INVESTMENT STRATEGY Guidance Statement

DRAGONSEGG SUPERANNUATION SCHEME

Document Name: Doc ID 58575 - DRAG0002 2023-24 Investment Strategy

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Dragonsegg Superannuation Scheme ('The Fund') Investment Strategy

The Commissioner's Guidelines on Investment Strategies for SMSF Trustees

1. What needs to be included in my SMSF's Investment Strategy?

Your SMSF investment strategy should be in writing. It should also be tailored and specific to the relevant circumstances of your fund rather than a repeat of legislation.

Relevant circumstances may include (but are not limited to) personal circumstances of the members such as their age, employment status and retirement needs, all of which influence investment risk. Strong investment strategies should explain how the investments will meet each member's retirement objectives.

In particular, under the super laws your strategy must consider the following specific factors in regard to the circumstances of the fund:

a) Risks involved in making, holding and realising assets, and the likely return from your fund's investments regarding its objectives and cash flow requirements.

b) Composition of your fund's investments including the extent to which they are diverse (such as investing in a range of assets and asset classes) and the risks of inadequate diversification.

c) Liquidity of the fund's assets (how easily they can be converted to cash to meet fund expenses such as the cost of managing the fund and income tax expenses).

d) The funds ability to pay benefits (such as when members retire and require a lump sum payment or regular pension payments) and other costs it incurs.

e) Whether to hold insurance cover (such as life, permanent or temporary incapacity insurance) for each member of the SMSF.

When formulating an investment strategy, it is not a valid approach to merely specify investment ranges of 0 to 100% for each class of investment. You also need to articulate how you plan to invest your super or why you require broad ranges to achieve your investment goals to satisfy the investment strategy requirements.

The percentage or dollar allocation of the fund's assets invested in each class of investment should support and reflect your articulated investment approach towards achieving your retirement goals. If you choose not to use allocated portions or percentages in your investment strategy, you should ensure material assets are listed in your investment strategy. You should also include the reasons why investing in those assets will achieve your retirement goals.

2. Are there any restrictions under the super laws with respect to my SMSF Investments?

You are free to choose what type of assets you may invest in, providing those investments:

a) are permitted by your fund's trust deed;

b) are not prohibited by the super laws; and

c) meet the sole purpose test.

For instance, you need to be aware of the in-house asset rules and acquisitions from related party rules. You also need to be aware of the non-arm's length income rules for income tax purposes.

Where your investments breach the Superannuation Laws, we can take compliance action against you. Depending on the severity of the breach, we may apply penalties and potentially disqualify you as trustee.

3. What does diversification mean and can I invest all my retirement savings in one asset or asset class?

While a trustee can choose to invest all their retirement savings in one asset or asset class, certain risks such as return, volatility and liquidity risks can be minimised if a trustee chooses to invest in a variety of assets. This is called a diversification, leading to a culmination of assets in a diversified portfolio which ultimately spreads out investment risk.

Investing the predominant share of your retirement savings in one asset or asset class can lead to concentration risk. In this situation, your investment strategy should document that you have considered the risks associated with a lack of diversification. It should include how you still believe the investment will meet your fund's investment objectives including your fund's return objectives and cash flow requirements.

Asset concentration risk is heightened in highly leveraged funds, such as where the trustee has used a limited recourse borrowing arrangement to acquire the asset. This can expose members to a loss in the value of their retirement savings should the asset decline in value. It could also trigger a forced asset sale if loan covenants (for example, the loan to valuation ratio) are breached.

Superannuation Laws also require trustees to invest in accordance with the best interest of all members. You need to be aware of any legal risks that may arise from investing in one asset class only.

4. What does giving effect to my Investment Strategy mean?

The Superannuation Laws require that you as trustee must formulate and regularly review your fund's investment strategy. You must also give effect to an investment strategy that has regard to the whole of the fund's circumstances.

This includes ensuring all your fund's investments are in accordance with your investment strategy so that the fund is on track to meet your retirement goals. To help meet this requirement, you could consider specifying appropriate allocations or percentage or dollar ranges for each class of investment ranges that you have chosen for your strategy. These allocations or ranges typically allow some flexibility for market fluctuations.

However, broad investment ranges between 0 to 100% in a broad range of assets do not reflect proper consideration in satisfying the investment strategy requirements. Your strategy must articulate how you plan to invest your super in order to meet your retirement goals.

We don't consider that short term variations to your articulated investment approach, including to specified asset allocations, constitute a variation from the investment strategy.

5. How often do I need to review my SMSF's Investment Strategy?

Your investment strategy should not be a 'set and forget' document. You should review your strategy regularly to ensure it continues to meet the current and future needs of your members depending on their personal circumstances.

Certain significant events should also prompt you to review your strategy, such as:

a) A market correction.

b) When a new member joins or departs the fund.

c) When a member commences receiving a pension- this is to ensure the fund has sufficient liquid assets and cash flow to meet minimum pension payments prior to 30 June each year.

You should also review your strategy at least annually and document that you have undertaken this review and any decisions made arising from the review. For example, you could do this as part of the annual trustee meeting minutes. You should then provide these minutes or other evidence of a review to your auditor. This will show that you've met the requirement to review regularly and, where necessary, revised your investment strategy.

6. What is my auditor's role in relation to my SMSF Investment Strategy?

When conducting the annual audit on your fund, your auditor will check whether your fund has met the investment strategy requirements under the super laws for the relevant financial year. This means they will check that:

a) Your SMSF had an investment strategy in place for the relevant financial year that considered the factors outlined above.

b) Your fund's investments during the relevant financial year were in accordance with that strategy.

c) Your strategy had been reviewed at some stage during the relevant financial year.

Where you don't comply with the investment strategy requirements, your auditor may need to notify us about this by lodging an auditor contravention report (ACR).

7. What happens if my SMSF Investment Strategy is not compliant?

If your auditor identifies that you have breached the investment strategy requirements, the breach must be ratified immediately. If your strategy failed to adequately address some of the factors mentioned above, such as the risk of inadequate diversification, you can fix this by attaching a signed and dated 'addendum to the strategy' or a 'trustee minute' which adequately addresses the requirements. You should then present this to your auditor prior to finalisation of the audit.

If you failed to invest in accordance with your strategy, you should revise your strategy to ensure it reflects your fund's investments and how those new investments will meet your retirement objectives. You should then ensure you adhere to the new strategy in the future.

Your auditor will only need to lodge an ACR notifying us of the breach if it meets the ACR reporting criteria. For most funds, the criteria will be met if either:

a) the auditor has identified the same breach in a previous income year and it has been repeated in the current income year; or

b) it is a breach from a previous year that remains unrectified at the time of audit.

However, the criteria may also be met if the fund is less than 15 months old and the value of any single breach exceeds $2,000.

8. What action will the ATO take if my auditor lodges an ACR in relation to my SMSF's Investment Strategy?

If your auditor is required to lodge an ACR and the breach has not been rectified, we will ask you to rectify the breach.

A penalty of $4,200 (as indexed each 1 July) can be applied on each individual trustee or the corporate trustee for a breach of the investment strategy requirements. The directors of a corporate trustee are jointly and severally liable to pay this penalty.

9. Who can help me prepare, update or review my Investment Strategy?

This document was prepared from a master template provided by Abbott & Mourly lawyers. Abbott & Mourly do not assist with the preparation of your investment strategy or financial advice. Please speak to your accountant or adviser in this respect.

If you require assistance with the preparation of an investment strategy, you should consider seeking advice from your usual SMSF adviser or a licensed financial adviser.

Note that your usual SMSF adviser may not be a licensed financial adviser and legally capable of assisting you. They may be able to guide you on where to obtain resources such as an investment strategy template. It is advised that you take due care when obtaining standard investment strategy templates as these may not satisfy the Superannuation Laws. They must be appropriately tailored to your fund's particular circumstances as discussed above and reviewed regularly as required under law.

Trustee Meeting Acceptance of the Funds Investment Strategy

Date: 4 July 2023

Name of Fund: DRAGONSEGG SUPERANNUATION SCHEME

Current Income Year Ending: 30 June 2024

Attended by the Trustee:

DRAGONSEGG PTY LIMITED ACN 609 649 738

Held at: 12 POWELL PLACE CHERRYBROOK NSW 2126

Chairperson: JULIAN HOWARD

Trustee: Adoption of Investments Strategy

The Trustee has reviewed the Fund's proposed investment strategy – attached in this minute and has considered the adoption of the investment strategy for the Fund. The purpose of the Investment Strategy is to maximise the Fund's members retirement benefits, including income streams and lump sums, as well as maximising any death benefits if the members superannuation benefits are not being used for pension purposes. Further the Trustee has reviewed the Investment Strategy for its adherence to the SIS Act and Regulations.

Trustee Resolutions:

It was resolved by the Trustee:

1. To cease the Fund's former investment strategy (if any); and
2. Adopt the current investment strategy – as detailed in this document to take effect from the date of execution of this Investment Strategy meeting until it is revoked or amended;
3. The Trustee shall keep this current Investment Strategy on file for the benefit of Members of the Fund.

SIGNED BY THE TRUSTEE:

DRAGONSEGG PTY LIMITED ACN 609 649 738 by being signed by the persons authorised to sign for the company pursuant to section 127 of the Corporations Act 2001:

..... 8 7 23
Julian Howard
Director

Date

..... 8 7 23
Suzanne Murray
Director

Date

DEED OF RECTIFICATION AND RATIFICATION OF THE INVESTMENT STRATEGY OF DRAGONSEGG SUPERANNUATION SCHEME FOR THE YEAR ENDED 30 JUNE 2023

Deed of Rectification and Ratification for the Investment Strategy of Dragonsegg Superannuation Scheme

This Deed is Dated: 4 July 2023

Parties:

1. Trustee:

DRAGONSEGG PTY LIMITED ACN 609 649 738 OF 12 POWELL PLACE, CHERRYBROOK NSW 2126

(the 'Trustee').

Recitals:

1. Dragonsegg Superannuation Scheme ('**the Fund'**) was established by Deed dated 7 December 2015.
2. Dragonsegg PTY LIMITED ACN 609 649 738 the current Trustee and Members of the Fund.
3. The Trustee of the Fund has previously created an investment strategy, pursuant to the provisions of SIS Regulation 4.09 for the following income years:
   a) Year ending 30 June 2023
4. An updated and rectified investment strategy, as prepared by the Trustee is attached to this Deed as the Fund's formal and hereby rectified and ratified investment strategy for the income years as noted in this Deed.
5. By this Deed the Trustee wishes to rectify the former investment strategy as well as ratify that strategy as the correct investment strategy for the periods as noted above.
6. The rectified and ratified investment strategy is to form part of the Fund's Governing Rules for the income years as noted in this Deed.

Provisions:

1. **Rectification of the Investment for the Income Year ending 30 June 2023:** The Trustee hereby rectifies the former Fund investment strategy for the year ending 30 June 2023 and hereby attests that the attached investment strategy represents the Fund's investment strategy for the income year as noted.

2. **Ratification of the Investment Strategy:** The Trustee hereby ratifies that the pre-rectification investment strategies used by the Trustee are to be replaced by the Investment Strategy attached to this Deed and the Trustees further ratify that this Investment Strategy is the Fund's investment strategy as required under the Fund's governing rules and also the SISR 4.09.

3. **No Resettlement at Law:** Any amendment to the Rules of the Deed effected by this Deed does not result in a resettlement of the Trust at law, equity or under other Law.

Executed as a Deed by:

DRAGONSEGG PTY LIMITED ACN 609 649 738 by being signed by the persons authorised to sign for the company pursuant to section 127 of the Corporations Act 2001:

.....
Julian Howard
Director

8 7 23
.....
Date

.....
Suzanne Murray
Director

8 7 23
.....
Date

INVESTMENT STRATEGY

Fund objectives, investment strategy and benchmark allocations

DRAGONSEGG SUPERANNUATION SCHEME

Investment Objective

The Funds investment objective is:

“The Trustee via its investment strategy seeks to maximise the Fund’s member’s retirement benefits, including income streams and lump sums, as well as maximising any death benefits if the member’s superannuation benefits are not being used for pension purposes.”

1. Member Name and Superannuation Interests

a) Julian Howard age 60

Employment: employed

Retirement Objective: The member seeks to be provided with a secure income stream in retirement in conjunction with external investments, superannuation and if needed the aged pension. The amount cannot be quantified at this stage.

Pension: No

Insurance Policy: The Trustee of the fund has considered insurance for the member and following discussions around the member's age and circumstances has decided not to insure the member.

b) Suzanne Murray age 60

Employment: employed

Retirement Objective: The member seeks to be provided with a secure income stream in retirement in conjunction with external investments, superannuation and if needed the aged pension. The amount cannot be quantified at this stage.

Pension: No

Insurance Policy: The Trustee of the fund has considered insurance for the member and following discussions around the member's age and circumstances has decided not to insure the member.

2. Investment Strategy

2.1 Background

The Funds investment strategy is consistent with its objective and seeks to formulate, review regularly and give effect to the investment strategy that has regard to the whole of the circumstances of the fund including, but not limited to, the following:

a) the risk involved in making, holding and realising, and the likely return from, the funds investments, having regard to its objectives and its expected cash flow requirements;

b) the composition of the funds investments as a whole including the extent to which the investments are diverse or involve the fund in being exposed to risks from inadequate diversification;

c) the liquidity of the funds investments, having regard to its expected cash flow requirements;

d) the ability of the fund to discharge its existing and prospective liabilities;

In addition, if there are any reserves for the fund—to formulate, review regularly and give effect to a strategy for their prudential management, consistent with the funds investment strategy and its capacity to discharge its liabilities (whether actual or contingent) as and when they fall due.

2.2 Investment Strategy – Asset Allocation

The Trustee is to ensure the funds portfolio has the right mix of assets to suit all Members' circumstances and where separate investment strategies are applied to a specific Member or a superannuation interest of the Member then the Trustee, on the advice of the Member should determine appropriate investment aims and attitude to risk.

2.3 The Issue of Risk

As an integral part of the construction process of an investment strategy, a Trustee is required by law to consider the risk in making, holding and disposing of any fund investments. All investments entail different levels and types of risk. If required, the Trustee may engage the services of an investment or portfolio

specialist. This would foster a relationship in which the Trustee and the portfolio specialist can work together to decide an asset allocation that offers the fund or specific member the best chance of achieving the investment objective within the requisite level of risk tolerance.

The Trustee of the Fund holds more than 75% of its portfolio in property and has considered and is aware the risks involved in holding a significant proportion of its portfolio in one asset class. At this time, the Trustee accepts the risks of poor returns and a depletion of capital but will monitor its position regularly and if need be, diversify to other asset classes.

The Trustee of the Fund holds 0% of its portfolio in crypto and has considered and is aware the risks involved in holding a significant proportion of its portfolio in one asset class. At this time, the Trustee accepts the risks of poor returns and a depletion of capital but will monitor its position regularly and if need be, diversify to other asset classes. Further, the Trustee acknowledges that cryptocurrency investments are considered to be high risk. The trustee accepts the higher level of risk in exchange for potential high capital gains.

2.4 Borrowing to Invest into Fund Assets

The Trustee may elect to acquire investments such as property or shares using a limited recourse borrowing arrangement or self funding instalment warrants. The Trustee is aware that should they elect to using a limited recourse borrowing arrangements or self funding instalment warrants that they understand and accept the risks involved in borrowing such as return risk, impact of changes in personal circumstances, loss of assets and regulatory risk.

As the Trustee has decided to borrow with borrowings relevant to the specific borrowing assets of 70% which the Trustee has considered to be within its range of capabilities to service with cash flow coming from income of the assets and also proposed contributions by the fund members. Insurances have also been considered in the event that any employment or potential contributions are foregone in times of serious incapacity. The Trustee intends to pay down its borrowings as quickly as possible.

2.5 Diversification to Mitigate Risk

Investment strategy laws require the Trustee of the fund to consider the utilisation of diversification to reduce or mitigate risk in relation to holding specific asset classes and any underlying investments corresponding to that asset class.

Diversification is best seen by the spread of a fund's portfolio across a broad mix of assets. An example of a non-diversified portfolio can be shown where a fund applies an asset allocation to 90%-100% property with 0%-10% cash which is exemplified by a single property. This example portfolio attracts inherent risk if the property drops in value, cannot be tenanted, is impacted by a natural or man made disaster or more importantly if one member dies, gets divorced or is retired and needs a lump sum. Such risks can result in significant losses to current members of the fund.

Importantly the Trustee understands that investment markets move in different cycles, reflecting the underlying strength of the economy, industry trends and investor sentiment. Individual assets also move differently according to external factors. Diversifying your portfolio can help mitigate market fluctuations: so returns from better performing assets help to offset those that aren't performing so well.

The Trustee of the Fund holds more than 75% of its portfolio in property and has considered and is aware the risks involved in holding a significant proportion of its portfolio in one asset class. At this time, the Trustee accepts the risks of poor returns and a depletion of capital but will monitor it's position regularly and if need be, diversify to other asset classes.

The Trustee of the Fund has decided to invest in Residential property as a long term hold – 10+ years and although the asset allocation is significant the contributions of members and rents ensure that the Fund is cash flow positive with cash reserves to be diversified in the future.

2.6 Cash Requirements

The Trustee has assessed and monitored its cash flow requirements and has chosen to invest in assets as well as has cash at hand to meet any liabilities including on-going costs such as accounting and audit liabilities.

2.7 Balancing Risk vs Returns

The Trustee is aware that the concept of risk/return suggests that low levels of investment risk will result in potentially lower returns, while high levels of risk will generate potentially higher returns. Of course, this does not come without risk. While increased risk offers the possibility of higher returns, it also can lead to larger losses.

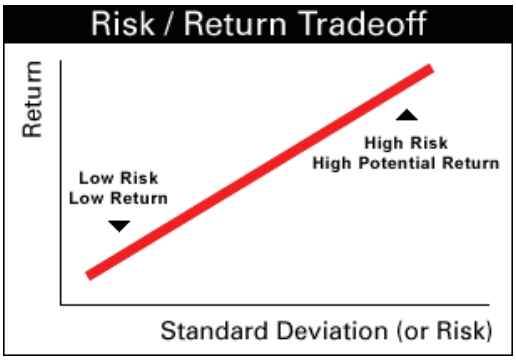


IMAGE: The risk/return trade-off principle

2.8 The Major Asset Classes for a SMSF Investment and an Asset Allocation for the Fund

ASSET CLASS	KEY CHARACTERISTICS	TRUSTEE TIME FRAME	BENCHMARK ALLOCATION
Cash			
Domestic Cash	Invested via bank accounts, bank bills and other similar securities. Provides income via interest. May be suitable for short-term needs.	Short-term (up to three years).	20%
International Cash	Invested via international bank	Short-term (up to three	0%

	accounts, term deposits, bank bills and other similar securities. International cash investments May have currency risk exposure if not hedged. Provides income via interest. May be suitable for short-term needs.	years).	
Fixed Interest			
Domestic Fixed Interest	Can provide a steady and reliable income stream with potential for capital growth and usually offers a higher interest rate, or yield, than cash. Includes Australian government bonds, Australian company bonds plus Australian special infrastructure bonds.	Short, medium or long- term.	10%
International Fixed Interest	Can provide a steady and reliable income stream with potential for capital growth and usually offers a higher interest rate, or yield, than cash. Includes	Short, medium or long- term.	0%

	International government bonds, International company bonds plus International special infrastructure bonds. May have currency risk exposure if not hedged.		
Equities			
Domestic Equities	Potential for capital growth, and may offer income through the payment of dividends with imputation credits. The Trustee may choose to invest in Australian companies either directly or using managed funds or listed companies.	Short, medium or long- term.	10%
International Equities	Potential for capital growth, and may offer income through the payment of dividends with foreign tax credits. The Trustee may choose to invest in International companies either	Short, medium or long- term.	0%

	directly or using managed funds or listed companies. May have currency risk exposure if not hedged.		
Property			
Domestic Property	Provides the benefits of diversification through access to Australian properties in residential, retail, office, industrial, tourism and infrastructure sectors. You can invest in Australian property directly or via managed funds or syndicates.	Medium-to-long term (five years plus).	99% Residential: 99%
International Property	Provides the benefits of diversification through access to International properties in retail, office, industrial, tourism and infrastructure sectors. You can invest in International property directly or via managed funds or syndicates.	Medium-to-long term (five years plus).	0%

	May have currency risk exposure if not hedged.		
Alternative			
Alternative	An investment in an asset that does not fall within the traditional asset classes noted above. They include hedge funds, private equity, art and antiques, futures, derivatives, commodities, credit, equity crowdfunding, etc.	Short, medium or long- term.	10%
Borrowing			
Borrowing	The Trustee may elect to acquire investments such as property or shares using a limited recourse borrowing arrangement or self funding instalment warrants.	Short, medium or long- term.	70%
Crypto			
Crypto	Invested via cryptocurrency	Long- term	0%

	exchanges or other similar applications or platforms. Highly volatile and risky due to limited regulation. Low diversification.		

2.9 Investment Strategy Review and Monitoring

The Trustees will monitor and review the funds investment activities on a regular basis and to communicate with the members should they feel that any change in strategy is necessary in order to achieve the funds objective.

Appendix A

Long-run Trends in Housing Price Growth

By Marion Kohler and Michelle van der Merwe – Reserve Bank Bulletin September 2015

Introduction

Housing is the most important asset owned by the majority of Australian households. It is a large component of household wealth and serves a unique, dual role as an investment vehicle and a durable good from which consumption services are derived. With most mortgages and many small business loans secured against residential dwellings in Australia, housing also forms an important part of the collateral backing the financial sector's balance sheet.

Changes in housing prices can affect the behaviour of a number of economic variables. For example, household consumption can be affected via the housing wealth channel; dwelling investment via a Tobin's Q relationship (whereby investment occurs as long as the expected return is above the cost of the investment); and small business investment can be affected by owners of small businesses facing collateral constraints in accessing credit.[1] Changes in dwelling prices also influence financial stability via their influence on the values of both household balance sheets and the assets backing bank balance sheets.

Over the past 30 years, Australian housing prices have increased on average by 7¼ per cent per year, and over the inflation-targeting period by around 7 per cent per year (Graph 1).[2] However, these averages mask three distinct phases:

a) During the 1980s, annual housing price inflation was high, at nearly 10 per cent on average, but so too was general price inflation. In real terms, housing price inflation during the 1980s was relatively low, at 1.4 per cent per annum compared with 4.5 per cent during the period from 1990 to the mid 2000s, and 2.5 per cent over the past decade.

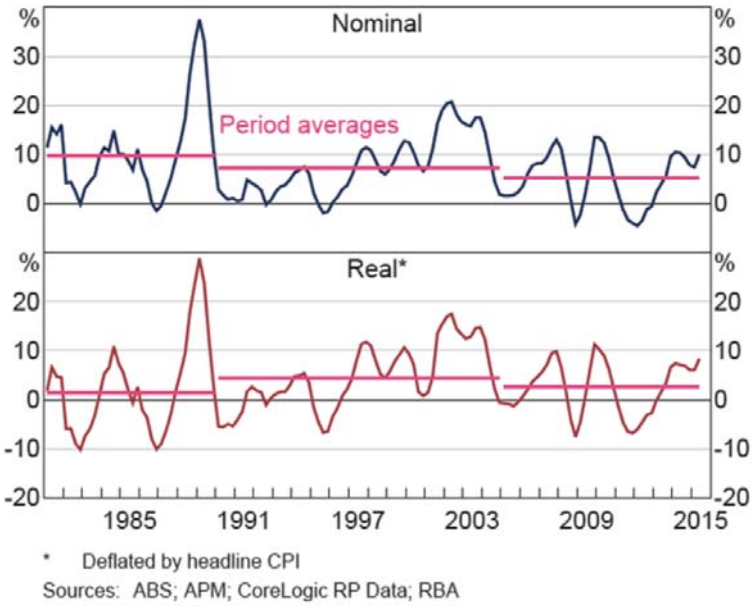
b) The 1990s until the mid 2000s were marked by quite high housing price inflation, of 7.2 per cent per annum, on average, in nominal terms.

c) Annual nominal housing price inflation over the past decade was lower than either of these periods, at a little over 5 per cent on average.

The remainder of this article analyses to what extent the differences in long-run trends can be explained by differences in fundamental drivers of housing price growth.

Graph 1

Graph 1 Housing Price Growth



Drivers of Long-run Housing Price Growth

Framework

A variety of models have been used in the literature to understand what determines housing prices. Much of the literature focuses on whether the observed level of prices is in line with fundamental determinants. In contrast, this article examines the extent to which changes or trends in such fundamental drivers correlate with observed changes in longer-run housing price growth.

The price of any good or asset is determined jointly by demand and supply. In this sense many of the frameworks in the existing literature are only partial because they often focus on either demand- or supply-side factors. One framework that nests a number of approaches and allows joint consideration of the supply and demand side is the stock-flow model of the housing market; it captures the dynamic interaction

between housing demand, supply and prices over the time (DiPasquale and Wheaton 1994).

In the stock-flow model, demand for housing assets (from both owner-occupiers and investors) is negatively related to the price and user cost (the cost of owning), and positively related to rent. A number of other variables also play a role, including demographic factors, the permanent income of households, and the cost of and access to credit. This encompasses different models of demand. One is the user cost of housing, which relates the price of owning a home to the cost of renting and has been estimated for Australia by Fox and Tulip (2014). The user cost is dependent on the real interest rate, running costs, depreciation of the asset and the expected real rate of housing price appreciation. Similarly, an investor would consider whether the rental return covers the user cost of owning the property, although the point of 'no arbitrage' will be different to that of an owner-occupier, given the different tax treatment of owner-occupied and investor property in Australia. Another, complementary view is that housing is like any other asset, where the price today reflects the sum of expected future discounted cash flows. However, property assets are likely to behave differently to other asset classes because, in comparison with most financial assets, they involve relatively large transaction costs, are traded in relatively thin markets and consist of heterogeneous products (Case and Shiller 1989; Bodman and Crosby 2004).

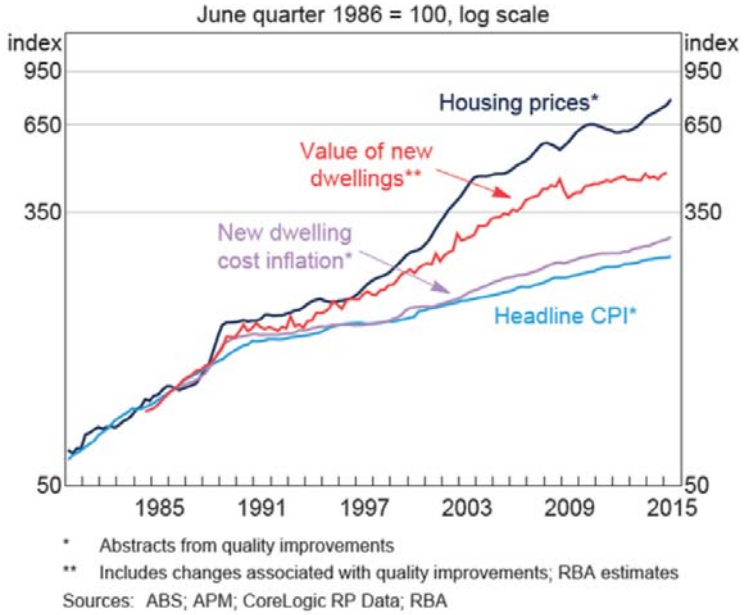
In the short run, the demand for housing can change more quickly than the supply of housing, and so housing prices will need to adjust temporarily to equilibrate housing demand and supply (unless vacant housing can absorb the change in demand). Supply adjustments in response to demand shocks usually take some time, reflecting both the timing lags associated with the construction of new supply and – in the case of supply reductions – that the existing stock is large relative to the flow of new dwellings (Ellis 2006). A developer will decide to construct a new dwelling if the cost of construction (including the cost of purchasing and readying the land) is less than the expected sale price of the new dwelling, including the land. (This framework is often referred to as the Tobin's Q model.) As new dwellings are built, all other things equal, downward pressure is placed on prices until supply and demand are equilibrated in the long run. The (new) long-run equilibrium price will depend on the relative price elasticities of supply and demand for housing.

Inflation

Measured in nominal terms, growth in housing prices will be affected by the general level of inflation. As already noted, during the 1980s, nominal housing price inflation was relatively high and volatile, but so too was general price inflation. Indeed, until the late 1980s, housing prices grew broadly in line with general price inflation.

Over the past 20 years, general price inflation was low and stable, consistent with the inflation target of 2 to 3 per cent per annum, which was introduced in the early 1990s. Housing price growth, however, has outstripped the rate of inflation in other prices in the economy including inflation in the cost of new dwellings (Graph 2).[3] In real terms, housing price growth since the 1990s was above that of the 1980s. One possible explanation is that this reflects improvements in the quality of housing over time that have not been adequately measured. The housing price measure used in Graph 2 (which is a hedonically adjusted housing price index) already abstracts from the higher costs of a number of quality improvements, such as the increase in floor space and the addition of modern conveniences such as air conditioning, but it may not fully capture all improvements.[4] An alternative benchmark is the value of new dwellings, where changes in quality are explicitly accounted for; this has also increased noticeably over the past few decades. However, housing prices have increased by a considerably faster pace than even the value of new dwellings, which include the costs of quality improvements of housing over time.**Graph 2**

Graph 2 Inflation, Housing Prices and Quality



* Abstracts from quality improvements

** Includes changes associated with quality improvements; RBA estimates

Sources: ABS; APM; CoreLogic RP Data; RBA

This gap between housing prices and different measures of the cost of new housing suggest that, over the past 25 years, factors have been at work that have increased the demand for housing relative to additions in housing supply (including in well-located and more desirable locations) and by more than had been the case during the 1980s.

The remainder of this section reviews some of the drivers that may help to explain relatively stronger demand growth for housing in the past two decades or so: one-off factors such as financial deregulation and the shift in the early 1990s to an environment of low and stable inflation; long-term determinants such as population growth; and cyclical factors that have contributed to housing price growth.

Disinflation, deregulation and housing demand

The deregulation of the financial sector during the 1980s and the shift to a low inflation and low interest rate environment in the early 1990s greatly increased household access to finance in Australia. These developments have been discussed in detail elsewhere (e.g. RBA 2003, 2014; Ellis 2006), so they are only summarised briefly here.

Many important changes to the financial landscape in Australia were made in the mid 1980s up until the early 1990s. Over time, financial deregulation, together with increased competition, increased borrowers' access to credit and reduced its cost. At the same time, the shift from a high- to a low-inflation environment in the 1990s saw nominal interest rates decline in line with the lower inflation compensation required.

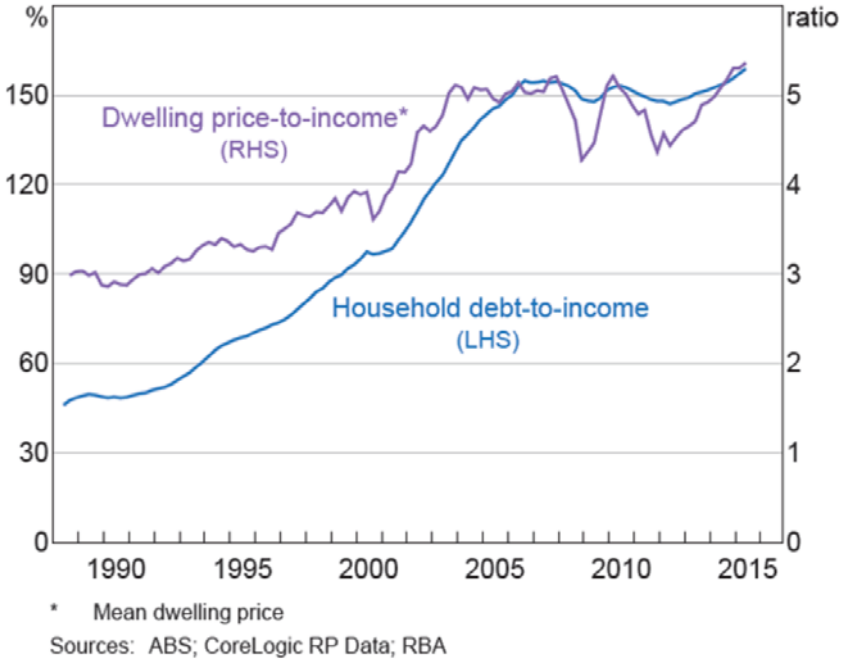
Low inflation together with increased competition in the mortgage market reduced housing loan interest rates, thereby easing serviceability constraints. Previously credit constrained households were increasingly able to borrow more for a given level of income and pay higher prices. Without a corresponding increase in supply in the most desirable locations, this was likely to have led to a pick-up in housing price growth, and household debt, for a protracted period (Kulish et al 2012).

The increased access to credit by Australian households over this period can be seen in the steady increase of the ratio of household debt to income (Graph 3). A similar trend is observed in the dwelling price-to-income ratio.[5] While deregulation and disinflation were largely complete by the mid 1990s, the adjustment of the economy to the new steady state took well over a decade (Ellis 2005; Kent, Ossolinski and Willard

2007). These adjustments appear to have largely run their course, with the household debt-to-income ratio fluctuating around 150 per cent over the past decade.

Graph 3

Graph 3 Debt- and Price-to-income Ratios



* Mean dwelling price

Sources: ABS; CoreLogic RP Data; RBA

Underlying demand and supply of new housing

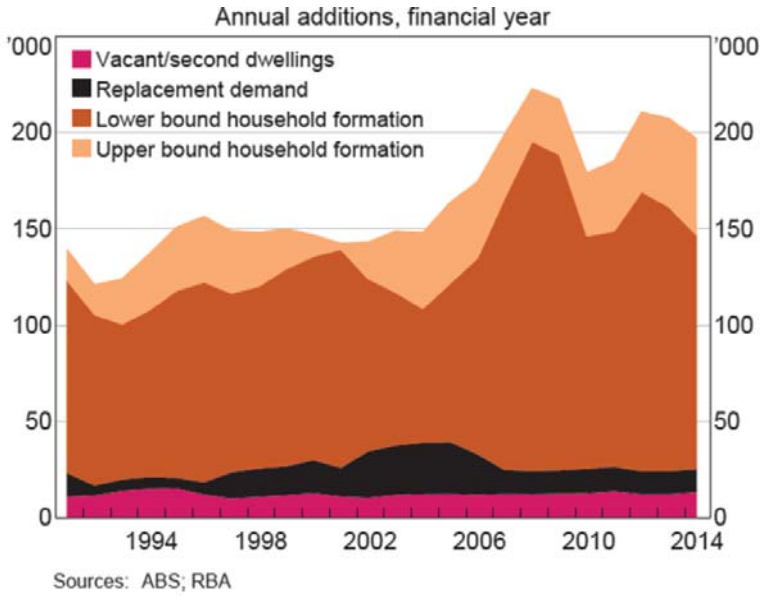
Underlying demand for new housing

Underlying demand for new dwellings can be thought of as representing what demand for newly built housing might have been, given the observed rate of population growth and an estimate of underlying average household size (Richards 2009a, 2009b). In other words, this is the longer-run level of demand, abstracting from shorter-term influences on housing demand related to the business cycle. Underlying demand, though unobservable, consists of three components: demand from newly formed households; demand for new dwellings to replace demolished ones; and demand for second or vacant homes (Graph 4). The latter two components have been relatively stable contributors to underlying demand compared with changes in the household formation rate, which have driven most of the variation in estimates of underlying demand. The rate of household formation in turn reflects the interaction between population growth and average household size.[6]

From 1990 to the mid 2000s, population growth in Australia was relatively low compared with that of the previous two decades, owing to a declining natural rate of population growth and lower net immigration. Since the mid 2000s, Australia has seen much higher net immigration and so population growth has stepped up to a significantly higher rate (Graph 5). A slightly higher natural increase in population has also contributed to the shift.

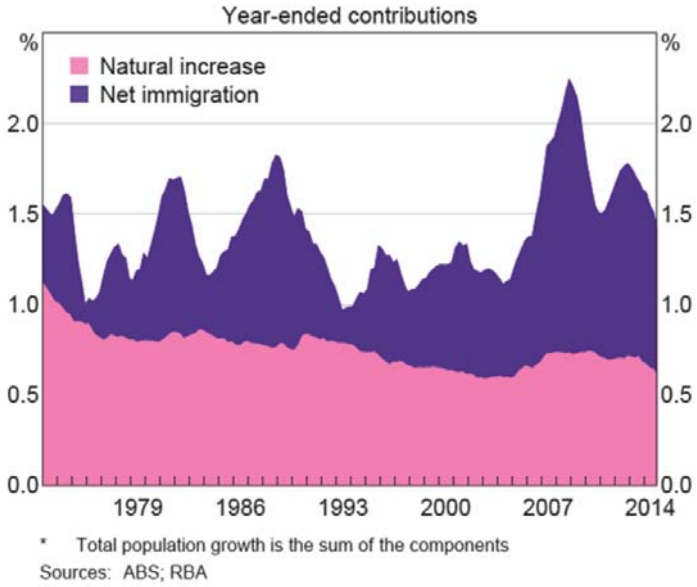
Graph 4

Graph 4 Components of Underlying Demand



Graph 5

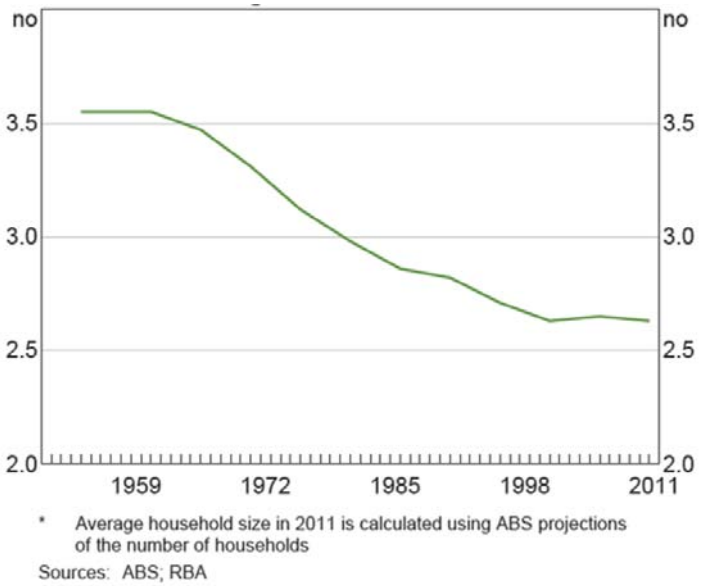
Graph 5 Population Growth



Average household size – the other component of the household formation rate – has declined markedly since the 1960s and, all else equal, has generated an increase in demand for housing for a given level of population (Graph 6). Unlike the earlier trend, average household size has been little changed since the 2000s. Changes in average household size reflect a combination of demographic changes, household preferences and endogenous responses to housing prices (Richards 2009a, Richards 2009b). Much of the downward trend over the past five decades has been attributed to demographic changes resulting from falling fertility rates, an ageing population and rising household incomes (Kearns 2012).[7] These forces have resulted in smaller-sized households, on average, that have demanded more housing for a given level of population (Ellis 2010). Average household size may also adjust in response to changes in housing prices. To the extent that pressures arising from higher demand for new housing outstrip supply increases over a short period, some of the excess demand is likely to be accommodated by short-term increases in average household size.

Graph 6

Graph 6 Average Household Size



Combining the range of estimates of average household size, population growth and demand for second homes and replacement dwellings, suggests that annual demand for new housing was relatively stable prior to the mid 2000s, fluctuating between 120,000 and 145,000 new dwellings every year (Graph 4). Since then, annual demand

for new housing increased by around 40 per cent (or by around 50,000 new dwellings), largely owing to strong population growth.

Will underlying demand remain elevated? Forecasts from the Department of Immigration and Border Protection suggest that population growth has declined noticeably over the past year or so, but population is still expected to expand at a pace above that recorded from 1990 to the mid 2000s. Underlying demand for new dwellings will also depend on developments in average household size. To the extent that the levelling off in household size since the early 2000s has partly reflected a response to rising housing prices, average household size could rise, thereby offsetting any increase in demand from population growth.

Supply of new housing

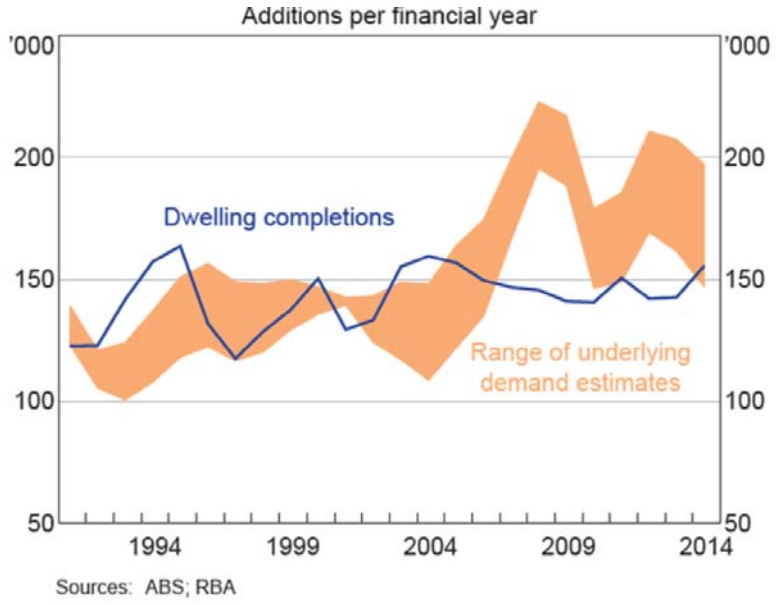
Whether or not an increase in demand leads to increased housing price growth depends on the response of supply to changes in demand. There is considerable evidence that, in the short run, there are lags in the ability of the supply of housing to respond to changes in demand. This is not surprising given the length and complexity of the planning process, the time taken to construct new dwellings, the difficulty in the provision and funding of required infrastructure, as well as the cost of readying undeveloped land for construction and availability of suitable sites (Hsieh, Norman and Orsmond 2012). Previous Australian and international literature has pointed out that local zoning and planning policies have played a prominent role in explaining some of the protracted supply-side rigidities observed in many housing markets (Glaeser, Gyourko and Saks 2005; Kulish et al 2012). If supply additions fall short of underlying demand for new housing for a time, prices can be expected to increase, at least until additional supply is available. Moreover, given the lags associated with construction, expected price changes play an important role in developers' decision-making processes.

Over the past three decades, dwelling completions have been relatively stable, at around 130,000 to 145,000 completions per annum (Graph 7). However, completions alone hide the noticeable increase in size and improvement in the quality of new dwellings that have occurred over time, along with the increased cost associated with their construction (Kearns 2012). For example, the average number of spare

bedrooms has increased over the past 20 years for households across all age groups and most household types.[8]

Graph 7

Graph 7 Underlying Demand and Supply



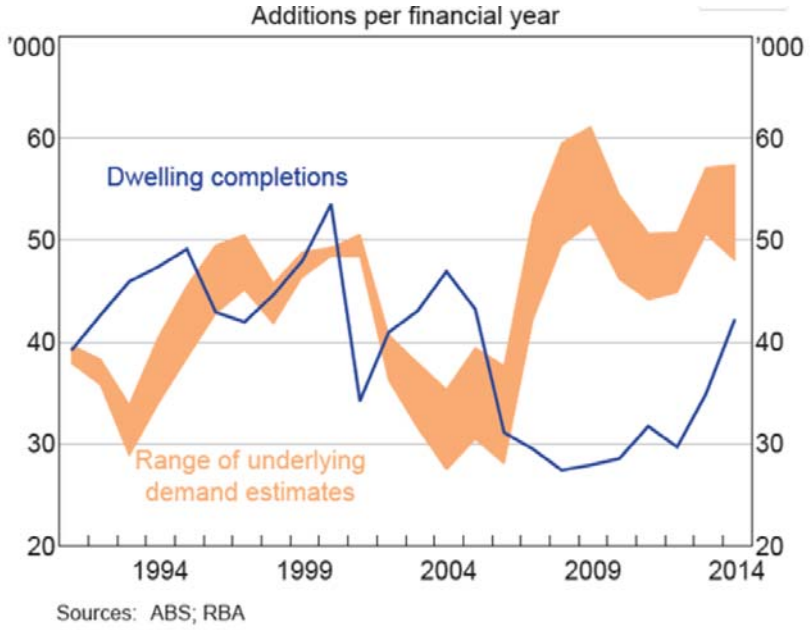
Annual supply and demand gap

When compared with the range of underlying demand estimates, completions suggest that, over much of the past decade, the supply side has been slow, or unable, to respond to the significant increases in underlying demand (based on estimates of underlying average household size, rather than actual household size).[9] More recently, the gap between underlying demand for and supply of new dwellings in Australia looks to have become smaller (Graph 7). Graph 8 suggests that much of the aggregate gap was accounted for by developments in New South Wales. Underlying demand-supply gaps in Queensland and Western Australia also look to have contributed to the aggregate gap, although the estimates of underlying demand on a state level are subject to even larger uncertainty than those at the national level (since some of the assumptions made on household formation are less likely to hold at a disaggregated level). More recently, new supply in New South Wales has increased sharply, consistent with the earlier period of strong underlying demand growth and the significant time lags in building construction, as well as very low interest rates currently that could be expected to underpin developers' expectations for housing price growth

to continue for some time. It could also be that an increased policy focus in recent years on alleviating supply-side rigidities has played some role in facilitating this pick-up (see also Hsieh et al (2012)).

Graph 8

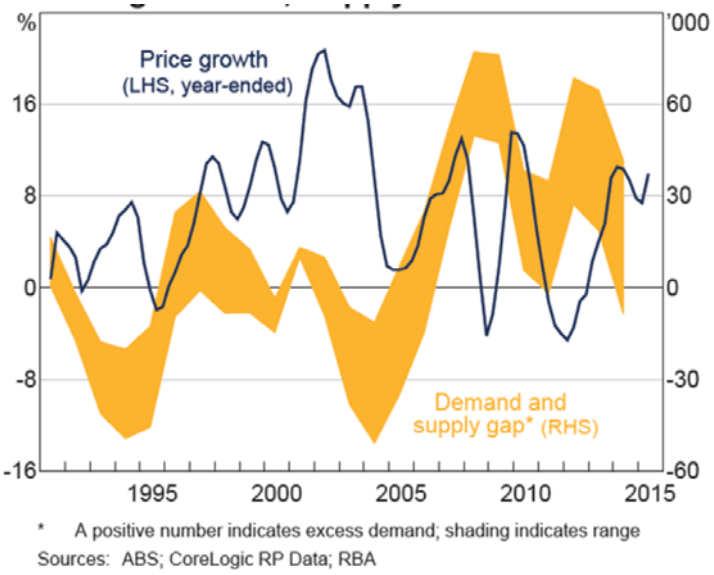
Graph 8 NSW – Underlying Demand and Supply



To summarise, since the mid 2000s, the Australian housing market looks to have been subject to a series of persistent increases in demand stemming from high population growth, while supply has continued to increase by around 145,000 dwellings. Graph 9 suggests that the excess demand for new dwellings (measured as underlying additional demand less additional dwellings) may have played a role in generating price growth since the mid 2000s, while it looks to have played a less prominent role in the decade before that.

Graph 9

Graph 9 Housing Demand, Supply and Price Growth



* A positive number indicates excess demand; shading indicates range

Sources: ABS; CoreLogic RP Data; RBA

Cyclical factors

While this article focuses on longer-run drivers of housing price growth, cyclical factors are likely to play a role in driving price growth over shorter periods. Most notably, monetary policy is thought to have an especially strong effect on the housing market, both in the established market through higher activity and prices and in the new dwelling market by encouraging dwelling investment. In fact, Otto (2007) finds that the level of the mortgage interest rate was a significant explanator of Australian capital city dwelling price growth over a period of around 20 years. While a lower mortgage rate encourages consumption of housing to be brought forward, in the long run, even if mortgage rates were to remain low for an extended period of time, there should be a supply response to help move the market back into its longer-run equilibrium. Indeed, the reduction in real mortgage rates since 2011 – following reductions in the cash rate – has been closely associated with both stronger housing price growth and strong dwelling construction more recently.

An Illustrative Example

The analysis in the previous section suggests a number of factors that are likely to have been associated with the longer-term trends in housing price growth over the inflation targeting period: the move to an environment of low inflation and easier

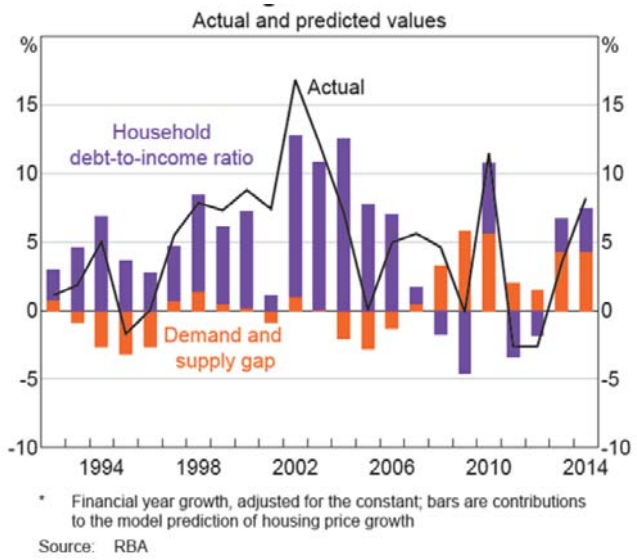
access to credit following financial deregulation, as well as differences between the underlying demand for new dwellings and their supply. In order to illustrate the importance of these factors both over time and relative to each other, the exercise in this section is based on a very simple estimated model of housing price growth since 1991, motivated by Otto (2007).

The model, discussed in more detail in Appendix A, considers the relationship between annual housing price growth and changes in the debt-to-income ratio as well as changes in the gap between the underlying demand and the supply in the preceding year. While this simple model cannot account for all the factors affecting housing price growth over the past 25 years, the model is able to account for more than half of the variation. As it is difficult to disentangle the causality between housing price growth and changes in the debt-to-income ratio, the results are only indicative and do not necessarily imply causation.[10] However, if households' ability or willingness to borrow (relative to their income) is a binding constraint in their housing purchase decision, then an increase in the debt-to-income ratio should lead to higher house prices, all else equal.

Graph 10 (based on this illustrative model) suggests that housing price growth was closely associated with changes in the debt-to-income ratio over most of the 1990s until the mid 2000s (the exception is the period around 2000/01, where housing market activity was affected by the introduction of the GST (Kearns and Lowe 2011)). The underlying demand gap has played a more prominent role over the past decade, and changes in the debt-to-income ratio played a less prominent role over this period.

Graph 10

Graph 10 Housing Price Growth



Other empirical studies suggest that real income growth is one of the main drivers of housing price growth over very long periods. If we include changes in real income per capita or real income in our econometric model, the coefficient is insignificant, suggesting that over the sample period considered here higher income per capita has had no role to play above its effect on underlying average household size.

Interest rate cycles do not appear to have had a particular correlation with housing price growth over and above what is already captured by the debt-to-income ratio and the demand-supply gap. While this contrasts with Otto (2007), that model does not include changes in the debt-to-income ratio. Intuitively, as most property purchase involves borrowing, it seems plausible that changes in the debt-to-income ratio would capture a large share of the impact of changes in interest rates on housing price growth.

Conclusion

This article analyses the factors influencing long-run housing price growth in Australia. During the 1980s, housing price inflation broadly followed general price inflation in the economy, which was relatively high and volatile. Following the financial deregulation of the mid 1980s and disinflation of the early 1990s, cheaper and easier access to finance underpinned a secular increase in households' debt-to-income ratio that was

closely associated with high housing price inflation from the early 1990s until the mid 2000s. The past decade saw a stabilisation of debt-to-income levels, but also a prolonged period of strong population growth – underpinned by high immigration – and smaller household sizes that led to increases in underlying demand exceeding the supply of new dwellings.

Looking ahead, it seems unlikely that there will be a return to the rather extreme conditions of the earlier episode when significant increases in household debt supported high housing price growth. Nonetheless, protracted periods of changes in population growth that are not met by adjustments in dwelling supply could lead to periods of sizeable changes in housing price growth. One important factor for housing price growth is the ability of the supply of new dwellings to respond to changes in demand. The significance of this is made clear by the recent increases in higher-density housing and lower growth of those prices relative to prices of detached houses, whose supply has been less responsive.

Appendix A

The econometric model of housing price growth discussed here was chosen to evaluate the validity and relative importance of the key factors identified. The purpose is not, however, to identify the best empirical model for housing price growth and a different model might be preferable for that purpose.

Equation (1) shows the specification underlying the illustrative example used in the text (Graph 10) for annual growth in Australian capital city housing prices, estimated over 1991 to 2014 (standard errors are shown in parentheses).[11]

Equation: Annual housing price growth (P, in log differences) is modelled as a function of: a constant, the change in the household debt-to-income ratio from the previous year to the current year (debt_income, in percentage points) and the gap between the midpoint of underlying demand and dwelling completions from the previous year (Gap, number divided by 1000). The equation is estimated from 1990/91 to 2013/14.

$$\begin{aligned}\Delta \ln P_t = {} & 1.52 + 0.92 \Delta Debt\_Income_t \\ & (1.40)\ (0.19) \\ & + 0.09 Gap_{t-1} + \varepsilon_t \\ & (0.03)\end{aligned} \qquad \text{(A1)}$$

View MathML

ΔlnPt is the annual rate of growth in nominal housing prices (in per cent), ΔDebt_Incomet is the change in the household debt-to-income ratio from t − 1 to t, and Gapt−1 is the difference between underlying supply and demand (using the middle of the estimated data range) from the previous year, divided by 1,000. Nominal inflation, which has been relatively stable over the estimation period, is captured as part of the constant. The model has quite high explanatory power, with an adjusted R2 of 0.55, and has no serial correlation of note. Note that the introduction of the GST in 2000/01 is not well captured in the model.[12]

In the model, the contemporaneous change in the debt-to-income ratio is significant, which could have a number of explanations. First, the time structure of dwelling purchases is such that, even though households often have pre-approval of finance when they purchase a dwelling, they usually take out a loan only after they purchase; the measured relationship is therefore close to contemporaneous, even though the decision might be causal from debt-to-income ratio to housing price. Second, there is a feedback between housing debt and house prices: an increase in the availability of finance allows households to pay higher housing prices, but higher housing prices in turn also require higher borrowing. The possible reverse causality means that the relationship between housing price growth and changes in debt-to-income ratios is not necessarily a causal relationship (in a temporal sense), but rather represents a correlation.

An instrumental variable (IV) estimate could, in principle, account for a possible endogeneity bias in the coefficient of the change in the debt-to-income ratio. However, this approach proved not to be possible in the model presented here for two reasons. First, our data covers only 23 years, which would make any IV estimates vulnerable to small sample bias. Using a longer time series (that is, including data prior to the 1990s) poses the problem of a number of structural changes in the economic relationships discussed in this article. Second, it is difficult to find a suitable instrument for the effect of financial deregulation and disinflation on households' indebtedness. The real mortgage rate facing household borrowers is one potential instrument. However, the measured changes in the real mortgage rate happened relatively quickly compared with the time it took for households to change their debt and house purchase decisions in response. As Bayoumi (1993) and Kent et al (2007) emphasise, the

change to household behaviour can easily take more than a decade, including because of the relatively low frequency with which an individual household purchases a new home. As a result, it is difficult to find a good instrument for these changes in households' debt relative to their income, which would allow to better control for the possible endogeneity between house prices and the debt-to-income ratio. However, if households' ability or willingness to borrow (relative to their income) is a binding constraint in their housing purchase decision, then an increase in the debt-to-income ratio should lead to higher house prices. In this case, the endogeneity bias (of higher house prices in turn leading to a higher debt-to-income ratio in the same time period) is likely to be relatively minor.

Footnotes

Marion Kohler is from International Department but completed this work in Economic Analysis Department, and Michelle van der Merwe is from Economic Analysis Department.

The authors would like to thank Luci Ellis, Tony Richards, Peter Tulip and, in particular, James Hansen for valuable comments and discussions.[*]

1. More detail can be found in Dvornak and Kohler (2003) and Windsor, Jääskelä and Finlay (2013) on the wealth channel; Corder and Roberts (2008) on dwelling investment and Tobin's Q; and Connolly, La Cava and Read (2015) on the housing collateral channel.[1]
2. For a discussion of very long-term developments in housing prices over the past century, see Stapledon (2012).[2]
3. This is true for both the CPI measure for new dwelling cost inflation in Graph 2 and the building cost index published by Rawlinsons (2014), which follows the CPI closely over that period.[3]
4. Most notably, the hedonic measure of housing prices used in Graph 2 may not abstract fully from a premium that is being placed on living close to the city centre (or other desirable locations) as cities increase in size over time (Ellis and Andrews 2001; Kulish, Richards and Gillitzer 2012) or the shift to higher-quality building materials used in construction (Kearns 2012).[4]
5. The reduction in the rate of inflation also contributed to the trend increase in the debt-to-income ratio; the rate at which nominal income growth will erode debt occurs less rapidly than in a high inflation environment (RBA 2003). Also, it is possible that households are willing to spend relatively more on housing as their real incomes rise, and this could also contribute to a rising debt-to-income ratio. However, the flattening out of the debt-to-income ratio over the past decade (when real incomes have continued to increase) suggests that this may have been a less important factor over the time period considered here.[5]
6. Data on average household size are only available in Census years and average household size measured at any point consists of a longer-run underlying trend (determined by demographics, income etc.), and shorter-term

adjustments in response to changes in housing prices (see below). In order to extract the longer-run, underlying trend of average household size, three alternative trend measures are fitted to generate annual estimates. The result is a range of scenarios for underlying demand, helping to account for some of the uncertainty around its estimation.[6]

7. Migration flows can also be a source of demographic change in average household size in countries with significant immigration such as Australia, if migrant household sizes are different to those of the existing population.[7]

8. Thanks to Mark Caputo and Stephen Knop for providing this analysis.[8]

9. See footnote 6 for details on the estimates of underlying average household size.[9]

10. For more details, see Appendix A.[10]

11. The lag specification was determined through general-to-specific modelling, starting with a model with a sufficiently long lag structure of all exogenous variables and removing insignificant variables step by step.[11]

12. If a dummy variable is included in 2000/01 for the introduction of the GST the adjusted R2 becomes 0.70 and the coefficient estimates are broadly similar.[12]

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