

HOUSING MARKET IMBALANCES IN AUSTRALIA: DEVELOPMENT, PROSPECTS, AND POLICIES¹

- **After a housing boom over the past 6 years, Australia’s housing market imbalances and the macro-financial impact of their possible resolution have become a concern.** House prices in the country’s eight capital cities have increased by 50 percent since early 2012, raising the value of Australian residential property from around 4 to over 5 times gross household disposable income and household debt to around twice the level of that income.
- **The housing boom has primarily been a regional boom, driven by demand shifts, and amplified by legacy imbalances and a slow supply response.** Developments in Sydney and Melbourne have driven national house prices, reflecting shifts in the strength of regional economic activity and population growth since the end of the mining investment boom.
- **While housing markets may stabilize soon, housing affordability issues will likely remain a concern given prospects for further population growth in the eastern capitals.** With such growth, the capitals need to prepare for affordable housing supply in the future, as both short- and long-term price elasticities of supply are low. In the long-term, urbanization, labor mobility, and productivity can be closely linked.
- **Housing-related policies have begun to address related imbalances and could usefully be complemented by tax reform.** Reducing the imbalances requires a multi-pronged approach amid strong demand fundamentals. The combination of more infrastructure investment and recent zoning and planning regulatory reform should contribute to increase the supply of developable land and enable its more efficient use. Prudential policies have increased the resilience of household balance sheets and the banking sector to housing and other shocks. But household debt remains high, and continued prudential policies are important to manage the risks to domestic financial stability. Housing tax reform would support the effectiveness of the overall policy response.

A. Introduction

1. Australia has experienced a housing boom over the past 6 years, with above-average residential investment growth. Prices of existing houses in the country’s eight capital cities have increased by 50 percent since early 2012, with considerable variations across cities. Prices in Sydney and Melbourne have risen the most among the capital cities, by around 80 and 60 percent, respectively. With these price increases, the value of Australian residential property has risen from around 4 to over 5 times gross household disposable income over the same time, and household debt has risen from 168 to over 190 percent of gross household disposable income.

¹ Prepared by Thomas Helbling (APD) and Grace Bin Li (RES), with inputs from Dirk Muir and Siegfried Steinlein (both APD). The chapter benefited from valuable comments by seminar participants at the Treasury of Australia.

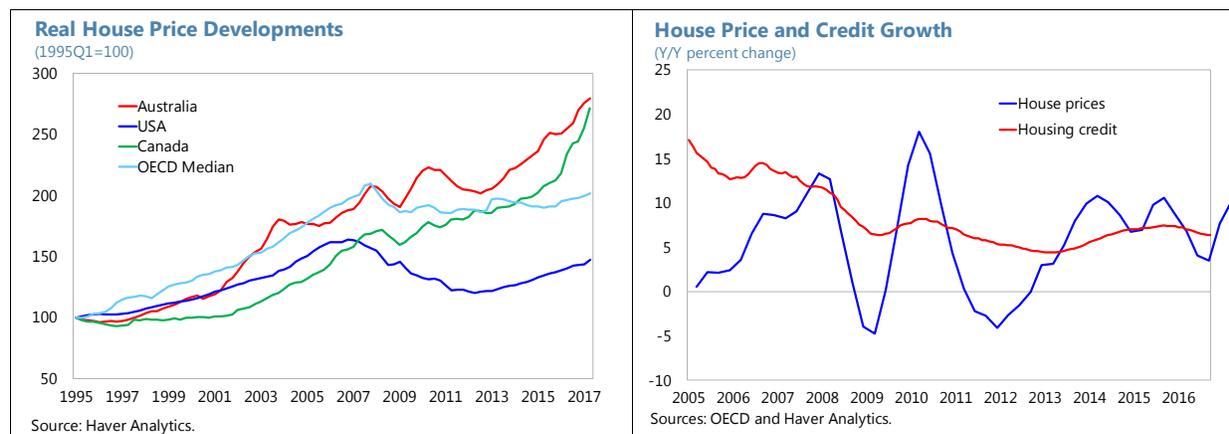
2. Concerns have been raised about the housing market imbalances that have emerged in the boom and the macro-financial impact of their possible resolution. With the strong upward momentum in housing prices, some house price overvaluation has emerged. At the same time, housing affordability has decreased markedly. A return to fair value in housing markets and greater affordability could potentially have a large macroeconomic impact, depending on whether it happens as a soft or hard landing. High household debt-to-income ratios could present risks to financial stability and amplify the impact of housing and other shocks on the economy.

3. On the structural side, a low housing supply elasticity has amplified the price impact of demand shocks and contributed to housing affordability issues. Australia is highly urbanized, and cross-country experience suggests that low supply elasticities are common in such a context. Nevertheless, housing affordability may become a constraint on the future growth of the main cities and their role as catalysts for productivity gains and future economic growth.

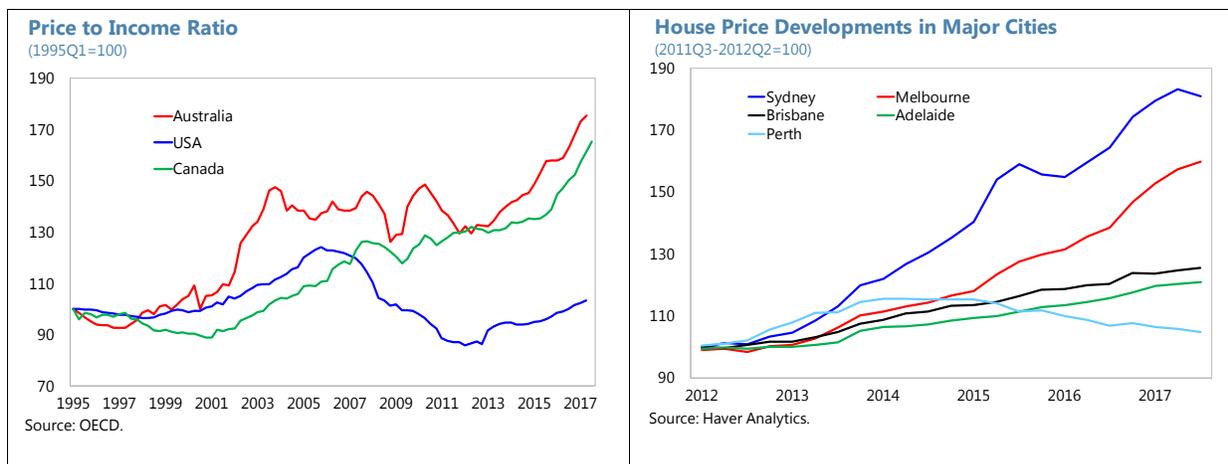
4. Against this background, this paper surveys housing market developments, prospects, and policies in Australia. It provides evidence to diagnose the housing boom and summarizes recent policy measures. It also links urbanization and housing affordability to long-term growth.

B. Diagnosis of the Housing Boom

5. Australia's housing boom over the past six years has been regional, concentrated in Sydney and Melbourne. The average real price of existing houses in the 8 capital cities has increased—when the boom began—but much of the increase has been driven by prices in the two major capital cities. This suggests that the housing market imbalances have been a regional phenomenon, and local factors have played an important role influencing the price dynamics.



6. Domestic demand fundamentals explain much of the price increase, although external factors have also contributed. On the domestic side, the beginning of the housing boom broadly coincided with the current monetary easing cycle, which began in November 2011 when commodity prices started declining. But a substantial narrowing of interest differentials across the entire maturity spectrum relative to major advanced economies has also contributed to lowering the financing costs of mortgages. The main reason for the regional nature of the housing boom is the

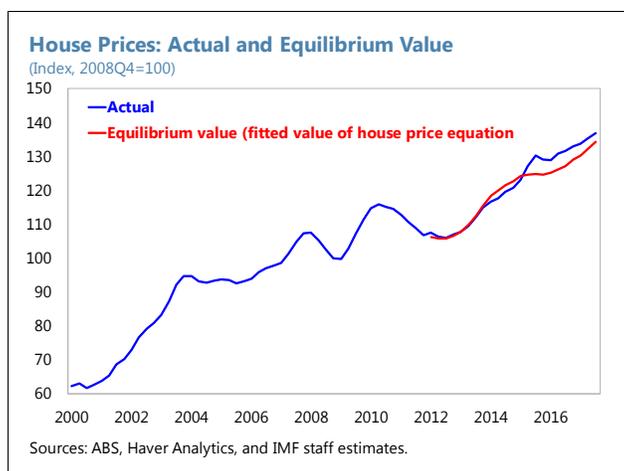


geographic shift in the underlying demand for housing from the rebalancing of the economy after the end of the mining investment boom around 2011-12. In this process, the greater metropolitan areas of Sydney and Melbourne have seen stronger growth in economic activity and have experienced increases in population growth above the national rate of 1.5 percent. Both cities have also seen growing foreign investor interest, particularly from the dynamic economies in East Asia. Inner-city apartments in Sydney and Melbourne are now part of the integrated global market for high-end real estate.

7. House price valuation models suggest overvaluation. To assess valuation, we use a simple reduced-form house price equation, following Igan and Loungani (2012). Using Australian time-series data we regress changes in real house prices on demand fundamentals.² The fitted values of the equation are the implied equilibrium real house prices. This approach suggests that average house prices as of 2017Q3 are moderately stronger than economic fundamentals would suggest, by some 5 percent to 15 percent, depending on econometric specifications and sample period for the estimation. One limitation of these estimates is that they are based on estimates for national house prices, which leaves the possibility that individual urban areas might be more, or less overvalued.³

² We regress the quarterly change in the average real house price for 8 capital cities on changes in affordability (measured by the log of the ratio of house prices to income per capita), the change in real income per capita over the previous quarter, the change in working-age population over the past year, the change in stock prices over the previous year, short- and long-term interest rates, and the real cost of construction, using ordinary least squares (OLS).

³ Another potential limitation is the estimation uncertainty around these estimates.



8. Prospects for housing market imbalances depend on prospects for demand shifters, and the longer-term resolution of the demand-supply imbalances. The unexpected shifts in demand beginning in late 2011 when commodity prices started declining seem to have run their course. On the valuation side, interest rates seem to have broadly bottomed out, and further upward pressure on prices from this channel seems unlikely absent any adverse demand shocks. Population growth is not expected to change, after increases from the mid- to late-2000s, related, among other factors, to the mining boom and higher arrivals on student visas. As for prospects for Sydney and Melbourne, the economic rebalancing away from mining to other activities will likely be completed soon, and activity and related recent increases in population growth will likely also slow somewhat. Across cities, internal migration patterns could be changing for some time, driven by the high house prices and costs of living in Sydney and Melbourne, with higher population growth in second-tier cities.

9. Price dynamics in the housing market also depend on long-term and short-term price elasticities of demand and supply. With demand factors likely stabilizing, much will depend on price elasticities. If longer-term elasticities are higher than short-term, some of the accumulated house price appreciation will be reversed, as higher supply will hit the market. In the next section, we will focus on the price elasticity of supply. While the price elasticity of demand also matters, it will play less of a role in the longer term if the supply elasticity is very high.

C. The Price Elasticity of Housing Supply in Australia

10. To quantify the supply elasticity, we model residential investment using Tobin's Q framework. The model (Tobin, 1969) posits that the ratio of investment to the capital stock is an increasing function of the ratio of the market price of capital to its replacement cost. Studies using this approach include Follain (1979), Green and others (2005), Vermeulen and Rouwendal (2007), and Grimes and Aitken (2010). The empirical settings are reduced form equations with price and cost shifters (typically, land cost, material cost, labor cost and various interest costs) as independent variables. It captures the intuition that investors and developers will produce more new housing when the margin between the price of a completed housing unit and its production costs is greater. Tobin's Q in the housing market is the ratio of the house price *HP* (market value) to the house

producing costs RC (book value). The investment-to-stock ratio $\frac{I}{K}$ is positively related to Tobin's Q , which, in the case of housing, is the ratio of house price HP and producing costs RC , $\frac{HP}{RC}$.

$$\left(\frac{I}{K}\right)_t = \beta_0 \left(\frac{HP}{RC}\right)_t^{\beta_1}, \quad \beta_0, \beta_1 > 0$$

11. Taking logs of the above equation, we obtain our econometric specification:

$$\log\left(\frac{I}{K}\right)_t = \log\beta_0 + \beta_1 \log\left(\frac{HP}{RC}\right)_t + \epsilon_t$$

where $\log\beta_0$ presents the constant term in our regression, β_1 shows the increasing relationship between Tobin's Q and the housing investment, and ϵ_t is an error term. Our sample covers the period 1988Q3 to 2017Q3.⁴

12. Our estimates suggest a low price elasticity of supply. Our analysis suggests that the housing supply elasticity (the elasticity of residential investment with respect to real house prices) in Australia is low in international comparison. The econometric estimation over the full sample confirms the positive and significant long-term price elasticity of residential investment. All variables in the equation are integrated or order one, and co-integration tests indicate the existence of one co-integrating vector. In Table 1, we present full sample regression results using three estimators: simple OLS (column 1), Dynamic OLS (DOLS) with one-lead and one-lag (column 2), and DOLS with 2 leads and 2 lags (column 2). All coefficients have the expected sign and yield an average elasticity of about 0.56 at the national level.

13. The long-term price elasticity of housing supply (residential investment) fell significantly between 2001-08 and 2012-14. We examine the evolution over time of the long-term price elasticity by running rolling regressions using 40-quarter windows. As documented in Stock and Watson (1993), DOLS allow us to obtain the time-varying elasticity over shorter samples. The national level housing supply elasticity was higher than unity before 2000s. However, when the recent housing boom started six years ago, the price elasticity of supply was considerably lower, although it recently increased again. Hsieh and others (2012) highlight the policy constraints on supply from the planning process, zoning restrictions, the provision and funding of infrastructure, land ownership patterns, and geographical constraints. Attitude toward higher density construction also matters.

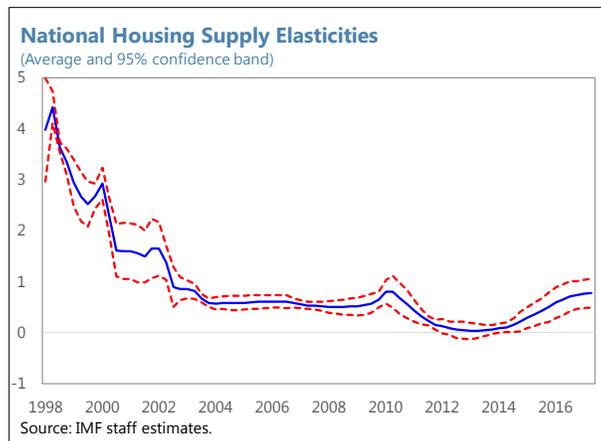
⁴ All the data (national average house price index, construction price index, residential investment, real GDP, GDP deflator, and residential investment, as well as other controls such as nominal interest rates and population growth) are data from the Australian Bureau of Statistics that we downloaded from Haver Analytics.

Table 1. Australia: The Long-term Elasticity of Housing Supply

Specification	Specifications		
	log(Housing prices/Construction Costs)	0.593*** [17.616]	0.551*** [12.305]
FD.log(Housing prices/Construction Costs)		-0.551 [-1.066]	-0.255 [-0.770]
D.log(Housing prices/Construction Costs)		-0.689*** [-5.138]	-0.674*** [-5.124]
LD.log(Housing prices/Construction Costs)		-0.280 [-0.940]	-0.563*** [-3.113]
F2D.log(Housing prices/Construction Costs)			-0.390 [-1.078]
L2D.log(Housing prices/Construction Costs)			0.150 [0.630]
Constant	9.905*** [1,056.998]	9.921*** [551.746]	9.922*** [526.709]
Estimation method	Simple OLS	DOLS(1,1)	DOLS(2,2)
Observations	84	81	79
R-squared	0.791	0.808	0.800
t-statistics in brackets			
*** p<0.01, ** p<0.05, * p<0.1			
Source: IMF staff estimates.			

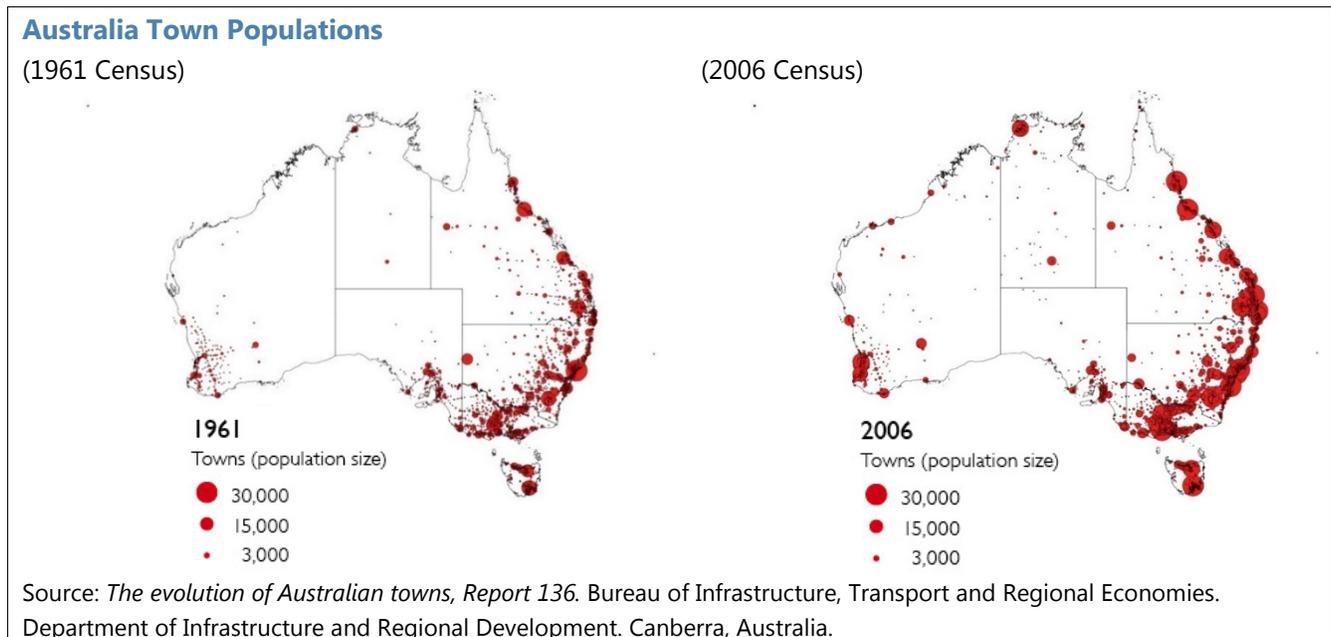
14. Australia's price elasticity of supply is low in international comparison, consistent with its high degree of urbanization. In the United States, the average price elasticity of supply for metropolitan cities with population above a half million is well above unity (Saiz, 2010). Using a different approach, a recent study found price elasticities of supply of supply above 1 not only for the United States, but also Canada, Denmark, and Sweden (Caldera and Johansson, 2013). Using state-level data, we find that the regional supply elasticities in Sydney and Melbourne are estimated at 0.21 and 0.61, respectively. The low elasticities for the two main capital cities is within the range found in some other, more densely populated OECD countries (for example, Caldera and Johansson, 2013, among others) and other studies.⁵ That said, the elasticity for Sydney is at the lower end of the range, consistent with anecdotal evidence of limiting zoning restriction, geographical constraints, and a period of underinvestment in infrastructure.

⁵ Gitelman and Otto (2012) use disaggregated house price data over the 43 local government areas and also estimate the supply elasticity in metropolitan Sydney. They find that the elasticity also depends on the type and the location of the property. Berger-Thomson and Ellis (2004) use a three-stage least squares system and analyze the sensitivity of the housing investment to the underlying factors.



D. Urbanization, Housing Supply, and Long-term Growth

15. The context to Australia’s housing market imbalances and low supply elasticity is its urbanized development. Australia is highly urbanized, with some three-fourths of the population living along the eastern coast. The share of the population living in urban areas rose from 82 percent in 1960 to about 90 percent in 2016. Economic activity is similarly concentrated geographically.



16. Mirroring urbanization, the largest cities have accounted for much of national economic growth. In the 1990s, the five larger capital cities (Sydney, Melbourne, Brisbane, Adelaide, and Perth) contributed about two-thirds to national real GDP growth. In 2015-2016, this share increased to four-fifths. Among the larger capital cities, Sydney and Melbourne dominate, both in terms of population and contributions to economic activity. The two cities house some two-

fifths of Australia's population and generate more than half of the country's value added. Recently, with the economic rebalancing after the mining boom, Sydney and Melbourne have again become the main engines of economic growth and have experienced population growth above the national rate.

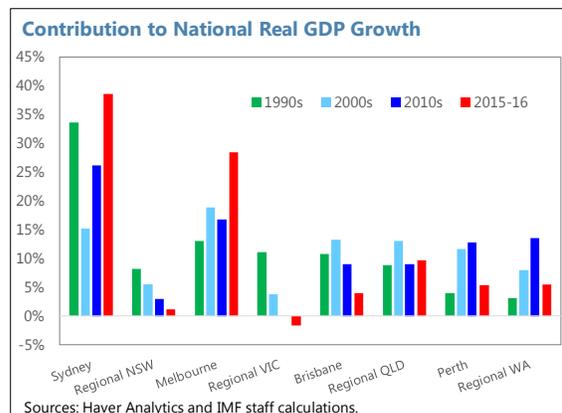
17. Rapid urban growth can clash with housing affordability. Krugman (1991) and others have pointed out that economic activity tends to

cluster around cities; proximity can generate increasing returns to scale or agglomeration externalities. Historically, when cities experienced outsized economic success, they would accommodate large increases in the demand for housing. New housing allowed thousands to participate and, at the same time, provide the basis for productivity increases in the locality (Hsieh and Moretti, 2015, and Glaeser and others, 2004). However, when cities grow, density increases, and with those increases come higher housing prices and rents relative to prices of other goods and services, as urban land is in limited supply. While productivity and wages tend to be higher in urban areas, the rising costs of living can still lead to conflicts between urbanization and housing affordability, especially in transitions, and challenge traditional social values (e.g., high home ownership) and preferences (detached single family houses).

18. Affordability and supply will likely remain policy issues even with a soft-landing in the housing market. First, the adjustment to higher real house prices in Sydney and Melbourne will continue, as relocation is costly and takes time. Anecdotal evidence already suggests interstate migration from Sydney to Melbourne, given lower housing costs in the latter. At the same time, there is some migration from the two capital cities to smaller cities within their respective states. While this may provide temporary relief, there will be additional demand for housing, given expectations of continued rapid population growth in Sydney and Melbourne. However, such expectations will only materialize if the two cities can accommodate this demand at a cost commensurate with productivity and incomes. Hence, housing affordability and long-term growth are linked.

E. The Policy Response to Housing Market Imbalances

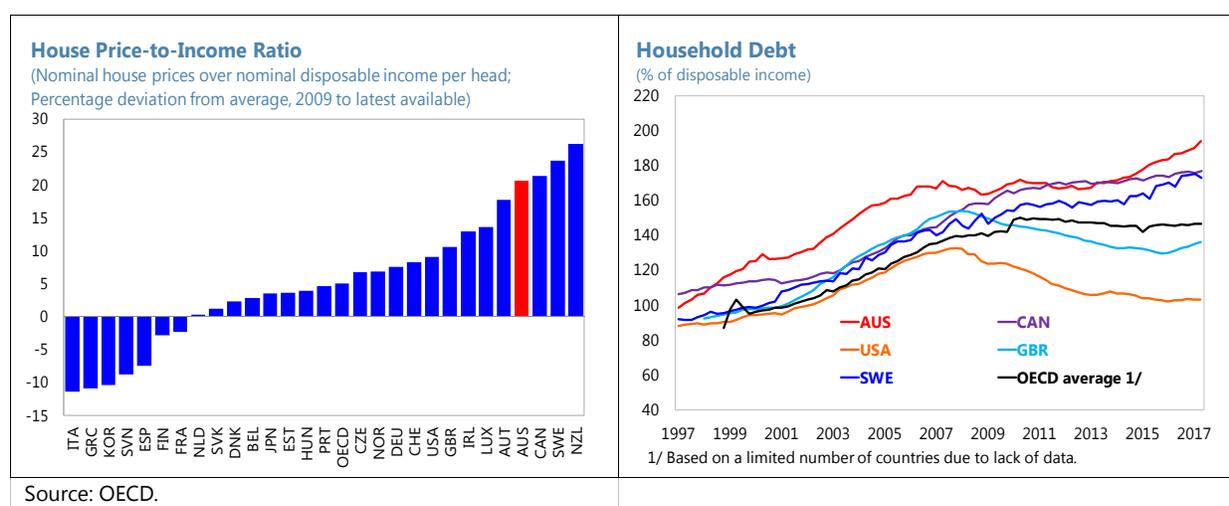
19. The Commonwealth and eastern States' governments have intensified efforts to address housing market imbalances. The policy packages were announced as part of the FY2017/18 budgets and aim to improve housing affordability. Table 2 provides an overview of the measures. Analytically, the measures can be broadly classified into supply and demand-side measures. The housing affordability packages were preceded by prudential policy measures to address the risk to domestic financial stability from the increased banking sector exposure to housing risks. This paper primarily discusses these housing-related measures, although it also touches on policy issues related to housing taxation. It takes the view that macroeconomic policies



are either too blunt a tool or involve undesirable tradeoffs between housing market objectives, mostly regional in the recent boom, and economy-wide stabilization objectives.⁶

Prudential Policies to Address Vulnerabilities and Risks from Housing

20. Rising housing market imbalances have coincided with higher household debt and bank exposure to related risks. Declining interest rates have raised equilibrium house prices and household mortgage debt has correspondingly increased. They have also raised concerns about speculative dynamics in housing markets with asymmetric information, the potential for myopic expectations, slow supply responses, and other frictions (e.g., borrowing or collateral constraints). Another concern is that negative shocks could trigger negative feedback loops between house prices, household and bank balance sheets, and aggregate demand, and lead to deep and protracted slowing in economic activity. The four large, systemically important Australian banks have a substantial exposure to these risks, which, in turn, can pose risks to domestic financial stability.



21. Prudential measures have been deployed to strengthen the resilience of household balance sheets and the banking system to housing and other shocks. Responding to increases in household debt ratios and related risks to banks' mortgage asset quality, the Australian Prudential Regulation Authority (APRA) has issued guidance asking banks to strengthen mortgage loan underwriting standards, through guidance on both loan-to-value (LTV) ratios and debt serviceability. It has also applied caps on new interest-only loans and caps on total domestic lending to private housing investors. APRA guidance on lending standards and growth was issued in December 2014, December 2016, and March 2017 (see Table 3). Following these measures, the share of riskier mortgages in new lending has decreased, gradually increasing the asset quality of the stock of

⁶ Consider, for example, the case of monetary policy, which has a direct influence on credit growth, household leverage and liquidity, thereby affecting housing demand, in addition to the direct valuation effects through interest rates. Using monetary tightening to improve housing affordability in the two main eastern capitals would run counter to stabilization objectives in an economy hit by the adverse aggregate demand effects of the end of the mining boom.

mortgage credit while decreasing the riskiness of the stock of household debt, everything else equal. The risks from household debt have also decreased because borrowers have used the savings from lower interest rates to build up buffers and as housing leverage (value of housing stock over mortgage debt) has declined.⁷ Banks have also become more resilient to housing market shocks because of increased capital. Their capital adequacy ratios place the four largest banks at the lower end of the upper quartile among international peers. Regulatory requirements for higher capital adequacy requirements had already been raised before the housing boom, also they have been refined since. Lending practices have also been scrutinized by the Australian Securities and Investment Commission (ASIC), including in 2014 when it investigated whether interest-only loans were consistent with responsible lending conduct.

22. Australia’s strategy to lower housing risks to household balance sheets and domestic financial stability has relied more on credit supply measures than in some other countries. The prudential measures operate through credit supply—tighter lending underwriting standards reduce the amounts of riskier loans in new mortgage lending and refinancing, everything else remaining the same. While this can also reduce actual credit growth, such reductions tend to be temporary amid strong demand fundamentals. Other countries have also applied macro-prudential policy instruments that directly affecting household demand for housing and related credit. In Hong Kong SAR, for example, different stamp duty rates are applied to different types of buyers or property (IMF, 2017). Buyers of a second home for investment purposes, for example, face a higher stamp duty for macro-prudential reasons. In Australia, such policies have only been applied to foreign buyers.

Policies to Affect the Demand for Housing

23. Demand-side policy measures have provided tax-relief to first-time home buyers and raised the after-tax price of property purchases by foreign buyers. On the domestic side, the focus has been on supporting first-time home buyers’ purchases, given the strong social preference for home ownership. For example, New South Wales and Victoria have exempted first-time home buyers from stamp duties since July 2017. In addition, first-time buyers also receive a grant (in effect a subsidy). On the external side, the costs of house purchases of foreign buyers have been raised through several measures. Victoria, New South Wales, and Queensland have levied stamp duty surcharges on foreign buyers, while Victoria and New South Wales have also levied land tax surcharges on foreign owners. Under the IMF’s so-called Institutional View, measures that differentiate between residents (or domestic buyers) and nonresidents (or foreign buyers⁸) are

⁷ With most mortgages being variable rate mortgages, the savings from lower interest rates can be used to build repayment buffers at unchanged debt service payments. Such buffers are supported by tax incentives.

⁸ Foreign buyer specifically refers to those buyers that need a purchase approval from Australia’s Foreign Investment Review Board. This group of buyers includes nonresidents and foreigners who are temporary residents.

classified as capital flow management measures (CFMs).⁹ At the Commonwealth level, the CFMs include limits on sales for foreign investors by developers (but not individual owners).

24. The impact of demand-side measures on general housing affordability is ambiguous.

These measures are in the first-instance redistributive, that is, they increase or lower housing affordability for specific groups of buyers, not for buyers overall. For example, the measures for first-time home buyers lower the purchase price after taxes (or after the grant) for this category of buyers. Everything else equal, demand from first-time home buyers is higher, and with unchanged supply in the short term, house prices before taxes might have to increase, for other buyers to hold off on a purchase.

25. The case for applying policies specifically aimed at foreign buyers is not clear-cut.

Australia housing market has seen increased interest for residential real estate from foreign buyers seemingly for investment purposes since about 2011. Nationwide, such interest currently accounts for around 5 percent of housing sales (Kearns, 2017). In some local markets, it seems to play a more substantial role, including in that for newly built apartments in Melbourne and Sydney, in which foreign buyers are believed to account for around 25 percent of sales. With such a market share, foreign buyers will be among the marginal buyers influencing prices, although this role does not necessarily call for policy intervention aimed at this group of buyers. One reason for intervention could be the pecuniary externality arising from the demand of foreign buyers—the fact that the increase in their demand raises house prices—in the presence of constraints (or frictions) for other buyers. Under such circumstances, the market outcome would not be optimal. With borrowing constraints because of tighter lending standards for many buyers, this condition seems meet. Supply constraints and social considerations (e.g., affordability and home ownership) could be other reasons. Others considerations are macro-financial externalities (e.g., fire sale externalities) or the possible price pro-cyclicality induced by uninformed foreign buyers that primarily respond to price momentum rather than domestic fundamentals. While there are reasons to be concerned about the participation of foreign buyers in local housing markets, it should be noted that some of the same issues may also apply to other buyers, including, for example, domestic investors. An important question therefore is whether separate measures for foreigners are needed. In Australia's case, the prudential regulatory measures are unlikely to influence foreign buyers since, unlike domestic investors, they rarely borrow from Australia's banking system.

Supply-Side Policies

26. Recent policy measures at the Commonwealth and State levels should increase the housing supply elasticity over time. Supply-side policies aim to increase the supply of housing. The Commonwealth has announced the release of some federal land in Melbourne as part of the FY2017/18 housing affordability package, and established a Government Property Register owned

⁹ The Institutional View on capital flow liberalization refers to the removal of CFMs, which are specifically designed to limit capital flows. However, liberalization does not rule out the maintenance of prudential measures nor the temporary re-imposition of CFMs under certain circumstances, if capital flows pose risks to macroeconomic or financial system stability. For details, see IMF (2016).

by non-corporate Commonwealth entities, with a view to encourage proposals for alternative uses. Higher density building in urban areas increases the efficiency of land use and housing supply, and States have changed zoning rules to allow for such density increases. Infrastructure is a precondition for land to be developable, and both the Commonwealth and States have increased infrastructure spending recently. Longer-term plans provide more certainty for developers, investors, and potential home owners on where to build and settle. In urban areas, common zoning, planning, and other regulatory standards can lower the cost of building and, possibly, for a more rapid supply response. Streamlining standards across local councils in urban areas or common standards in States have been important developments in this respect.

Tax Policy

27. Housing tax reforms could complement recent policies to address housing market imbalances. The existing policy packages have not involved changes to tax policy settings. Such changes could, however, also contribute to reducing housing market imbalances, including by encouraging transactions and alternative use of land and property, and through changes in incentives in the demand for housing. Table 4 summarizes the current housing tax regime.

28. Stamp duties discourage housing transactions at a time of structural transformation in urban areas. The States' stamp duty regimes are inefficient—they have a narrow tax bases—only transactions—and discourage transactions in existing properties that could have more productive alternative uses. It should be replaced with a systematic land tax regime applying to all residential and commercial properties. A land tax is an efficient tax on a largely fixed factor. Such a change would raise challenging transition issues, given the importance of stamp duties as a revenue source for States and the cash flow problems this could raise for so-far untaxed owner-occupiers. As demonstrated by the recent reform in the Australian Capital Territory, the transition can be gradual, which helps to avoid a disruptive impact on State revenues. Cash flow problems for low-income homeowners can be addressed through deferment and other options too.

29. The Commonwealth housing tax settings favor leveraged housing investment in upswings and might encourage excess demand for housing. In international comparison, Australia's federal housing tax regime provides strong tax incentives for home ownership and for leveraged housing investment (Table 5). While some tax incentives for home ownership are the norm, some of the incentives are not limited (e.g., the capital gains tax exemption or the exemption from means testing for old age pensions). Such settings may encourage "excess" demand for housing, excess in the sense that families prefer more to less space. On the investment side, the combination of high capital gains tax discount rates and unlimited negative gearing can encourage leveraged real estate investment in market upswings. While similar tax incentives are also present in other countries, they tend to be more limited.

F. Summary and Conclusions

30. The recent housing boom in Australia is primarily a regional boom, driven by demand shifts and amplified by legacy imbalances and a slow supply response. While Australia's real

house prices have risen significantly faster than the OECD average over the past few years, much of this rise has been driven by developments in Sydney and Melbourne even though some of the demand drivers have been national, notably lower interest rates. The regional nature of the boom reflects the shifts in the strength of regional economic activity and population growth since the end of the mining investment boom. In the denser urban setting of the two cities, supply constraints amplify the price impact of demand shocks, especially in Sydney.

31. While the boom may be over soon, housing affordability issues may not disappear given prospects for further growth in the eastern capitals. In the dense urban settings of Sydney and Melbourne, any shift in demand will tend to have a larger price impact than in less urbanized settings. But prospects for the eastern capitals turning into considerably larger cities also means that these capitals need to prepare for affordable housing supply in the future, as both short-and long-term price elasticities of supply are low. In the long term, urbanization, labor mobility, and productivity can be closely linked.

32. Housing-related policies have begun to address housing-related imbalances and should be complemented by tax reform. Reducing the imbalances requires a multi-pronged approach amid strong demand fundamentals. The combination of more infrastructure investment and recent zoning and planning regulatory reform should contribute to increase the supply of developable land and enable its more efficient use. Continued prudential policies are important to manage the risks to the financial sector from housing. Housing tax reform would strengthen the effectiveness of the overall policy response.

Table 2. Australia: Key Features of Government Housing Supply and Affordability Measures as of End-2017

Measure	Effective date	Description
Commonwealth Level		
First Home Super Saver Scheme	Jul 1 2017	Contribute money from annual superannuation contribution limit (up to \$15,000 per year for a maximum of \$30,000) for a first-home deposit. Provides tax advantages to saving within superannuation framework.
National Housing Infrastructure Facility (NHIF)	Jul 1 2018	Administered by newly established National Housing Finance and investment Corporation (NHFIC). \$1bn (\$600 mn concessional loans; \$5225 mn equity investment; \$175 grants) to provide financing to State/Territory and local-government owned corporations for housing and utilities, and Community Housing Providers (CHPs). Will also invest its funds to become self-sustaining.
Affordable housing bond aggregator	Jul 1 2018	The affordable housing bond aggregator is designed to provide cheaper and longer-term finance to CHPs and will be underpinned by a government guarantee.
Western Sydney housing package	2018	Deliver a coordinated package of planning reform to accelerate housing supply in Western Sydney. The package will be delivered as part of the Western Sydney City Deal, a collaborative partnership between the Commonwealth, New South Wales and eight local governments.
National Homeless and Housing Agreement (NHHA)	Jul 1 2018 (projected)	The new National Housing and Homelessness Agreement sets out a small number of specific conditions which States need to meet to receive 100 per cent of their share of the Commonwealth housing and homelessness funding. This will secure improved outcomes, but in a way that is achievable for the States and Territories and does not jeopardise the funding of core social housing and homelessness services. The new agreement will maintain the level of funding under existing agreements and, for the first time, ensure that funding allocated to homelessness services will be ongoing and indexed. The new agreement is needed because three out of four of the benchmarks under the current National Affordable Housing Agreement have not, or are unlikely, to be met. ¹
Release surplus Commonwealth lands	Jul 1 2017	The Commonwealth has established an Australian Government Property Register, which encourages proposals for alternate use of Commonwealth land. Commonwealth land in Melbourne has been released for approximately 6,000 new dwellings.
Adding home sale proceeds to superannuation funds for Australians 65+	Jul 1 2018	Up to \$300,000 from the sale of a home owned as a principal residence for at least 10 years may be deposited into their superannuation account. Incentivizing further sales of homes.
Capital gains tax (CGT) discount for investors in affordable housing	Jan 1 2018	Additional 10 percent discount on CGT for affordable housing managed through a CHP, and must be held as affordable housing for at least 3 years.
New South Wales		
Infrastructure investment to unlock housing supply	Jul 1 2017	\$1.6 bn for priority projects; \$369 mn grants and \$500 mn concessional loans to local government; additional \$545 mn over 4 years for Special Infrastructure Contributions to speed up development in more regions.
Stamp duty exemptions and grants for first time buyers	Jul 1 2017	No stamp duty for first time buyers for any home under \$650,000; discount for up to \$800,000; \$10,000 grant.
Rezoning as Priority Precincts	Jul 1 2017	Allow for faster and easier approvals, to allow fast-tracking of house building.
Victoria		
First Home Owner Grant	Jul 1 2017	Up to \$20,000 for regional Victoria (next 3 years); retained at \$10,000 in Melbourne.
Social Housing Growth Fund	Jul 1 2017	\$1 bn to support up 2200 social housing places over 5 years
Stamp duty exemptions for first time buyers	Jul 1 2017	No stamp duty for first time buyers for any home under \$600,000; discount for up to \$750,000
Vacant Residential Property Tax	Jan 1 2018	Applies to dwelling vacant more than 6 months in previous calendar year, in inner and middle rings of Melbourne; relies on self-reporting.
HomesVic	Jul 1 2017	Co-purchase properties for up to 400 first home buyers without a large enough deposit (2-year pilot)
Queensland		
First Home Owners' Grant	Jul 1 2016	\$15,000 (\$20,000 in FY2017/18) grant to first-time home buyers for new houses under \$750,000
Queensland Housing Strategy	Jul 1 2017	\$1.8 bn over 10 years. Encourages partnership between private firms and CHPs to build up to 8000 units across state of social and affordable housing. Support homeownership for disadvantaged and aboriginal populations.

Sources: Commonwealth, New South Wales, Victoria and Queensland budget documents for FY2017/18; Commonwealth Mid-Year Economic and Fiscal Outlook 2017; <https://www.qld.gov.au/housing/building-home/first-home-grant>; <http://www.hpw.qld.gov.au/housingstrategy>

Table 3. Australia: Regulatory Activity on Lending Practices, 2014-17

Measures	Authority	Date introduced
Introduction of Prudential Practice Guide, which outlined APRA's expectations for sound mortgage lending practices	APRA	Late-2014
Supervisors would be alert to annual growth in a bank's investor housing lending above a benchmark of 10 percent	APRA	Late-2014
Supervisors would be alert to high levels of higher-risk mortgage lending, such as lending with a high LVR and/or loan-to-income ratio and lending to owner-occupiers with lengthy interest-only periods	APRA	Late-2014
Serviceability assessments for new mortgage lending should include interest rate buffers of at least 2 percentage points above the effective variable rate applied for the term of the loan, and a minimum floor assessment rate of at least 7 percent to allow borrowers to accommodate future increases in interest rates	APRA	Late-2014
A loan review was undertaken to determine whether lenders' interest-only housing lending practices complied with responsible lending obligations	ASIC	Late-2014
Increased its analysis of lenders' underwriting standards, including strengthening household income definitions in pre-loan serviceability calculations, e.g. applying a discount to some income such as bonuses and overtime	APRA	Early-2015
Additional scrutiny of lenders' underwriting standards for interest-only loans, including tighter requirements for the assessment of the borrowers' ability to repay after the initial interest-only period	APRA	Early-2015
Conducted onsite reviews of past and new loan documents to spotlight additional areas where stronger actions are needed to enhance resilience	APRA	Early-2015
Countercyclical capital buffer (Basel III) was incorporated into the capital standards for banks and other ADIs	APRA	Early-2016
Reviewed large mortgage broker lending practices	ASIC	Late-2016
Revisions to Prudential Practice Guide to formalize the recent tightening of standards on serviceability buffers and interest-only lending for residential mortgages.	APRA	Late-2016
Introduction of a limit on the flow of new interest-only lending to 30 percent of new residential mortgage lending, and within that: <ul style="list-style-type: none"> • Strict internal limits on the volume of interest-only lending at loan-to-valuation ratios (LVRs) above 80 percent • Strong scrutiny and justification of any instances of interest-only lending at an LVR above 90 percent 	APRA	Early-2017
Lending to investors to remain below the benchmark of 10 percent growth (first introduced in 2014)	APRA	Early-2017
Serviceability metrics, including interest rate and net income buffers, to be set at appropriate levels for current conditions	APRA	Early-2017
Lending growth in higher risk segments of the portfolio, e.g. high LTI loans, high LVR loans and very long-term loans, to be constrained	APRA	Early-2017

Notes: APRA is the Australian Prudential Regulation Authority. ASIC is the Australian Securities and Investments Commission

Table 4. Australia: Taxation of Residential Real Estate and Other Assets

Commonwealth	Housing Assets		
	Owner-occupied	Investment (Non-owner-occupied)	Equity
Taxation of (imputed) rent	No	Yes	Equivalent to housing investor
Taxation of capital gains	No	Yes (a standard income tax rate, with 50 percent concession if owned for more than one year)	Equivalent to housing investor
Deductibility of interest payments (and other expenses)	No	Yes (including from non-rental income categories)	Equivalent to housing investor
States and Territories			
Property taxation			
(1) State land taxes	No	Yes	...
(2) Council rates	Yes	Yes	
Transaction tax (stamp duty)	Yes	Yes	(no or lower – <i>to be double-checked</i>)
GST on new housing construction and improvement	Yes	Yes	...
Benefit system: means test exemption for old age pension	Yes	(No)	(No)

Table 5. Real Estate Taxation in Selected Countries

	Capital Gain Tax	Land or Property Tax	Negative Gearing	Land or Property Transfer (Stamp) Duty
Australia	As part of national income tax, capital gain tax applies to real estate assets (acquired after September 20, 1985) with exemption for main residence property. Some concession or discount (50%) will be granted for investment property if owned for more than one year (discount also applies to non-property assets held for more than one year).	States collect land tax usually with exemption for owner-occupied properties, or below state-specific thresholds. States also enable each council to levy rates and charges on properties to help fund local infrastructure and services. Some surcharges are on vacant land or absentee owners.	Australia allows property investors who make a loss to reduce the tax they pay on other types of income (e.g. wage or business income), without total ceiling of the deductions.	Stamp duty is applied by individual States to the sale or transfer of land or a business, with assistance and concessions to the first-home buyers.
Canada	The capital gains inclusion rate is currently 50 percent, with exemption for the sale of a principal residence property.	Municipal governments levy property tax, generally proportional to the full value of the properties for mostly all households across income groups.	Canada does not allow the transfer of income streams. Net capital loss can be deducted with limitation to only taxable capital gain for the year (carry back for three years and carry forward indefinitely.)	Land or property transfer tax is collected by the provincial governments, with rebates for a newly built home and/or first-time buyers in a few provinces.
Hong Kong SAR	No capital gains tax.	Property tax is charged at a standard rate of 15% of the property's net assessable value, which is the assessable value after deduction.	No negative gearing.	In October 2012, the Special Stamp Duty was raised to up to 20 percent on resales within 36 months (20 percent within first six months of purchase, 15 percent between six and 12 months, 10 percent between 12 and 36 months), while a buyer's stamp duty of 15 percent was introduced for buyers of residential properties who are not HKSAR permanent residents. This was followed by a doubling of the existing ad valorem stamp duty rates to a maximum of 8.5 percent in February 2013. The ad valorem stamp duty is levied on nonresidential and multiple residential property purchases.
New Zealand	New Zealand does not have a general capital gains tax. However, gains on the sale of personal property are taxable where the taxpayer's dominant purpose in acquiring the property is for resale. In 2015, New Zealand introduced a presumption of resale intention at purchase if an investment property is being resold within two years ("bright-line test"), to strengthen the enforcement of existing capital gains taxation rules.	Local authorities charge property tax on land based on the official valuation of land. The rates vary considerably from one locality to another.	New Zealand allows negative gearing and the transfer of losses to other income streams, with some restrictions.	New Zealand does not levy stamp duty or transfer taxes.

Table 5. Real Estate Taxation in Selected Countries (concluded)

	Capital Gain Tax	Land or Property Tax	Negative Gearing	Land or Property Transfer (Stamp) Duty
Singapore	Generally, the gains derived from the sale of a property in Singapore are not taxable. However, the gains may be taxable if you buy and sell property with a profit seeking motive.	Based on the Annual Value of the property, a yearly property tax is levied depending on the type of the property (residential or non-residential, owner-occupied or non-owner occupied), and is usually on a progressive scale by the value bands.	No negative gearing.	Stamp duty is applied to buyers and sellers, with a surcharge for foreign buyers. In 2017, the duty rates for sellers were reduced by 4 percentage points for each year of holding and eliminated beyond three years.
Sweden	A tax rate of 22% applies to the sale of private real property and tenant owner's apartments. Under certain circumstances, it is possible to defer the taxation of gains, up to a certain amount, from selling a private real property when a new private real property (house or apartment) is bought either in Sweden or the EU/European Economic Area (EEA) area. The deferred gain will be subject to investment income tax on a notional income computed based on the deferred gain.	Properties are subject to a state real estate tax, ranging between 0.2% and 2.8% on the tax assessed value of the property. The rates depend on the property type and use.	No negative gearing.	Stamp duty is levied on the transfer of real estate and on mortgage loans, at rates of 4.25% for companies and 1.5% for individuals.
United Kingdom	Capital gains tax is levied for buy-to-rent, business premises, or land, when the properties are not under the Private Residence Relief exemption.	Properties are subject to the council tax on the annual basis. The rates depend on the property type and use.	UK adopted the negative gearing in 2012, with the ceiling of £50,000 or 25 per cent of income, whichever is the higher.	Stamp Duty Land Tax is levied when buying properties or land in England, Wales and Northern Ireland, above the threshold of £125,000 for residential properties and £150,000 for non-residential land and properties. Certain tax discount or relief is applied for first-time buyers.
United States	Capital gains tax on property is imposed with deduction of \$250,000 for individual (\$500,000 for a married couple filing jointly) on the sale of real property if the owner owned and used it as primary residence for two of the five years before the date of sale.	Most local governments in the United States impose a property tax based on the assessed fair market value of the property.	In principle, the US federal tax does not allow the transfer of income streams. Taxpayers can deduct expenses of renting property from their rental income.	Stamp duty is levied on the legal transfer of assets or properties by counties.

References

- Australian Government, 2014, "The Evolution of Australian Towns", Report 136, Department of Infrastructure and Regional Development.
- Berger-Thompson L. and L. Ellis, 2004, "Housing construction cycles and interest rates". RBA Research Discussion Paper 08.
- Caldera, A. and A. Johansson, 2013, "The Price Responsiveness of Housing Supply in OECD Countries" *Journal of Housing Economics* 22, 231–249.
- Follain, J., 1979, "The Price Elasticity of the Long-Run Supply of New Housing Construction," *Land Economics* 54 (2), 190-199.
- Gitelman, E., and G. Otto, 2012, "Supply Elasticity Estimates for the Sydney Housing Market" *Australian Economic Review* 45 (2), June, 176-190.
- Glaeser, E., R. La Porta, Fl. Lopez-de-Silanes, and A. Shleifer, 2004, "Do Institutions Cause Growth?" NBER Working Paper No. 10568, June.
- Green, R., S. Malpezzi, and S. Mayo, 2005, "Metropolitan-Specific Estimates of the Price Elasticity of Supply of Housing, and Their Sources," *American Economic Review* 95, 334-339.
- Grimes, A. and A. Aitken, 2010, "Housing Supply, Land Cost and Price Adjustment," *Real Estate Economics* 38, 325-353.
- Hsieh W., D. Norman and D. Orsmond, 2012, "Supply-Side Issues in the Housing Sector," *RBA Bulletin*, September, 11–19.
- Hsieh, C. and E. Moretti, 2015, "Housing Constraints and Spatial Misallocation," NBER Working Paper No. 21154. Issued in May, revised 2017.
- Igan, D., and P. Loungani, 2012, "Global Housing Cycles," IMF Working Paper No. 12/217 (Washington: International Monetary Fund).
- International Monetary Fund, 2016, "Capital Flows—Review of Experience with the Institutional View," IMF Policy Paper, at <https://www.imf.org/external/np/pp/eng/2016/110416a.pdf>
- International Monetary Fund, 2017, *People's Republic of China—Hong Kong Special Administrative Region: 2016 Article IV Consultation—Staff Report*, International Monetary Fund, IMF Country Report No. 17/11.
- Kearns, J., 2017, "Australian Property—Financial Stability and Foreign Involvement," Speech given at the Aus-China Property Developers, Investors and Financiers, Sydney, November 20, 2017.
- Krugman, P., 1991, "Increasing Returns and Economic Geography," *Journal of Political Economy* 99, 3 (Jun), 483-499.

Saiz, A, 2010, "The Geographic Determinants of Housing Supply" *Quarterly Journal of Economics*, August, 1253-96.

Stock, J., and M. Watson, 1993, "A Simple Estimator of Cointegrating Vectors in Higher Order Integrated Systems", *Econometrica* 61, 783–820.

Tobin, J., 1969, "A General Equilibrium Approach to Monetary Theory," *Journal of Money, Credit and Banking* 1(1), 15–29.

Vermeulen, W. and J. Rouwendal, 2007, "Housing Supply and Land Use Regulation in the Netherlands," Tinbergen Institute Discussion Paper 07-058/3, CPB Netherlands Bureau of Economic Policy Analysis and VU University Amsterdam