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A History of Housing Prices in Australia 1880-2010

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A History of Housing Prices in Australia 1880-2010

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This paper introduces series of house and land prices for Australia's major capital cities for the period 1880-1970 which, spliced to modern data, give series spanning 1880-2010. The broad trends in prices for houses, land and rents highlight no significant movement in real prices for the first seventy years followed by a persistent and significant trend rise in prices. Cycles in house prices and housing activity played a major part in each of the seven major economic cycles in this period, the first associated with the 1880s boom/1890s depression and finishing with a major cycle which commenced in the mid-1990s.

JEL Code: G12; N97; R21; R31; R38

Key words: Australia, house prices, land prices, gross dwelling rents, price and rent controls, housing cycles, economic cycles.

1 Introduction

Since the early 1970s house prices in Australia have risen on average by 3% per annum in real terms, with the latest cycle commencing in the 1990s generating rises of the order of 6% per annum. But if we can look back further in history, which the price series from 1880 presented in this paper[1] allows, the housing story turns out to be less a one-way street and more complex. In the 70 odd year period from 1880 till the mid 1950s there was negligible change in prices for houses in real terms (Figures 1, 2) and periods when prices fell quite significantly. Then from the mid-1950s there was a change in direction with house prices commencing the upward trajectory observed from the 1970s. Interestingly, the broad trend for house prices in the Australian market does not appear unique. A similar pattern can be discerned from estimates for the US (Shiller 2005) although the magnitude of price rises post-1950 is less for the US. Over the longer time span from 1625 to the 1960s, Eichholtz (1997) observed negligible trend growth in prices for Amsterdam, followed by an upward shift in prices after the 1960s.

The long-run history of prices allows some observations on the various cycles in house prices. The most conspicuous spike in prices occurred after the lifting of War-time price controls introduced in 1943 which, because they prevailed during a period of significant inflation from 1943-1949, caused real prices to be artificially compressed. These price controls, in conjunction with ceilings on house rents and the low construction activity during the war years, exacerbated a post-World War 2 (WW2) shortage of housing which accentuated the subsequent spike in prices.

That interesting episode apart, the two cycles which appear to stand out are the boom-bust cycle of the 1880s/90s, already widely written about by historians[2], and the most recent boom of 1990s/2000s. The 1890s has often been compared with the 1930s, both periods when the aggregate economy experienced a 'great depression'. In terms of what declines in housing activity subtracted from overall economic activity, the two periods are comparable but in terms of prices, the rises in the 1920s were more subdued and subsequently the falls experienced in real and nominal terms in the 1930s were less extreme. The other related contrast between these two depression periods is that Australia experienced a "financial/banking crisis" in the 1890s but, despite the difficulties presented by a 'great depression', avoided a repeat in the 1930s.

Australia's other and only post-WW2 banking crisis occurred in conjunction with the recession of the early 1990s. While this coincided with a housing cycle, this recession and banking crisis was more to do with excesses in the commercial side of the property market. In this cycle, house prices declined just 8% from their 1989 peak. By contrast the excessive overbuilding in the office property market saw prices decline by about 40%.

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[1] The house price series build on, and incorporate revisions to, series developed in Stapledon (2007).

[2] See for example Noel Butlin (1964), Sinclair (1976) and more recently Simon (2003).

While much has been written about the excesses of the 1880s boom, in terms of magnitude of cyclical upswings in house prices, the price rises of the 1880s pale next to those of the last cycle starting in the 1990s. This last cycle has seen house prices rise by 111% in real terms versus, by comparison, a modest 33% in the 1880s. The Sydney market peaked in 2004 but, with other capital city markets benefiting from the major resources boom which kicked off in the mid 2000s, the overall market peak was in 2008. This peak coincided with the Global Financial Crisis of 2008, a major feature of which was major price falls in housing markets across the US and Europe. However, house prices in Australia experienced very minor falls before heading higher again from mid 2009 – the overall market registered a rise of 15% by mid 2010. The full story is yet to be told but, as the 1880s boom also illustrated, while the housing cycle is an influence on the economy, the factors driving the economy are a very powerful influence on the housing cycle.

The paper proceeds as follows. The following two sections outline the sources of the house price series and compares them with earlier historical estimates. The broad trends are discussed in section 4. Then in the subsequent three sections, the major cycles in the pre-WW2 period, the period of price controls and the post-WW2 cycles are discussed. There is a brief conclusion.

2 House Price Series 1880-1970

The annual house price series for Sydney and Melbourne for the period 1880-1970 are generated from two sources: actual sale prices for the period 1950-1970 and asking prices for the period to 1950. The actual selling price series are sourced from weekly property market reports published in the main city daily newspapers, the Sydney Morning Herald and the Melbourne Age.[3] The Sydney reports are available in the years before 1950, albeit in lesser depth, while the Melbourne series starts in 1950. BIS-Schrapnel published house price series from these same sources for the period 1965-89 and the Real Estate Institute of Australia (REIA) used this source as the basis for house price series starting from 1979. These sale price series are imperfect but they provide a reasonable measure of house prices where the focus is on broad trends and cycles as distinct from precise measurement of short-term changes in prices. The key issue for all these sale price series is whether the samples of prices are reasonably representative of the prices of the population of houses. In later periods, where comparison can be made between raw series of sales published by the REIA and series stratified by the ABS from large samples of sales, the comparison does suggest the sale price series are reasonably close to the true price.[4] With a higher level of confidence it can be said that the broad trends in the sale price series are a good representation of movements in the market.

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[3] So far as the author can ascertain from perusing capital city newspapers, there are not similar reports for the other capital cities.

[4] The sample sizes mostly range from 200-500 with a median sample of about 300. Much larger sample sizes would be needed to do more detailed stratification of the series and the cost would be very substantial.

Stepping backwards, in the period 1942-49 house prices in Australia were subject to price controls, with the prices fixed at their levels for 1942. One result was that sales, and certainly publicly recorded sales in Sydney, gradually dried up in this period. High inflation rates in this period implied significant declines in the real price of housing so that, apart from deceased estates, there were few willing sellers. There was a black market for established houses in this period but not unexpectedly there are no records. However, the sales actually recorded for Sydney show prices at about 1942 levels consistent with the legal requirement for fixed prices in this period.

For the years 1880-1943, the annual price series are based on asking prices from the sample of houses advertised for sale by private treaty in the Sydney Morning Herald and Melbourne Age newspapers respectively. There are two precedents for an asking price series. The first is an asking price series for Melbourne 1861-91 constructed by Noel Butlin (1962) and presented in terms of price per room. The second is an unpublished study by the US National Housing Agency.[5] The US study collated asking prices from newspaper advertisements for 100 cities for the period 1940-47 and for Washington, DC for the period 1918-47. The series for Washington does appear to provide a reasonable picture of trends in houses prices over the period 1918-47, showing a similar pattern to the Grebler, Blank and Winnick (1956) series for 22 cities over the same years 1918-34. The authors of the Washington series acknowledged the limitations of using asking prices, identifying three sources of potential bias: period to period changes in the sample; houses with advertised prices may not represent the population of houses; and the relationship between asking and actual prices received can vary over the cycle with, for example, sellers accepting larger discounts to the asking price when the market is weaker. The first two points are also common to sale price series.[6] The third point is specific to an asking prices series. In terms of cycles, the Sydney-Melbourne series probably miss some of the short-term small shifts in prices and lacks precision on timing due to variation in the discount but, as with the Washington series, observation of the series indicates that it captures the major movements and cycles. This includes falls. There is a view that sellers are reluctant to drop their prices but that is not the experience with these price series in the period 1880-1943.

The Sydney and Melbourne house price series for the period 1880-1970 have been used as the base to construct a series for median house price series for all the capital cities for the period 1880-1970 which, spliced with existing series post-1970, gives a series for 1880-2010. Similarly, a series for the mean market value of all private dwellings for Australia

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[5] *Ad Analysis – a Technique to Study Prices of Single-Family, Other-than New Houses*, cited in Fisher (1951)

[6] In recent times, with larger samples of house sales and information about the characteristics of houses sold, and the use of hedonic techniques, more precise measures of housing price movements have been developed (see Prasad and Richards, 2006; Hansen, 2006) which partially address the first two points. Nonetheless, the heterogeneity of houses means that some degree of imprecision is inherent.

has been constructed which when spliced with estimates from the Reserve Bank of Australia from 1988, gives estimates for the period 1880-2010.

The new series measure house prices for the sample of houses for each year. That is, when comparing years, the series do not measure pure price changes: the changes in price also reflect improvements in the average quality of the housing stock and changes in the locational composition of the stock as the urban areas have expanded. In Stapledon (2007) the long-term impact of improvements, or capital spending, on the mean value (in constant prices) of the housing stock is estimated to have added an average of 0.95% per annum to the real value of housing in the period 1961-2005. This improvement reflects the growth in the average size and quality of new stock being added each year, and the alterations and additions to the existing stock. Estimates also indicated that the changing composition of the stock probably subtracted 0.35% per annum from the mean price. Changing composition refers to the fact that, as the boundaries of a city grow, the median house moves out – so for example the median house in the 1950 housing stock is in 2000 closer in and its land value is higher than the median house in the housing stock of 2000. The net effect of these quality and compositional effects is a net addition of 0.6% per annum which, subtracted from the price series estimates, gives a 'constant quality' index series for house prices. Applying this 0.6% adjustment factor to the whole period, the average rise in real terms over the period 1880-2010 of 1.6% becomes an estimate of 1% per annum in terms of pure price changes.

Data collected for prices of residential lots of land for sale or sold in Sydney and Melbourne provide an insight into the story of house prices. The land lots for sale in any period will include land from all segments of the urban area but will tend to be predominantly new allotments for sale in the outer suburbs of a city. Hence, the price series will not provide a measure of the average value of land lots in the urban area but rather a crude measure of the price of fringe land. The mean price will be affected by the sale of a portion of high priced blocks closer to the centre but the median price will be less affected and can be taken as a reasonable proxy for the level and trends in the price of lots at the urban fringe. The series are volatile and to ascertain broad trends, the estimates have been aggregated into period averages in Table 1. That Table also contains estimates of the ratio of the fringe land to house prices for those periods which gives an indication of the contribution of changes in fringe urban land prices in the Sydney and Melbourne markets to the changes in houses prices in those markets.

3 Comparison with Earlier Historical Estimates

There are few historical estimates of house prices for Australia prior to the 1960s against which to benchmark the various new series. Daly (1982) has collated some estimates at five yearly estimates for Sydney within the period 1880-1940 and the levels of the estimates

appear to be similar for specific years.[7] Abelson (1985) has constructed annual estimates for Sydney, based on valuations of property, which covers the period 1925-70. While not matching the short-term movements, the broad direction and magnitude of the Abelson series in the period 1925-70 is consistent with that of the new price series. A series from Neutze (1972) spanning the period 1949-67 is also broadly consistent with the new series for that corresponding period. For Melbourne, there is even less historical data. A number of studies have been done of the boom-bust of the 1880s and 1890s in Melbourne. For the 1880s, there is the Noel Butlin series for Melbourne of asking price per room 1861-91 which closely matches the new series and, consistent with the new series, has prices peaking in 1888.[8] Fisher and Kent (1999) and Simon (2003) have constructed series for Sydney and Melbourne for the 1880s and early 1890s which are based on valuations of rateable properties: in both cases, the magnitude of the movements is comparable with the new house price series.

In terms of national estimates of houses prices, the Australian Treasury and Reserve Bank of Australia (RBA) have constructed unpublished series starting from 1960 for internal use in their modelling of the economy, using the various available series starting with BIS-Schrapnel series for Sydney and Melbourne prices as their primary base for the 1960s and 1970s.[9] These series are very close to the overlapping Stapledon (2007) estimates for the 1960s and to the series from 1970 spliced using various series prior to the ABS series starting in 1986. The Australian Treasury had used these to construct and publish June quarter estimates of aggregate market value, and implicitly mean values per dwelling, of private dwelling assets in Australia, this published series of estimates starting in June 1960. In a Treasury publication Goldbloom and Craston (2008) announced that the Treasury had discontinued this series in 2007 in favour of the RBA series of the aggregate market value of private dwellings. What Goldbloom and Cranston failed to mention was that the RBA and Treasury series had diverged in the 1990s and a review by the two institutions and the Australian Bureau of Statistics of the two series had seen the Treasury concede and adopt the RBA estimates.[10] In the period 1960-88, the RBA estimates are very close to the estimates in Stapledon (2007).

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[7] The poor quality of the Figure (Daly, 1982: Figure 5.5, page 148) in which some of the price estimates are embedded, make exact comparison difficult. Daly did not publish his estimates in tabular form.

[8] Noel Butlin (1964), page 276, Table 62. Noel Butlin took the view that the increase in number of rooms per dwelling was a proxy measure for quality, but on pages 221-23 he discusses a whole range of factors which lifted the quality of housing apart from the increase in number of rooms.

[9] Unpublished estimates by the Australian Treasury of mean house prices supplied to the Productivity Commission and presented in real terms in Figure 2.1, page 16 of the Productivity Commission Discussion Draft "First Home Ownership" December, 2003.

[10] ABS (2005) discussion paper on the disparity between the two series in the period after 1995, while not directly criticising the Treasury series, came out in support of the Reserve Bank series. The ABS paper has the Treasury Series cited as a reference but the text pointedly makes no reference to it. However, the ABS paper was written after an ABS/Treasury/RBA tri-partite (internal) review and did specifically adopt the RBA measure of the market value of housing as its preferred measure. The Treasury then quietly discontinued their

4 Discussion of Broad Trends

The broad trends that can be observed are that the real median price for houses (Figures 1 and 2) rose only marginally in the 70 year period from 1880 to the mid 1950s. [11] And if the rental price of housing is observed over the same period, with allowance for the distorting impact of rent controls in the 1940s and 1950s, the measure of real gross rent per dwelling (Figure 3) also shows relative stability in this period. From the mid 1950s, however, there is a clear shift in trajectory as the median house price grows significantly in terms of all measures and real rents also show a clear upward trend. Taking 1955 as the turning point[12], over the 50 plus year period 1955-2009, the median house price for the All Capitals shows a rise in real terms of 3.6 times or 2.5% per annum. Over this period Sydney prices rose about 2.7% per annum, while Melbourne prices have risen about 1.8% per annum. These broad trends in prices and rents and the shift in trajectory from the mid 1950s can also be observed in the price-to-income ratio (Figure 3) which shows no trend change then a clear upward trend in the second half of the 20th century.

Housing represents a depreciating asset sitting on a block of land. If the value of that depreciating asset approximates to its replacement cost which in turn moves closely in line with general inflation, then house price movements are primarily a function of land.[13] The price of land can be separated into the fringe price of urban land, for which some data is available, and the location premium attached to proximity to, for example, the CBD.[14] If Sydney and Melbourne fringe land prices are observed (Table 1), they are volatile and, while they are high in the 1880s, they appear to show no clear trend in real terms from the 1890s to the mid-1950s. Then, in the period from the mid-1950s to the 1970s the price of fringe land in Sydney and Melbourne increased sharply in real terms and that, in turn, appears to explain a significant portion of the rise in median house prices in this period. In the case of Sydney, whereas in the first half of the 1950s, the cost of fringe land represented about 10% of the median house price, it rose thereafter with the sharpest movements occurring in the first half of the 1960s and the first half of the 1970s, and by the latter period the cost of fringe land had risen nine fold and accounted for 60% of the median price of a house in Sydney (Table 1). The rise in Sydney fringe land prices accounted for

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series in 2007 and adopted the Reserve Bank series for the period 1960-2007 (Goldbloom and Cranston 2008).

[11] These rises refer to the series adjusted for quality changes.

[12] In Stapledon (2007) page 84 Chow tests in Table 3.1 support 1955 as a suitable choice for a turning point.

[13] Over the long term, inflation in housing construction costs has tended to run marginally higher than general inflation but not enough to change the general point that changes in land prices are the dominant influence on house price movements.

[14] The location premium rises from zero at the fringe to a peak at the centre, the point at which transport costs are zero. The slope of the location premium is also referred to as the transport gradient. There are features other than transport costs which give locations a premium (e.g. proximity to ocean) but transport explains a significant portion.

effectively the whole of the rise in median house prices in the period to the mid-1970s. For Sydney, the rate of appreciation in the fringe land price decelerated after 1975 but from the high base established in the first half of the 1970s, prices nonetheless approximately trebled in the period to the first half of the 2000s. In doing so, this rise in the price of fringe land accounted for about two thirds of the rise in median house prices in Sydney in this later period. That leaves an unexplained component to the rise in median house prices which points to a significant rise in the location premium.

The story for Melbourne is similar to Sydney but different at the margins in terms of timing and magnitude. Fringe land prices were rising only steadily in the period to the mid-1970s and only then rose sharply. And over the period from the early 1950s-2000s, Melbourne fringe land prices have risen about half the rate of Sydney prices.

Australia's experience with housing prices appears to be consistent with the pattern observed in the other countries for which series are available. Long-run series for the US (Shiller, 2005) and the Netherlands (Eichholtz 1997) also show little change in real house prices in the period 1880s-1950s, with prices then rising in the second half of the 20th century. Eichholtz's series is for an area of Amsterdam and spans the period from 1627-1970 and then can be spliced with series for the Netherlands. For that three hundred odd year period his series seems to suggest that, cycles in prices aside, there was little change in house prices in real terms. If that were to be correct for all housing markets, it would make the period from the 1950s even more unique. The caution is that, with data available for just two other markets, the sample is too small to be entirely convincing.

The question these broad trends pose is how do we explain them? In this paper, the objective has been to outline the broad trends and not be diverted into what is a significant subject matter in its own right. The key point I would make is that it does not appear to be a simple matter of the demand variables of population and income driving prices. Population growth has been slower in the post-WW2 years than was the case in the pre-WW2 years, even despite the disruption caused by WW1 and the two depressions. In the case of income, if the ratio of nominal prices to nominal income is observed (Figure 3), it indicates a steady relationship between prices and income up to the mid-1950s and then a substantial change in that relationship with prices rising well ahead of income thereafter. One possible explanation is that it involves the interaction of these key variables with supply variables. There is a considerable economic literature arguing that government regulation and controls, which restrict the supply of land for urban use, are a major explanation of the variation in level and volatility of prices across segments of the US housing markets (Malpezzi and Wachter 2005). In the context of explaining why prices in Australian cities are high relative to income, the Reserve Bank of Australia has pointed to supply factors being a major factor (Richards 2009). While the US studies have constructed comparative measures of the effect of regulation across markets at a point in time, the missing ingredient is the difficult task of constructing quantitative measures of (the effect of) changes in regulation over time. In the Australian context, for example, we can point to the state

governments introducing legislation in the 1940s and 1950s which gave them powers for the orderly (meaning restricted) release of fringe land for housing.[15] In effect, the market for land was changed from relatively free to a fairly tightly controlled market. However, other factors could be at play. Transport is a major influence on land prices – access to the motor car was a factor tending to increase the supply (and reduce price) of land in the first half of the 20th century but traffic congestion would have worked to lift prices in the later period. There is scope for further research in this area.

5 Pre-WW2 Cycles in Land and House Prices

In the period 1880-1939, two cycles in housing prices stand out associated with the great depressions of the 1890s and 1930s but there was also a significant cycle in the 1910s cut short by WW1. The boom-bust cycle of the 1880s-90s was the biggest of the cycles. In the lead up to it, the period from 1850-90 was a period of very strong economic expansion for Australia – stimulated by the gold rushes of the 1850s and 1860s and rapid growth in the wool industry, the population expanded extremely rapidly (eight-fold from 400,000 to 3.2 million) as substantial numbers of immigrants were drawn in by economic opportunities. More specific to the 1880s and relevant to housing, whereas adult population growth averaged about 2.5% per annum in the 1860s and 1870s, it accelerated to close to 4% per annum in the 1880s (Figure 5), a factor here being the baby boom generation from the 1850s and 1860s moving into adulthood (Sinclair 1976, page 141). Sinclair also argues that, as the tail end of the expansion, the 1880s was a period when increasingly more marginal investment opportunities were explored, encouraged by the high returns achieved in the earlier decades and accommodated by the capital inflows. The buoyancy of demand for most of the 1880s is reflected in the upward movement in house prices (Figures 1, 2) and rents (Figure 4) in the Sydney and Melbourne markets. Housing supply, measured by rate of growth in housing stock in Figure 5, responded to the higher prices and more or less in line with the surge in population growth. However, supply was running ahead of demand growth from the mid-1880s, and as the supply-demand balance swung more towards surplus, the housing market started to falter and was vulnerable to any adverse demand shock. New housing supply peaked at its highest level in 1884 but there was a second peak in 1888, from which supply of new housing dropped 20% in each of 1889 and 1890, contributing to the first coincident decline in GDP in 1889.[16] Signs of weakness were also

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[15] In NSW Local Government (Town and Country) Amendment Act 1945 gave governments power to control all new development and land use. State Planning Authority (SPA) Act 1963 centralised this further giving powers to one authority for the *orderly* development and use of land in conjunction with the provision of public infrastructure. '*Orderly'* was code for slow release of new land. In Victoria the Town and Country Planning (TCP) Act 1944 was more explicit in stating its objective was to address 'the problem of extravagant and unrealistic sub-division of land on the outskirts of built-up areas.' With a lag, these and subsequent amendments gave government increasing control over the supply of land for new housing in Sydney and Melbourne.

[16] Based on the Noel Butlin (1962) estimates of GDP. Haig (2001) has GDP growth at sub-1% growth rates from 1889-91 but only negative in 1892.

evident in prices – Melbourne house prices peaked in 1889 and Silberberg (1975) has urban land prices peaking in 1888.[17] That is, in the housing story, there is evidence that boom had turned to bust before the Barings crisis of late 1890 was said to have triggered the collapse. The Barings crisis in London in late 1890 was linked to lending to Argentina which had, like Australia, experienced a major boom in property/construction in the second half of the 1880s (Miles 2002). The defaults in Argentina cautioned British and other investors to reappraise the optimistic scenarios underpinning their lending to all markets and the subsequent withdrawal of capital was a factor in financial crises in a number of countries including Britain itself, US and South Africa (Reinhart and Rogoff 2009) and the global recession of the early 1890s.

While the pre-conditions for a domestic recession were already there, the sharp turn in external factors from positive to negative accentuated the downturn with the combination of weaker demand and tighter credit conditions flowing through to sharp declines in asset prices and contributing to the most severe banking crisis experienced by Australia (Fisher and Kent 1999). For housing, this weakness fed into lower immigration and the next two decades saw population growth averaging under 2% per annum. In terms of house rents, the weakness in demand translated into a very significant cyclical decline in rents (Figure 4) against which, aside from the two war-time periods, there is no comparable experience. The cyclical downturn in rents associated with the 1930s depression is mild by comparison.

Historians have Melbourne at the epicentre of the 1890s recession (Cannon 1972; Sinclair 1976). With the main gold discoveries in the Victorian hinterland, Melbourne had been the main beneficiary of the boom period and its population grew sixteen fold from 30,000 in 1851 to 485,000 in 1890 (average 7.5% per annum), taking it comfortably past Sydney which over the same period grew seven fold (average 5% per annum) from 54,000 to about 366,000. By contrast in the 1880s, the growth gap between the two had lessened with Melbourne's population growth in the 1880s averaging 6% per annum, only slightly ahead of Sydney's 5.5%. Then the first half of the 1890s saw Melbourne's population contract by 12% – it returned to positive growth in the second half but it was still lower in 1900 than it had been in 1890 and it had fallen behind Sydney which still managed to grow at about a 2% per annum pace in the 1890s (Figure 6). In terms of house prices, Melbourne prices rose about 64% in real terms from 1880 to their peak in 1889, then fell by 51% to a trough in the mid 1890s. To put that 1889 peak in perspective, prices in Melbourne did not revisit their 1889 levels until over sixty years later in 1950 – in nominal terms they matched the 1889 peak in 1918 but that was due to general inflation associated with World War 1 and its aftermath. The duration of that weakness reflects the sheer volume of supply of new

[17] Silberberg (1975) has the rate of return over various time periods within the period 1880-92 positive till it turns negative in 1892 but the decline in the rate of return from its peak in 1888 is consistent with, or implies, a fall in prices from a peak in 1888.

urban land lots developed in the 1880s boom which required or anticipated continued rapid growth of Melbourne, not the stand still that occurred.[18]

The 1880s-90s price cycle in Sydney, in keeping with its less dramatic cycle in population growth, was less extreme than Melbourne's experience but still stands out. Sydney median prices rose a lesser 32% in the 1880s to a peak in 1892, that is, there was a lag of a few years after Melbourne prices peaked and started their sharp decline. The subsequent fall was about 36% so that, while the boom had been less pronounced than Melbourne's experience, the immediate pain was still significant. However, where the experience of the Sydney and Melbourne markets also differed was in the period between this cycle and the next big cycle of the early 1910s. Sydney experienced a cyclical recovery in the late 1890s which in 1902 took prices to within 10% of their 1892 peak. By contrast, while the Melbourne market also experienced a recovery from the extreme lows of the 1890s, the recovery was much more subdued and prices in 1902 were still about 35% below their 1889 peak.

The US and Europe recovered from global depression and experienced moderate expansion in the second half of the 1890s. This external recovery contributed to the Australian economy experiencing a significant mining boom from the mid-1890s to early 1900s but this was focussed in WA, Queensland and western NSW (Battellino 2010) which is reflected in strong population growth in the former two states – in part, drawing population from Victoria and Melbourne. Stagnant population in Melbourne reflected still stagnant economic conditions in that city which, in turn, made the process of clearing the excess supply of housing and land left over from the boom a drawn-out process. Conditions in other markets was more favourable as evidenced by the short-lived upswing in Sydney prices to 1902 coinciding with the peak in the mining boom, and the Perth and Brisbane markets would have been buoyant in this period. The next cycle came in the early 1910s and can be clearly seen in the spike in population growth which peaked in 1913 and in the rate of growth in the housing stock which peaked in 1914 (Figure 5). Prices in the Sydney market also picked up in this cycle but to levels still well below the peaks experienced in the 1880s boom. By contrast, while Melbourne also experienced a cyclical rise in population growth (Figure 6), prices in the Melbourne market barely moved. The absence of a price response reflects the magnitude of the supply hangover from the 1880s boom – surplus houses had been absorbed but surplus urban allotments were still it seems able to comfortably accommodate the lift in demand.

World War 1 (WW1) from 1914-18 impacted on both the demand for and supply of housing. On the demand side, it disrupted immigration flows so that population growth slowed sharply. The numbers of soldiers absent in the European war zone also had an impact on demand directly and indirectly, with it reported that there was significant sharing

[18] Silberberg (1975, page 209) quotes a number of local journals in 1888 reporting the strong evidence of a very large oversupply of allotments, one suggesting sufficient lots for a city of five times the then population.

of houses by absent soldiers' families in this period.[19] Another factor was that, whereas in World War 2 the Federal Government introduced rent controls across the whole market, the Government introduced more limited controls with regulations which afforded 'special protection to persons connected with the Defence Forces against increases in rents.' [20] Nonetheless, significant numbers were connected with the Defence Forces and the effect would have been to make new investment less attractive to investors. The NSW State Government also introduced some protection for renters with its Fair Rents Act 1915 but other states refrained from intervention. The net result of these negative effects was that prices and rents declined in real terms in the period 1915-18 (Figure 4). On the supply side, responding to lower demand and the diversion of resources to the war effort, the rate of growth in the housing stock also fell to much lower rates of growth.

The period immediately after WW1 was disruptive as the economy adjusted from war to peace-time footing and experienced inflation pressures. While prices were rising in 1919 they failed to keep up with inflation and, in real terms, prices did not start moving up until 1920 – rents did not turn up until after 1920. From these post-WW1 low points the economy then experienced strong economic growth in the first half of the 1920s but then weakness in the second half 1925-29 ahead of the Great Depression, when the terms of trade moved adversely against Australia. Immigration inflows were slow to pick-up in the period immediately after WW1 but then registered stronger growth which pushed population growth from sub-2% to 2.5-3% per annum pace from 1922-1928 (Figure 5). Meredith and Dyster (1999, page 112-13) argue that this depended on Government subsidies to immigrants rather than the drawing power of economic opportunity of earlier periods. Nonetheless, housing activity, normally a barometer of the general level of economic activity, was very strong in the first half of the 1920s and really only fell away late in the 1920s – the rate of growth of housing stock accelerated to a peak in 1925 and then a secondary peak in 1927 before falling away. In contrast with earlier periods, including the 1880s, the growth of housing stock in the 1920s ran well ahead of population growth, suggesting a developing supply-demand imbalance which would explain the decline in activity after 1927. This decline in housing activity coincided with, and contributed to, the first decline in GDP and preceded the stock market crash of 1929 which triggered the 1930s depression. In terms of prices, from their cyclical low in 1919, prices in both Sydney and Melbourne picked up quite sharply in 1921 and then peaked in 1924 at 35% and 39% respectively above their 1919 levels. Thereafter, they held just below those levels for the remainder of the 1920s and while activity fell sharply after 1927, prices did not fall until after the 1929. There is normally a coincidence between house price and activity cycles but the stickiness of prices in the late 1920s is probably explained by the general optimism generated by the strength of equity prices before their collapse in 1929.

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[19] Official Yearbook of Australia No. 13, page 1091

[20] Official Yearbook of Australia No. 13, page 1098.

Daly (1982) has described the 1920s as a boom period in Sydney house prices but, while clearly well above 1919 levels, prices were still below their peak of 1892 – notionally only 5% below but factoring in quality improvement more like 10-15% below those peaks.[21] For Melbourne, the pick-up in prices in the 1920s, in matching that of Sydney, is probably a fair indicator that this market had finally absorbed the supply hang-over from the 1890s.

Housing fared better in the 1930s depression than was the case in the 1890s in terms of prices but the contraction in housing activity was comparable (Table 3). From the 1929 'nominal' peak, Sydney and Melbourne prices fell just 11% and 13% in real terms to their respective cyclical lows in 1932 and 1931 (versus the 36% and 51% falls of the 1890s) and recovered most of that by 1939. One positive factor for prices was that prices were less elevated than was the case in the 1880s and hence there was less room for them to fall. A second positive was that rents experienced only a small fall, certainly significantly less than that experienced in the 1890s. Another positive was the 'greater conservatism of the banking sector (in the 1920s versus 1880s), particularly with regard to credit policy' (Fisher and Kent 1999, page 27) and the related point that bank lending to the private sector was also more in line with growth in domestic deposits. This conservative lending would have been a constraining influence on prices but also meant that the balance sheets of the banks were in much better shape and less vulnerable to foreign financial shocks. While real prices fell just 11-13% this was a period of deflation in prices and wages and in nominal terms median prices fell by more than 25%. From the perspective of banks, this deflation implied a rise in the real value of debt and a rise in the debt to asset ratio of their borrowers. The fact that, despite this deflation, the banking system's balance sheets were in better shape meant that availability of finance was not tightened as much as occurred in the 1890s which would have been a (relative) positive for demand.

In terms of activity, from a rate of growth in housing stock of just over 4% in 1927, that had declined to 3% in 1929 and then fell to just a 0.6% per annum pace in 1933-34. That peak to trough deceleration was actually slightly sharper than the experience of the 1890s. However, the deceleration in population growth from a 3% pace to a 2% pace was not as sharp as occurred in the 1890s and, with new supply dipping below population growth in the 1930s, the excess supply from the 1920s would have been absorbed by the mid 1930s.

6 Price controls 1942-49

The price of houses and rents in the 1940s, and rents also in the 1950s, was heavily distorted by price and rent controls, imposed during a period of comparatively high inflation. In 1939 the Australian Government used its war-time powers[22], to fix rents throughout Australia at their then levels a measure which was taken in most war-time

[21] Daly (1982) presented all his data in nominal terms, so that there is some inflation illusion in the assessment that prices hit new highs in the 1920s.

[22] Rents were fixed throughout Australia and tenants provided protection against eviction under the Commonwealth Landlord and Tenant Regulations, enacted as part of the National Security Act, 1939.

economies, including the US (Block and Olsen 1981) and UK (Coleman 1988). Then in 1942 the Australian Government moved to extend price controls to more goods and services including, in what appears to have been unique to Australia, the prices of houses and land. Prices were fixed at levels that were not more than 10% above a fair and reasonable price as at 10 February 1942 as determined by an approved valuer.[23] As valuations were used to estimate local rates and taxes, valuations were available for properties. In the early years, before inflation had eroded the real value of the valuations and notwithstanding the subjectivity in valuation of properties, Sidney Butlin (19--)[24] describes the task of the valuers as being initially comparatively easy. However, in the later years, with real values significantly eroded by inflation, the task became much tougher not least because 'buyers and sellers exerted strong pressure on (the valuers) to produce an "acceptable" valuation.'[25] The price controls were circumvented in a number of ways. First, low prices for houses were offset by excessive payments for furniture. This avenue was closed by additional regulation in 1943 which constrained second-hand furniture prices to no more than 75% of 'the ceiling price for new goods'[26]. When this loop-hole was closed, the market switched to vendors requiring key money – it was illegal but given the imbalance in the housing market, there 'was no way of stopping this form of black-market.'[27]

When the legislation enabling the price (and rent) controls lapsed on 30 December 1946, the controls were included in the Defence (Transitional Provisions) Act. The constitutional basis of this new legislation, however, appeared likely to be successfully challenged and, in response, the Government sought by referendum (of 29 May 1948) to amend the Constitution to give it permanent powers over prices and rents. When that referendum proposal was defeated, power to control rents and prices was shortly thereafter transferred to the States.[28] As Sidney Butlin noted, the States adopted the substance of the Commonwealth laws in their own legislation. However, while the States mostly persisted with rent controls albeit in steadily diminished form into the 1960s, the price controls proved untenable and the States suspended them in or around September 1949[29].

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[23] So far as I can ascertain, other countries did not control house and land prices. The US and UK did not. The Australian plan was given effect by the National Security (Economic Organisation) Regulations of 20 February 1942, refer specifically Statutory Rules 1941 No. 76 20 February 1942.

[24] This title is undated.

[25] Sidney Butlin (19--), page 322.

[26] Prices Regulation Order No. 1092, Gazette No. 144 as cited in Tebbutt (1950), page 39.

[27] Sidney Butlin (19--) page 322.

[28] Formal control was transferred on 16 August 1948 to all States, except Queensland for which transfer happened on 1 September 1948.

[29] NSW lifted controls on 28 September 1949 (NSW Yearbook 1950). Victoria lifted controls on 5 October (Victorian Yearbook 1950).

As inflation was substantial in the period 1942-49, the pegging of prices implied sizable falls in real prices. Consumer prices rose 30% in that seven year period but, more pertinent to house prices, the residential construction cost deflator rose 48%[30]. Moreover, inflation was accelerating and by 1950 these two inflation measures were up 42% and 64% respectively from their 1942 levels. There were significant shortages of building materials and scarce labour (Sidney Butlin 19--) which explains the much faster rise in construction costs in this period.

With the lifting of controls, house prices rose very sharply. For Sydney, the median house price rose 119% from the pegged price which put the 1950 median price 53% above their 1942 level in real terms and 33% above the increase in costs in the period 1942-50. The price estimates by Abelson (1985) and Neutze (1972) also show very substantial nominal rises of 77% and 76% respectively coinciding with the lifting of controls.[31] Indirect support for the high magnitude of rises is the price of new houses as there is generally some proximity between new and established house prices. For 1950, the median asking price for new detached houses was $6400 which represents a nominal rise of 94% compared with an estimate of $3300 for new detached houses in 1942. In the case of Melbourne, the price rise with the lifting of controls was actually sharper, with real prices in 1950 rising to 79% above the 1942 level.[32]

In nominal terms, capital city house prices continued to rise, not least because of the high general inflation associated with the Korean War (1950-53). In real terms, however, 1950 was the peak. Prices remained high in 1951 but then dropped away and by 1953 capital city prices had retreated in real terms by about 25%. The retreat can probably be attributed to the price levels in 1950-51 containing a degree of 'overshoot' in response to the extreme situation presented by the price controls. If other demand and cost indicators are looked at, they continued to be positive for house prices in the first half of the 1950s. On the demand side, a post-WW2 rebound in immigration had lifted the growth rate in household formation to a 2.5-3% annual growth rate in the years 1947-50 – a good rate but not high by historical standards – but this then accelerated to a 3.5-4% growth rate in 1951-54, a pace only matched in the first half of the 20th century in the mid-late 1920s. In the hypothetical absence of price controls, it could be conjectured that this lift in demand would have more likely produced a peak in prices in the early 1950s rather than 1950. On the supply side, while house prices retreated after 1950, the construction cost index continued to edge marginally higher in real terms in the period 1950-56, indicating persistent cost pressures.

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[30] Source is residential cost deflator from the national accounts estimates by Matthew Butlin (1977).

[31] Both are lower than the estimates from my series but are not necessarily inconsistent. The issue with the Abelson series is the small sample size. The Neutze series is a calendar year average and as the 1949 estimate will have probably included a substantial number of sales in the December quarter after the lifting of price controls, the 76% rise will, if anything, understate the actual rise from the pegged price.

[32] Estimates of new house prices are from Stapledon (2007).

After 1956, with demand easing and supply probably catching up with demand, construction costs then experienced a steady decline in the period 1956-71.

Interestingly, prices for medium density housing and units, which were predominantly used for rental housing, do not appear to rise or recover anywhere near as significantly with the lifting of price controls. In real terms, while the price of detached housing was higher by an average 43% in 1950-53 (vs. 1936-39), that of medium density houses were about 23% lower, or 35% relative to the rise in the cost of construction.[33] One explanation for the relative decline in the price of medium density houses was that while controls on house and land prices were lifted, the NSW State Government (along with other States) legislated to continue rent controls. While new houses were exempted from the controls, the existing stock remained subject to the controls until tenants moved out voluntarily.[34] With the future rental stream effectively fixed at 1939 levels, the present value of these properties was constrained from rising, except to the extent that investors might anticipate a future lifting of controls. Then, as rent controls were gradually phased down, the price of medium density housing could be expected to catch and this is observed in the second half of the 1950s and again in the 1960s. (In the UK market, Coleman (1988, page 234) observed a heavy discount of the market value of residential properties subject to rent controls.) Apart from the impact of rent controls, there could be other factors contributing to the recovery of the price of medium density housing. For example, with a heavy concentration in the inner areas of Sydney and Melbourne, it could be that the location premium in the inner areas was rising with the expansion of the urban areas in the 1950s and 1960s, although Abelson (1997) argues that, in the case of Sydney, the rise in the location premium was more a creature of the 1970s and 1980s than the preceding two decades.

Evidence of the impact that rental controls had on the housing market is the substantial structural change in ownership in the market in this period. The rental share of houses in the capital cities declined from 55% of the market in 1947, to 32% in 1954, and 20% in 1961.[35] In absolute terms, the number of rented houses declined by 25% in the period 1947-54, while the number of owner-occupied houses almost doubled. This structural shift was not unique to Australia, with the US and UK also experiencing a very similar shift in this period also in response to rent controls (Block and Olsen 1981; Coleman 1988). The final point to note is that the high rate of owner-occupied housing which emerged in the 1960s then became a permanent feature of the housing market in Australia, and also in the US.

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[33] Estimates from Stapledon (2007) data, splitting the samples between medium density (semi-detached houses) and detached houses. Averages for a number of years used to take out the annual volatility.

[34] Tenants were protected from eviction and various amendments in the 1950s in NSW increased the protection of tenants. In the case of an owner-occupier buying a tenanted property, the new owner had to wait a period of six months before taking possession. While this was a disincentive to purchasing such properties, sale to owner-occupiers was still a means for landlords to circumvent, or extricate themselves from, the rent controls.

[35] The figures for Sydney (and Melbourne) show comparable declines from 55% (53%) in 1947 to 20% (19%) in 1961. Source is ABS Census data.

7 Post-World War 2 Cycles

Five significant cyclical peaks can be identified in the post-WW2 period in 1950 (discussed above), 1974, 1981 (in Sydney), 1989, and 2008 (or 2004 for Sydney). The first broad point to make is that these price and activity cycles in housing (Tables 2, 3) have been closely associated with the post-WW2 recessions and near recessions of the 2000s.

From the 1950s to the 1974 peak was a period of sustained expansion in the economy. The one interruption in this period was associated with the 1961 credit squeeze. The credit squeeze had a short-term but significantly negative effect on the economy (Meredith and Dyster 1999, pages 193-95) so it would be expected to have had some adverse effect on the housing market. That is evident in the decline in housing stock growth and also in the ABS national accounts for the period which show new dwelling construction activity peaking in the September quarter 1960 and then falling by 24% in the next four quarters. Ownership transfer costs, which reflect the volume of turnover in the real estate market, fell 22% over the same period. However, the impact on prices appears to have been muted. Sydney market prices show some declines but within an underlying upward trend. Conversely, the credit squeeze appeared to be a trigger for the Melbourne market prices to flatten out before picking up strongly in the late 1960s. The data on land prices suggests that for both Sydney and Melbourne land prices perhaps did not fall during the 1961 credit squeeze. In short, evidence of a soft landing for housing prices in an environment in which the expectation would be that prices of both houses and land would have fallen.

The next clear peak in house prices for the capital cities (both Sydney and Melbourne) was 1974 which was preceded by sharp rises in late 1960s and early 1970s. This boom was associated with the first post-WW2 mining boom which also ended when the property boom ended. For Sydney, that peak had prices up 116% on their 1950 peak, while for Melbourne the peak had prices up 47% on their 1951 peak. For Sydney, the significant rise was associated with a sharp rise in fringe land prices which, as discussed earlier, probably account for the whole of the rise. Fringe land prices rose by a lesser amount in Melbourne. From those 1974 peaks, Sydney and Melbourne prices declined by about 18% and 24% respectively in real terms. Whereas real price falls in the 1890s and 1930s translated into nominal price falls, the high inflation which characterised the 1970s cushioned the fall for the property market and in turn also protected the banking system. This episode does not rate as a banking crisis in the catalogue of crises assembled by Caprio and Klingebeil (2003) but a number of non-bank lending institutions, some of which were subsidiaries of banks, did get into difficulties in the 1970s due to property lending and this led to one small bank, The Bank of Adelaide, being directed by the Reserve Bank to be absorbed by a larger bank.[36]

[36] The Bank of Adelaide's wholly-owned subsidiary Finance Corporation of Australia made substantial losses on property lending. The Bank was 'taken over' by the ANZ Bank, becoming a subsidiary of that bank on 30 November, 1979.

The next major cycle was in the late 1980s. In between, the picture was mixed. Sydney appears to have experienced a cyclical peak in 1981, but that barely registered in Melbourne. Then there was another minor peak in 1986 before the surge in prices to the 1989 peak. The 1989 peak saw prices reaching 53% (Sydney) and 27% (Melbourne) above their 1974 peaks in real terms. For all capitals the rise was 39% and the peak to trough decline 1989-91 was just 8%. In historical terms (Table 2), the amplitude of price movements does not make it a significant cycle. In terms of activity, it was also relatively insignificant (Table 3). Nonetheless, this cycle was associated with arguably Australia's worst post-WW2 recession and its second recognised banking crisis (Caprio and Klingebiel). The key to banking losses in this period, which saw Governments rescue two State-owned banks and private banks absorb significant losses, was not the residential property market but the commercial property market where, for example, office prices in the Sydney market declined by 40%.[37] Similarly, it was the contraction in non-residential building activity which was the most significant factor in the contraction in economic activity.[38] In this cycle, Melbourne suffered a sharper peak to trough fall in house prices than other markets (-19%) and this reflected its worse experience during the recession.[39]

The final cycle which commenced from 1996 is an unfinished story at the time of writing. While prices hit their trough in 1992, prices did not really move in any material way until 1996. The trough-to-peak (1991-2004) rise in Sydney prices was 91% to be 73% above their 1989 peak. However, on this occasion Sydney has been the laggard – Melbourne prices at their peak in 2008 were 115% above their 1989 peak and for all capital cities prices at their 2008 peak were 94% above their 1989 level. That puts it ahead of the 1974 cycle and the 1880s cycle in terms of the magnitude of rises (Table 3) and ranks this period as arguably the biggest housing cycle in Australia's history.[40] A crucial difference from earlier periods in history is that the land component is a larger share of the house price vis-à-vis the structure, so if we look at booms in terms of land prices, the boom in Melbourne in the 1880s would still be bigger. Whereas land prices in the latest cycle have probably risen by a factor of just over two, Silberberg (1975) has land prices rising by factor of seven or more in the 1880s. What makes this particular cycle interesting is that it is occurring against the backdrop of the most significant resources boom in the post-WW2 period and probably the biggest since the gold rush period of the 1850s and 1860s which preceded the 1880s boom (Battellino 2010). The magnitude of the rise in prices in Australia is not

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[37] JLW office property data provided to Westpac where the author worked.

[38] From peak to trough, private spending on non-residential buildings and structures declined 37% and subtracted 2.2 percentage points from growth between December quarter 1989 and December quarter 1991, with flow-on multiplier effects to other areas of spending. Peak to trough housing subtracted 1.3 percentage points from growth. Source for data is ABS National Accounts Cat No 5206.0.

[39] Whereas unemployment nationally rose by 4.9 percentage points from 5.7% in December quarter 1989 to a peak of 10.6% in December quarter 1992, unemployment in Victoria rose by 7.7 percentage points from 4.4% to a peak of 12.1% in the September quarter 1993.

[40] 'Arguably' only because we do not have data for the period before 1880.

unique – other countries experienced substantial rises with, for example US prices rising 60% in real terms in 10 years to December quarter 2006[41] – but where Australia stands apart in this cycle is the small size of the decline in prices after the peak or in response to the Global Financial Crisis (GFC) of 2008. A decline of 4% compares with falls of 19% to March quarter 2010 for the aggregate US market but much sharper falls in some segments – the US housing market was at the epicentre of the GFC. Moreover, that small decline was been swamped by a 15% rise in 2010 as concerns about the GFC were outweighed by the on-going boost to the economy from the resources boom.

One final point when comparing the post and pre-WW2 cycles, we can observe that peak to trough declines have become less severe, averaging 23% in the pre-WW2 cycles and 13% afterwards or 10% excluding the early 1950s spike/slump, and the trend is clearly down. Bearing in mind that the land is a larger component of house prices in the post-WW2 period and that the land is the volatile component of a house price, this suggests greater stickiness in prices in this period. The caution is that other markets have exhibited significant falls in the late 2000s, so the declining trend is no safeguard for the future. Conversely, in terms of trough to peak rises the rises have become on average steeper: 30% versus 53%, although the latter is heavily influenced by the 1990s/2000s episode with a rise of 111%. That steepness in part reflects the impact of the upward trend in prices in the post-WW2 period but also, as discussed previously, that the land component is a larger share of the house price so that changes in land prices have a larger proportionate impact on house prices. What stands out more clearly is the degree of volatility in activity. In the three pre-WW2 cycles, the percentage point decline in housing stock growth averaged 3.6, whereas in the cycles associated with five post-WW2 recessions, the average percentage point decline was just 0.9 or about quarter. Nonetheless, housing has still played a significant role in the post-WW2 economic cycles.

8 Conclusion

The long-term history of house prices presented in this paper highlights a number of interesting periods in Australia's economic history. such as the period of rent and price controls around WW2 which distorted the market and produced consequences not intended by the policy-makers of the time. Those consequences were a significant decline in the stock of rental properties which in turn forced a major shift towards owner-occupation – a shift which proved long lasting after the rent controls were gradually phased out.

Importantly, from the perspective of 2010 looking back, the long-term price story puts the recent history in some perspective. In particular it has not always been the case that house prices and rents have followed the sharp upward trajectory observed since the 1970s.

[41] FHFA prices series for US deflated by US national accounts consumption price deflator. Series is all USA Purchase Only Indexes (Estimated using Sales Price Data). Produced by Federal Housing Finance Agency (FHFA), the series was previously produced by Office of Federal Housing Enterprise Oversight (OFHEO).

Indeed the trajectory appears to have been a relatively flat one up to the 1950s. The focus here has been on the cycles and, while there have been big changes in the structure of the economy since 1880, this long history allows comparison of the various housing cycles and their links to the broader economic cycles in the economy. In that respect, it is interesting that the two most significant cycles, in different ways, have been the first - 1880s/90s boom-bust - and the last, most recent cycle which peaked in the 2000s.

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Table 1: Sydney and Melbourne land prices vs. house prices 1880s-2000s

		Sydney median prices			Melbourne median prices		
		Land	House	Ratio	Land	House	Ratio
		[1]	[2]	[3]	[1]	[2]	[3]
		$'000, 2007/08 prices		[1]/[2]	$'000, 2007/08 prices		[1]/[2]
1880s		10.6	58.2	18.3%	14.5	51.3	28.0%
1890s		8.7	54.1	16.3%	10.6	44.0	23.5%
1900s		5.5	53.7	10.2%	7.8	45.1	16.8%
1910s		5.8	54.2	10.8%	7.0	43.2	16.7%
1920s		8.2	61.6	13.4%	8.2	54.5	15.2%
1930s		7.7	61.4	12.6%	8.7	51.8	17.0%
1940s		6.5	68.2	9.7%	5.0	57.9	8.4%
1950s	H1	10.1	76.2	13.4%	8.2	87.2	9.5%
	H2	21.8	84.8	26.1%	18.4	96.5	19.2%
1960s	H1	43.7	115.9	37.7%	17.0	97.2	17.5%
	H2	61.6	140.6	43.9%	22.3	97.6	22.8%
1970s	H1	109.8	184.1	60.3%	25.9	134.0	19.5%
	H2	89.2	177.5	49.7%	67.7	138.9	49.4%
1980s	H1	96.6	204.1	46.9%	79.7	135.5	59.0%
	H2	107.0	239.6	44.9%	105.6	171.4	61.8%
1990s	H1	104.2	277.4	37.5%	71.9	165.8	43.4%
	H2	146.0	316.2	46.2%	79.4	193.8	40.9%
2000s	H1	324.6	467.4	69.8%	129.6	310.2	41.9%
	H2	300.0	474.5	63.0%	148.3	396.7	37.3%

Notes to Table:

[1] Period average of median land prices, using data from Stapledon (2007) Table A.14 but with additional data collected post-2007. Data can be downloaded from website:

[2] Period average of median house prices for the corresponding period. Periods: 1880 = 1880-1889, etc; HI = 1950-1954, etc; H2 = 1955-1959, etc

[3] Ratio of median land price to median house price.

Table 2: Key Housing Price Cycle Movements 1880-2010 [1]

		Sydney		Melbourne		All capitals	
1880s	1880-Peak Rise	1880-92	+32%	1880-89	+64%	1880-91	+33%
	Peak to Trough Fall	1892-94	-36%	1889-95	- 51%	1891-94	-37%
1910s	Peak to Peak Change	1892-1913	-11%	1889-1913	-37%	1889-1913	-27%
	Trough to Peak Rise	1894-1913	+38%	n.a.[2]	n.a.[2]	1894-1913	+21%
	Peak to Trough Fall	1913-16	-22%	n.a.[2]	n.a.[2]	1913-17	-17%
1920s	Peak to Peak Change	1913-24	+6%	1913-24[2]	+35%	1913-24	+15%
	Trough to Peak Rise	1916-24	+35%	1916-24[2]	+39%	1919-24	+37%
	Peak to Trough Fall	1924-32	-15%	1924-31	-18%	1924-31	-16%
1930s	1930s recovery	1932-39	+15%	1931-39	+4%	1931-39	+5%
1950s	Peak to Peak Change	1924-50	+38%	1924-51	+83%	1924-51	+45%
	Peak to Trough Fall	1950-53	-28%	1951-53	-32%	1951-53	-28%
1970s	Peak to Peak Change	1950-74	+116%	1951-74	+47%	1951-74	+47%
	Peak to Trough Fall	1974-77	-18%	1974-80	-24%	1974-79	-16%
Early 80s	Peak to Peak Change	1974-81	+16%	1974-81	-20%	1974-81	-8%
	Trough to Peak Rise	1977-81	+41%	1980-81	+6%	1979-81	+10%
	Peak to Trough Fall	1981-83	-15%	1981-82	-3%	1981-83	-10%
Late 80s	Peak to Peak Change	1981-89	+32%	1981-89	+57%	1981-89	+28%
	Trough to Peak Rise[3]	1987-89*	+58%	1987-89	+30%	1987-89*	+39%
	Peak to Trough Fall	1989-91	-9%	1989-92	-19%	1989-91	-8%
1996-	Peak to Peak Change	1989-2004	+73%	1989-2008	+115%	1989-2008	+94%
	Trough to Peak Rise	1991-2004	+91%	1992-2008	+164%	1991-2008	+111%
	Peak to Trough Fall	2004-09	-12%	2008-09	-2%	2008-09	-4%

[1] Changes are the percentage change in real price between the June quarters of the relevant years.

[2] Melbourne missed the 1910s cycle – for comparison with Sydney.

[3] Sydney and Melbourne had smaller cycles in the mid-1980s with slight dips in 1987

Table 3: Key Housing Supply Cycle Movements 1880-2010

	Recession/Event	GDP level - peak to trough[1]		Housing stock growth rate - peak to trough [2]	
GDP Series		Period	Percent decline	Period	Percentage point decline
Butlin (1962)	1890s depression	1889-95	-32.9	1887/88-1899/00	-4.06
Haig (2001)		1891-92	-1.8		
Vamplew (1987)	Pre-WW1 boom-bust	1913/14-17/18	-6.8	1913/14-17/18	-3.37
Haig (2001)		1913/14-17/18	-7.2		
Vamplew (1987)	1930s depression	1926/27-30/31	-10.3	1926/27-1933/34	-3.47
Haig (2001)		1928/29-30/31	-18.6		
ABS annual series	Korean War	1951/52-52/53	-15.3	1951/52-56/57	-1.84
ABS quarterly series from September 1959	1960/61 recession	Sept 1960 – Sept 1961	-2.6	1960/61-62/63	-0.44
	Mid 1970s recession	March 1974 – Dec 1974	-1.1	1969/70-75/76	-1.29
	Early 1980s recession	Sept 1981 – June 1983	-3.8		
	Early 1990s recession	June 1990 – June 1991	-1.5	1989/90-90/91	-0.49
			No recession	1993/94-96/97	-1.19
	2000 Tech Bubble	2000 (one quarter only – Dec = -1.2%)	No recession	1999/00-01/02	-0.47
	2008 GFC	2008 (one quarter only – Dec = -1.5%)	No recession	2004/05-08/09	-0.35

[1] Percent decline in GDP in real terms between the years or (post-1960) quarters.

[2] Percentage point decline in the growth rate of the housing stock between the years.

Figure 1: Sydney and Melbourne median house price series, 1880-2010

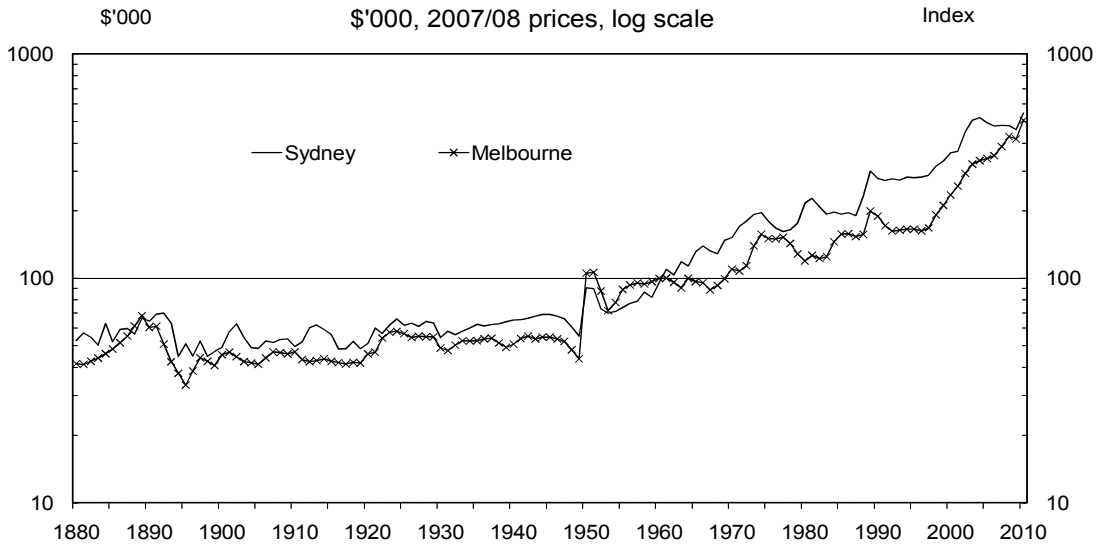

Figure 2: Capital cities median house and constant quality price series, 1880-2010

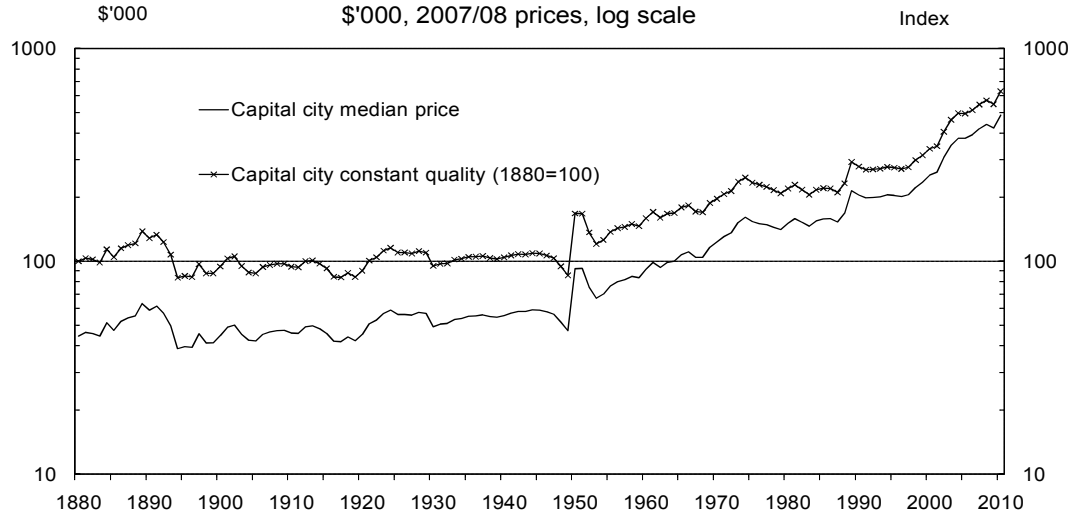

Figure 3: Ratio of private sector dwelling assets to Income, 1880-2010

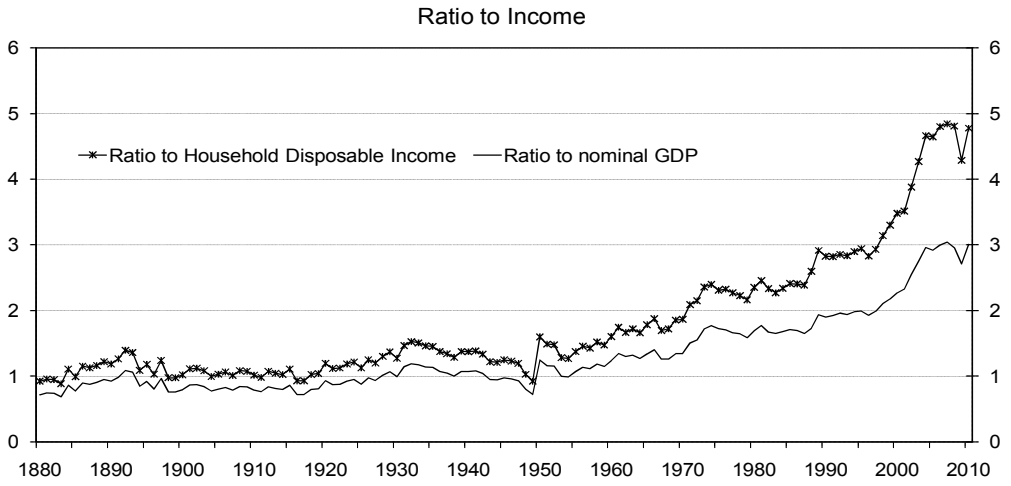

Figure 4: Real gross rental income per dwelling 1901-2010

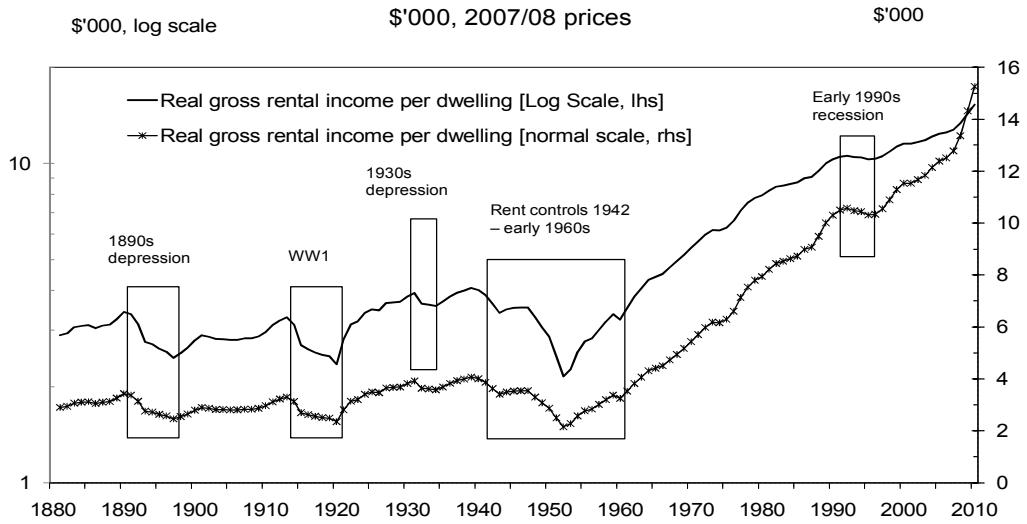

Figure 5: Adult population growth and growth in dwelling stock, 1860-2010

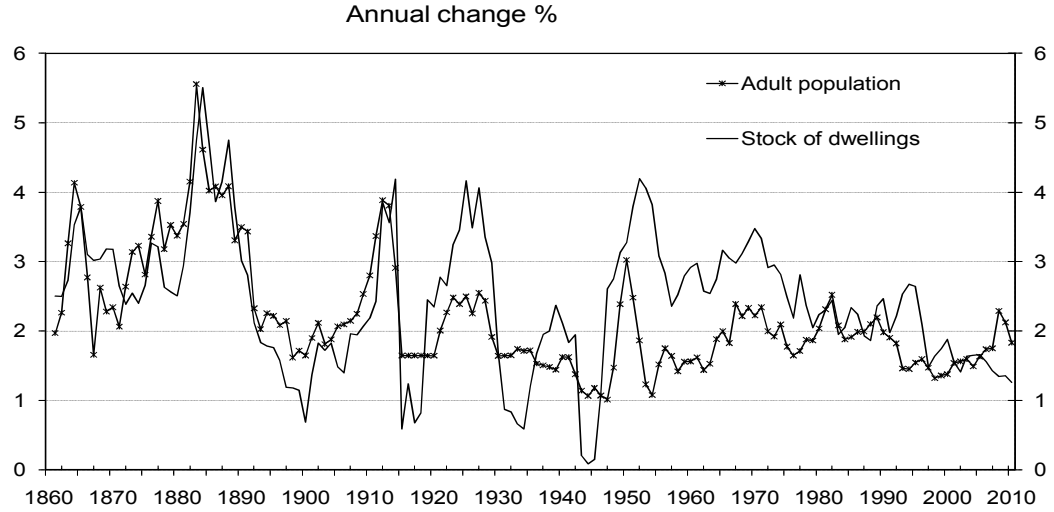

Figure 6: Adult population growth – Melbourne, Sydney and Other Capital Cities, 1881-1916