

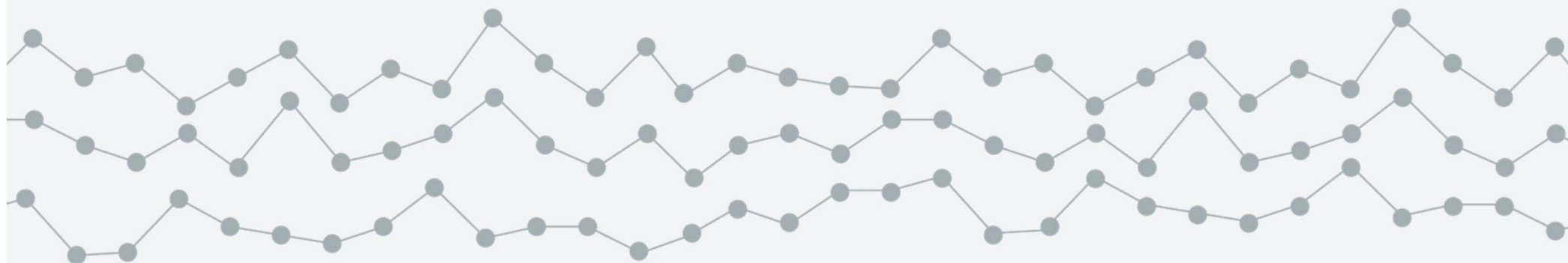


National
Australia
Bank

Australian Dwelling Prices and Tobin's q

Presentation to UNSW Business School Real Estate
Symposium

Peter Jolly, Global Head of Research
September 2016



Tobin's q

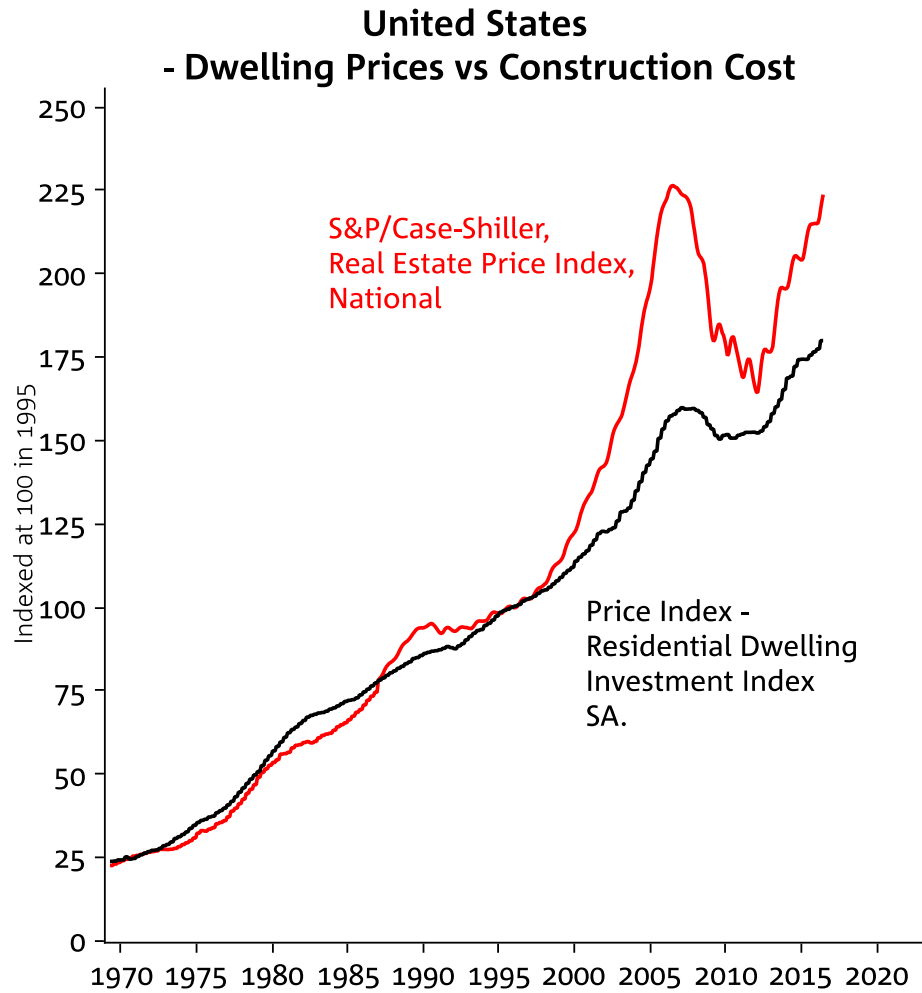
$$q = \frac{\text{Market Value for an asset}}{\text{Replacement Cost}}$$

Relevance of q

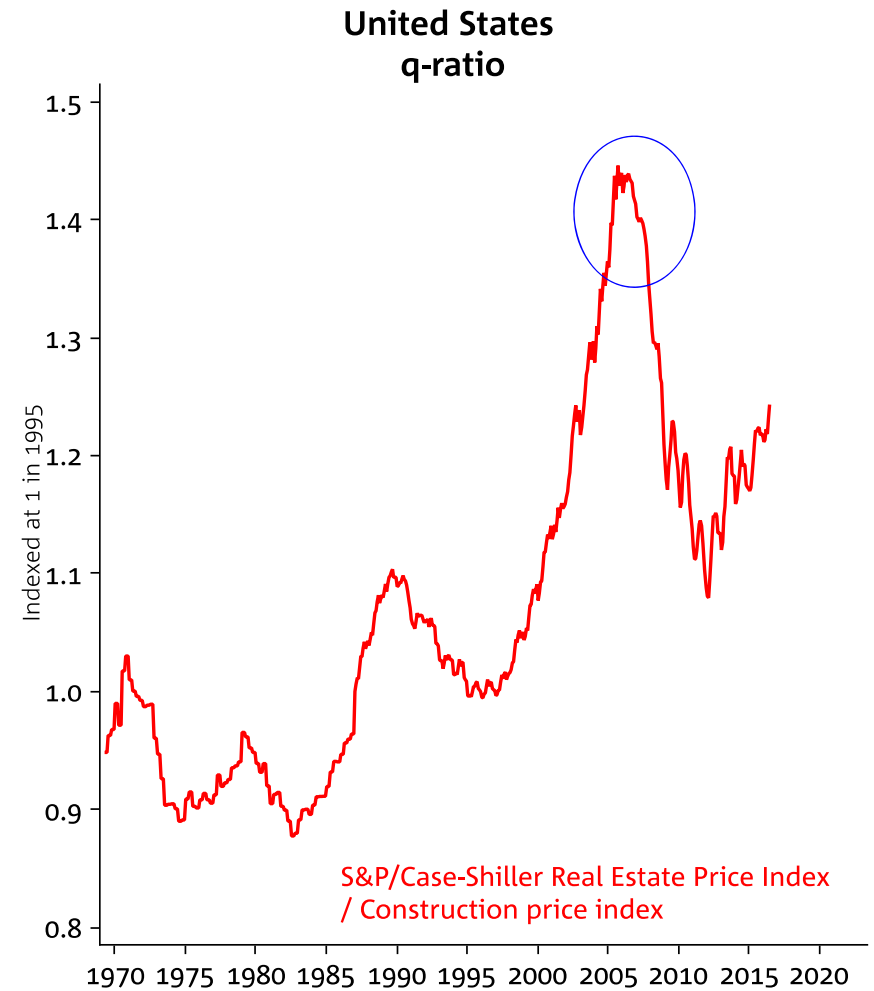
- If $q > 1$, market prices may be overvalued ($MV > RC$)
- If $q < 1$, market prices may be undervalued ($MV < RC$)
- The greater the deviation of q from 1, the stronger the signal (+ or -)

Shiller's simple q for the United States

– Compare dwelling prices to dwelling construction costs from national accounts



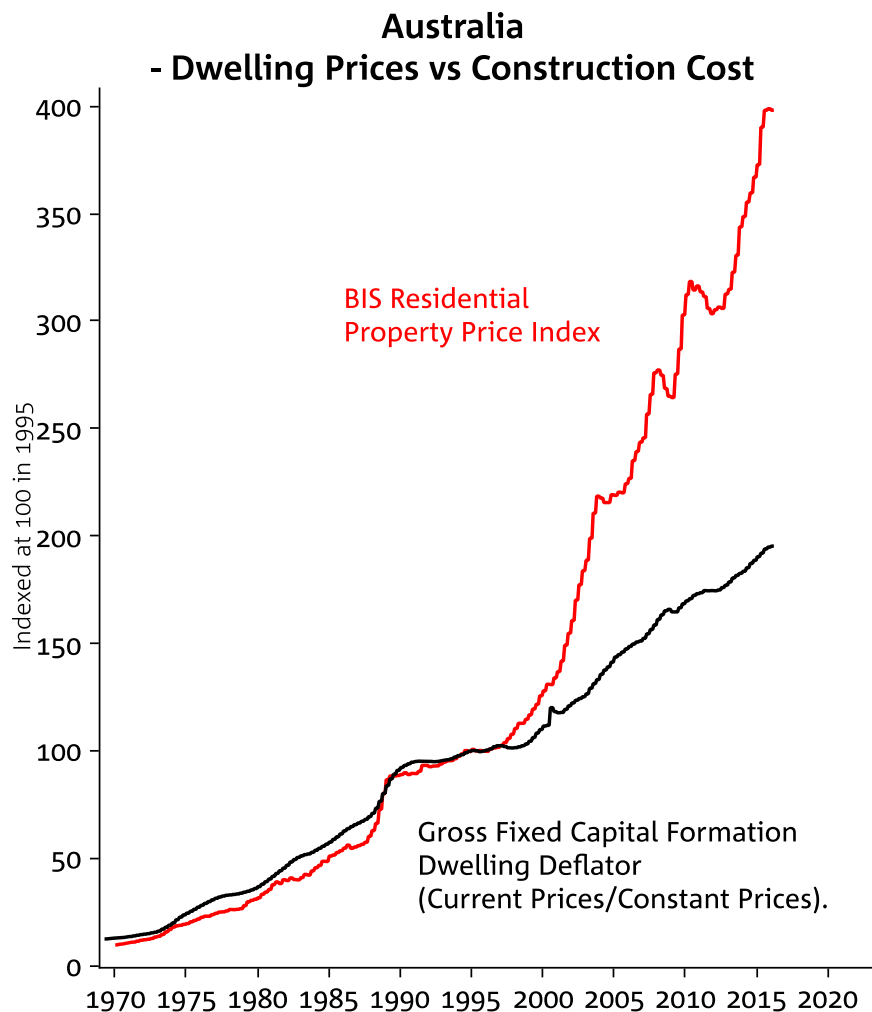
Source: National Australia Bank, Macrobond



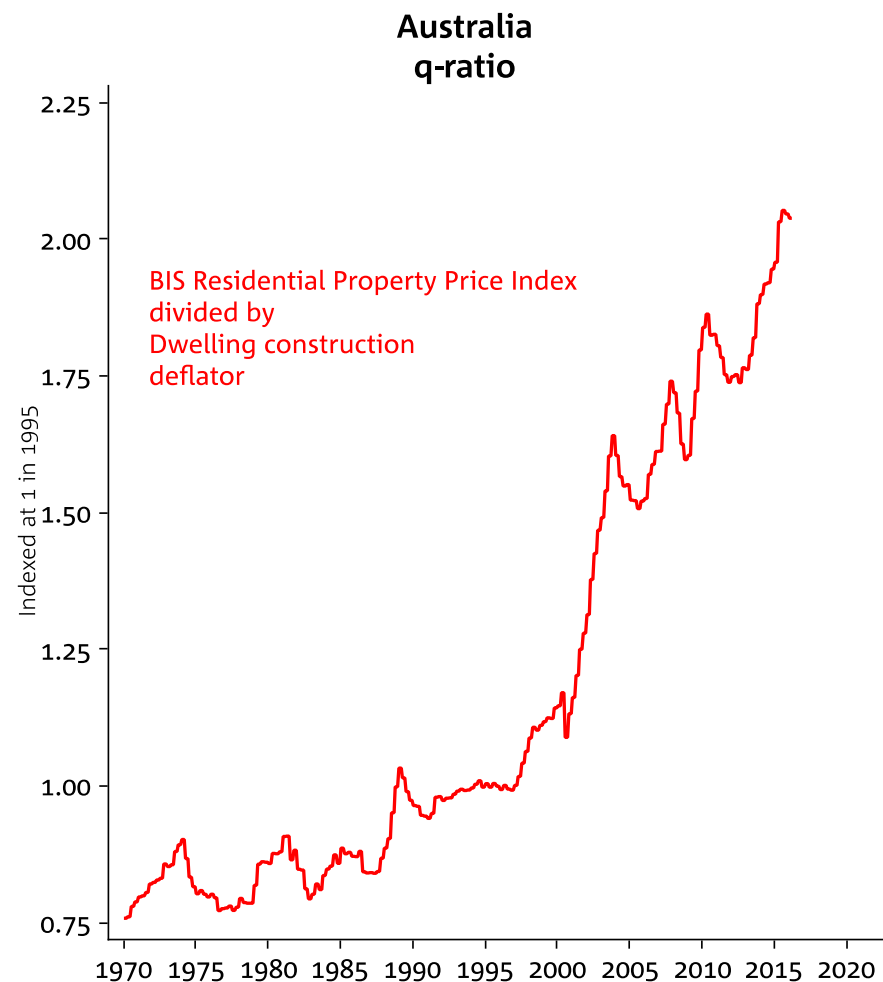
Source: National Australia Bank, Macrobond

Shiller's simple q for Australia

- Compare dwelling prices to dwelling construction costs from national accounts

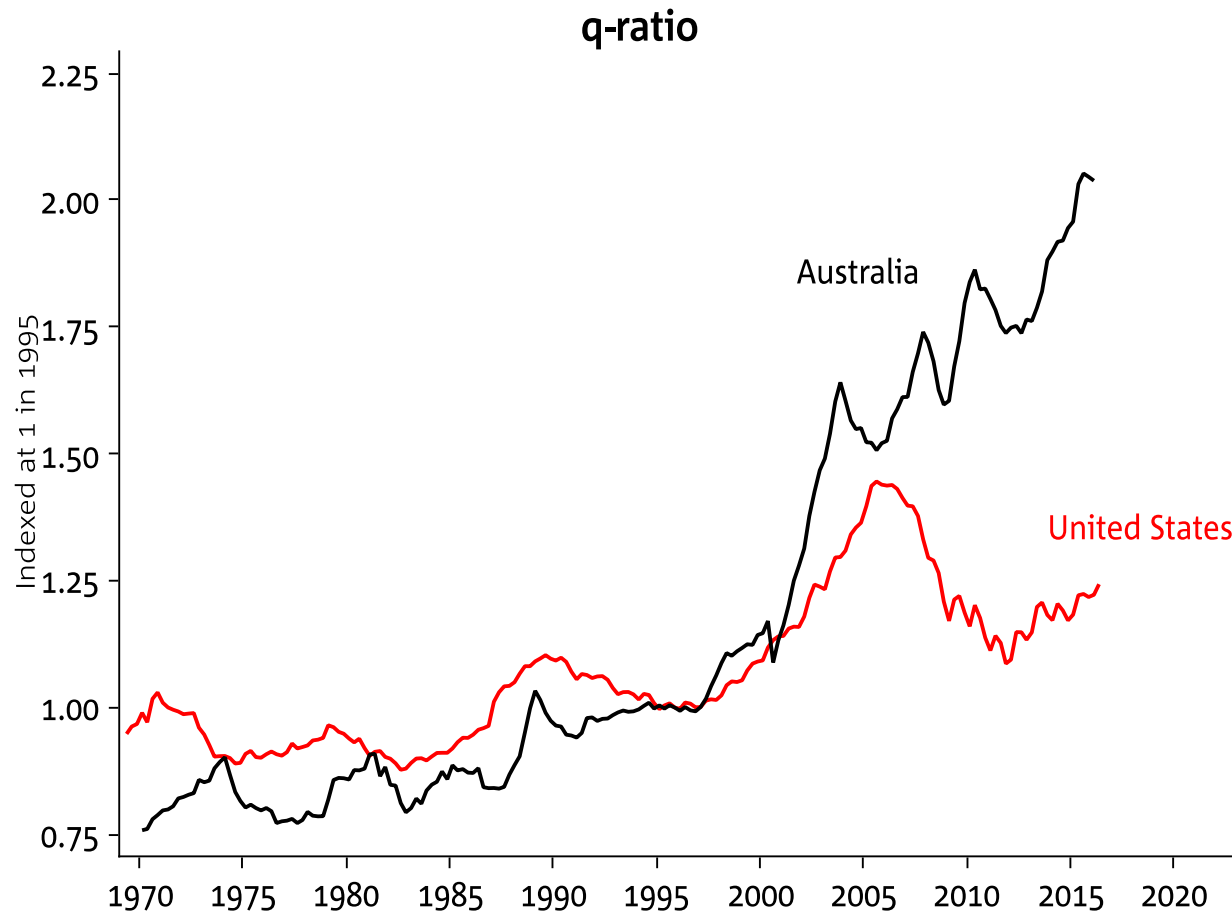


Source: National Australia Bank, Macrobond



Source: National Australia Bank, Macrobond

Shiller's simple q for the United States and Australia



Source: National Australia Bank, Macrobond

Issues:

Why q's have an upward slope?

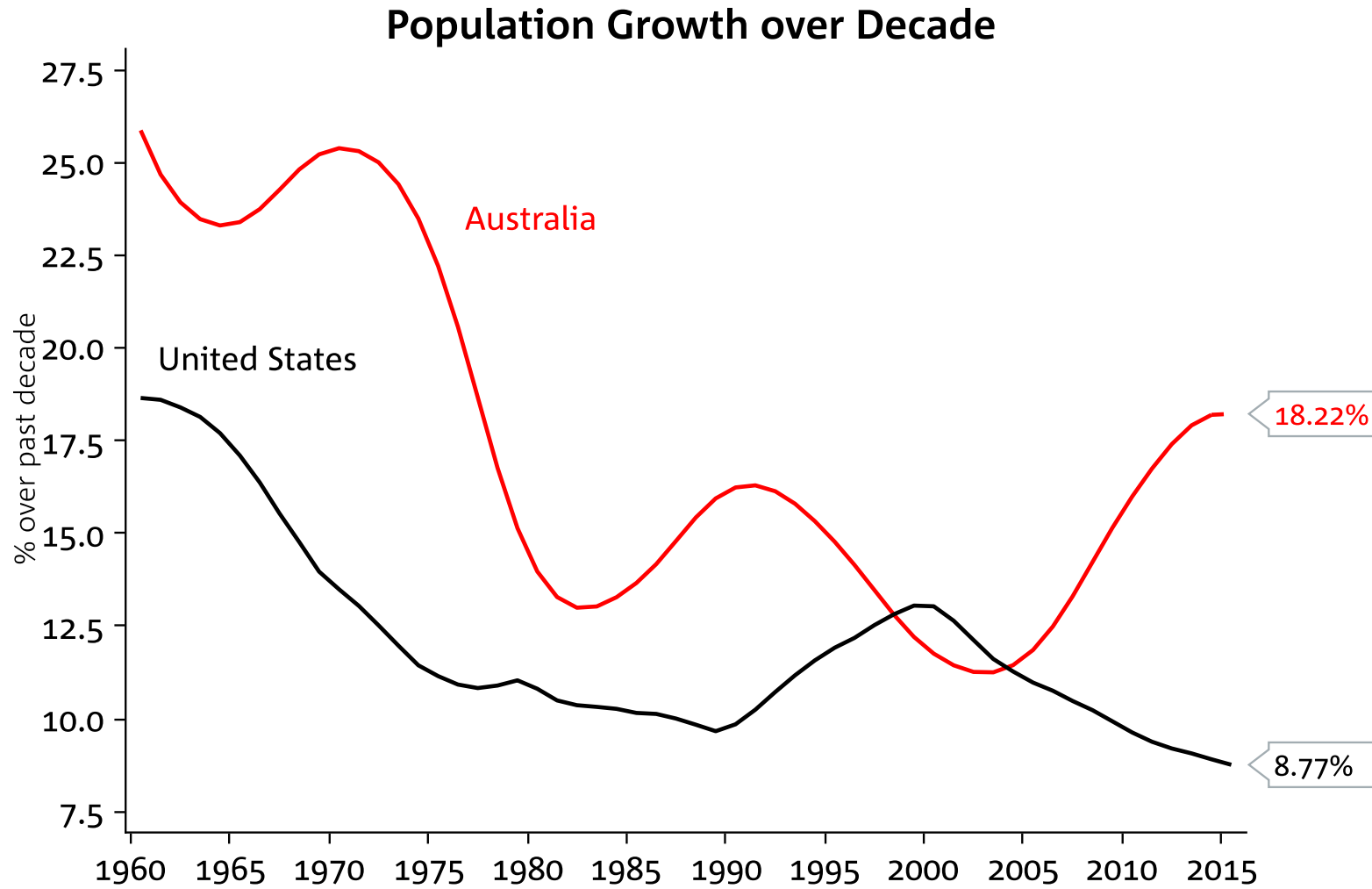
Why has Australia gone up much more than the US?

Potential answers:

1. Bubble?
2. Land – the numerator includes land/property but the denominator (construction costs) does not.
 - If land is partly the answer, it seems that residential land prices rise more quickly in Australian than the United States. Why are we less good at creating new residential property
3. Dwellings are becoming bigger?

One approach is to focus on apartments/units which should minimise the impact of rising land price

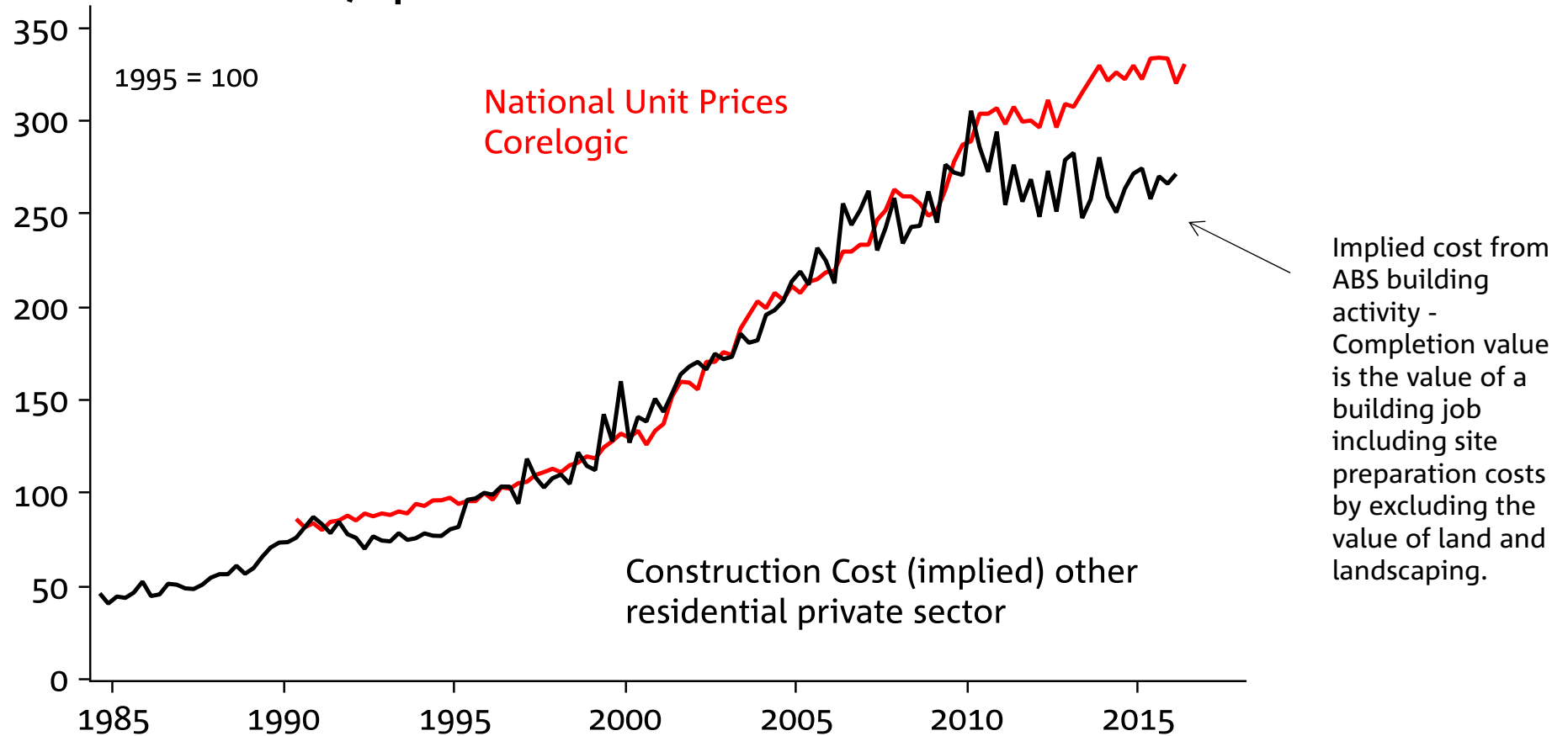
Australia's population has grown 18% over the past decade



Source: National Australia Bank, Macrobond

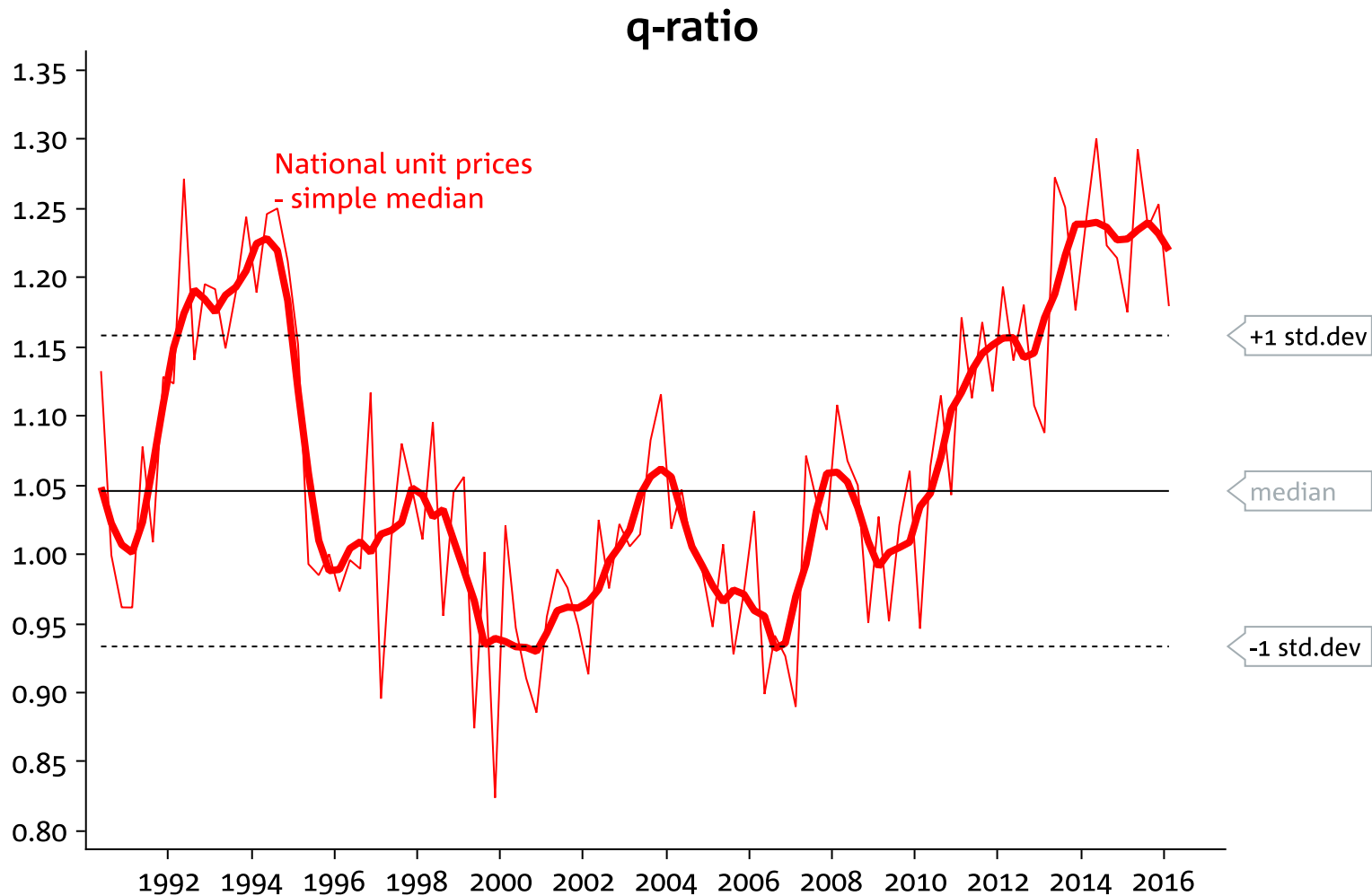
Components of q-ratio for Units

Australia Unit/Apartment Prices versus Construction Costs



Source: National Australia Bank, Macrobond

q-ratio for apartments/units

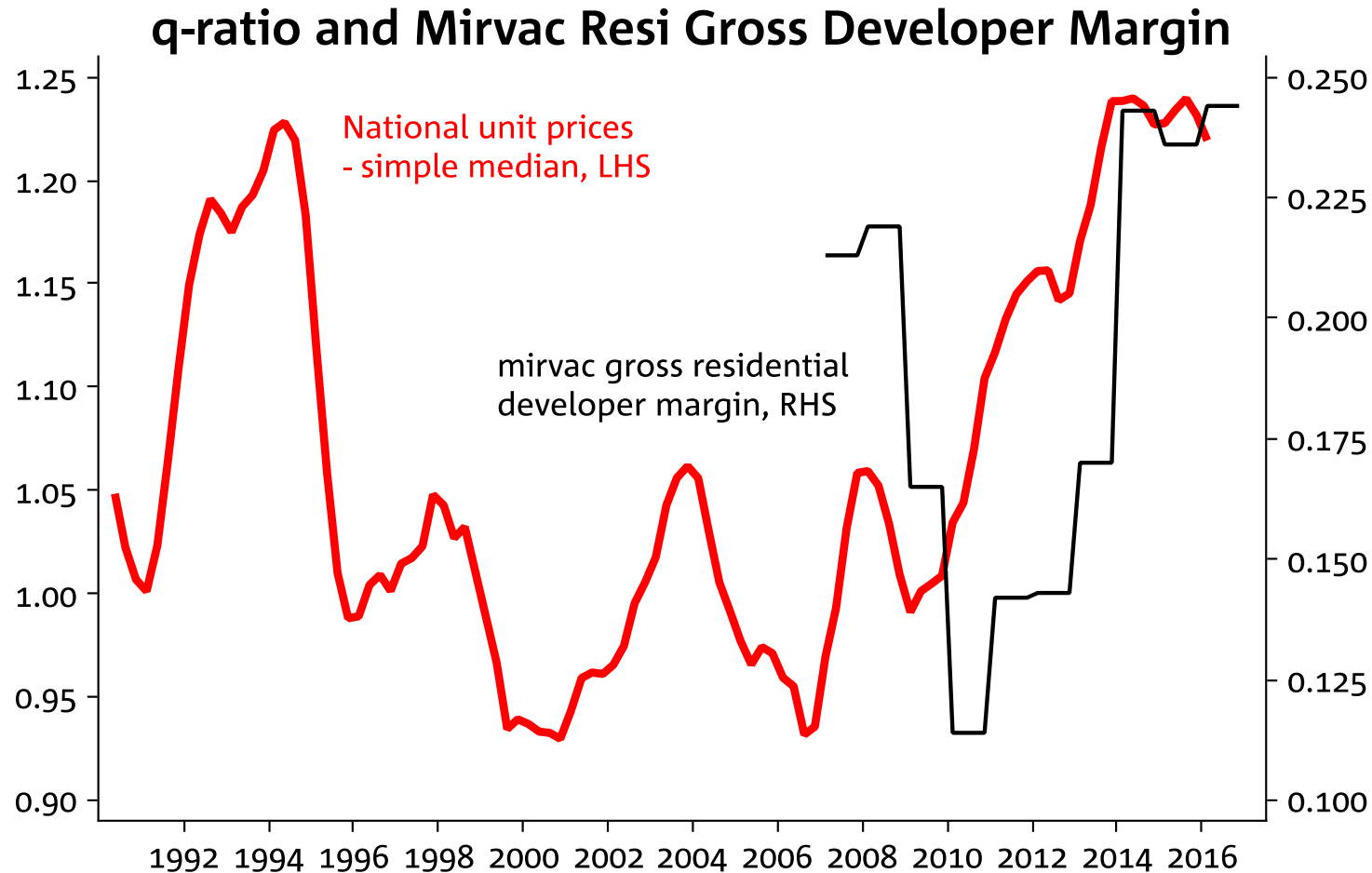


Source: National Australia Bank, Macrobond

If q high what should we see?

- Good profits for property developers.
- New supply of dwellings

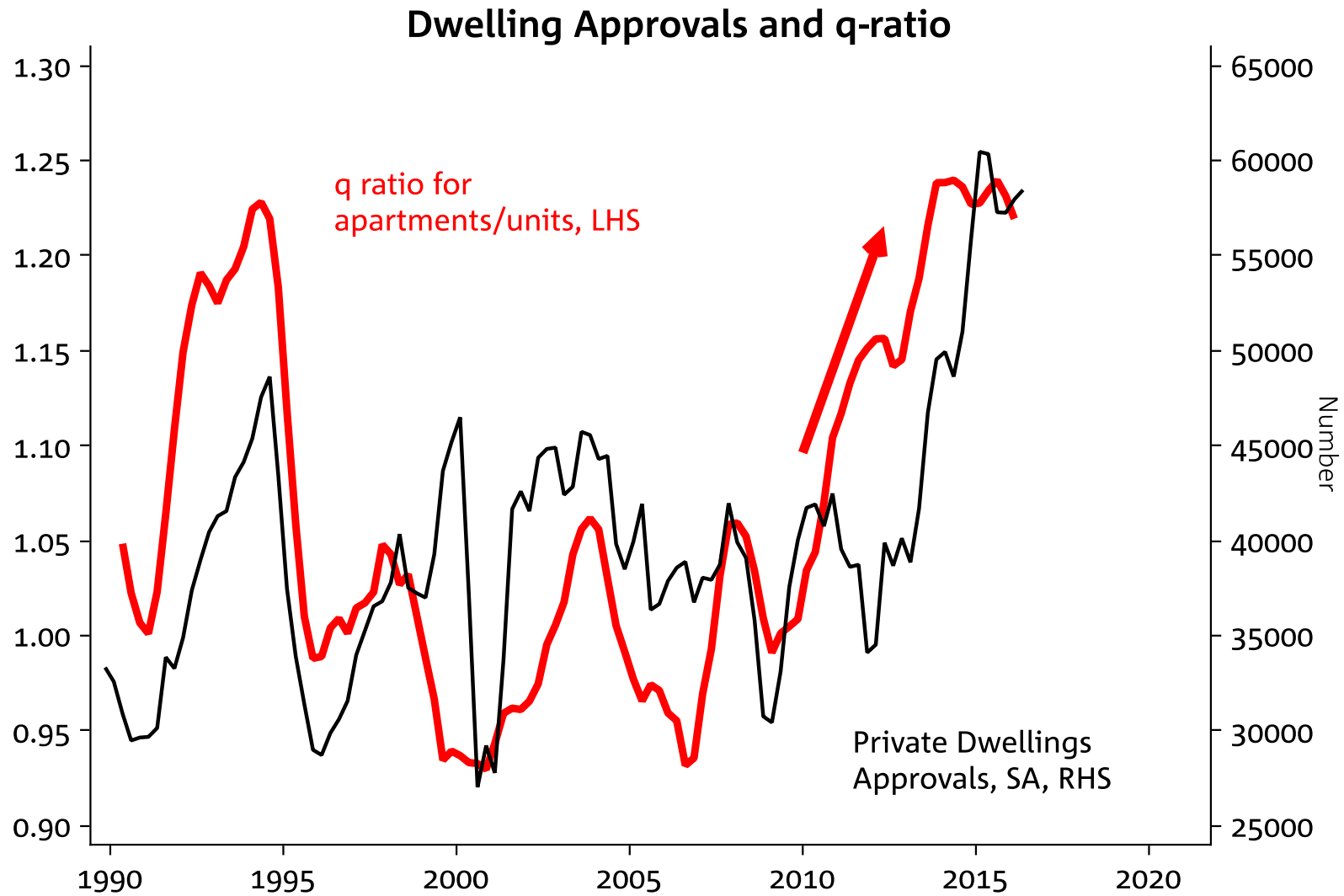
Question 1: Did it predict a supply response? Developer margins surged.



Source: National Australia Bank, Macrobond, Mirvac Financial Accounts

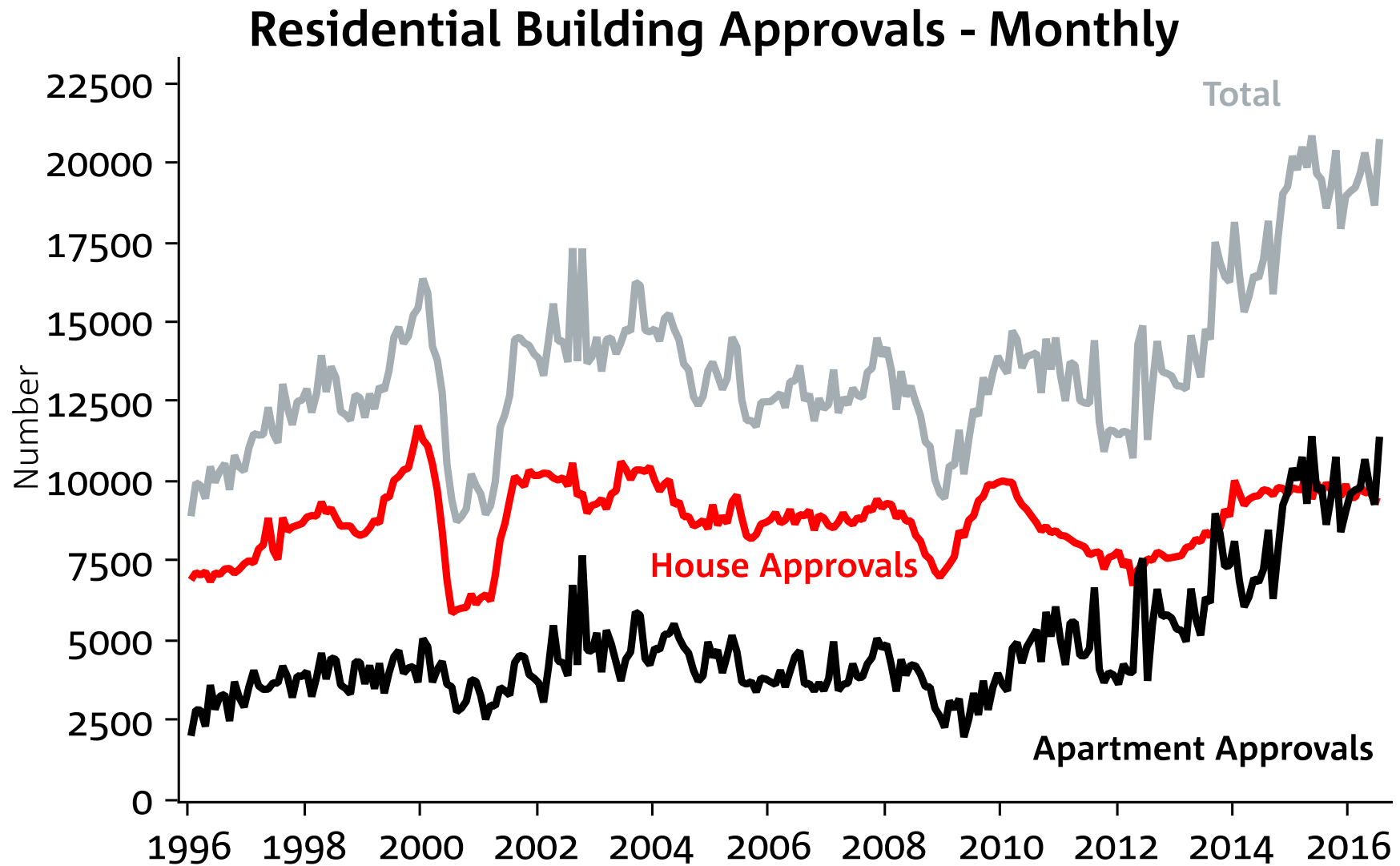
Gross developer margin is development revenue – cost of development & construction. Also it's just for the residential business so I've re-titled & removed the note previously attached (probably not worth including).

Question 1: Did it predict a supply response - Yes. Dwelling approvals have surged!



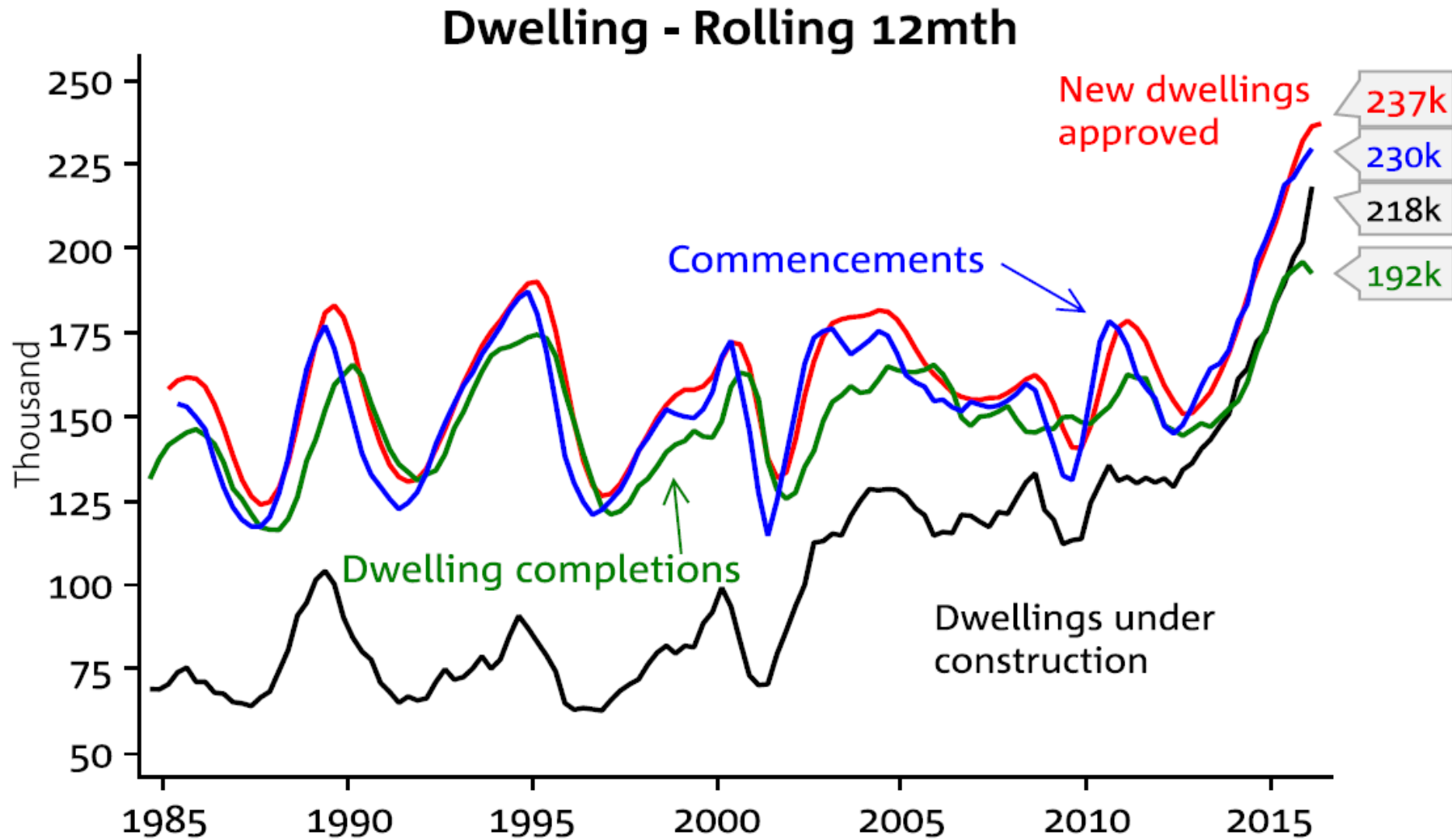
Source: National Australia Bank, Macrobond

There has been a significant lift in supply of dwellings - especially of apartments.



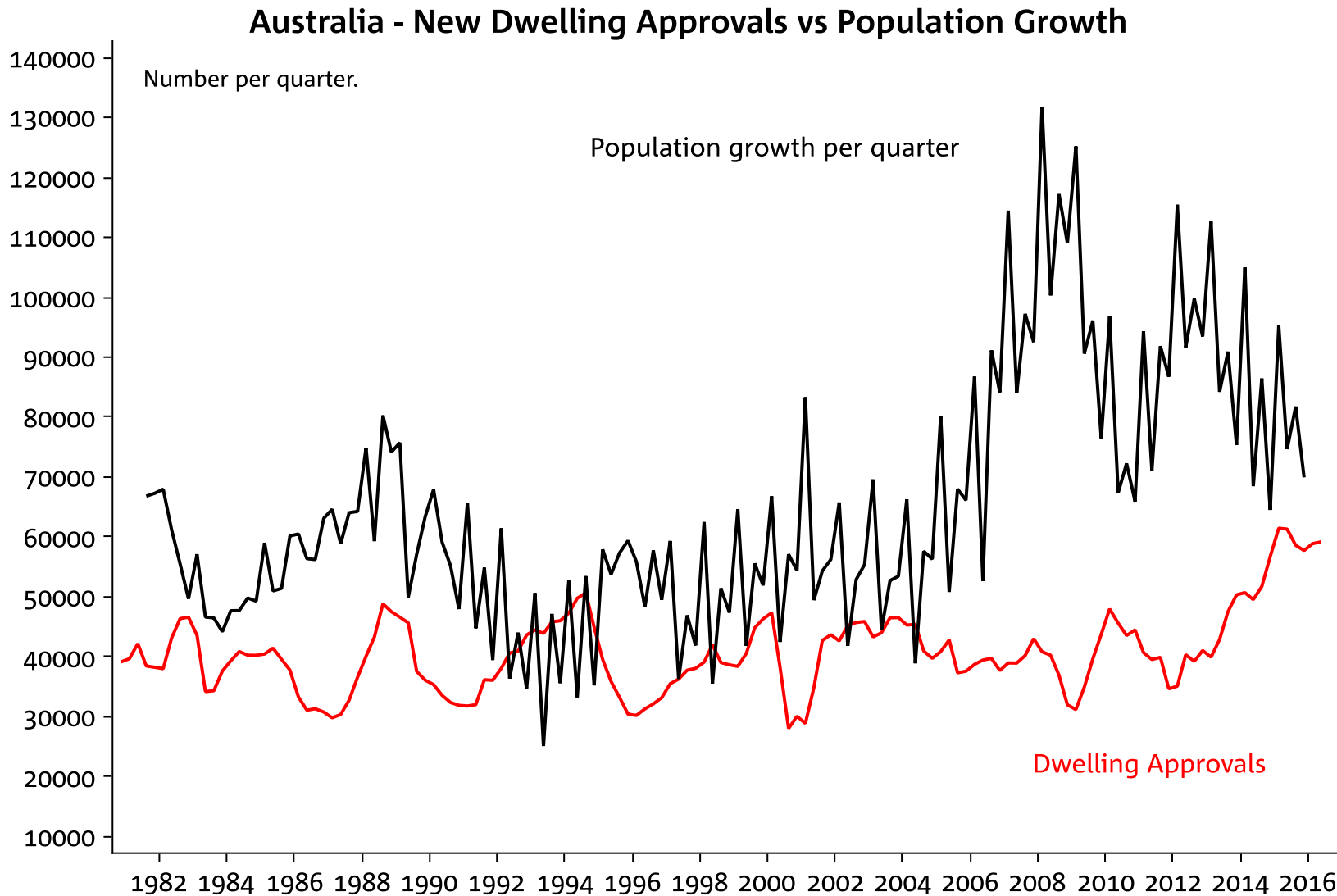
Source: National Australia Bank, Macrobond

230,000 dwellings have been commenced.



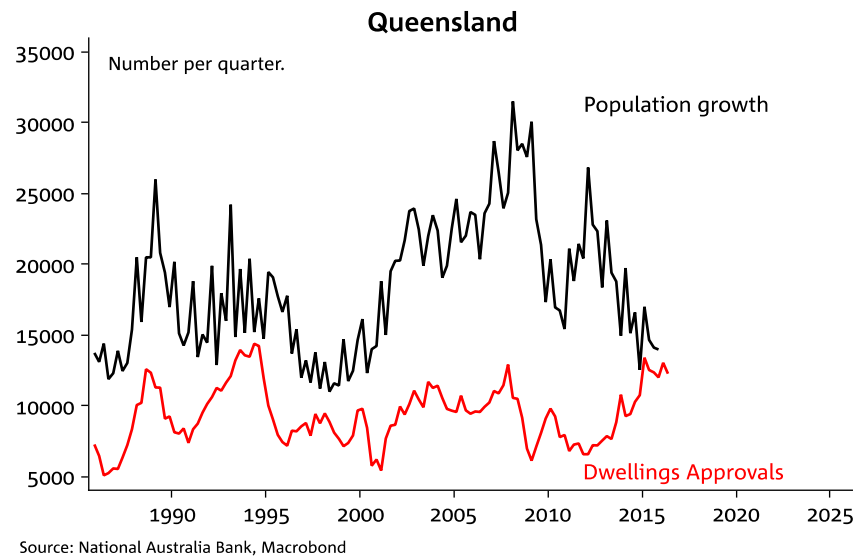
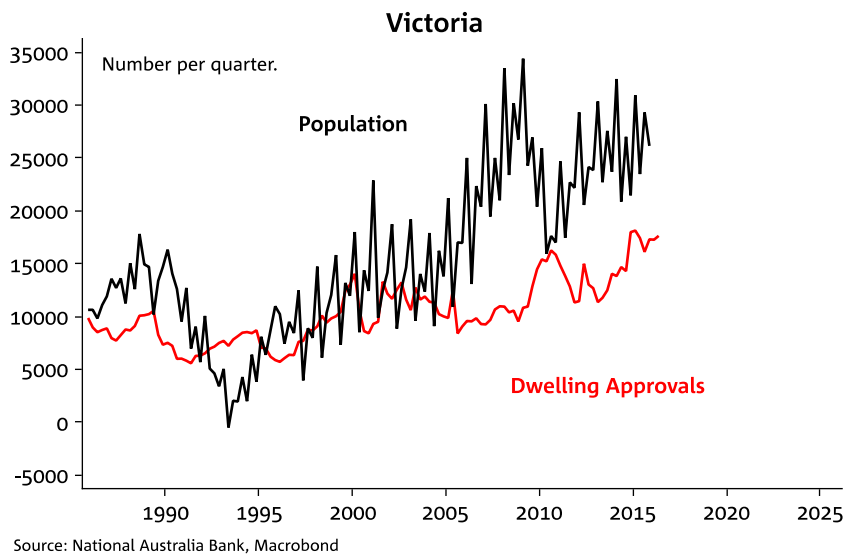
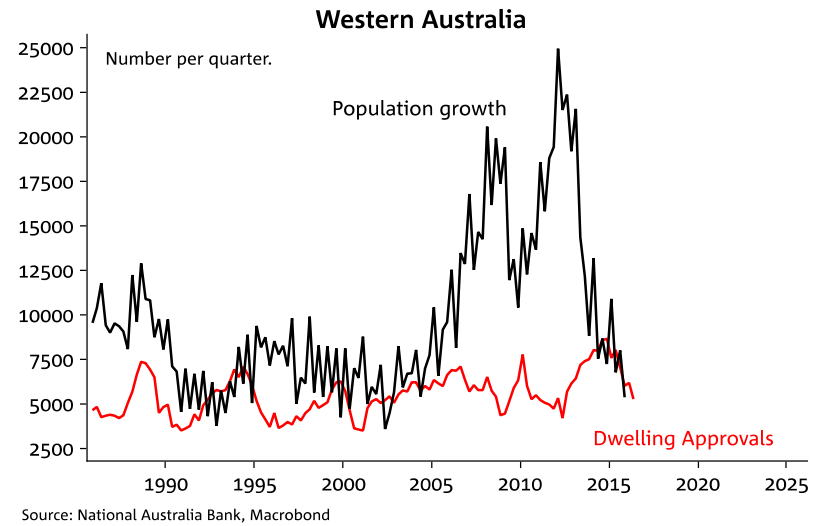
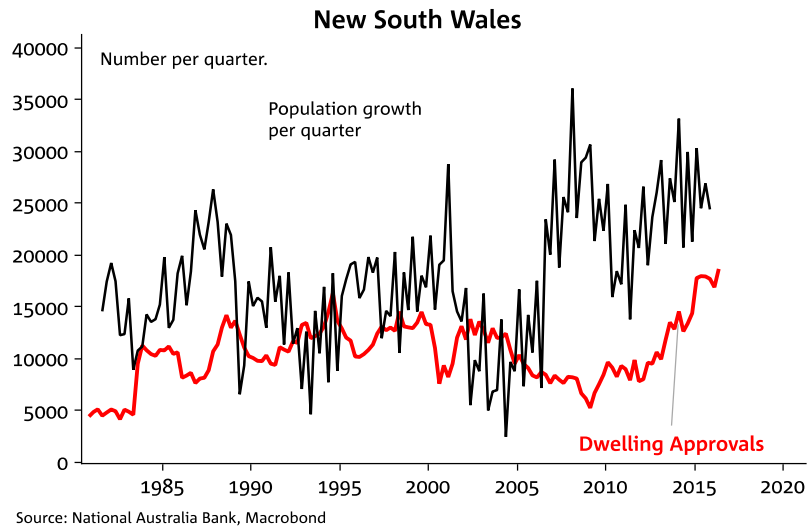
Source: National Australia Bank, ABS

Residential supply and demand nearing balance. Foreign demand an extra factor.



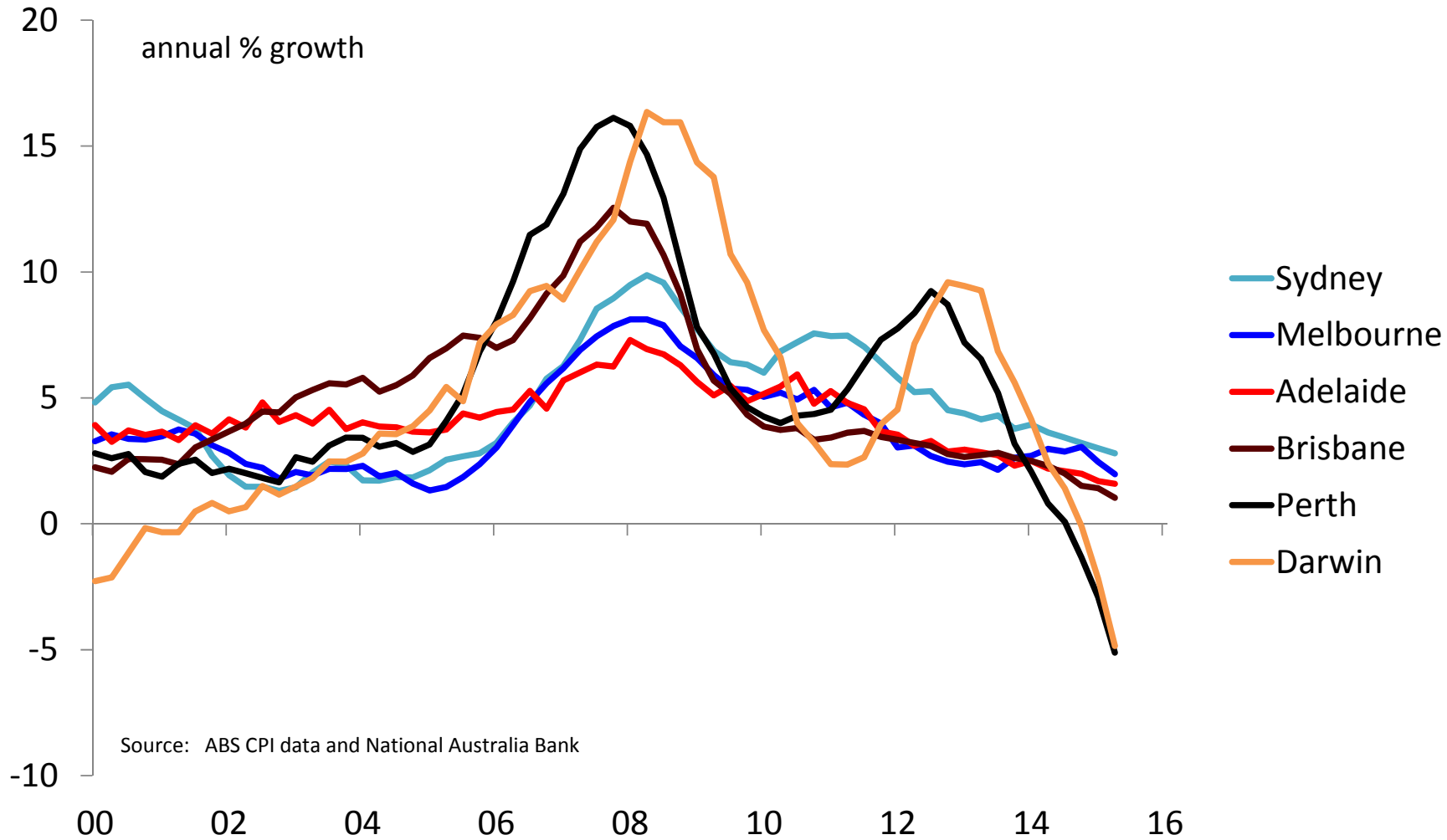
Source: National Australia Bank, Macrobond

Supply-demand gap by State – NSW and Victoria OK. Over-supply in WA and QLD.



Rental growth slowing most places – a clear sign that supply has caught demand.

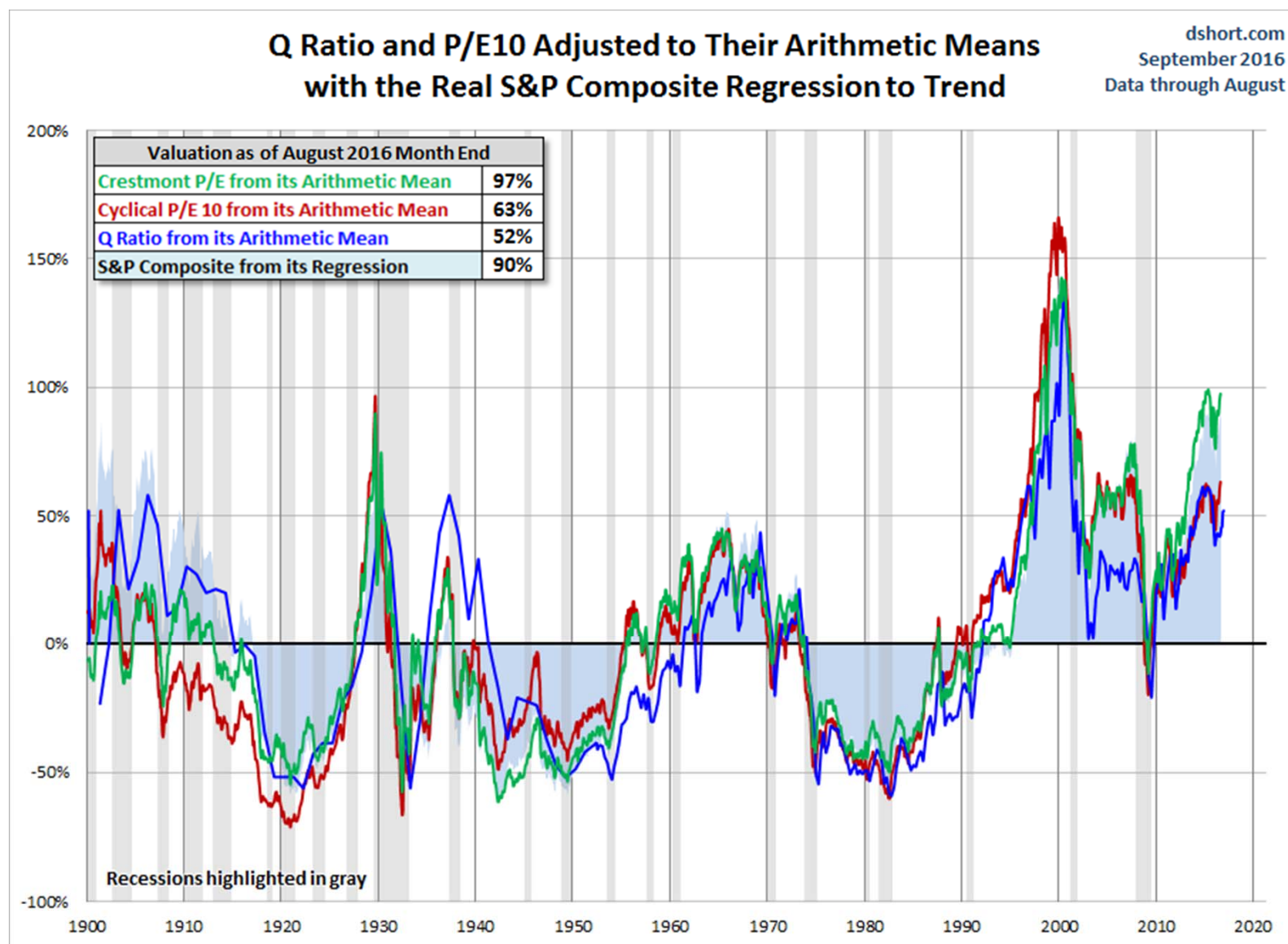
Residential rents by city



Question 2: Is q a useful indicator of over/under pricing of housing?

$$q = \frac{\text{Dwelling price}}{\text{Replacement cost}} \approx \frac{\text{Dwelling price}}{\text{Household Income}} \approx \frac{\text{Dwelling price}}{\text{Rents}} \approx \frac{\text{Dwelling price}}{\text{CPI Inflation}}$$

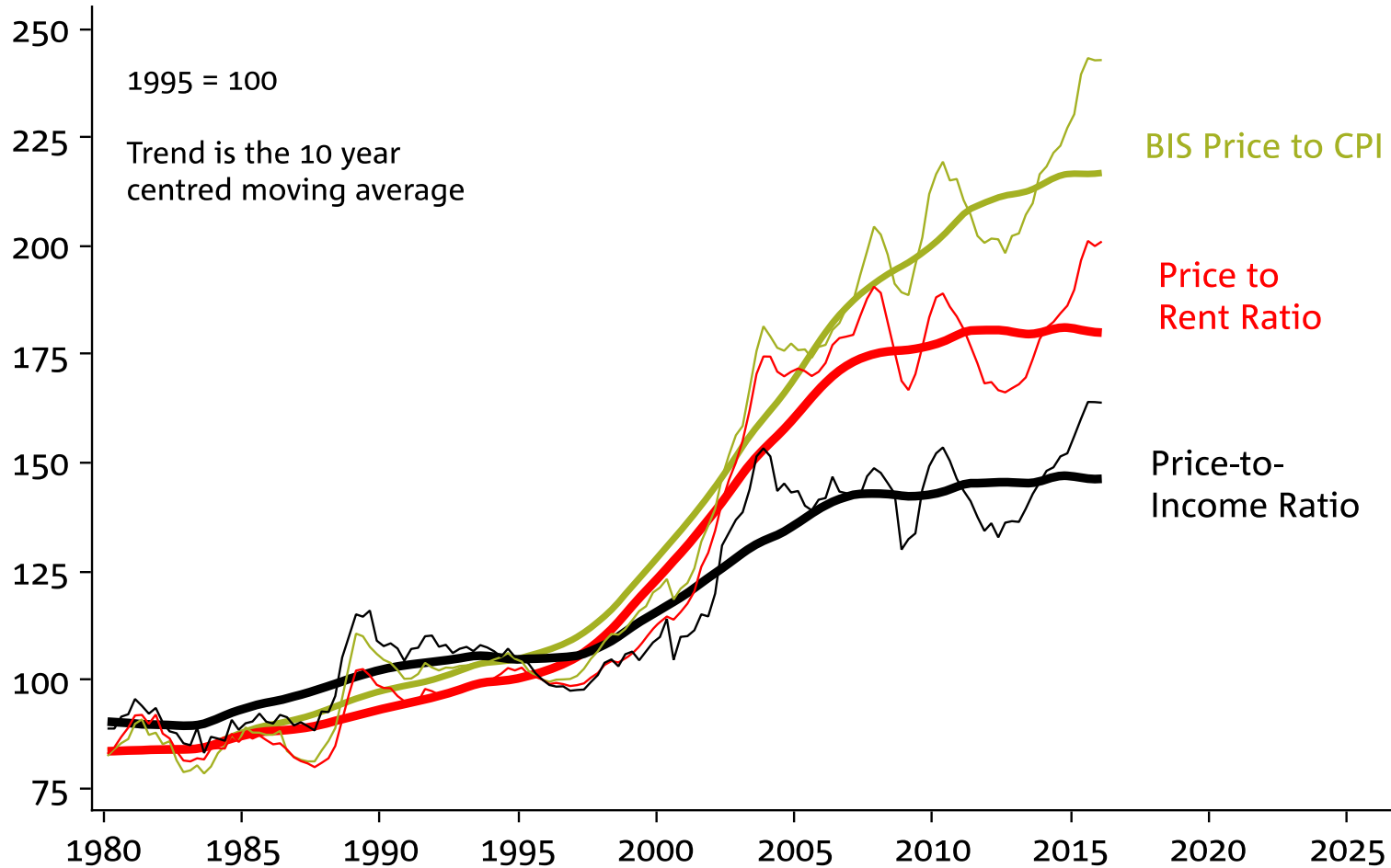
United States stockmarket - the *q*-ratio and other valuation metrics



<http://www.advisorperspectives.com/dshort/updates/Market-Valuation-Overview>

Other measures of Australian house price valuation

Australia House Price Valuation Measures



Source: National Australia Bank Calculations, BIS, OECD, Macrobond

Reasons why house prices have surged.

- Lower interest rates and improved affordability
- Population growth
- Foreign demand
- Slow supply side response of construction sector

Bubble?

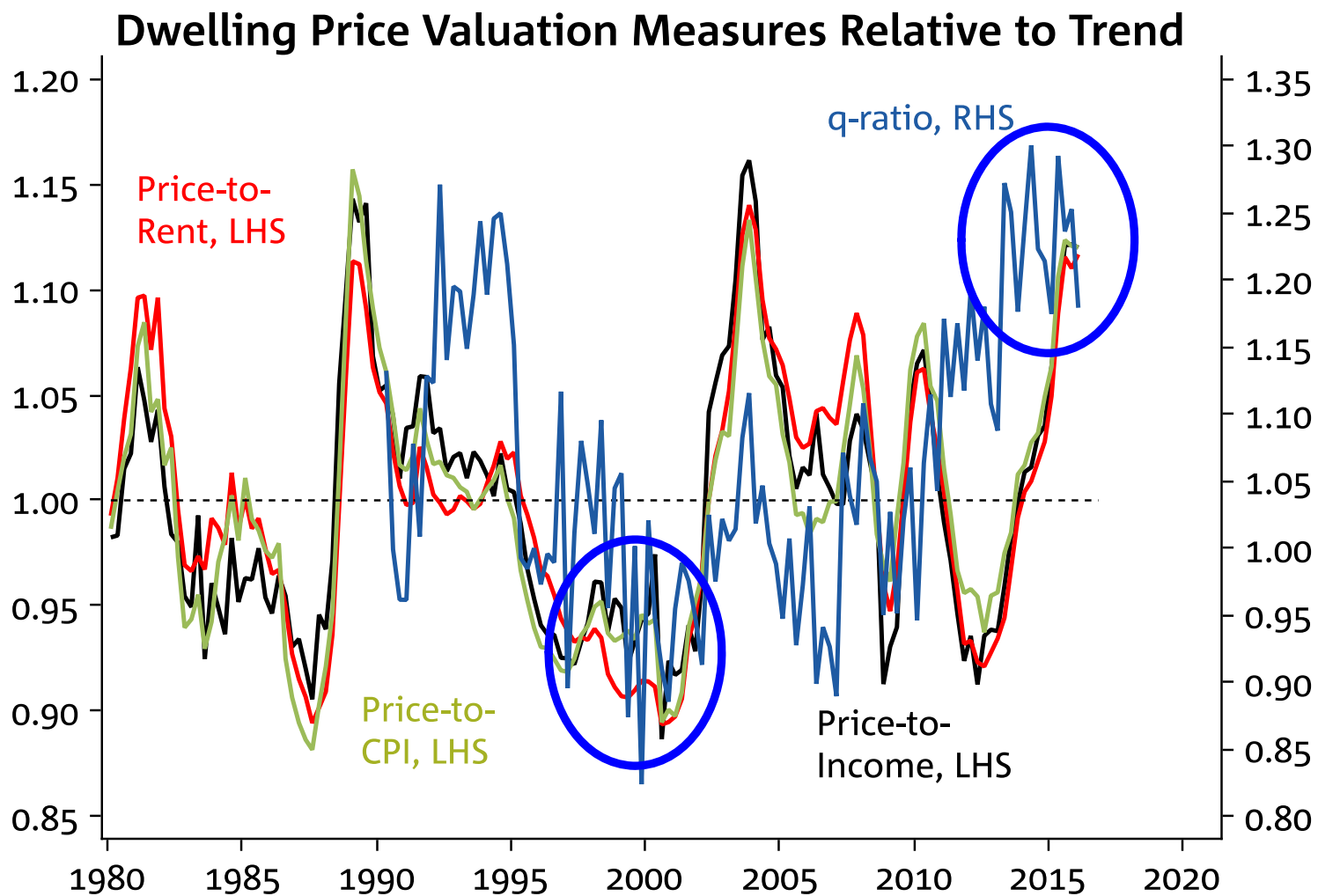
Possible - but for now being supported by low interest rates and low unemployment rate.

Short-term

Look at deviation from long-run trend

Dwellings/apartments around 10-15% overvalued on all valuation tools.

- for the first time since 2000, all valuation metrics are saying the same thing.



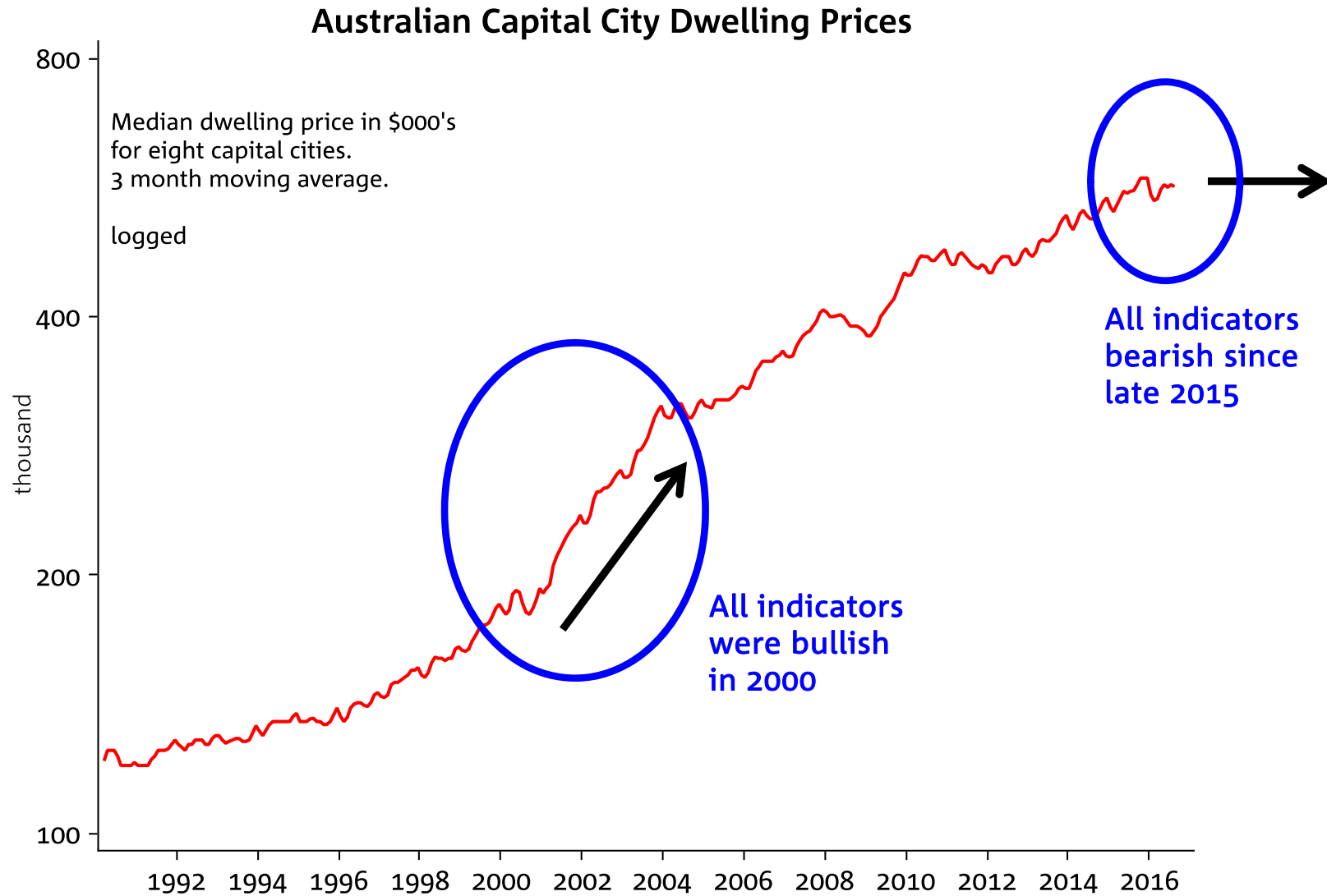
Over valuation on short-run metrics:

<i>q-ratio</i>	13%
<i>Price to rent</i>	12%
<i>Price to Income</i>	12%
<i>Price to CPI</i>	12%

Source: National Australia Bank Calculations, BIS, OECD, Macrobond.

q is for apartments/units as calculated and other measures are deviation from 10 year centred moving average

What about prices from here?



Source: National Australia Bank, Macrobond, Corelogic.

NAB's view: Housing to cool appreciably and some units to fall in price

- Low mortgage rates, foreign demand and a slow supply-side response all have supported higher dwelling prices in some Australian cities in recent years
- Some of those supports have weakened:
 - prices/valuations are higher
 - The under-supply of dwellings – particularly units/apartments - has closed and some some postcodes are already in over-supply. Peak supply still 12-24 months away.
- At the same time, mortgage lending standards have tightened.

NAB's view on housing

- Our expectation is that the housing market will cool appreciably
- National house price growth of 0.5% is expected in 2017.
- Unit prices are expected to decline by nearly 2% over 2017 – more where over-supply is acute.
- We continue to hold the view that residential property prices are unlikely to experience a severe 'correction' without a trigger from a shock.

NAB House/Unit Price Forecasts – y/y%.

Hedonic House Prices							
	2011	2012	2013	2014	2015	2016f	2017f
Capital City Average	-4.0	-0.5	9.9	8.4	7.8	5.1	0.5
Sydney	-2.6	1.3	15.2	13.4	11.5	8.6	0.2
Melbourne	-4.4	-2.9	8.5	8.4	11.7	6.1	0.4
Brisbane	-7.0	-0.5	5.3	5.2	4.3	4.0	1.9
Adelaide	-3.8	-0.8	3.0	4.5	-0.3	3.5	1.7
Perth	-3.4	0.6	10.2	2.1	-3.8	-5.5	-3.5
Hobart	-8.8	-0.5	2.9	3.3	-1.6	8.5	1.7

Hedonic Unit Prices							
	2011	2012	2013	2014	2015	2016f	2017f
Capital City Average	-2.6	0.5	9.0	5.1	7.9	3.6	-1.9
Sydney	-1.3	2.3	11.6	8.3	11.3	7.2	-1.5
Melbourne	-3.2	-2.5	8.7	1.1	6.9	0.6	-3.5
Brisbane	-2.0	-3.5	3.5	1.2	1.8	1.7	-1.8
Adelaide	-8.0	-0.5	0.6	2.5	1.4	0.2	0.5
Perth	-5.4	3.3	6.3	1.9	-3.5	-7.2	-5.0
Hobart	-5.6	4.2	-5.1	5.9	8.6	9.0	0.6

SOURCE: CoreLogic; NAB Economics

Important Notices

United Kingdom: If this document is distributed in the United Kingdom, such distribution is by National Australia Bank Limited, 88 Wood Street, London EC2V 7QQ. Registered in England BR1924. Head Office: 800 Bourke Street, Docklands, Victoria, 3008. Incorporated with limited liability in the State of Victoria, Australia. Authorised and regulated by the Australian Prudential Regulation Authority. Authorised in the UK by the Prudential Regulation Authority. Subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Details about the extent of our regulation by the Prudential Regulation Authority are available from us on request.

USA: If this document is distributed in the United States, such distribution is by nabSecurities, LLC. This document is not intended as an offer or solicitation for the purchase or sale of any securities, financial instrument or product or to provide financial services. It is not the intention of nabSecurities to create legal relations on the basis of information provided herein.

New Zealand: This publication has been provided for general information only. Although every effort has been made to ensure this publication is accurate the contents should not be relied upon or used as a basis for entering into any products described in this publication. To the extent that any information or recommendations in this publication constitute financial advice, they do not take into account any person's particular financial situation or goals. Bank of New Zealand strongly recommends readers seek independent legal/financial advice prior to acting in relation to any of the matters discussed in this publication. Neither Bank of New Zealand nor any person involved in this publication accepts any liability for any loss or damage whatsoever may directly or indirectly result from any advice, opinion, information, representation or omission, whether negligent or otherwise, contained in this publication. National Australia Bank Limited is not a registered bank in New Zealand.

Hong Kong: If this document is distributed in Hong Kong, such distribution is by National Australia Bank Limited, Hong Kong Branch, which is licensed by the Hong Kong Monetary Authority and registered (CE Number AAO169) under the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) for Type 1 (dealing in securities) regulated activities. Its main business address is Level 27, One Pacific Place, 88 Queensway, Hong Kong. The contents of the Materials have not been reviewed by any regulatory authority in Hong Kong. If you are in any doubt about any of the contents of the Materials, you should obtain independent professional advice.

Singapore: If this document is distributed in Singapore, it is made available to you in Singapore by NAB, Singapore branch, through general information circulation only and does not take into account of your specific investment objectives, financial situation or particular needs. If you choose not to seek advice from a financial adviser, you should consider whether the product in question is suitable. Recipients of this material in Singapore should contact NAB, Singapore branch at 12 Marina View, #20-02 Asia Square Tower 2, Singapore 018961, Tel (65) 6419 6875 for any matter arising from, or in connection with, this material. The contents of the Materials have not been reviewed by any regulatory authority in Singapore. If you are in any doubt about any of the contents of the Materials, you should obtain independent advice.

Japan: If this document is distributed in Japan, National Australia Bank Limited has an office in Japan but is not licensed to conduct securities-related business in Japan. Therefore, to the extent that it relates to securities this document is only for information purposes only in Japan. This is not an offer to buy or sell securities, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (except pursuant to an exemption from the registration requirements of, and otherwise in compliance with the Financial Instruments and Exchange Act (Japan) and any other applicable laws, regulations and ministerial guidelines of Japan.

China: If this document is distributed in the PRC, such distribution is by National Australia Bank Limited, Shanghai Branch. National Australia Bank Limited, Shanghai Branch is a financial institution registered in the PRC, and mainly regulated by China Banking Regulatory Commission, People's Bank of China, and State Administration of foreign Exchange.