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# Planning restrictions harm housing affordability

PETER TULIP

THE CENTRE FOR INDEPENDENT STUDIES


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# Introduction

Housing in Australia is too expensive. Sydney and Melbourne are the third and fourth least affordable housing markets in the world.* Rising housing costs are leading to increasing inequality, commuting times and rental stress. Home-ownership is falling. Workers and firms are moving away from their most-productive locations.

A series of government and academic reports have attributed our high housing prices to land use policies.** For example, planning restrictions reserve most of our cities for low-density detached housing. Where higher density is allowed, limits on height and the floor-to-area ratio prevent more dwellings being provided. These and other restrictions limit the supply of housing and hence raise its price. That is, we could have more affordable housing if we allowed more housing to be built.

A large body of international research supports this conclusion. However, this research is often technical. The main objective of this paper is to provide a short and relatively accessible summary. I discuss some criticisms of the research and suggest they reflect simple misunderstandings. For quantification, I draw on estimates from my own research.***

# The impact of planning restrictions on housing prices

The effect of planning restrictions on housing prices can be estimated by what people pay for the legal permission (i.e. Development Approval) to put an extra dwelling on a site. This is analogous to estimating the effect of taxi licences or import quotas, for example, by the amount that producers pay for them. This permission is valuable because it is scarce — our housing shortage is really a shortage of approvals.

The large value placed on legal permission can be seen when rezoning increases the density allowed on a site. The value of the site will often rise by several hundred thousand dollars for each new dwelling. For examples, see Kendall and Tulip (2018, Appendix A),

* Demographia (2020, Schedule 2) based on ratio of median house price to median household income for 309 large cities. Only Hong Kong and Vancouver are less affordable. Morgan Stanley publish similar estimates.

** These include Moran (2006); OECD (2010); Kulish, Richards and Gillitzer (2011); Productivity Commission (2011, 2017); Housing Supply and Affordability Reform Working Party (2012); RBA (2014); Senate Economics References Committee (2015); CEDA (2017); Stevens (2017); Daley, Coates and Wiltshire (2018), and NSW Productivity Commission (2020) among others.

*** Kendall and Tulip (2018); Saunders and Tulip (2019); Jenner and Tulip (2020).

Millar, Vedelago and Schneiders (2015), much of the literature on value capture or the recurring corruption allegations that bedevil our politics. If developers did not have to pay for this permission, the cost of supplying housing would be much less. The scarcity and value of approvals can also be seen in the way developers discuss 'site values' on a per-dwelling basis; recognising that the value of a block of land is approximately proportionate to the number of dwellings that legally can be built on it.

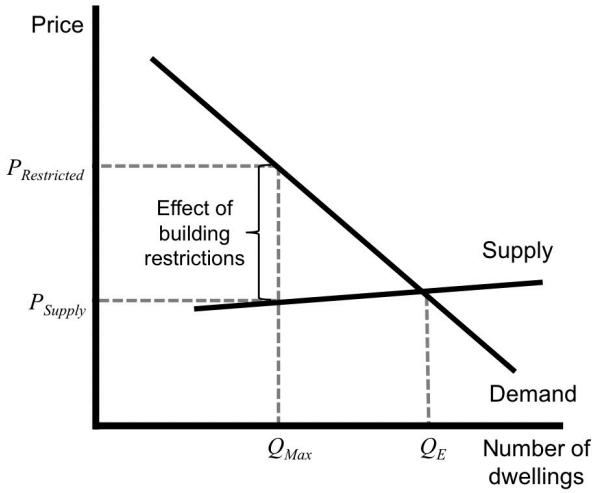
Although examples of planning restrictions boosting prices are common, it is not clear how representative they are. To estimate average effects for city-wide markets we calculate the difference between the average sale price of the dwelling and what it costs to supply, where costs include a normal profit margin. In a competitive market, this is what developers will pay for legal permission to supply extra dwellings.

A simple supply-demand diagram (Figure 1) illustrates the approach. Planning restrictions reduce the supply of housing from $Q_E$ to $Q_{max}$, pushing the price up to $P_{Restricted}$. The difference between $P_{Restricted}$ and the cost of supply, $P_{Supply}$, often referred to as the 'zoning tax,' provides a measure of the severity of these restrictions and the shortage they cause. This is the standard way in which economists measure the severity of quantitative restrictions.

Estimates of the effect of planning restrictions on the price of detached houses are shown in Table 1 (from Kendall and Tulip, 2018). In Sydney, for example, the average house sold for $1.16 million in 2016. A relatively small proportion of this (34 per cent) can be accounted for by the value of the structure. Most of the price (66 per cent) represents the value of the land.

However, land as a physical thing is not especially scarce and so not especially valuable. Homebuyers pay very little for extra yardage. Holding other characteristics (location, number of bedrooms, bathrooms etc) constant, buyers are estimated to

**Figure 1: Stylised Apartment Market with Binding Quantitative Constraint**




only pay an extra $411 on average for each extra square metre of land. This is well below the average market price of land of $1,137 per metre. The difference between the two prices is that the market price includes the legal right to put a dwelling on that property — this is what makes urban land so expensive. This legal right adds $489,000 to the value of the property, adding 73 per cent to the other costs. Similarly, the legal permission to build is estimated to add 69 per cent to the cost of houses in Melbourne, 42 per cent in Brisbane and 54 per cent in Perth.

One implication of these results is that buyers pay a lot for location, but do not especially value yard area. As a result, there are huge incentives to subdivide. Incremental increases in the density of detached housing would be highly profitable but are being prevented. That helps explain why housing in Australian cities is so expensive.

However, from a policy perspective, the estimates are so large that more than incremental increases are called for — a marginal increase in density will not

**Table 1: Average House Price Decomposition 2016, $000s, (per cent of total)**

| | Sydney | Melbourne | Brisbane | Perth |
|---|---|---|---|---|
| Average House Price | 1 160 (100%) | 793 (100%) | 542 (100%) | 588 (100%) |
| Dwelling Structure | 395 (34%) | 268 (34%) | 267 (49%) | 242 (41%) |
| Land | 765 (66%) | 524 (66%) | 275 (51%) | 346 (59%) |
| *Physical land* | *276 (24%)* | *201 (25%)* | *116 (21%)* | *140 (24%)* |
| *Zoning effect* | *489 (42%)* | *324 (41%)* | *159 (29%)* | *206 (35%)* |
| Zoning effect as a percentage of physical input costs | 73% | 69% | 42% | 54% |

Source: Kendall and Tulip (2018)

Table 2: Average Apartment Prices and Costs, 2018, $000s

| | Sydney | Melbourne | Brisbane |
|---|---|---|---|
| Average sale price | 873 | 588 | 470 |
| Cost of supply | 519 | 491 | 460 |
| Effect of planning restrictions ($000's) | 355 | 97 | 10 |
| Effect of planning restrictions (per cent of costs) | 68% | 20% | 2% |

Source: Jenner and Tulip (2020)

be enough. We need to replace detached houses with apartments. Hence, the policy debate and the rest of this paper both focus on higher density. Conveniently so, as estimates for apartments are simpler.

Table 2 shows estimates of the effect of planning restrictions on apartment prices (from Jenner and Tulip, 2020). In 2018, the average Sydney apartment sold for $873,000 but only cost $519,000 to supply. So restrictions boosted prices by $355,000 — or 68 per cent of costs. Planning restrictions raised the cost of apartments by 20 per cent in Melbourne and 2 per cent in Brisbane (Appendix B provides details).

Supply costs can be measured in different ways. The estimates in Table 2 refer to the extra costs that would be incurred in supplying an apartment by raising the typical building height an extra storey. This 'building up' raises average construction costs but means extra land does not need to be used. These costs are slightly lower than the costs of 'building out' — keeping average construction costs constant but using extra land.

## Alternative explanations

Attributing high housing prices to planning restrictions is consistent with (in fact, complementary with) other research that emphasises high and rising demand. For example, Saunders and Tulip (2019) emphasise the contributions of immigration and low interest rates. Mulheirn (2017) and Pawson *et al* (2020, Sections 3.4.1 and 9.6) point to taxes and financialisation.

These demand-side explanations do not exclude a large role for planning — rather, they require it. High and rising demand only raises prices if supply is limited. In the absence of a barrier to construction, builders would respond to rising demand by building more housing, not by raising prices. In terms of the supply-demand diagram shown in Figure 1, planning restrictions make the supply curve steep. It is the interaction of inelastic supply with rising demand that explains higher prices. Conversely, supply restrictions only boost prices if demand is rising. Any explanation that *only* discusses supply or demand, but not both, is incomplete.

This argument also explains how rising prices can be attributed to planning restrictions even though the planning code has not changed. The inertia in the planning code is actually the problem. While our urban population, and hence the demand for housing, is growing steadily, our urban structure hardly changes. New building is difficult — if not prohibited — in much of our cities; so rising demand means ever-increasing prices.

The same arguments apply to local variations. Nicole Gurran (cited in Williams, 2020) has argued that housing is expensive because of proximity to nearby amenities. But again, unusually high prices can only be sustained by restricting supply. For example, apartment-buyers in the inner suburbs of Sydney pay more than double the cost of supply (more than half a million dollars) for the benefit of central location. This premium is sustained because a relatively small share of Sydney's new apartments have been built in inner suburbs, as discussed in Appendix A. In contrast, central Melbourne and Brisbane have comparable commuting distances and amenities to inner Sydney but their prices remain near cost. The difference is that Melbourne and Brisbane have been building apartments where buyers want them — in inner suburbs — whereas Sydney has not.

## Consistency with other research

The approach and estimates for detached houses discussed in the previous section are qualitatively similar to those found in international research including for coastal US cities (Glaeser and Gyourko, 2003), Southern California (Sunding and Swoboda, 2010), Florida (Cheung, Ihlanfeldt and Mayock, 2009) and New Zealand (Lees, 2019). The approach and estimates for apartments are similar to, or smaller than, those found for Manhattan (Glaeser et al 2005), Auckland (Lees, 2019), Zurich (Wälty, 2020) and commercial property in Britain and Europe (Cheshire and Hilber, 2008). Each of these studies uses different data sets and examines sensitivity to different variations. So the results are robust. Moreover, judging by journal status and the large number of citations, this research approach has been very thoroughly vetted.

Despite this, the NSW Minister for Planning Rob Stokes (Stokes, 2020) has complained that the approach used for estimating the effect of restrictions

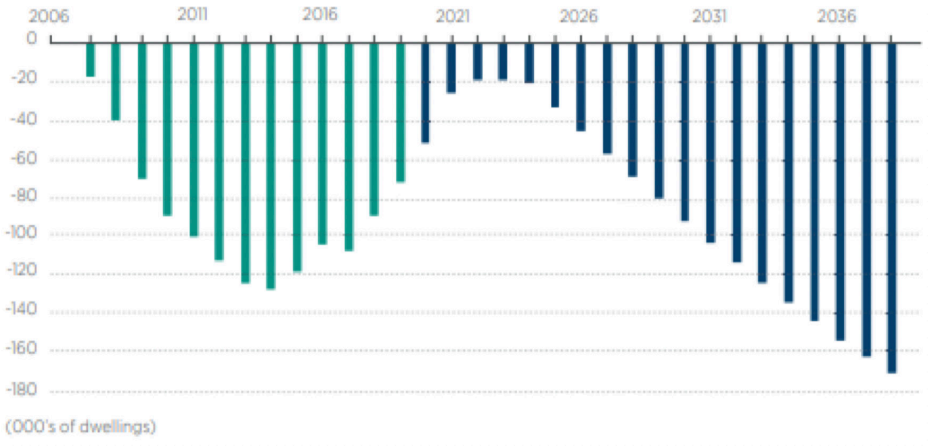
on apartment prices is "contested". That appears to be an attempt to shed unjustified doubt on the results. It is true that the results are not well understood by the general public and users of social media. However, among researchers who have looked closely at the issue, the approach is not controversial. If a credible critique exists, it is not cited in the papers above nor in surveys of the topic, such as those by Gyourko and Molloy (2015), the US Government (2016), Glaeser and Gyourko (2018) or Hilber and Vermeulen (2016).

While comparing prices with costs is the leading approach to identifying housing shortages, other approaches lead to qualitatively similar conclusions.

For example, Lejcak, Rambaldi and Tan (2020) regressed variations in housing prices on variations in land use regulations in Greater Melbourne and find very large effects. The NSW Productivity Commission (2020) summed up building completions since 2006 and subtracted an estimate of household formation. The Commission concluded that the failure of NSW housing supply to keep pace with demand since 2006 has resulted in an underlying shortage of around 70,000 dwellings in 2019, which is expected to widen to 170,000 by 2038 (Figure 2). For a similar analysis for other states, see Daley, Coates and Wiltshire (2018).

**Figure 2: Housing Undersupply in NSW**

Cumulative difference since 2006 between underlying demand and supply of housing
Actual (green) and Projected (blue)




Source: Reproduced from NSW Productivity Commission (2020, Figure 7.5)

# Costs versus benefits of planning restrictions

## Costs of planning restrictions

The main reason for worrying about planning restrictions is that they make housing unaffordable. Reasonable housing is being placed out of the reach of large sections of society. This has several dimensions.

### *Planning restrictions are inequitable*

The main beneficiaries are wealthy landowners who receive unearned capital gains. The burden falls on renters and home buyers, who tend to be poor and young. High housing costs eat up a disproportionate share of the budgets of low-income households. As saving a deposit grows increasingly difficult without parental assistance, home ownership is increasingly becoming hereditary.

### *Planning restrictions are inefficient*

They drive a wedge between price and marginal cost. For what people are paying, they could have more things they genuinely value. Home-owners could have a shorter commute and an extra bedroom or bathroom. Young families need no longer be trapped in insecure rentals. Workers could move to where the best-paying, most productive jobs are. Firms could take advantage of the specialisation and productivity benefits of concentrating workers together.

In short, affordable housing means a happier, more secure and more prosperous society, where people have more freedom to choose their own living arrangements.

## Benefits of planning restrictions

The costs of planning restrictions, mentioned in the previous section, need to be weighed against benefits. However, estimating benefits has not been a focus of the recent research. Most of the papers cited above estimate the effect of restrictions on housing prices. However, they do not estimate whether this effect is good or bad. This narrow focus is prominently acknowledged in the papers.

Despite these acknowledgements, a common complaint is that the research ignores the benefits of planning restrictions. For example, this is almost the entirety of Rob Stokes' (2020) recent contribution. The onus of documenting benefits should arguably be on those who claim they are important. Nevertheless, here are some comments.

Many residents want to preserve the low density of their neighbourhoods. They dislike the look of tall buildings and the shadows, crowds and traffic that accompany them. These are all legitimate value judgements that should be respected.

However, policy-makers need to balance these preferences against those of homebuyers who like high density and the walkable communities it creates. We can presume this latter group is large because of the significant proportion of real estate advertisements boasting of proximity to shops, commercial activity and transport hubs. These features of high density are selling points.

We can also presume that many home-buyers are happy with high density because it is difficult to find examples of houses near high-rise developments falling in price. If anything, overseas research suggests the opposite occurs. As judged by willingness to pay, high rises do not seem to be a noticeable source of disamenity. Studies of land use restrictions in the UK (Cheshire and Sheppard, 2002) and the US (Turner, Haughwout and van der Klaauw; 2014, Section 4.2) find small (relative to the costs) or negative effects on the price of nearby properties. The CIS plans to quantify these effects in Australian housing markets in future research.

The side-effects of high density extend beyond neighbourhood amenity. Concentrating people together is good for technological growth, productivity and employment. It reduces automobile use, carbon emissions and urban sprawl. A large body of research finds that the economic and environmental benefits of high density are substantial, relative to the costs. For a survey see Ahlfeldt and Pietrostefani (2019).

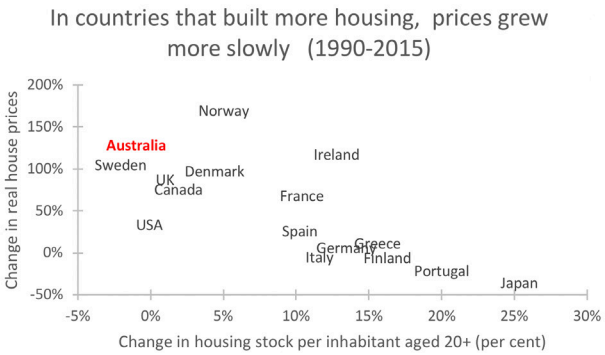
A common reaction to the finding that planning restrictions have large effects on affordability is that these effects outweigh the benefits of restrictions. Rob Stokes suggests this is a "pretty clear implication" of Jenner and Tulip (2020). That may be, but it involves a value judgement that extends beyond the findings of that paper. That judgement is consistent with overseas research showing small or negative external benefits.

# Would more supply make housing more affordable?

A large body of econometric research and the overwhelming majority of economists (Coates, 2018) say yes. The effect is easy to see in international comparisons (Figure 3). Countries that build housing quickly, such as Japan, have enjoyed lower housing costs. Countries that restrict housing, like Australia, have a growing affordability problem.

The same correlation is evident within the United States. Cities that make building difficult — like San Francisco, Los Angeles, Honolulu or New York — have housing that is up to four times as expensive as cities where it is easy to build, like Atlanta or Houston (Glaeser and Gyourko, 2018).

**Figure 3**




Source: OECD Affordable Housing Database (stock; prices)

Ian Mulheirn (2017) and Cameron Murray (2020) have complained that extra supply would have small effects on affordability. This just means that there is a large task ahead of us. Extra supply takes a long time to appreciably lower prices. For context, 203,000 Australian dwellings were completed in 2019, representing about 2 per cent of the nation's housing stock. A mid-range estimate of the price elasticity of demand for housing is that a 1 per cent increase in dwellings would reduce housing prices by about 2.5 per cent (Saunders and Tulip 2019, Section 5.3). So if the annual supply of new housing doubled, the cost of housing would decline by an extra 5 per cent per year. In practice, even a fraction of that seems politically ambitious. A shortage that was created by decades of under-building will take decades to unwind.

Another criticism is that that there cannot be a significant shortage of apartments because supply is growing quickly. See Phillips and Joseph (2017), Murray (2020), Rowley, Gurran and Phibbs (2017) or Pawson, Milligan and Yates (2020, Section 9.6). More recently, numerous local councils in Sydney have argued that population growth will fall following the COVID-19 pandemic, creating an excess supply of housing (Taylor 2020).

While one could debate the assumptions underlying these arguments, their fundamental problem is that they focus on changes, when it is levels that matter for policy. Rapid growth in supply, relative to changes in population or the number of households, implies the shortage is *decreasing* — it does not imply that the supply is adequate or that housing is affordable. Even if prices fall by more than they have in previous downturns, they will still substantially exceed marginal cost. That is the relevant criterion for determining whether prices are excessive and whether we need more housing.

Planning and building decisions should not be based on how busy the construction industry will be in the next few months, but on whether prices are likely to be excessive in several years' time. The long-run structural problem of housing affordability will outlast the pandemic.

# Appendix A: Where should we build extra housing?

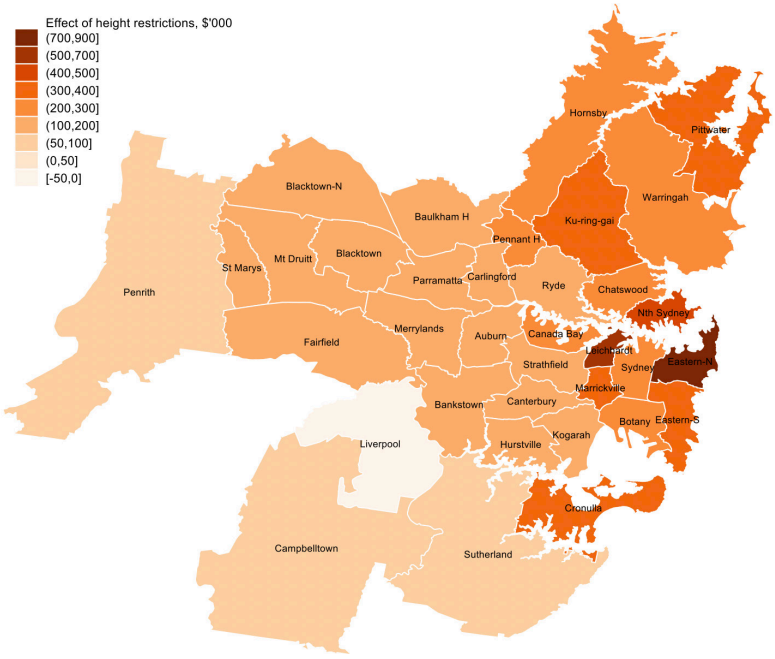
Estimates of planning effects at a local level indicate where extra building would create the most value.

Figure 4 shows the difference between the average sale price of new apartments and the cost of building up within each region. To increase sample sizes, the estimates cover a longer, earlier period, 2011 to 2016, than the estimates in Table 2. Jenner and Tulip (2020) explain how the estimates are constructed.

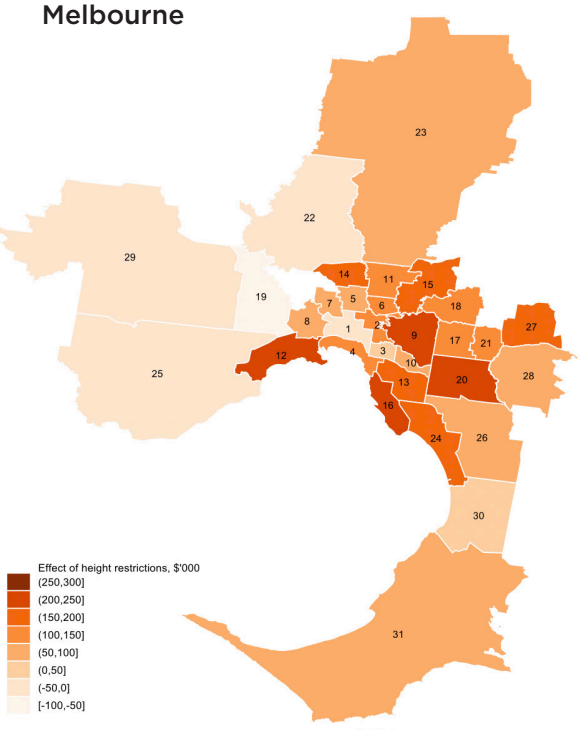
**Figure 4: Apartment Shortage by SA3**

**July 2011–December 2016**

## Sydney

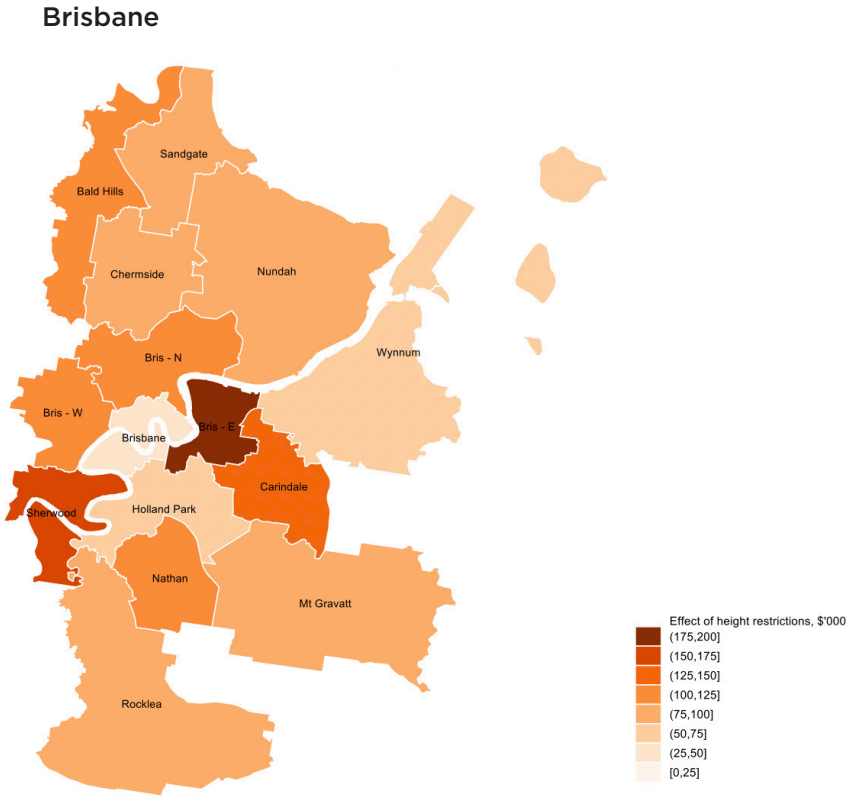



## Melbourne




SA3s ranked by distance to CBD

1 Melbourne City
2 Yarra
3 Stonnington – West
4 Port Phillip
5 Brunswick–Coburg
6 Darebin – South
7 Essendon
8 Maribyrnong
9 Boroondara
10 Stonnington – East
11 Darebin – North
12 Hobsons Bay
13 Glen Eira
14 Moreland – North
15 Banyule
16 Bayside
17 Whitehorse – West
18 Manningham – West
19 Brimbank
20 Monash
21 Whitehorse – East
22 Tullamarine–Broadmeadows
23 Whittlesea–Wallan
24 Kingston
25 Wyndham
26 Dandenong
27 Maroondah
28 Knox
29 Melton–Bacchus Marsh
30 Frankston
31 Mornington Peninsula




Source: Jenner and Tulip (2020)

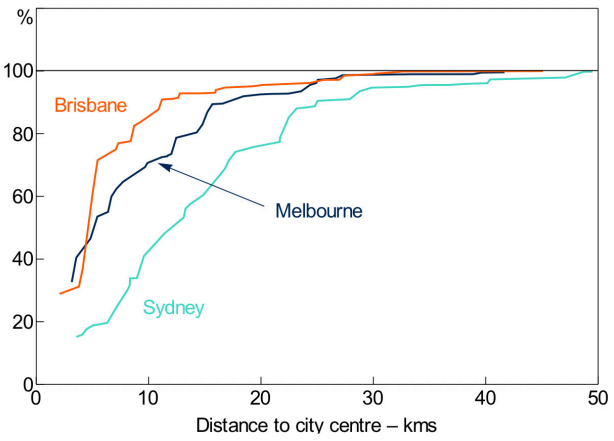
The map of Sydney shows the effect of restrictions to be small in outlying areas like Penrith, Liverpool or Campbelltown, moderate in the middle ring and large near the centre. The largest gaps between demand and cost — exceeding $400,000 — occur in inner areas of Sydney, such as the Eastern Suburbs, Leichardt and North Sydney. In contrast, prices near the centre of Melbourne and Brisbane are close to costs — even though relative travel times and amenities are comparable to inner Sydney.

These differences seem to reflect differences in building patterns. As Figure 5 shows, apartment building in Brisbane and Melbourne has been concentrated in the centre, whereas most of Sydney's apartments have been built in middle-ring suburbs. As discussed in Section 2, a large location premium — as in inner Sydney — can only be sustained with supply restrictions.

The dispersal of apartment building in Sydney is sometimes supported on the grounds that it is less costly to build in outlying suburbs, where land is cheaper. However, home buyers place a higher value on apartments near the city centre and will readily pay the higher costs of central locations. Development in Melbourne and Brisbane has accommodated these preferences.

**Figure 5: Apartment Completions by Distance to CBD**

**Cumulative share of city total, 2013–18**




Source: Jenner and Tulip (2020)

# Appendix B: Detailed Estimates

The table below decomposes estimates for apartments. It is reproduced from Jenner and Tulip (2020), where the estimates are discussed in detail.

The top row shows the average price of new apartments. The estimates come from unit record data from CoreLogic and reflect several thousand sales in each city. The next several rows show costs and their breakdown. The most important component is the average construction cost. These are unpublished estimates from the ABS Building Activity Survey. The estimates include underground carparks, common areas, architect fees and builders margin, but exclude the cost of land.

There are two main ways to supply extra apartments. We can construct more buildings like those recently constructed, each of which will require purchase of land. This is called building out, estimates for which are discussed in Jenner and Tulip (2020, Section 6). Or we can make those buildings higher. The latter approach — 'building up' — is simpler, because it avoids the need to purchase and value extra land. However, it incurs extra constructions costs. Costs typically increase with building height reflecting the need for extra reinforcing, lifts and greater safety standards. That extra cost is shown in row 4, labelled 'extra height'.

The difference between prices, shown in the first row, and costs (second row) is the estimate of the effect of planning restrictions (bottom two rows).

There is room for debate as to whether some of the entries in Table 3 reflect social costs that need to be incurred. Some economists argue that developers' margins include scarcity rents that are another effect of planning restrictions. And much of the demand for infrastructure is determined by population and would be incurred regardless of where or whether new buildings are constructed. Were we to exclude items like these from the cost of supply, the estimated effect of planning restrictions would be greater.

**Table 3: Apartment Prices, Costs and the Effect of Building Restrictions**
**Per apartment, $'000, 2018**

| | Sydney | Melbourne | Brisbane |
|---|---|---|---|
| Average new sale price | 873 | 588 | 470 |
| Cost of building up | 519 | 491 | 460 |
| Comprising: | | | |
| Average construction cost | 340 | 312 | 287 |
| Extra height | 24 | 38 | 29 |
| Professional fees | 12 | 12 | 11 |
| Marketing and sales | 20 | 20 | 18 |
| Finance | 29 | 28 | 26 |
| Developer's margin | 74 | 71 | 64 |
| Infrastructure charges | 18 | 10 | 26 |
| Effect of building restrictions ($000s) | 355 | 97 | 10 |
| Effect of building restrictions (% of cost) | 68 | 20 | 2 |

Source: Jenner and Tulip (2020)

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# About the Author

## Peter Tulip

Peter Tulip joined the Centre for Independent Studies as Chief Economist in August 2020. Before that he spent nine years in the Research Department of the Reserve Bank. He has also worked for the US Federal Reserve Board, the OECD and the Commonwealth Treasury. He regularly publishes in and reviews for international economic journals. His recent publications have focused on housing and monetary policy.  He has a PhD from the University of Pennsylvania.

# Related Works

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