to that seen in markets elsewhere seems appears a distant possibility. This can be attributed to the underlying government incentives to manage the risks during the crisis. Other micro-economics aspects also helped manage the downturn.

### **2.3. Australian house prices and the fundamental influences**

Australian housing demand has been strong and can be also attributed to the following:

- strong overseas migration from 2004 to 2007;
- housing shortages due to a rapidly growing population;
- Australian household sizes are shrinking;
- lending standards stricter than most advanced economies including the US; and
- interest rates at record lows.

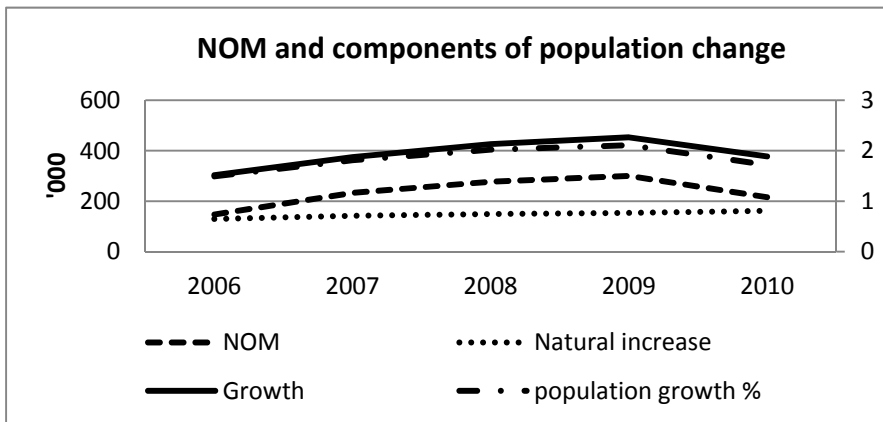


Source: ABS

**Figure 8.** Australian annual house price change in the last decade

2.3.1. *Trend of net population increase and net overseas migration increase*

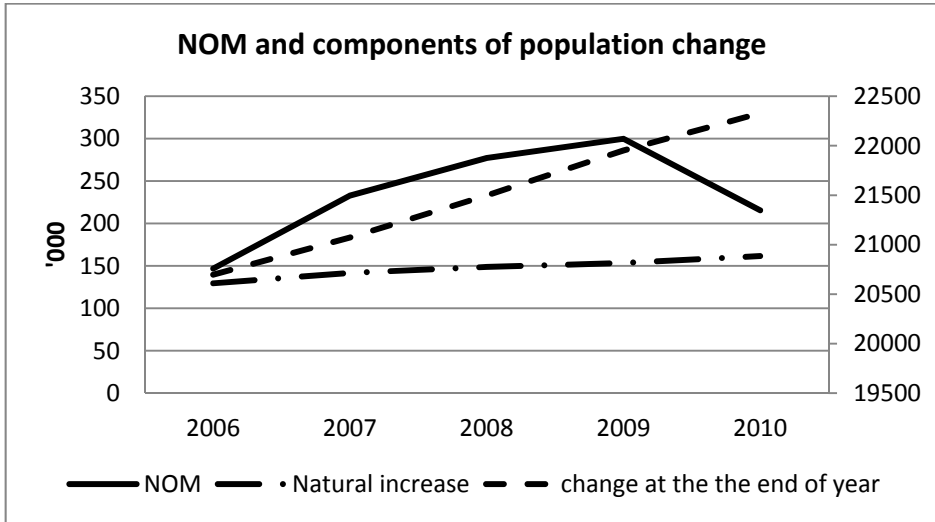
House prices have been underpinned by a chronic housing shortage in Australia. This was brought about by an ever increasing population and constraints placed on housing supply over time. Figure 9 shows the increase in population growth from both natural growth and migration since 2006. From 2006 to September 2010 natural population growth has only seen a marginal increase, but during the same period the net overseas migration growth has been substantial.



Source: ABS

**Figure 9.** Trend of natural population increase and net overseas migration

Figure 10 shows that there has been an increase in the total population by about 1.6 million people 2006–2010. During the same period, the Net Overseas Migration (NOM) accounted for 1.02 million people compared to only 600 000 increase in natural population. However, given that there has been a large influx of people into Australia, the question was whether there was enough housing infrastructure in place.



Source: ABS

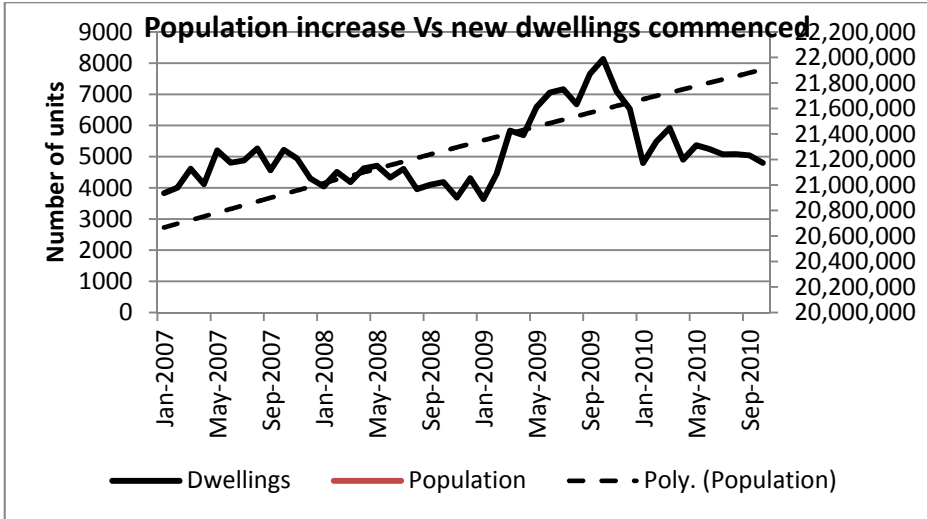
**Figure 10.** Net overseas migration and components of population change

#### 2.4. Trend in the number of dwellings commenced and population

Figure 11 shows the trend in the population and dwellings commenced from January 2007 to October 2010. As shown earlier, the population growth showed an upward trend over the entire period. The number of dwellings commenced shows a rather distressing trend. Figure 11 shows the commencement of new dwellings significantly fell short and did not keep pace with the rapid growth in population. For an addition of 1.25 million people during this period only about 235 000 new homes were built demonstrating a significant shortage in the housing market. Interestingly, this situation presents a case for more property investment as people search for a place to live.

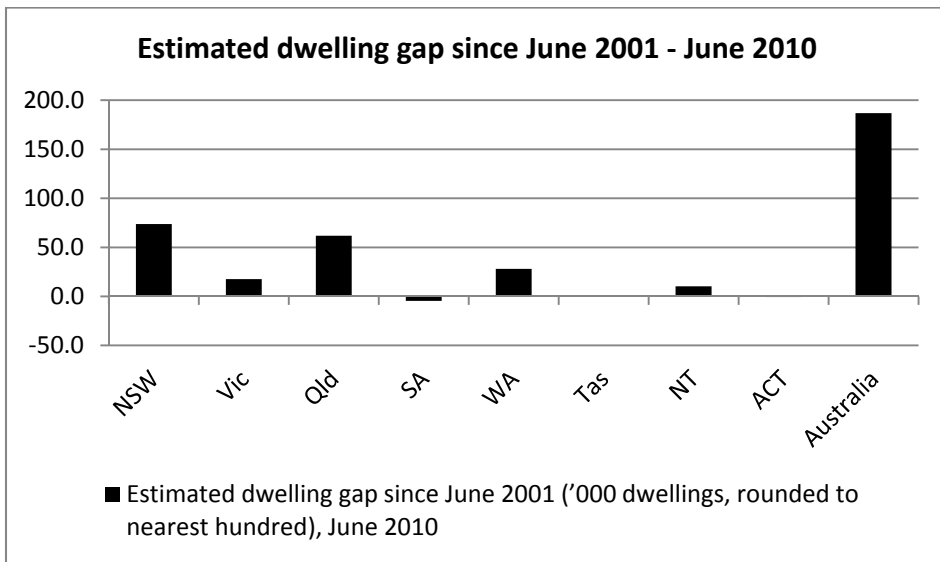
#### 2.5. Demand and supply scenario

Historically, Australia has been behind in the demand versus supply of residential dwellings, but more so in the last decade than any time earlier. Figure 12 shows the dwelling gap in the previous decade. Australia continues to run large annual deficits in housing supply - the underlying demand for dwellings and the completion of dwellings has not matched. In view of this it can be expected that in the longer term Australia’s housing market is underpinned by insufficient supply in addition to robust underlying demand.



Source: ABS

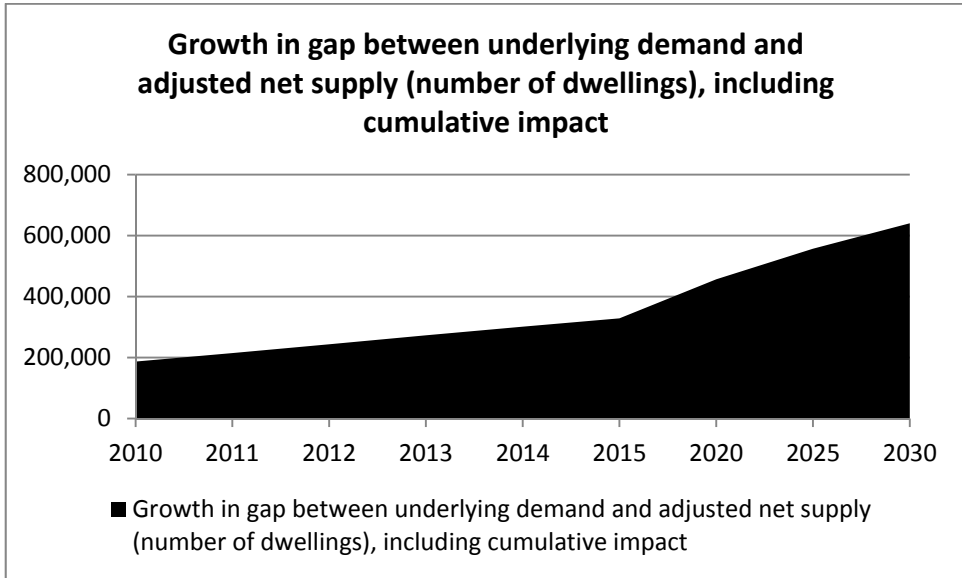
**Figure 11.** Trend in the number of dwellings commenced and population



Source: NHSC

**Figure 12.** Estimated dwelling gap in the last decade

National housing supply council (NHSC) estimates a demand versus supply gap of approximately 640 000 houses in 2030; and an increase in the gap from 250 000 in 2012. Figure 13 shows the projections in the supply gap to 2030. The figure shows an increase over time till 2015, and indeed a higher rate of increase predicted from 2015 till 2030.

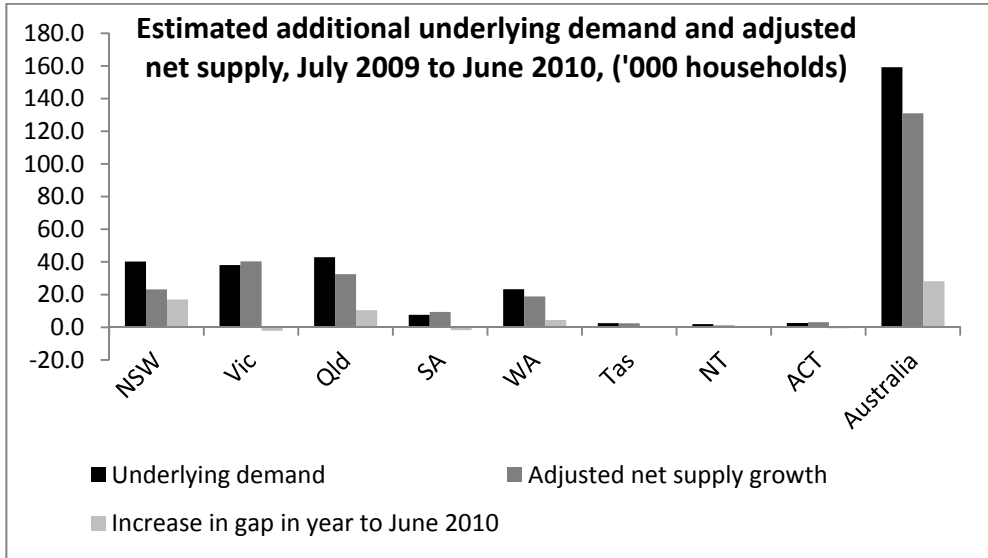


Source: NHSC

**Figure 13.** Supply and demand gap projections to 2030

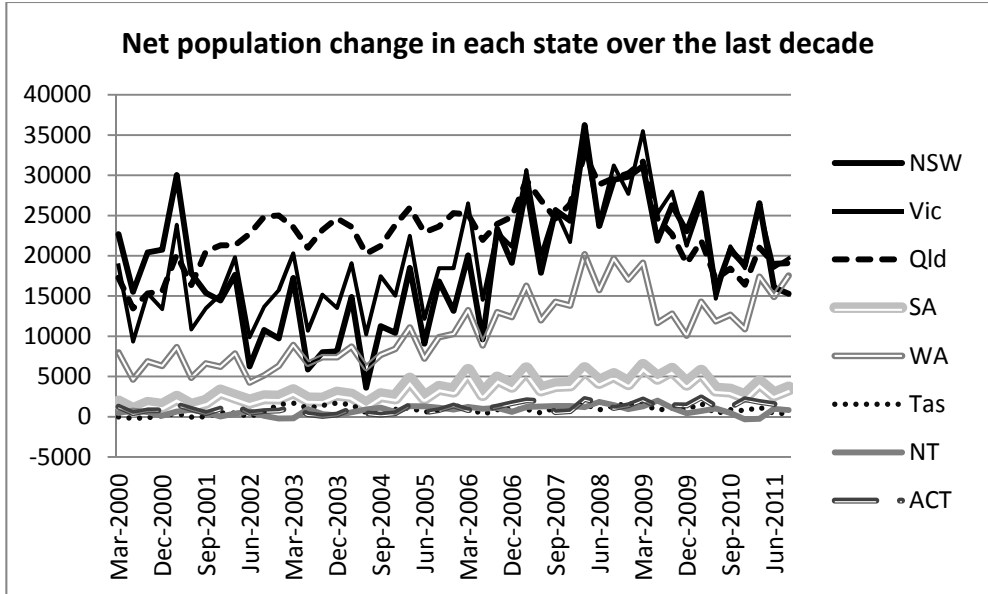
To examine whether the situation is the same throughout Australia or mainly confined to a few states, data from all the states are explored in more depth. Figure 12 and Figure 14 both show that not all states have an acute shortage of housing such as South Australia (SA), Tasmania (Tas) and Australian Commonwealth Territory (ACT). Their data runs against the trend for the last decade but more so during 2009-2010. The larger states of New South Wales (NSW), Victoria (Vic), Queensland (Qld) and Western Australia (WA) all continue to have high deficits year after year and the deficit is increasing – however, Victoria being an exception in 2009-2010 where it managed to go against the trend temporarily (Figure 14). To further understand the nature of the differences between states, the net population increase in the demand across states needs to be compared. Figure 15 shows the state by state net change in population as well as housing issues. The states with a high influx of population showed higher dwelling demand.

Not surprisingly, the high demand has led to a rather strong rental market particularly in the larger states and this has provided an impetus for higher rental returns and an ideal time for new investors to consider for the longer term. With recent housing approvals declining, this demand supply gap can only be expected to widen. Clearly, the population increase cannot only be driving the market. Therefore, other aspects need investigation such as house price to income ratio; and house hold debt to income ratio.



Source: NHSC

Figure 14. Housing demand and supply by states



Source: ABS

Figure 15. Net population change - state by state over 2000-2011

### 2.6. House price-to-income ratio

The house price-to-income ratio is generally calculated using average income of the whole population. This method of calculating house price may not be appropriate in that a set of buyers whose incomes are above the average income of the wider population, and have the ability to service the loans tend to bid in the auctions there by inflating house prices [28]. Such competition is visible across all capital cities but more so in Sydney, Melbourne, Perth and Canberra than other cities. Figure 16 shows the median change in the house prices across eight capital cities since 2007.

Figure 16 shows that the increase in house prices in the major capital cities have been greater than those of other cities. This suggests the increase in house prices in Australia over the past five years was driven mostly by house prices in the most expensive cities, where home buyers tend to be higher income earners. The house price-to-income ratio does not seem to pick up the distributional differences. The household debt to disposable income ratio can provide valuable insights while assessing the vulnerabilities. Therefore, disposable incomes of people need to be considered when assessing the vulnerability of an average mum and dad investor.

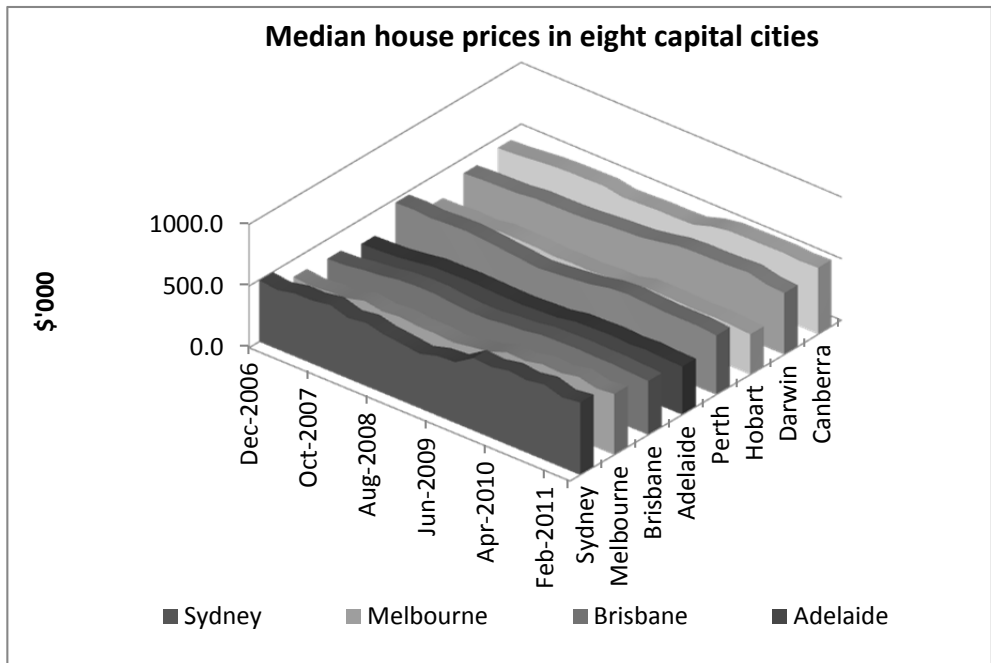


Figure 16. Dwelling prices in capital cities in Australia Source: ABS

### 2.7. Owner- Occupier debt

Figure 17 shows the distribution of debt to income since 2006. The data indicates that the debt to income ratios has been fairly high – but consistent around 160% for the total debt, of



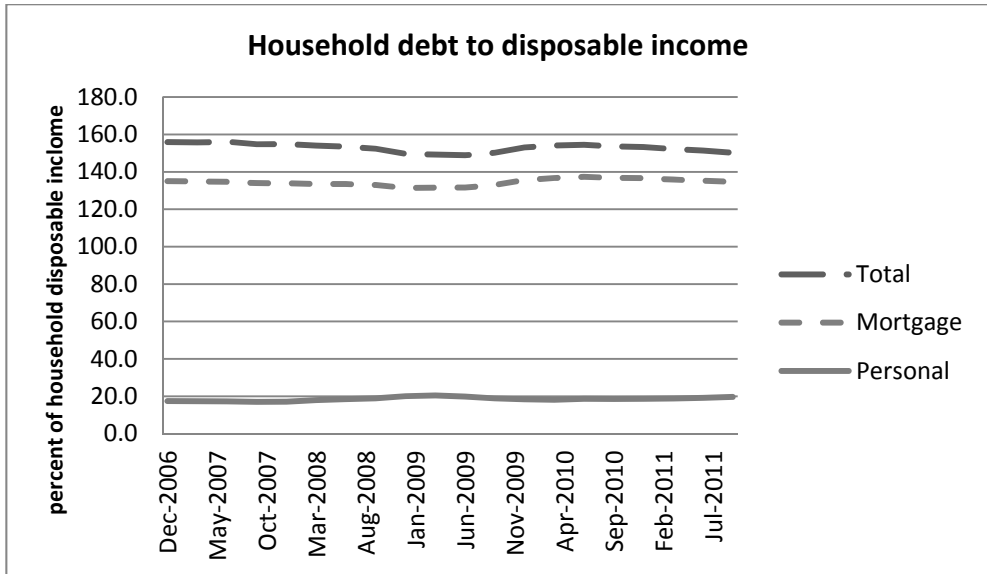


Figure 17. Owner occupier debt Source: RBA

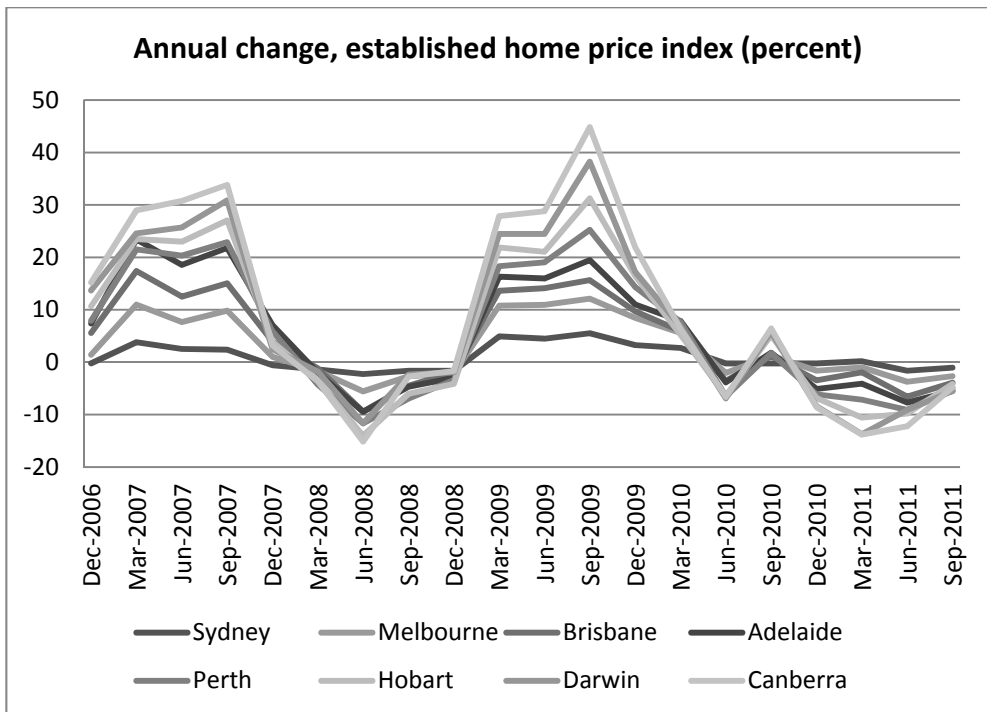


Figure 18. Annual change in established home prices Source: ABS

which close to 140% is towards the mortgage. An indication to the scale of vulnerability can become salient when the house hold income to debt and the annual change in established home price are compared. Figure 18 shows that there has been a somewhat volatile situation in the housing market in all capital cities during 2006-2011; yet, during the same period, the debt to income ratio seem to be approximately constant over time. The comparison shows the average households are not so vulnerable to at least a change in their income situation given there was volatility in house price changes over time.

### 3. Conclusion

The aim of this paper was to define risk and risk management in terms of real estate investment thus demonstrating the in depth nature and complexity of the process. Another aim was to conduct risk analysis of the Australian real estate market in particular, in terms of the global financial crisis – pre GFC, during GFC and post GFC. The review shows that risk analysis involves a number of steps with each step in turn involving another set of procedures. Risk analysis is a process that it is often ignored by investors particularly by the individual or smaller investors who tend to be more vulnerable. Similarly, risk management involves a number of processes and stages with steps and these have been outlined in the paper. A risk analysis is conducted here for investors in Australia real estate market. The results are rather interesting in that several conditional differences exist between Australia and the rest of the world. The factors identified that influence Australia's house price are different from the rest of the world; including for example the rather stricter and well regulated lending practices of Australia's financial institutions. A tight financial system regulation in Australia means a highly disciplined financial sector. The tougher regulation of the industry therefore prevents financial institutions from taking on excessive risks, contrary to the US counterparts. In fact, increasing house prices was identified in Australia after the crises of 2007-8; and this was associated with the changes in mortgage lending rates, rising family income, increasing overseas migration demand, government incentives to name a few. Together the market situation suggests that Australia is unlikely to face a US style housing bubble. The results of the risk analysis show that:

- rising incomes and population growth ensure the demand for housing outpaces current supply, thereby increasing the prices;
- high capital growth in larger cities where there has been large population migration such as Perth, Sydney and Melbourne;
- high demand still exists for residential and commercial real estate to accommodate growing expatriate working community;
- increased property prices has to many Australians increasingly seeking rental accommodation, making housing investment a healthy growth area for investors;
- higher growth rate in property investment in Australia - superior to most OECD countries, including the UK, Spain and the US; and

- foreign exchange rate changes have been favorable, making property purchase in Australia a valuable option; that in turn driving property prices higher. This has changed in 2011-12 when the higher Australian dollar has posed interesting challenges for the Australian investments.

The findings are in line and relate to that of the Australian housing and urban research institute's findings [29], which further suggest:

- investors are motivated to invest in the private rental market for a number of reasons such as financial factors, personal goals (retirement or future home for children at university), and household circumstances (proximity to their own dwelling);
- investors use their own measures of quality and personal preference when selecting a dwelling even though they will not be living in the property;
- investors perceive property as a long-term, safe and stable investment that is low risk and will produce guaranteed returns;
- investors largely expect capital gains from investing rather than rental yield only and this is how success is measured; and
- informality characterizes investor approaches to the housing market where property is considered familiar, relatively easy to invest in when compared to other investments.

In summary, Australian housing industry continues to experience significant housing shortages in major cities due to a rapidly growing population; in particular, the growth has been fueled by strong overseas migration during 2004-2007, but the Australian current government immigration laws suggest that the strong levels of immigration will continue for some time due to the lack of skills in the labor market. The housing demand is further supported by the fact that the size of the Australian household appears to be shrinking adding to the pressure on housing both in rental and investment. The demand of rental housing together with somewhat lower house prices in recent times (buyer market) has lured many new investors in the market. This aspect, the negative gearing benefits, and the first home ownership schemes supported by significantly lower interest rates have all led to a favorable and stronger real estate market in Australia. All of this has occurred within a framework of a stronger, tightly regulated financial sector that has been more-strict than most advanced economies including the US. Such a regulated real estate market appears to have kept the mortgage repayment failure and housing related bad debts at a minimum in Australia.

## **Author details**

Gurudeo Anand Tularam and Gowri Sameera Attili

*Griffith University, Australia*

*Science Environment Engineering and Technology [ENV], Environmental Futures Centre, Brisbane, Australia*

#### 4. References

- [1] Sunstein CR. A note on “voluntary” versus “involuntary” risks. *Duke Environmental Law & Policy Forum*. 1997 Fall; 8(1):173-180.
- [2] Standards Australia/Standards New Zealand. AS/NZS 4360:2004 : Risk management. 3rd ed. Sydney: Standards Australia International Ltd and Standards New Zealand. 2004.
- [3] International Standard Organization. Guide 73: Risk management – Vocabulary. 2009; [cited 2012 March 4] [about 24 screens] Available from: [http://pqm-online.com/assets/files/standards/iso\\_iec\\_guide\\_73-2009.pdf](http://pqm-online.com/assets/files/standards/iso_iec_guide_73-2009.pdf)
- [4] Comcover Insurance & Risk Management. The Introduction of AS/NZS/ISO 31000:2009 - Risk Management Principles and Guidelines. Issue 32; [cited 2012 March 17] [about 2 screens] Available from: [http://finance.gov.au/comcover/docs/IB\\_Issue32\\_Oct09.pdf](http://finance.gov.au/comcover/docs/IB_Issue32_Oct09.pdf)
- [5] Hillson D, Murray-Webster R. Understanding and managing risk attitude. 2nd ed. Aldershot: Gower; 2007.
- [6] Webb A. The project manager's guide to handling risk. Burlington: Gower; 2003.
- [7] IRM, AIRMIC, ALARM. A risk management standard. London: IRM; 2002.
- [8] Hillson D. Extending the risk process to manage opportunities. *Int J of Project Management*. 2002 April; 20(3):235-241.
- [9] ACT Insurance Authority. Guide to Risk Management. 2004 February; [cited 2012 March 10] [about 10 screens] Available from: <http://treasury.act.gov.au/actia/guide.doc>
- [10] Susilawati C. Can risk management boost the supply of affordable housing development and management?. *Int J Housing Markets Analysis*. 2009; 2(4): 392-402.
- [11] Susilawati C, Armitage L. Affordable Housing: who supply it? Tenth Annual Conference, Pacific Rim Real Estate Society; 2004 January.
- [12] Elenor C. Managing Risk in Community Housing Operations: Concepts and Tools. NCHF [serial on the internet]. 2006 April; [cited 2012 March 19]: [about 52 screens]. Available from: <http://pandora.nla.gov.au/pan/105045/20090903-1455/www.nchf.org.au/downloads/ManageRisk2006.pdf>
- [13] Melton T. Project management toolkit: the basics for project success. 2nd ed. Oxford: Elsevier; 2007.
- [14] Hillson D, Murray-Webster R. Understanding and managing risk attitude. 2nd ed. Aldershot: Gower; 2007.
- [15] Bisset H, Milligan V. Risk Management in Community Housing: Managing the challenges posed by growth in the provision of affordable housing. NCHF [serial on the internet]. 2004 December; [cited 2012 March 18]: [about 76 screens]. Available from: [http://pandora.nla.gov.au/pan/105045/20090903-1455/www.nchf.org.au/downloads/risk\\_management\\_summary.pdf](http://pandora.nla.gov.au/pan/105045/20090903-1455/www.nchf.org.au/downloads/risk_management_summary.pdf)

- [17] Sheryl V and Adam W. Housing Association: Risk Management Plan (template). Version 5. 2008 December. [cited 2012 March 18]; [about 22 screens]. Available from: [http://google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CFQQFjAA&url=http%3A%2F%2Fcommunityhousing.org.au%2Fresourcebank\\_docs%2Ffrisk\\_mgmt\\_docs\\_GovGPG3%2FHFA%2520template%2520v5%2520Dec%252008.doc&ei=AiiNT5KVMumviQes6a3\\_DA&usg=AFQjCNEAsSuQamg9mQaask5Xrbe3mHReXg](http://google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CFQQFjAA&url=http%3A%2F%2Fcommunityhousing.org.au%2Fresourcebank_docs%2Ffrisk_mgmt_docs_GovGPG3%2FHFA%2520template%2520v5%2520Dec%252008.doc&ei=AiiNT5KVMumviQes6a3_DA&usg=AFQjCNEAsSuQamg9mQaask5Xrbe3mHReXg)
- [18] ABC [homepage on the internet]. ABC Materials; [updated 2003 Apr 13; cited 2012 March 8]. IMF predicts Australia housing bust; [about 3 screens]. Available from: <http://abc.net.au/news/2003-04-13/imf-predicts-aust-housing-bust/1835644>
- [19] Smart Company [homepage on the internet]. Smart Company.com.au Pty Ltd; [updated 2008 Apr 4; cited 2012 February 28]. Australian property bubble could be about to burst: IMF; [about 3 screens]. Available from: <http://smartcompany.com.au/>
- [20] The Economist [homepage on the internet]. London: The Economist Newspaper Ltd; [updated 2010 Apr 15; cited 2012 March 25]. You can't keep 'em down; [about 3 screens]. Available from: [http://economist.com/node/15911113?story\\_id=15911113](http://economist.com/node/15911113?story_id=15911113)
- [21] The Australian [homepage on the internet]. News Pty Ltd [updated 2010 May 3; cited 2012 March 15]. Housing tipped for price implosion; [about 4 screens]. Available from: [http://theaustralian.com.au/archive/business-old/housing-tipped-for-price-implosion/story-e6frg9gx-1225861304871?from=public\\_rss](http://theaustralian.com.au/archive/business-old/housing-tipped-for-price-implosion/story-e6frg9gx-1225861304871?from=public_rss)
- [22] ABC [homepage on the internet]. ABC Materials [updated 2011 Mar 11; cited 2012 March 8]. Australian house prices 56 per cent over valued: The Economist; Available from: <http://abc.net.au/pm/content/2011/s3155728.htm>
- [23] Real Estate Institute of Australia. Australian house prices: bursting the bubble myth. 2010; [cited 2012 April 5]. Available from: <http://reia.com.au/search-result.php>
- [24] Reserve Bank of Australia [homepage on the Internet]. Reserve Bank of Australia C2001-2012; [cited 2012 March 7]. Available from: <http://rba.gov.au/>
- [25] Research Institute of Housing America [homepage on the Internet]. Washington: mortgage bankers association; c2008-2012; [updated 2011 March 30; cited 2012 March 12]. Available from: <http://housingamerica.org/default.htm>
- [26] Carmassi J, Gros D, Stefano M. The Global Financial Crisis: Causes and Cures. *J Common Market Stud.* 2009 November; 47(5): 977-996.
- [27] Brown A, Fabbro D, Hanrick T, Davies M. Recent Developments in Banks' Funding Costs and Lending Rates. *Bulletin.* 2010 March: 35-44.
- [28] Reserve Bank of Australia. Financial Stability Review. 2010 September 29.
- [29] Reserve Bank of Australia. Recent Developments in Margin Lending in Australia. *Bulletin.* 2009 December: 11-17.
- [30] Lloyds banking group [homepage on the internet]. Lloyds banking group plc [cited 2012 March 15]. Emerging markets top global house price league over the past decade. Available from: [http://lloydsbankinggroup.com/media/pdfs/LTSB/2012/1703\\_global.pdf](http://lloydsbankinggroup.com/media/pdfs/LTSB/2012/1703_global.pdf)

- [31] OECD. Recent house price developments: the role of fundamentals. OECD economic outlook. 2006 Jan 19; 2005(2): 123-154.
- [32] Seeling T, Thompson A, Burke T, McNelis S, Pinnegar S, Morris A. What motivates households to invest in the private rental market?. 2009 Jun 22; [cited 2012 March 5]. Available from:  
[http://google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CDQQFjAA&url=http%3A%2F%2Fwww.ahuri.edu.au%2Fpublications%2Fdownload%2Frap\\_issue\\_115&ei=aDGNT8nfK--QiAeC6K3JDA&usq=AFQjCNGpcAlAjmJeWptc7zFKMCKw0iJ5TQ](http://google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CDQQFjAA&url=http%3A%2F%2Fwww.ahuri.edu.au%2Fpublications%2Fdownload%2Frap_issue_115&ei=aDGNT8nfK--QiAeC6K3JDA&usq=AFQjCNGpcAlAjmJeWptc7zFKMCKw0iJ5TQ)