

The Effect of Zoning on Housing Prices – Response to questions

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Ross Kendall's and my recently published Research Discussion Paper, '[The Effect of Zoning on Housing Prices](#)' estimated that zoning has large effects on housing prices. Among generally favourable coverage, the paper attracted many questions and criticisms (for example, [here](#), [here](#), [here](#), [here](#) or [here](#) and links below). This note answers some of these.

Most of the following arguments are made in the paper, but a rephrasing and elaboration may be helpful. I also provide links to references, some of which unfortunately require subscriptions. Before dealing with detailed questions, it is useful to discuss the overall plausibility of our results.

Anecdotal evidence

Appendix A of the paper provides examples of zoning having large effects on land prices. To give another: a property at 661 Chapel St, South Yarra was zoned for 13 storeys when it was sold for \$20 million in early 2014. It was then rezoned for 31 storeys and sold later in 2014 for \$56 million ([Source](#)). There are many similar examples (for more, see [here](#)). We interpret this evidence as indicating a large unmet demand for permits to build. People will pay hundreds of thousands of dollars for the legal right to put an extra dwelling on their property. It is not clear how else this evidence might be interpreted.

Other research

Our conclusions and approach are widely followed in top international journals. Our approach is emphasised in surveys of the research by [Gyourko and Molloy](#) and [Glaeser and Gyourko](#). The conclusions of this research are endorsed by leading economists from across the political spectrum; for example, [John Cochrane](#), [Paul Krugman](#), or the US [Obama Administration](#). Our estimates for detached houses are qualitatively similar to those found for separate studies of coastal US cities, Southern California, Florida and New Zealand. Each of these studies uses different datasets and examines robustness to different variations. Our estimates for apartments are similar to those found for Manhattan and substantially smaller than that found for commercial property in Europe. Despite the breadth and profile of this research, we have been unable to find published critiques of it.

These observations cast doubt on claims that there is a simple and obvious error in our approach. They imply that criticisms of our approach are novel, important and apply to a large, well-established body of research. If these criticisms were robust, they would be publishable.

Detailed questions and criticisms

We say that zoning accounts for large increases in housing prices. But other research finds that this increase is explained by interest rates/immigration/taxes/debt etc.

The two explanations are complementary, not alternatives. Demand for housing has increased for many reasons. Previous RBA [speeches](#) and [research](#) have emphasised low interest rates. But why has that higher demand resulted in high prices rather than more construction, as has occurred in many [other places](#)? The reason is that supply is inelastic. There are several possible reasons why supply might be inelastic – our paper discusses these and concludes that the main reason appears to be

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land use regulations. It is the interaction of inelastic supply, due to zoning, and rising demand that explains the rise in house prices. This explains why, despite interest rates being very low across all advanced economies, sharp increases in house prices have been concentrated in localities with more restrictive zoning.

But zoning regulations have not tightened.

Yes. In fact it is the rigidity of regulations that is the issue. In the face of rising demand for housing, regulations that previously were not binding (for example, restricting an area to detached houses) are now preventing increases in density.

We ignore the benefits of zoning.

Yes, we readily acknowledge this. We only measure costs -- in particular, the effect on prices. This is not because we think benefits are unimportant, but because we can only write one paper at a time.

Why attribute the wedge between housing prices and the cost of supply to zoning?

This is perhaps the issue on which there is the most scope for legitimate disagreement. As some observers have noted, a gap between prices and costs can (and arguably will) develop for many reasons: changes in demand, population, land release and so on. What those observers do not explain is how that gap can persist. Some barrier has to stop people subdividing properties at low cost and then selling them at high market prices. We discuss several possibilities (time to build, imperfect competition, adjustment costs, etc) in Section 5.3 of the paper and conclude that the most plausible explanation is that subdivision is illegal in large parts of our cities. That conclusion is supported by substantial indirect and anecdotal evidence and the absence of other plausible explanations. We recognise however, that none of those pieces of evidence is compelling on its own.

The paper ignores details and differences in planning regulations.

Appendix A provides examples of specific changes in zoning. Although these anecdotes suggest our results are plausible, they do not provide a quantitative estimate of overall effects. Researchers in other countries have examined variations in planning regulations in detail. As we note in Section 2 of the paper, surveys of this research conclude that regulations often have large effects on prices.

Construction is booming and real rents are falling. There is no housing shortage.

It is important to distinguish between changes and levels. There is a shortage of housing in the sense that prices have been bid up far above the cost of supply. Maybe that shortage is less severe now than in the recent past, but that is a separate question. If housing supply was greater, rents would be even lower.

Construction is booming. Regulations don't seem to be holding it back.

In 2017 residential investment was 5.7% of GDP, not that different to its average since 2001 (5.5%). On widely used [measures](#), Australia's housing stock per person has been growing slower than other countries. So the current boom is not extreme; there is scope for expansion.

Furthermore, very large increases in prices have been needed to generate this level of construction. As the international research documents, in cities and countries with elastic supply, smaller increases in house prices would have been needed.

Increasing supply would not lower housing costs.

In a [recent survey](#) of 26 leading Australian economists, 21 respondents (81%) agreed that building more homes would make housing cheaper than otherwise. The effect of demand and supply on prices can be easily seen in housing auctions. It can also be seen in comparisons of US cities. As [Glaeser and Gyourko](#) show, house prices are close to construction costs in cities with liberal zoning but are two or three times as high in cities with restrictive zoning.

Our estimates of apartment costs omit the cost of land.

Yes. That is because we measure marginal costs, not average costs. An extra apartment can be supplied by adding it on top of an existing project, without purchasing more land. There may be lower cost ways to supply more apartments by going out instead of up, but that would strengthen our argument.

Our estimates of apartment costs understate financing costs and margins.

We make a generous 15 per cent allowance for the financing of *marginal construction* costs, which are incurred towards the end of project development. This excludes the larger costs of financing land purchase, for reasons discussed above.

If anything, we are more worried that our estimates double-count financing costs. This is because the Rider-Levett-Bucknell cost estimates we focus on are tender prices, which include a return to the builder, including margins. However, most financing costs are associated with the land purchase, so this is unclear.

Other issues with apartment costs.

We have received further information on apartment costs since publication of our paper. While some of this suggests our estimates may be a bit high, other information suggests they are too low.

Our estimates did not include parking spaces. (Though these are included in the ABS estimates below or the CIE estimates we cite in the paper). According to Rider Levett Bucknell ([2017](#), p S38), it costs between \$38 000 to \$59 000 to include an extra parking space in the basement of a high-rise. Our data on CoreLogic apartment sales does not say whether a basement parking space is included in sales, but sale notices suggest this is common. Inclusion of parking costs would imply a moderate upward revision to our cost estimates.

A data source we should have placed more weight on is the ABS [approvals survey](#) (Cat No 8731.0). This indicates that the per-unit construction cost of an apartment block in Sydney was \$323 000 in 2016, and slightly lower in other cities. This estimate includes margins, financing costs, GST, parking and other non-residential space (lifts, hallways) but does not include certain land-related factors or the difference between marginal and average costs. Even making a generous allowance for these, the estimate is well below our estimate of \$471 000.

Balancing all this information is difficult and there is considerable scope for further work. We readily acknowledge that different weights or assumptions could lead to somewhat lower estimates of the zoning effect for apartments than ours. However, for those estimates to be substantially lower – by enough, say to change the wording of our conclusions – would require unusual assumptions or data sources other than those we cite.

A simple check on the plausibility of our construction cost estimates is the residual land valuation. Developers typically pay over \$500 000 per unit that they are allowed to build for a block of land in

inner Sydney, around \$300 000 in middle ring suburbs and small amounts on the outskirts. We do not know how to average these, but they seem comparable to our estimates of the zoning effect.

It is the difficulty in obtaining finance that is the constraint preventing development.

Yes, this is an important constraint. But it largely reflects zoning. The large margin that is made on building each apartment is capitalised into the cost of land, so that overall returns to builders equal those elsewhere in the economy. The returns to the owners of land are higher. Hence construction is only marginally profitable and banks are appropriately ambivalent about financing it. Moreover, inelasticity of supply increases price volatility and the riskiness of development projects and hence the cost and availability of finance.

Our approach seems to imply large effects in 1851 Brisbane.

[Cameron Murray](#) of the University of Queensland has run similar regressions to ours on land values in Brisbane in 1851 and generated similar results to our estimates for 2016. Cameron's blog post is light-hearted and quirky, but does not compare like with like. As Brendan Coates of the Grattan Institute has pointed out, Cameron compares large farms distant from the town centre with small residential properties in the centre. As in our study, there is a large difference in land values. But unlike our study, there is no incentive for subdivision. In contrast, our paper compares residential properties within each suburb, holding other characteristics constant.

Cameron has argued that our approach always finds large effects, even when there is no zoning. A quick glance at Figure 2 of our paper or the international research disproves this. We estimate the zoning effect to be negligible in Brisbane, Perth and Melbourne in the early 2000s.

Subdivision is sometimes difficult: you can't build a house on 1m².

Cameron Murray argues that some properties are difficult to subdivide, and hence the value of the legal right to add a dwelling is hypothetical. This argument ignores the fact that many other properties are easy to subdivide and that increases in density are always possible. Even if we restrict the discussion to detached houses, there are large variations in lot size within suburbs. The marginal subdivisions – which determine the cost of supply – are those which are most profitable, not those which are most difficult.

What you call 'zoning' should really be referred to as 'land use regulations'.

We think 'zoning' is common usage for the policies we describe. Nevertheless, we are happy to use the term 'land use regulations' when talking with people who care about this distinction.