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MELBOURNE'S PANDEMIC RENTAL DYNAMICS:

an (un)natural experiment in excess supply

TIM HELM

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Executive summary

This report examines the consequences for housing costs of population change and housing construction in Melbourne over the course of the pandemic.

Melbourne in 2019 was one of the developed world's fastest growing cities, with high and finely balanced rates of growth in demand and supply for housing.

As a result of closed borders and extensive lockdowns over the course of 2020 and 2021 the city experienced a major population shock – one far larger than for other Australian cities. In the year to mid-2021, Melbourne recorded its first year of negative population growth since the Great Depression, losing around 80,000 residents or 1.6% of the population. Meanwhile, construction continued more or less unabated.

The scale of the imbalance between construction and population growth over 2020 and 2021 makes pandemic-era Melbourne a remarkable natural experiment in the consequences of 'flooding the market' with additional housing.

Melbourne's experience can shed light on the question of whether new housing can ever be supplied fast enough to out-run adaptive consumption and migration responses and meaningfully lower housing costs, which is central to the debate within economics and policy about the benefits of widespread upzoning.

We estimate that over the two years to mid-2021 construction in excess of population growth generated an excess supply of dwellings of 5.1% to 6.7% of the housing stock – equivalent to adding 100,000 to 130,000 dwellings more than were required to house the population at the pre-pandemic average household size.

The speed and scale of this excess supply shock far outstripped what even the most optimistic advocate for supply-side regulatory reform would claim is possible – meaning Melbourne's experience should be a living demonstration of the value of land use deregulation.

Yet the effects on housing costs were small and short-lived. Average market rents fell by only 12% to the bottom of the market in mid-2021, and had recovered to pre-COVID levels by mid-2022.

As Prosper's forthcoming *Speculative Vacancy* report will show, 35,000 more dwellings than usual sat vacant or under-used over the entire year of 2021 – a 51% increase that absorbed one-third of the excess supply shock. The remainder was absorbed by way of greater per-capita housing consumption caused by a combination of changing preferences and demand responses to lower prices.

The consequences of this 'virtual building boom' for housing affordability were minor: the average Melbourne tenant saved around $2,200 for just one year.

By contrast, a mortgaged new owner of the median Melbourne home now faces $30,000 more per year in interest expenses as a result of increases in the cash rate over the last 12 months.

The Melbourne experience is worth further study. More detailed empirical work could improve upon this exploration of the data by quantifying the contributions of changing preferences, elastic demand, migration, wealth effects and rising wages to the quick rebound in housing costs.

In the meantime, the findings sound a cautionary note for policymakers placing market supply at the centre of housing policy.

Melbourne's experience suggests the most effective means of promoting more affordable housing for those in stress is not on the supply side, but on the income side – as demonstrated during the pandemic itself.

Over the same period considered in this report, the temporary coronavirus supplement delivered eligible welfare recipients almost $9,000 each – four times what 'flooding the market' managed to briefly deliver in lower housing costs.

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About Prosper

Prosper Australia is an independent, not-for-profit organisation that advocates for a more just tax system. Our research is focussed on the management of exclusive and essential resource allocation through revenue policy. This includes land and other natural resources, natural and government-instituted monopolies.

It is our position that the unearned and unproductive streams of private income derived from these elements of our economy should be more heavily taxed. Meanwhile, taxes on the productive sector should be eased, making for a more equitable and more efficient economy.

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Introduction

You'd never get ethics permission for an experiment like this. Take a city of 5 million, growing at 100,000 per year, construction rates steady – a city on a stable trajectory of rapid growth. Now freeze time, drop in 130,000 extra dwellings, and resume.

What happens to housing costs?

That experiment was, broadly speaking, the experience of Melbourne over the course of 2020 and 2021. With one of the world's longest and harshest lockdowns, borders more or less closed to internal and international migration, and a one-way escape valve for an exodus of foreign citizens, the city's population shrank in absolute terms by 80,000 people, while construction continued more or less unabated.

The result? An urban population by mid-2021 some 340,000 residents short of the level expected in projections from just two years prior – or, expressed another way, a city with 130,000 dwellings more than previously thought to be needed.

Pandemic policies engineered a massive over-supply of dwellings. What were the consequences for housing costs?

Excess supply is an 'out-of-equilibrium' situation. Melbourne during the pandemic is also an 'out-of-sample experience': short of edge cases such as Detroit and the hollowed-out cities of the United States rust belt, urban populations have rarely shrunk in absolute terms – and we've never seen this in rapidly-growing modern Australia.

The consequences are important to examine. What happened is more than just pandemic history.

Melbourne's experience is also an illuminating case study for housing policy generally, because it offers insight into the limits of market solutions to problems of unaffordable housing.

For those who argue the prominence of supply-side factors in shaping house prices, and advocate on that basis for massive upzoning of urban land, Melbourne's experience offers a case study of what happens when we succeed in 'flooding the market' with housing.

This report is an exploration in data of this unusual natural experiment. As will be shown, the results are not as promising for the idea of market-led supply as the centrepiece policy for tackling housing affordability as some advocates of upzoning would have it.

Section 2 provides the context for this report, sketching out the housing supply debate and the nature of Melbourne's pandemic experience as a natural experiment.

Sections 3 and 4 present data on population, construction, and rents prior to the pandemic and during the pandemic years of 2020 through 2022 respectively, using several new data sources.

Section 5 takes stock of the excess supply shock of the pandemic years and discusses what it achieved for housing affordability.

Section 6 considers why the price impacts of market adjustment to this out-of-sample shock were so limited, exploring the evidence about adaptive responses and other contributing factors.

Section 7 wraps up with lessons for policymakers.

Context: the natural experiment, the zoning debate, and the reason we care

A natural experiment in excess supply?

Economists rarely have the chance to experiment at scale: quite understandably, people do not like their world messed with for the sake of science.

A social science that cannot conduct controlled experiments must tease out cause and effect from messy real-world data, using specific statistical techniques capable of inferring causation within a world of many moving parts. That means dealing with confounding variables, reverse causality, and a minefield of other statistical hazards. Attributing causation in the real world is real hard.

That also makes natural experiments a prized source of data. When just one thing changes, and to a sufficient degree to observe the signal within the noise, we might see something ordinarily obscured from view beneath the everyday flux of economic data.

Melbourne's pandemic experience is a fascinating natural experiment of a housing market shock. One big thing changed: the population.

Put another way, what changed was the balance of supply and demand for housing. A mass exodus of people meant the market was in effect flooded with excess supply – Melbourne witnessed a 'virtual building boom', unprecedented in scale.

What might we learn – and why should we care?

We think Melbourne's experience can inform the debate about the effects of land-use regulations on housing costs.

In broad terms, one side of this debate argues that land-use rules ('zoning') are constraining new housing supply, and causing rents and house prices to be higher than they should be.

Planning reforms and upzoning for higher-density development, it is said, will trigger faster construction and drive rents and prices lower.[1]

This has been the official position of many public inquiries, including the 2022 Federal Parliament Inquiry into Housing Supply and Affordability (the Falinski Inquiry) and the Productivity Commission's 2022 inquiry into the National Housing and Homelessness Agreement.[2]

1. The best-known academic advocate for this is Harvard economist Edward L. Glaeser, who says: "housing is expensive because of artificial limits on construction created by the regulation of new housing… there is plenty of land in high-cost areas, and in principle new construction might be able to push the cost of houses down to physical construction costs… land prices are high, not due to some intrinsic scarcity, but because of man-made regulations" (Glaeser and Gyourko 2003)

An alternative view is that although land-use constraints might indeed bind on each and every housing development, reducing the profits of each and every developer, these rules are still not binding on the market rate of new supply, since most feasible development opportunities are rationally left undeveloped as strategic investments, in what is usually described as speculation or landbanking. In this view, zoning just shapes where housing goes and what it looks like – but doesn't change how much is built.

Prosper's 2022 report *Staged Releases: Peering Behind the Land Supply Curtain* provided evidence of this landbanking strategy in greenfields master-planned communities. The same incentives and behaviour apply to infill and redevelopment sites too.

There is an additional question about whether faster construction can do much for housing costs, since adaptive responses – especially increased migration and consumption of more housing – may eat up price gains faster than developers and their builders can or will choose to serve them to the market.

If demand is highly elastic, in other words, will making supply more elastic do much for prices?

There are two distinct points of debate. First, whether upzoning will trigger faster new supply. Second, whether this will arrive fast enough to out-run adaptive responses and meaningfully lower prices.

Melbourne's experience sheds light on the latter. It gives us a sense of what excess supply *could* do for housing costs, and for how long, were we able to engineer it. We assess this through the change in market rents (see Box 1).

What about household formation and changing preferences?

'Household formation' is the unlovely name given to a range of major (and often lovely) life events: moving out of home, moving in with a partner, forming a share-house, or reshuffling your housing situation in any other way that sees you and your people now occupying a dwelling where previously you did not.

As research from the Reserve Bank of Australia has described, rates of household formation rose during the pandemic. The existing population 're-formed' itself into more households. In Melbourne, the average household size fell from around 2.6 to 2.5 between 2020 and 2022 (RBA 2022, 2023).

This was the main way the market absorbed excess supply. Excess supply does not mean 'empty homes' – it means 'homes surplus to the number previously required'. Adjusting to excess supply involved fewer people occupying more homes, meaning the average household size necessarily had to fall.

This change was not solely a demand-side response to lower prices, however – it was probably driven by changing preferences too.

As the horrors of flatmates and the joys of Zoom became clear, the story goes, people's preferences for housing relative to other consumption shifted. Larger homes were in vogue, restaurant dinners out.

The extent to which this muddies the interpretation of Melbourne's experience as an experiment in excess supply is unclear, because although the preference shock is an intuitive story, disentangling this from the adaptive response to falling rents is difficult. As will be discussed, there is evidence that the declining average household size reflected both causes.

2. For an illustrative example of this dominant narrative, take the AFR editorial of 5 April 2023: "the need to ease the pressure on renters and house hunters is an opportunity for local and state governments to remove the planning and regulatory obstacles to building more homes… It's no secret, as numerous reports and inquiries have found, that local and state government planning and regulatory constraints artificially restrict new housing supply and increase house prices… Zoning laws, building regulations, and limits on funding for new road, transport, health and education infrastructure mean new housing supply is relatively inelastic or more or less fixed, despite rising house prices."

But we don't know by how much – we can't easily quantify the extent to which people demanded more space independently of the fact that space became cheaper.

What is clear is that there is a caveat to keep in mind when studying Melbourne as if just one big thing changed: it may be that changing preferences were big enough to matter too.

Why does Prosper care about upzoning?

Prosper's vision is to move taxation off productive activity and onto land and natural resources.

This is based on the ethical view that the products of the earth and of society at large should be shared by all, while the fruits of individual effort should be owned by the individual.

In the headlong rush to upzone land we as a society are giving away the farm.

Development rights are valuable assets; land is worthless without rights. Giving these rights away for free by upzoning land means gifting windfall wealth gains to the lucky (or connected).

That's why we maintain there should be no upzoning without value capture.

Instead of enriching landowners, upzoning gains could be captured for society at large to pay for lower taxes on labour effort and capital investment, or better public services.

Box 1: Why do we look at rents?

Two-thirds of houses are owner-occupied, one-third rented. Why look at rents?

The reason is that rent directly measures the price of housing services.

Housing provides two things: a consumption service, and a savings vehicle.

In our concern for housing affordability we don't care how easy or hard it is to accumulate wealth through this particular asset class. We do care that everyone has access to shelter and community and opportunity – such as access to employment.

That means the right metric for housing costs is rent. The cost of housing consumption is either the rent you pay, or the rent you avoid by owning your home. Owner-occupier housing expenditure, by contrast, mixes together both consumption and savings elements.

The rental market effectively tells us about housing costs for everyone. It is the visible tip of a larger iceberg, the 'market for housing services'. We can't directly measure this whole market, but we know that if the visible tip is moving south so is the rest.

The other reason we look at rents is that house prices fluctuate largely due to asset pricing factors, such as interest rates and expectations. There's no easy way to extract a housing cost signal from this asset pricing noise. When we look at rents, by contrast, we know we are seeing the fundamentals of housing demand and housing supply meeting in the market.

Scrutinising the evidence base underpinning upzoning policies that clearly produce large gains for vested interests but less clearly benefit society more broadly is our way of forestalling a mass unpriced privatisation of publicly owned assets. Once given away, this value will never be recovered for the public. So whatever the merits of upzoning, we say governments should hit 'pause' until value capture arrangements are in place.

We also want housing affordability policies that work.

Unaffordable housing is a justice issue. Faith in free markets to deliver social justice is often misplaced. A developer-driven push to deregulate land use risks delaying implementation of policies more likely to make a difference.

Pre-pandemic Melbourne: a city in equilibrium

Prior to 2020 Melbourne was one of the world's fastest growing cities. Expanding at astonishing rates from the early 2000's, Melbourne grew by an average of 100,000 residents or 2.2% per annum over the decade prior to the pandemic, reaching a population of 5 million by mid-2019 (Figure 1). With a 24% total rate of growth over the decade Melbourne was amongst the fastest growing cities in the developed world.[3]

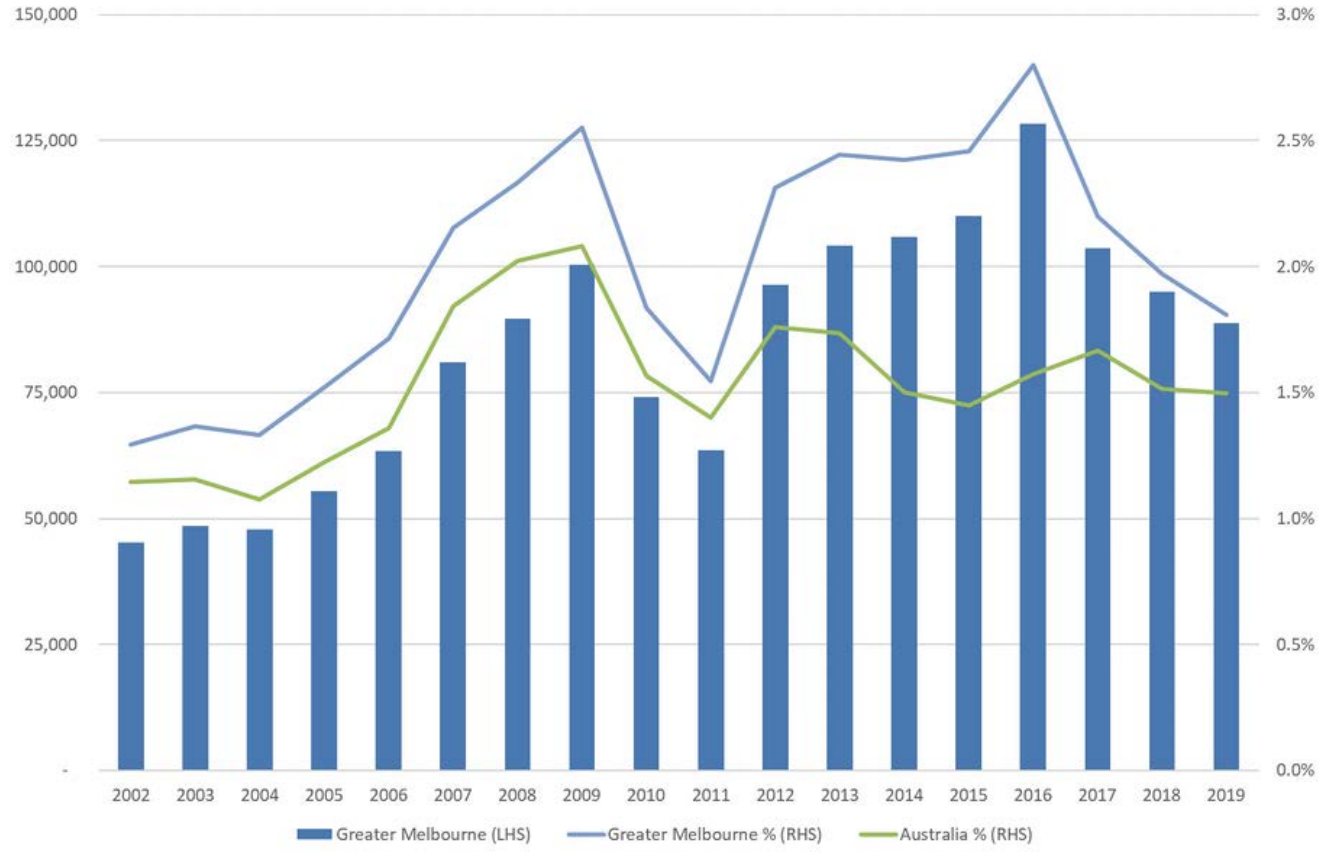
Despite this breakneck pace of growth, construction kept up.

Net dwelling growth (completions minus demolitions) ranged between 35,000 and 50,000 per annum over the decade, averaging 40,000 per annum (Figure 2).

This was enough to supply an average 0.41 new dwellings per new resident, above the 0.38 needed to maintain the average household size at the existing level of 2.6 persons per dwelling (as per the 2011 and 2016 Censuses).

Figure 1: Melbourne had rapid population growth over the 10 years to 2019 (2.2% p.a.)

Population growth 2002 to 2019, Melbourne and Australia, year to June



Source: ABS Regional population 2021-22

3. Toronto, Canada's fastest growing city, grew by 14% over the decade (Macrotrends 2023) and Auckland in NZ grew by 18% (Stats NZ 2023). Amongst major U.S. metropolitan areas only Austin (TX) with 33% growth and Orlando (FL) with 25% growth expanded more rapidly than Melbourne (Kiersz 2021)

Construction was even faster in the three years immediately prior to the pandemic: one new dwelling was added for each two new residents.[4]

Absorbing this growth was a remarkable achievement. To put it in context we offer two comparisons.

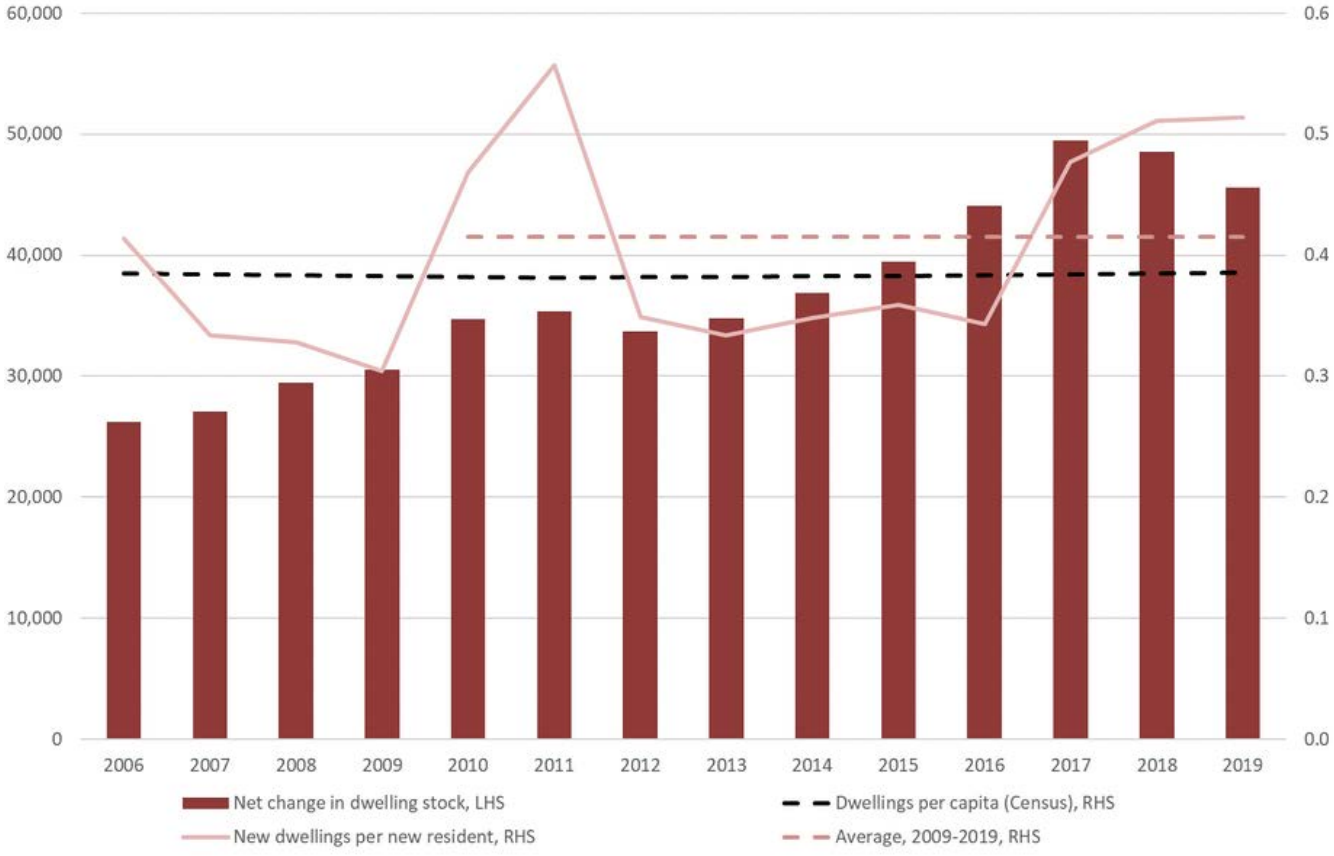
The first is with the fast-growing cities of Houston and Dallas in Texas. Many commentators extol the virtues of the planning systems in these cities: a 2018 report from Infrastructure New Zealand, for instance, heralded Houston's "ultra-flexible planning system" and championed Dallas for ensuring that "planning, funding or other restrictions do not impede the supply of housing".

But Infrastructure NZ and its 42-strong delegation to the U.S. might have looked closer to home (and saved on flights), because Melbourne in fact expanded over the last decade at a rate one-fifth faster than Houston and Dallas managed.[5]

A second comparison is with Auckland, which is experiencing a building boom often credited to a major upzoning in 2016. But as Figure 3 shows, Melbourne's growth left Auckland in the shade. Net dwelling additions expanded the housing stock in Melbourne by 2.5% per annum between 2016 and 2019, while the closest available figure for Auckland (dwelling completions not accounting for demolitions) finally nudged above 2.0% only in the year 2020.

Figure 2: Housing construction more than kept up with population growth

Net dwelling growth, and new dwellings per new resident, Melbourne, year to June

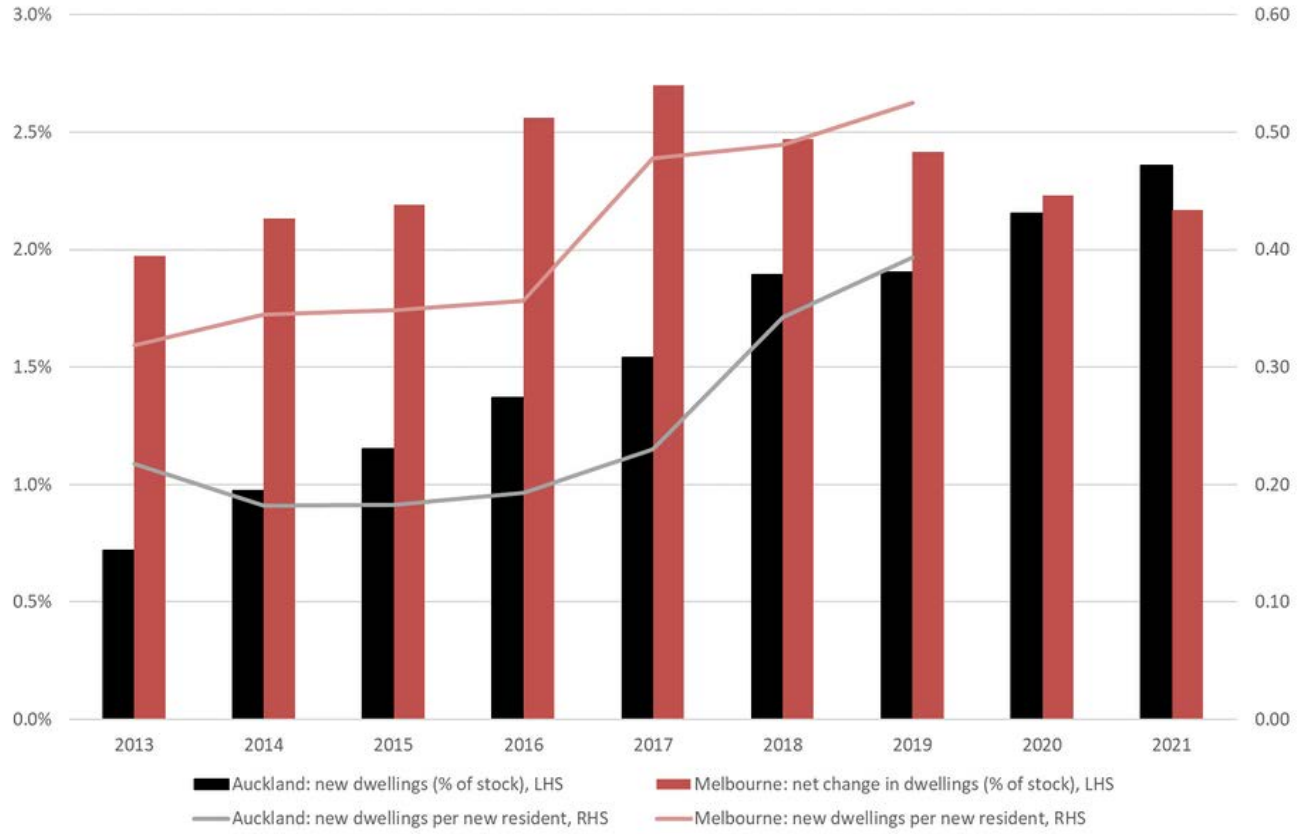


Source: Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022

4. Net dwelling addition data from 2006 to 2016 is sourced from the Victorian Department of Transport and Planning's Housing Development Data. The ABS net dwelling additions series only begins from 2017.
5. The Dallas-Fort Worth and Greater Houston metropolitan area populations each grew by 20% over the decade (Kiersz 2021)

Figure 3: Melbourne's construction boom trumped Auckland's

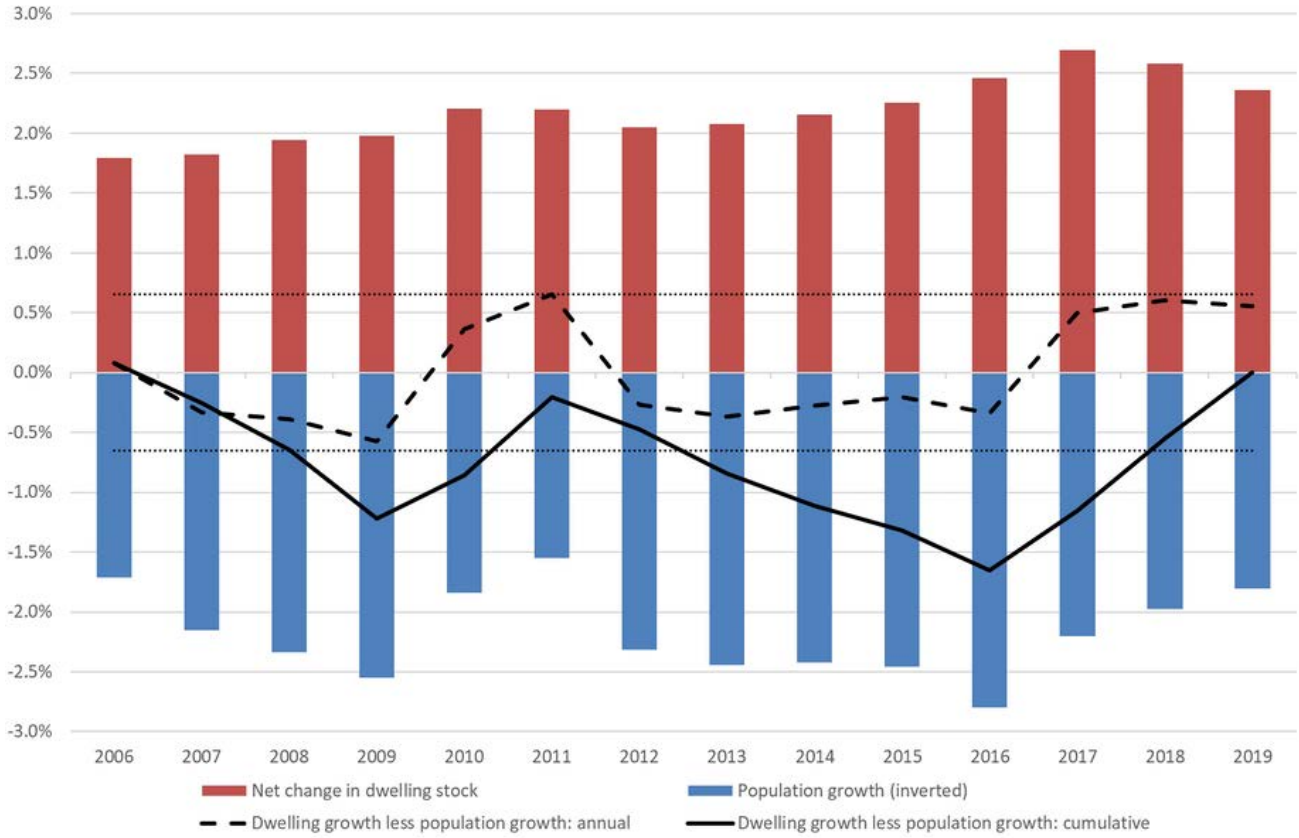
Change in dwelling stock, and new dwellings per new resident, Melbourne and Auckland



Source: Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022; Auckland Council Code Compliance Certificates issued; Stats NZ population by region

Figure 4: By end-2019, supply and demand growth in Melbourne were in balance

Excess supply pressure: net dwelling growth less population growth, annual and cumulative since 2006



Source: Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022; ABS Regional Population 2021-22

Figure 4 puts together this population and construction data to depict the overall demand and supply balance from 2006 onwards.

The red bars pointing upwards show the rate of housing supply growth (the change in dwelling stock as a percentage of existing stock) and the blue bars pointing downwards show the rate of housing demand growth (the percentage change in population, inverted). The dashed line shows the difference between them, i.e. the imbalance between supply and demand growth. Excess demand is shown by the line dropping below zero, and excess supply by the line rising above.

Population and construction are imperfect metrics for demand and supply. They do not account for demographic effects and income effects on demand, nor for variation in the type and size of new dwellings supplied. However they are good enough proxies to provide a broad picture of how overall market pressures have changed over time.

Several points stand out from Figure 4:

- Moderate excess demand until 2016 was followed by a period of excess supply to 2019;
- Cumulative demand pressure from 2007 onwards (the solid line) was effectively cleared by 2019;
- The difference between annual demand and supply growth remained small throughout: over the entire series the absolute difference averaged 0.4% and never exceeded 0.7%; and
- The accumulation of excess demand over the 10 years to 2016 produced a cumulative imbalance of only 1.7% (a useful benchmark for the pandemic excess supply shock).

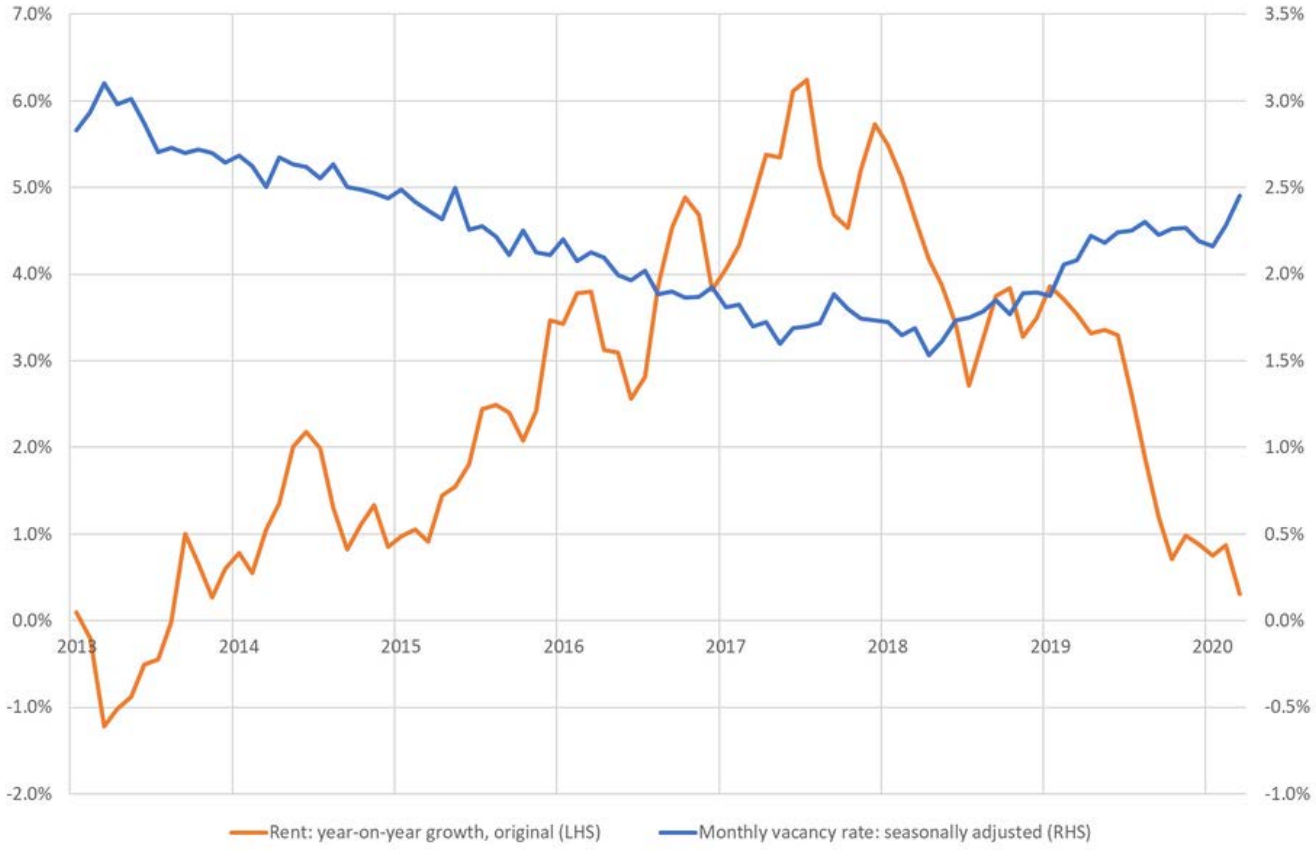
This story of demand and supply imbalances is mirrored in the advertised rental price and vacancy data in Figure 5. As demand pressures accumulated between 2013 and 2016, rents began rising.

They grew by 6% year-on-year at the peak in mid-2017, before growth flattened to zero by 2019. Short-term vacancy, as part of the process of price adjustment, moved in the opposite direction.

The upshot of all this? Prior to the pandemic Melbourne was a city in a high-growth, high-construction equilibrium. Housing demand and supply growth were high and finely balanced, with rental prices stable – an ideal starting point for a natural experiment.

Figure 5: Rent growth mirrored supply/demand balances, and had flattened to zero by end-2019

Melbourne average rent growth and vacancy rates, Jan 2013 to March 2020



Source: SQM

Pandemic-era Melbourne: people, dwellings, and rents

If Melbourne in 2019 was an urban ecosystem in delicate balance, 2020 was the year we lobbed in the cane toads.

The extensive lockdowns, closure of international borders, and long periods of closed state borders brought immigration to a halt and triggered something of an exodus from the city, resulting in Melbourne's population falling for the first time since the Great Depression.

Population growth in the year to mid-2020 was at half the usual level. The year to mid-2021 then saw a net population loss of around 80,000, or 1.6% of the city's population (Figure 6). Almost 190,000 residents – one in 25 Melburnians – departed the city, and far fewer than usual arrived to replace them.

The size of this shock cannot be overstated: 1.6% is a typical year's population growth for Australia, one of the fastest-growing countries in the world.

Figure 6: Melbourne's population shrank, for the first time since the Great Depression

Population growth 2002 to 2022, Melbourne and Australia, year to June

Source: ABS Regional population 2021-22

Between July 2020 and June 2021 Melbourne not only hit 'pause' on this pace of growth but went into reverse at the same rapid rate.

As Figure 7 shows, the sources of this degrowth were both domestic and international.

Notably, internal migration to and from Melbourne, which had been relatively balanced before the pandemic, shifted for the first time into a significant net deficit. About 110,000 residents left for other parts of Australia in 2020-21 (20,000 more than usual), contributing to a net internal migration loss of 34,000 people. The vast majority of this related to interstate moves; flows between Melbourne and regional Victoria were small by comparison.[6]

The opening of international borders in early 2022 saw the return of international migration, driving positive but small overall growth for Melbourne in the year to mid-2022.

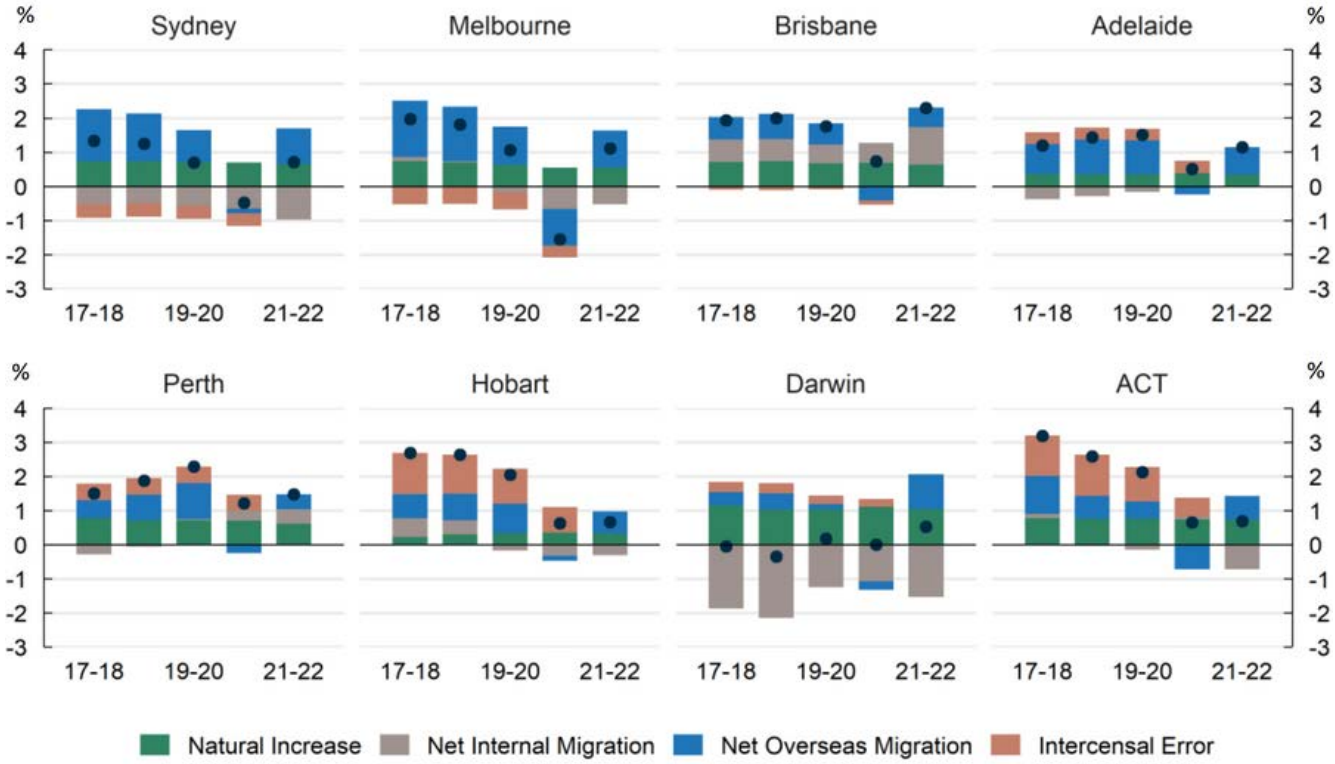
Still, the population at mid-2022 remained slightly lower than at the beginning of the lockdowns in March 2020.[7]

Net internal migration remained negative in 2021-22. While internal flows to Melbourne resumed their pre-pandemic level, the flow of residents moving from Melbourne to elsewhere in Australia was around 30,000 people (or one-third) higher than the pre-pandemic average.

Dwelling construction, meanwhile, continued at more or less business-as-usual rates throughout 2020 and 2021 (Figure 8). Long project lead times, looser regulations for the construction sector than for many other industries, and new orders spurred on by booming house prices saw net dwelling additions remain at around 46,000 per annum over these years, only barely short of the 47,000 net additions seen in 2019.

Figure 7: Immigration recovered in FY22, but internal migration remained negative

Contribution of components of population change to growth, year to 30 June



Source: Australian Government Centre for Population, Regional Population 2021-22

6. Internal migration arrivals to regional Victoria over the three years to mid-2022 were only around 6,500 (3.4%) higher than the pre-pandemic average, while internal migration departures from Melbourne were around 45,000 (16.2%) higher than the pre-pandemic average (ABS 2023a, Table 4 – Population components). The net internal migration balance (arrivals less departures) was 75,000 lower than usual for Melbourne and 6,000 higher than usual for regional Victoria over these three years.

7. The mid-2022 population was 26,000 (0.5%) lower than at mid-2020. ABS capital city population estimates are only available on an annual basis as at 30 June, but we can infer from zero net migration to Victoria in the June quarter of 2020 that the Melbourne population of March 2020 was likely similar to that of June 2020.

Only in the financial year to mid-2022 did construction slacken, falling to a level last seen in 2015.

To summarise: one of the developed world's fastest growing cities brought population growth to a screeching halt through 2020 and 2021 – even throwing the growth truck into reverse – while construction steamed ahead at more or less the same rate as before the pandemic.

Housing markets are never normally this unbalanced – to put it mildly. What did this state of massive excess supply do for rents?

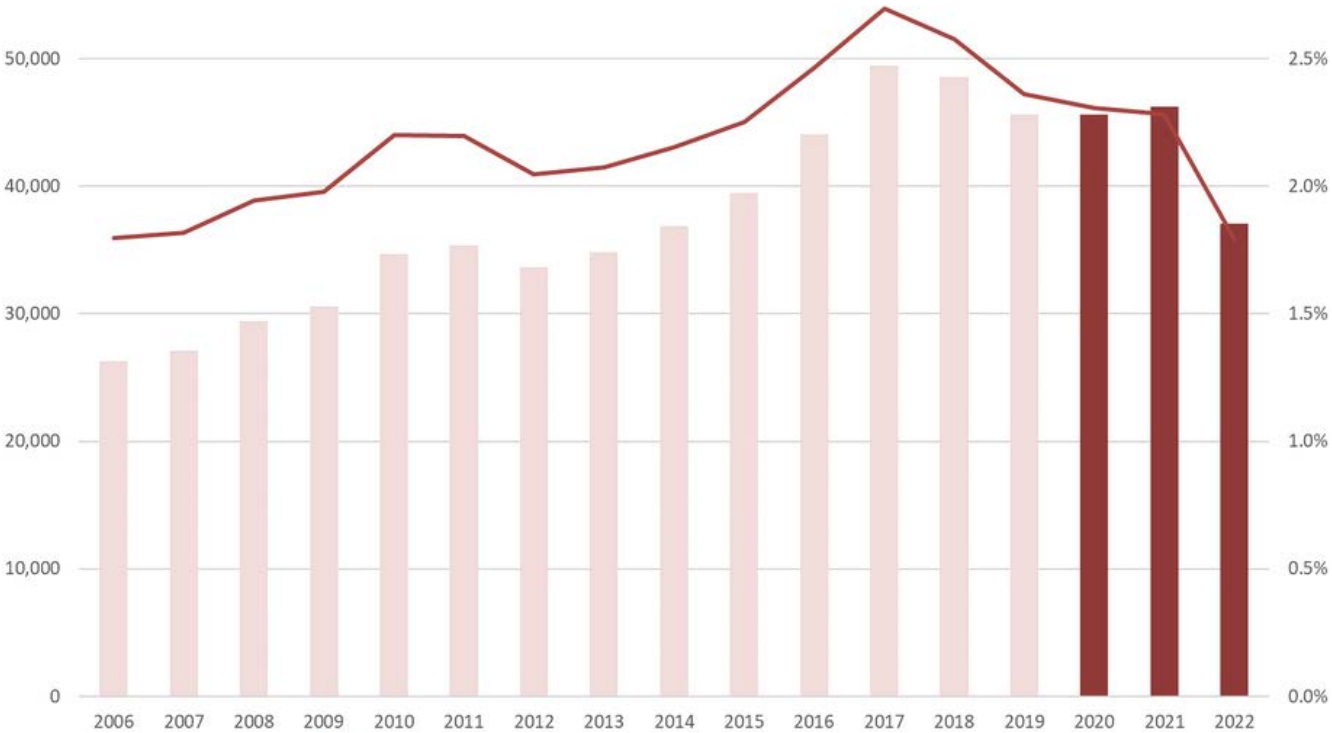
As Figure 9 shows, the impact was surprisingly small and short-lived.

The decline in average rents bottomed out at -12% in mid-2021, before recovering to March 2020 levels by mid-2022. Over the final two quarters of calendar year 2022 rents grew to 8% above pre-pandemic levels.[9]

There was far greater dispersion in rent growth by location than ever seen before (Figure 10). Inner-urban rentals suffered from the absence of foreign students and other migrants, while outer-urban locations saw minimal change or rising rents.

Research from the ABS examining rental expenditure suggests that these changes in advertised rent fed through only slowly to the rental stock. Although average advertised rents had risen above pre-pandemic levels from mid-2022 onwards, around 62% of rentals in inner-urban locations were still paying less in February 2023 than they were before the pandemic.

Figure 8: Construction continued almost unchanged over 2020 and 2021
Net dwelling growth, Melbourne, year to June

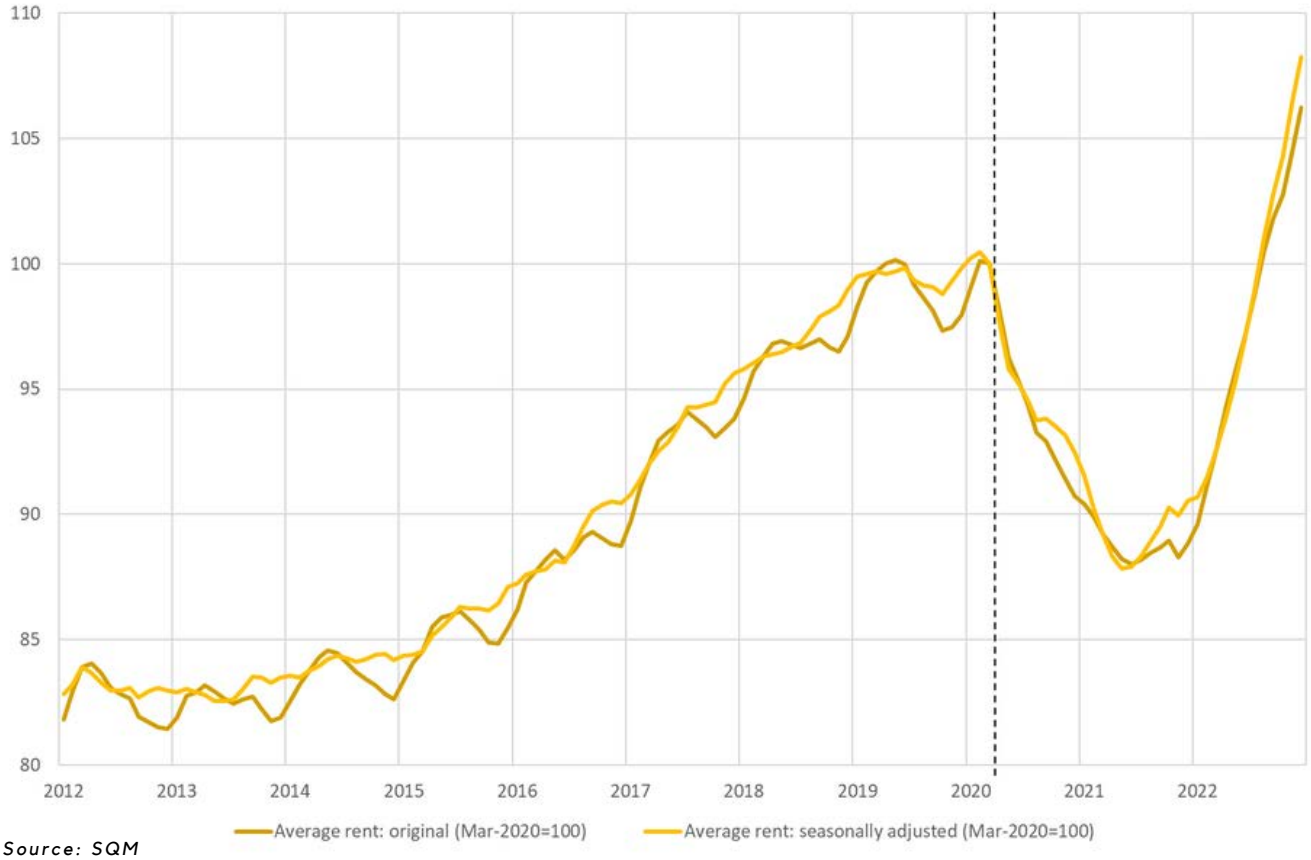


Source: Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022

9. This data is for advertised rent, so potentially understates the extent and speed of the actual decline in rents for new tenancies through calendar year 2020, since discounts upon the headline advertised price (e.g. rent-free periods) were often offered during the early stages of the pandemic.

Figure 9: Average rents fell -12% by mid-2021, regaining this by mid-2022

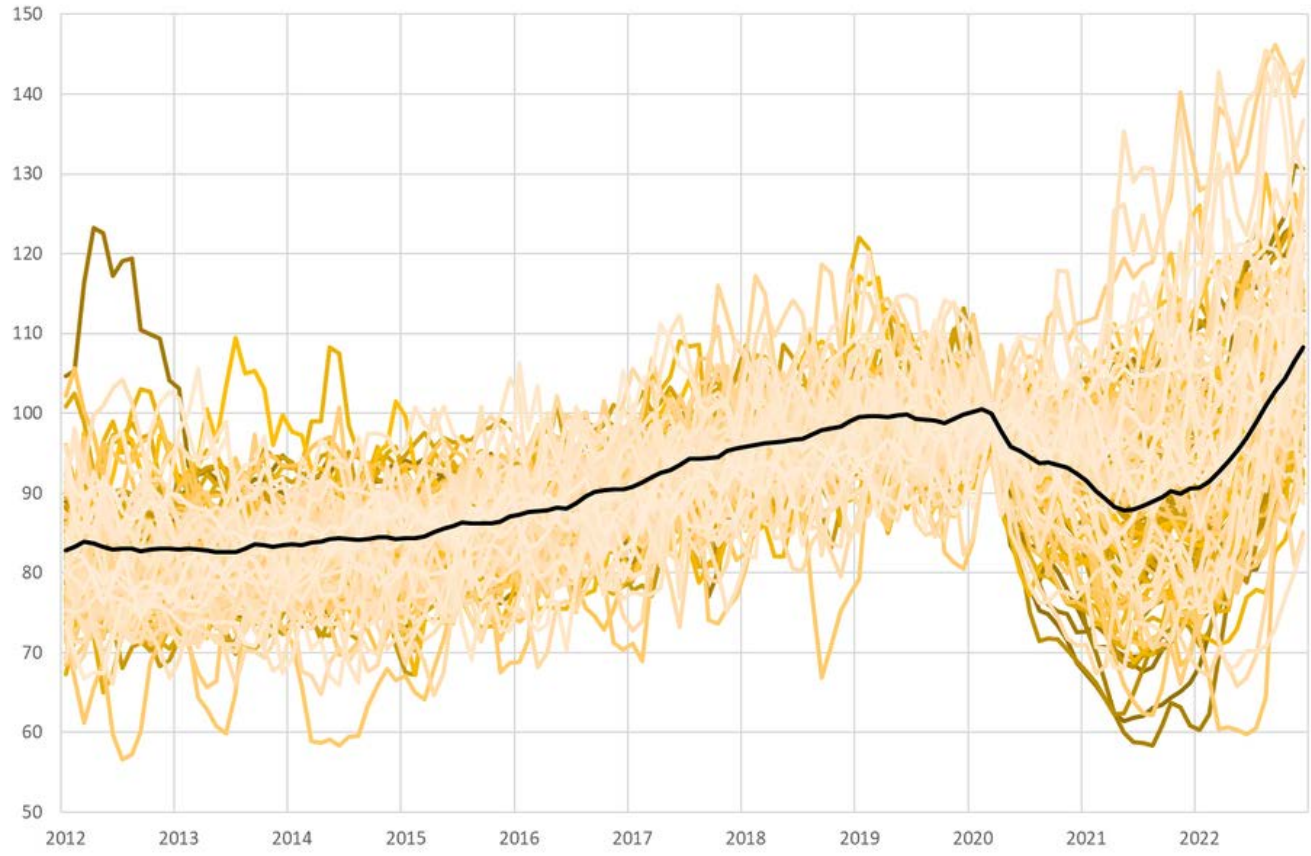
Melbourne average rent to December 2022, indexed to March 2020 = 100



Source: SQM

Figure 10: There was massive dispersion in postcode rent growth over 2020 and 2021

Melbourne average rent and rent by postcode (postcodes >1000 dwellings), indexed to March 2020=100



Source: SQM

Similarly, despite outer-urban rents barely declining throughout 2020 and 2021, as of February 2023 only 6% of renters in these areas were paying 10+% more than they were paying before the pandemic (ABS 2023b).

As a stylised fact, therefore, the impact of Melbourne's population outflow amid ongoing construction was to knock down average rents by a maximum of 12%, and for about a year – with average rents recovering to pre-pandemic levels a little over two years from the start of the pandemic.

We now turn to quantifying the excess supply shock to mid-2021, and asking why this rental price impact was so small and short-lived.

Taking stock of the excess supply shock

We quantify excess supply two ways. We measure:

- the cumulative imbalance between construction growth and population growth over the pandemic years; and
- the population shortfall relative to projections.

The difference in method is essentially about the starting point. The first method measures actual population and dwelling changes to mid-2021 from the starting point of supply/demand balance in mid-2019. The second method measures the actual outcome at mid-2021 relative to a counterfactual starting point with an assumed supply/demand balance at that time.

Either way, excess supply can be expressed in terms of dwellings, their capacity for people, years' worth of construction, or relative to the imbalances typical of Melbourne's housing market before the pandemic.

Figure 11 shows that over the two years to mid-2021 dwelling growth less population growth generated a 5.1% imbalance between new supply and new demand, expressed as a percentage of the 2019 dwelling stock or population.

This is equivalent to an excess supply of 100,000 dwellings, or 2.1 years of construction at average pre-pandemic rates – enough to house 260,000 people.

It is an imbalance some 13x larger than the annual average prior to the pandemic, and is three times as large as that which accumulated between 2007 and 2016 (see Figure 4).

Figure 12 shows that the mid-2021 population was some 340,000 residents short of that projected just two years prior. The missing population would have required 130,000 dwellings – equivalent to 2.8 years of construction, or 6.7% of the pre-pandemic stock. Excess supply on this measure was around 17x more than seen in a typical pre-pandemic year, and four times larger than the supply/demand imbalance that accumulated between 2007 and 2016.

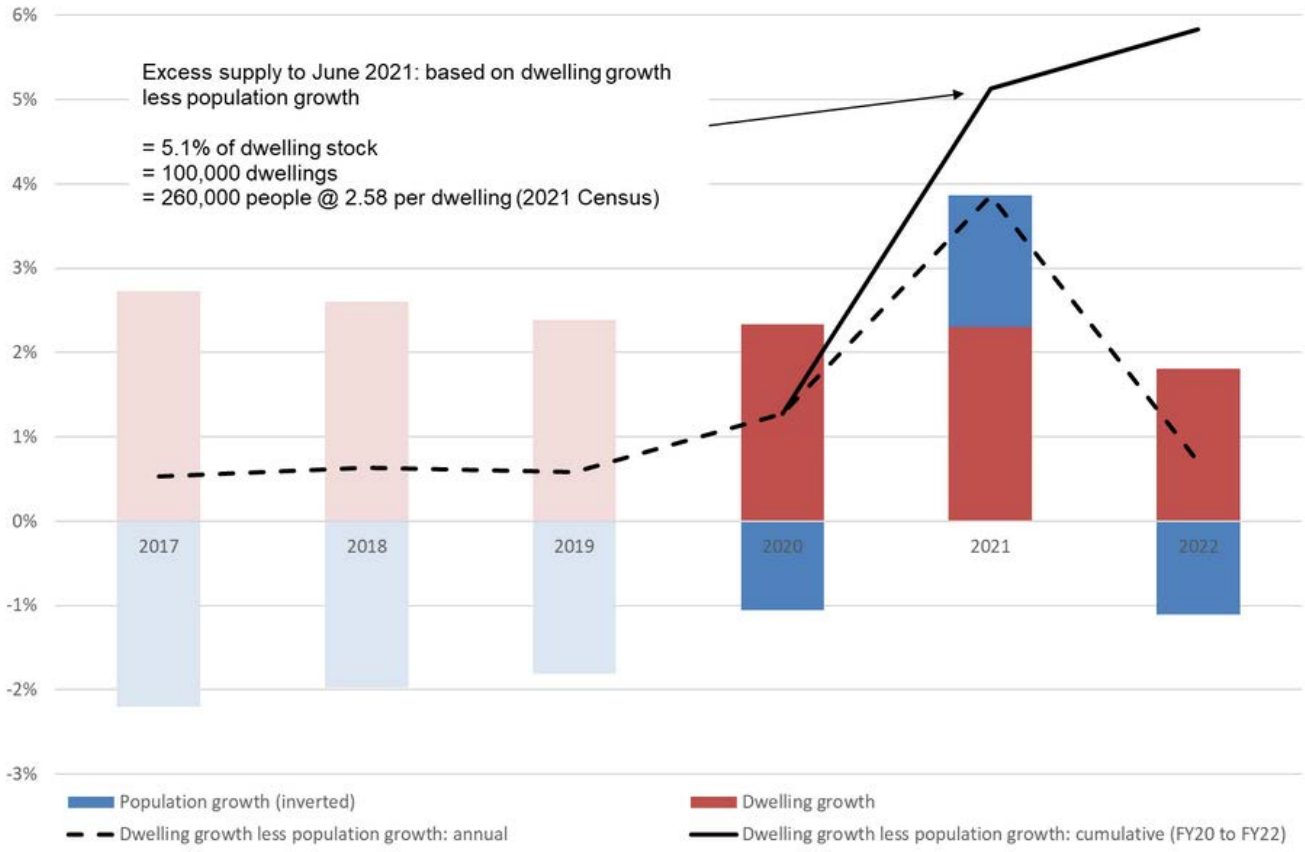
Another way of expressing the shock is to note that spare dwellings equivalent to two to three years of additional construction were freed up over a period of around 15-18 months – just as if the rate of construction had doubled over this period without the population growth shock.

These excess supply conditions persisted throughout 2021-22. Over the year to mid-2022 excess supply on both measures in fact increased slightly, to 5.8% and 7.4% respectively.

Table 1 summarises these estimates.

Figure 11: Supply growth exceeded demand growth by 100,000 dwellings over FY20+21

Excess supply pressure: net dwelling growth less population growth, annual and cumulative from 2020



Source: Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022; ABS Regional Population 2021-22

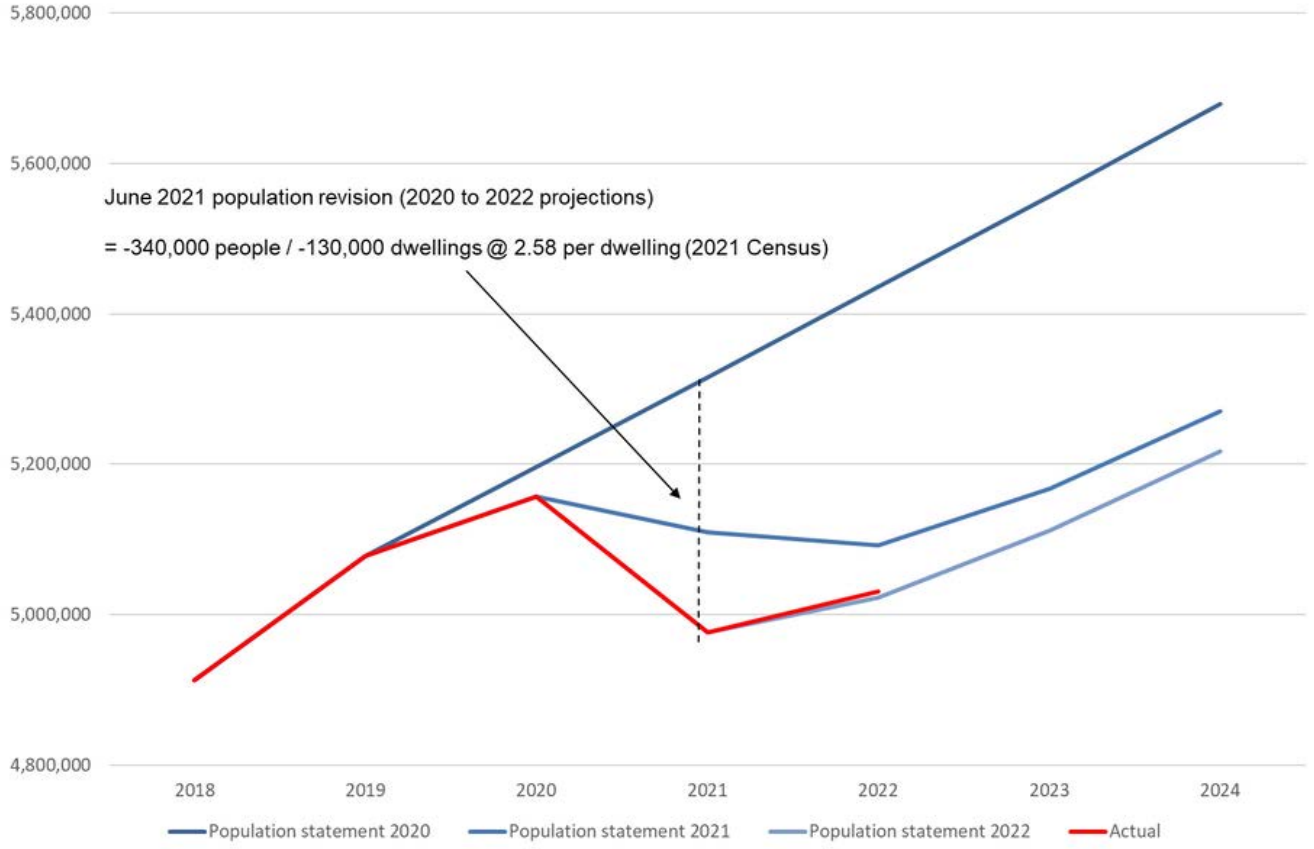
Table 1: Quantifying the excess supply shock: July 2019 to June 2021

	Dwelling growth less population growth	**Population shortfall relative to projections**
Dwellings	100,510	131,589
Population equivalent	259,316	339,500
Years of construction	2.1	2.7
Relative to 2006-2019 average imbalance	13x	17x
Relative to 2006-2017 cumulative imbalance	3.0x	4.0x
Percentage excess supply at mid-2021	5.1%	6.7%

Source: Prosper Australia calculations based on Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022; ABS Regional Population 2021-22

Figure 12: Melbourne's population at mid-2021 was 340,000 short of expectations

Actual population and projections from Australian Government Centre for Population



Source: ABS Regional Population 2021-22; Australian Government Centre for Population, Population Statements 2020, 2021, 2022

What did this 'virtual building boom' do for housing affordability?

A renting household commencing a new tenancy at the Melbourne average rental price of $420 per week at the bottom of the market in mid-2021 will have saved just $2,200 on rent for a maximum of one year (assuming their landlord restored their rent to the market rate after 12 months).

By way of comparison, each 25 basis point change in interest rates costs the owner of a Melbourne median home priced at $1 million about the same amount, $2,000 per annum, in interest expenses (assuming an 80% loan-to-value ratio). Mortgaged homeowners have lived through *fifteen* such changes since May 2022.

What flooding the market with housing achieved for housing expenses, that is, pales in comparison to the impacts of monetary policy. It also pales in comparison to what can be delivered through income support: the Coronavirus Supplement gave each eligible welfare recipient almost $9,000 over its eleven months of operation in 2020 and early 2021 – four times what the average rental household saved due to falling rents.

These comparisons, given the size of the shock, cast doubt on the idea that significant and sustained housing affordability improvements are best achieved by inducing faster market supply.

Even the most hopeful advocate for planning reform would not suggest it could prompt a doubling of the rate of construction in a city already building housing faster than almost any other, and to deliver the same increase over longer timeframes would inevitably trigger migration responses to falling rents. So the scale of the pandemic excess supply shock is far beyond that achievable under ordinary conditions – our 'experiment' is a total fantasy set-up, in other words. If upzoning-driven housing supply growth is the key to affordability, a shock this large should have delivered a housing cost paradise.

Yet it did not. Price impacts to mid-2021 may have been broadly within expectations (see Box 2), but the impacts on household budgets were minor. And even these price declines did not last: within a year they had been erased. Why?

Box 2: Benchmarking price responses against Grattan

The Grattan Institute's 2018 report Housing affordability: re-imagining the Australian dream suggests that boosting the national housing stock by 5% over a decade could leave Australian house prices 5 to 20 per cent lower than they would have been otherwise.

Grattan's analysis implicitly suggests this would not induce faster net migration to areas of falling prices, or other adaptive responses. That makes their prediction a suitable benchmark for our results: both are expressed as a pure supply shock.

What occurred in Melbourne to mid-2021 is broadly in line with Grattan's view. Population and construction changes to mid-2021 equivalent to a 5.1% to 6.7% shock to the supply side, slightly above Grattan's figure, produced a 12% decline in housing costs, within Grattan's range.

The interesting difference is in what happened next. Melbourne's rents rose quickly from mid-2021 to mid-2022 despite no reversal of the population/construction shock. By mid-2022, Melbourne's population was still 0.5% below March 2020 levels, and the dwelling stock 4.8% larger, but average rents were no lower than in March 2020.

3. RBA (2022, 2023).

Adaptive responses

Introduction

The Grattan Institute's 2018 report *Remarkably adaptive: Australian cities in a time of growth* is a rare example of analysis specifically directed towards adaptive responses to change.

It looked at how transport and housing choices have responded to rapid population growth, finding that the situation in Australia's cities "is not spiralling out of control… migration has not brought cities to a standstill".

The report's key insight that "people adapt – they are not hapless victims" contains a subtle and more general message too.

The message is that when we predict the consequences of economic or policy change we too often focus on the initial impact, and pay inadequate attention to subsequent adaptive responses. We worry about or elevate first-round effects, while downplaying second-round reactions.

In the real world, whenever there's a change, there's a countervailing adaptation. That means neither doomsday scenarios nor promised policy utopias tend to pan out that way.

It also means that all we can ever exploit through policy are the relative timeframes and scales of the initial shock and the subsequent reaction.

This is the essence of the second critique of the upzoning claim.

If falling prices see existing residents consuming larger houses and bidding up better locations, and cause more new residents to arrive and fewer existing residents to leave, then new supply might not do that much for affordability. In other words, if demand is highly elastic over the timeframes for which we want to improve supply elasticity, the price impacts of more elastic supply might be small (Box 3).

What were the adaptive responses in Melbourne?

Excess supply was clearly absorbed into the market – not all 100,000 to 130,000 excess dwellings sat empty. But the number left vacant and the price change needed to fill the remainder are interesting to examine, as they tell us something about the extent to which supply-led affordability gains are possible in ordinary times.

We discuss below evidence for three different margins of adjustment: withholding of supply, consumption responses to price, and inter-city migration.

Box 3: Adaptive responses – a glossary

We use some economic language below in discussing market reactions to change.

A key distinction is between exogenous ("having an external cause") shocks to a market, and endogenous ("produced, originated or growing from within") responses within that market.

In the classic supply/demand diagram, exogenous shocks shift the curves, and endogenous responses are movements along the curves.

The strength of the adaptive/behavioural/endogenous response over a given timeframe is called the elasticity of demand or supply, and is represented by the slopes of the curves in the diagram.

The equilibrium is the end-point of change – represented by the intersection of the curves.

Supply-side response: vacant property

Prosper Australia's regular *Speculative Vacancy* reports use water meter data to gauge how many dwellings are held in a state of long-term vacancy. We measure empty homes recording zero water use over an entire calendar year, and under-used dwellings recording less than one-quarter of the average use for a single person household over the year.

Figure 13, from our upcoming report, shows how the number of long-term vacancies changed over the pandemic. There was a significant increase: in 2021 around 35,000 more homes were left empty or under-used for the entire year than in 2019 (a 51% increase).

This increase represents around 1.8% of the housing stock, or around one-third of the pandemic excess supply shock, indicating that leaving property empty was an important margin of adjustment.

Why did this occur? Figure 14 offers a clue. Before the pandemic, short-term rental vacancy across locations bore no relation to long-term dwelling vacancy. We viewed long-term vacancy as mostly a strategic choice to preserve flexibility for sale, not a cyclical phenomenon. But over 2020 and 2021 the growth in long-term vacancies by postcode correlated strongly with short-term rental price growth. High short-term vacancy in sub-markets with falling rents appears to have bled over into higher long-term vacancy.

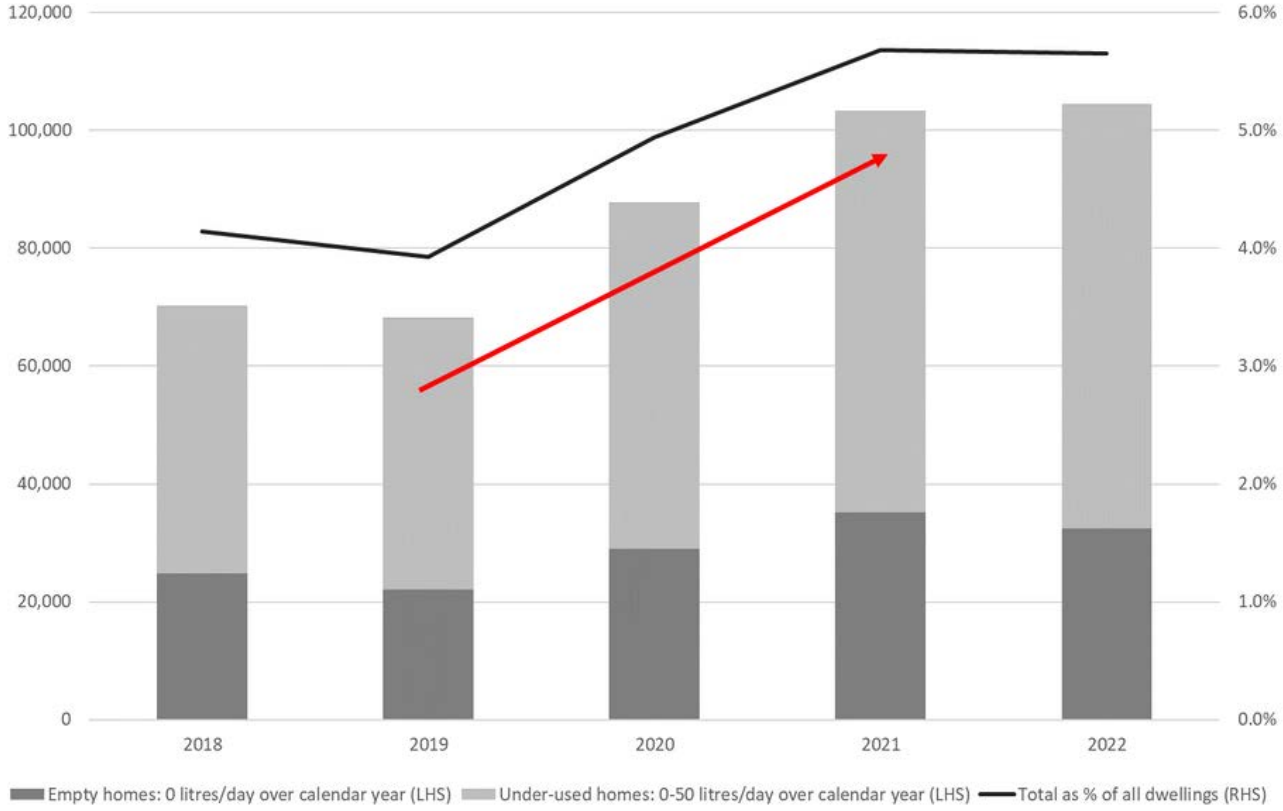
In addition, vacancy rates did not decline in 2022. The number of empty homes remained 47% above the pre-pandemic level, and the number of under-used homes increased to 56% above 2019 levels.

This suggests the growth in vacancies was at least in part due to investors being unwilling to adjust price expectations to meet the market.

This contradicts the ordinary assumption that built property is in perfectly inelastic supply (a "kinked supply curve"), and challenges the theory that upzoning will spur developers to continue building housing even as rents decline. If falling rents see owners of built property increasingly prepared to sacrifice yield on past investments to preserve option value, what chance that owners of underused land under the same conditions will be increasingly prepared to sacrifice option value to develop land for the sake of yield?

Figure 13: Supply – 35,000 more dwellings (1.8% of the stock) were left vacant

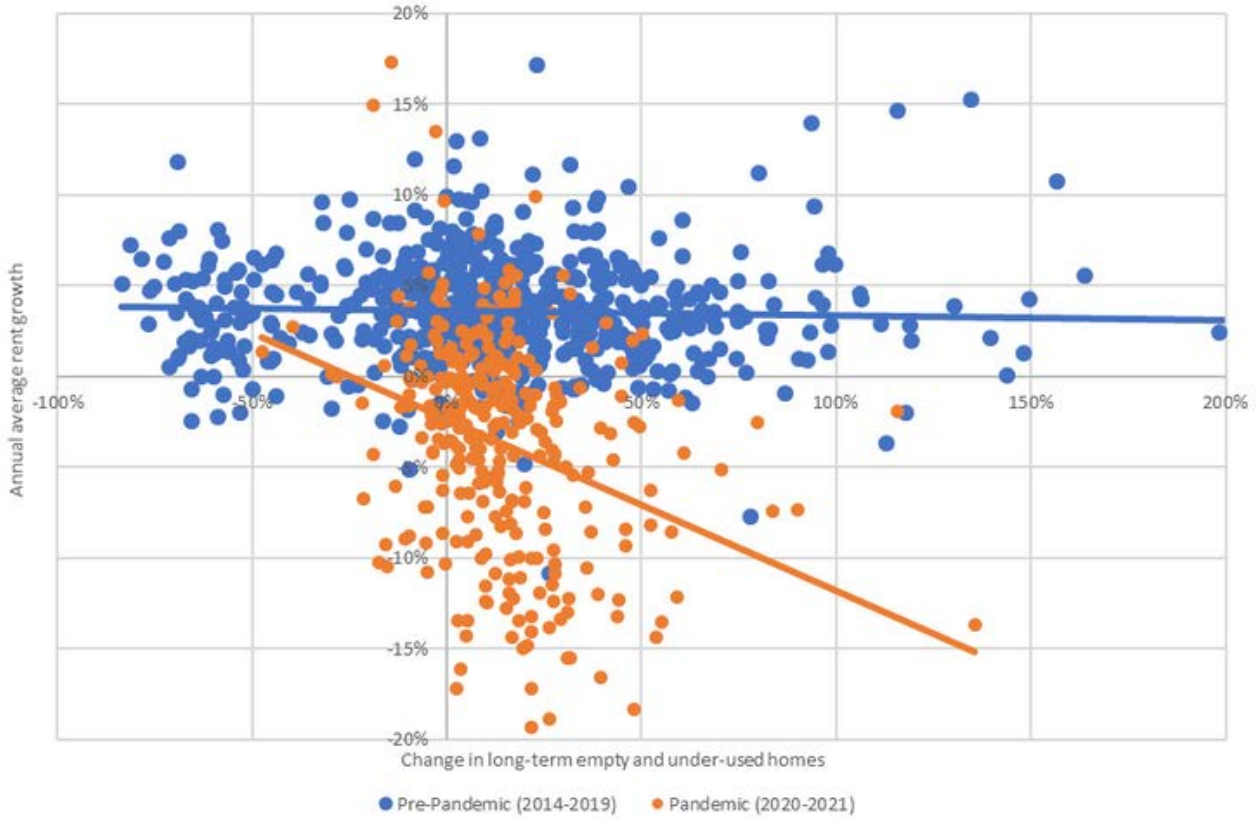
Empty and under-used housing measured by water data, calendar year



Source: Prosper Australia, forthcoming Speculative Vacancy report, data from SEW, GWW, and YVW

Figure 14: Falling rents appeared to drive higher long-term vacancy

Change in empty and under-used housing vs change in rents by postcode



Source: SQM; Prosper Australia, forthcoming Speculative Vacancy report, data from SEW, GWW, and YVW

Demand-side responses: housing consumption

RBA research has shown how the average household size declined significantly in Sydney in Melbourne over 2021 and 2022 (Figure 15).

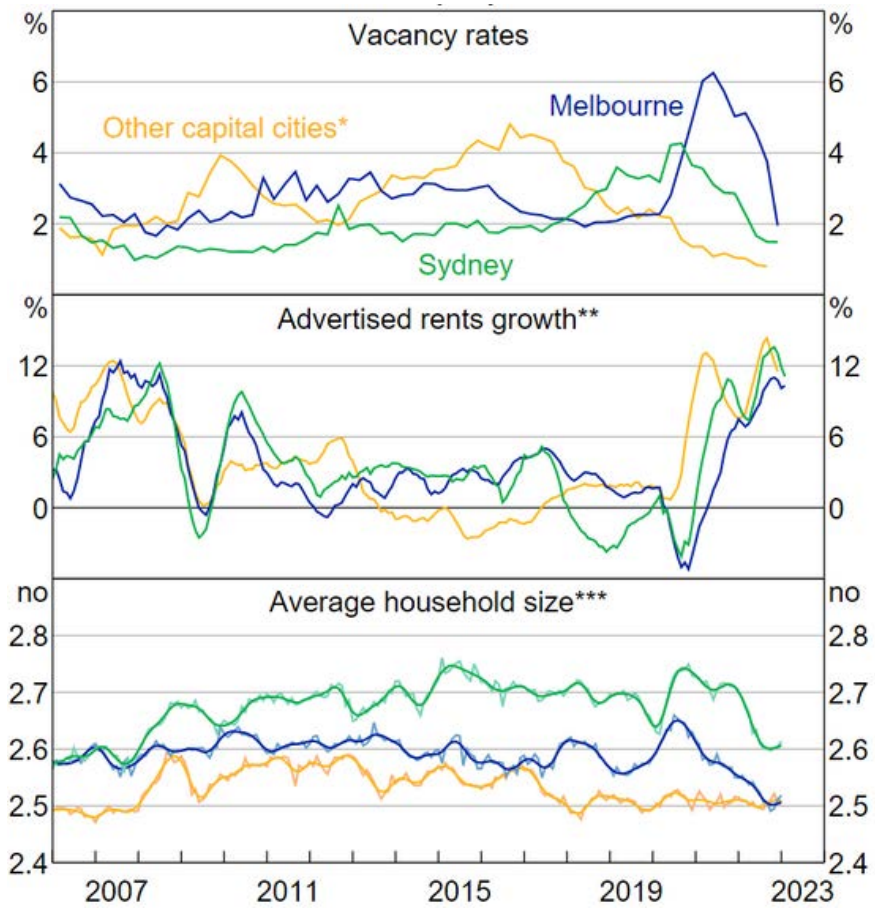
This was no a surprise, as RBA governor Luci Ellis has explained, but simply a mathematically necessary consequence of excess supply: *"If average household size hadn't declined, there would have been fewer households to fill the new homes being built. Instead of the result being a swathe of empty homes, though, prices would have adjusted – in this case, rents... The subdued level of rents was likely one of the factors that induced the decline in average household size I mentioned earlier... The lesson here is that we shouldn't focus only on the original shock – but rather how people will react to that shock (RBA 2022)."*

The decline in average household size in Melbourne from more than 2.6 people per household in 2020 to around 2.5 by end-2022 meant the population remaining in the city occupied around 4% or more dwellings than previously required, which absorbed the two-thirds of excess supply not left vacant.

That in turn limited the extent to which prices fell. As shown in Figure 16, the decline in prices as the market moved into excess supply was nowhere near as large as could have been expected based on the rise in prices as the market moved into excess demand in the years between 2013 and 2019. Excess supply appears to have prompted a demand response over 2021 and 2022 that limited how far rents fell, just as excess demand from 2013 to 2016 prompted a (slower) supply response that limited how far rents rose.

Figure 15: Household size declined over 2021 and 2022 in Melbourne and Sydney

Rental market conditions: vacancy, rent growth, and household size



Source: RBA Bulletin March 2023

There were at least two possible drivers of the adjustment.

The first was the exogenous shock to housing preferences, in which the move to remote working strengthened household preferences for larger dwellings.

The second was the endogenous response to lower housing costs: as housing space got cheaper, households consumed more of it.

Both factors are clearly relevant in explaining why price effects were small and short-lived – but unfortunately we have little evidence with which to judge their relative significance.

Much of the available data is consistent with either relatively-inelastic per-capita demand for housing increasing as preferences changed, or relatively-elastic demand for housing responding to lower prices, or a combination of the two, or other explanations.

For instance:

- Falling rents in inner-urban areas and rising rents in outer-urban areas could reflect changing preferences, but could also reflect inner-urban sub-markets being hit harder by emigration and missing immigration;
- Declining household sizes in Sydney and Melbourne, where rents fell, but not in the other capitals, where rents were flat or rising (Figure 15), could be solely an adaptive response to larger population shocks, but could also reflect larger preference shifts in places where relatively more people were living in higher-density housing before the pandemic;
- Higher migration from capital cities to regional areas is evidence of shifting preferences, but despite extensive media coverage of this phenomenon, and genuine impacts on prices in small regional housing markets, the actual flows were very low – most internal migration from Melbourne was to other states (see footnote 6);
- The wealth effect of booming house prices (another exogenous shock) might have triggered higher willingness-to-pay for housing space, irrespective of changing preferences;
- Rents rising above pre-pandemic levels in 2022 even as the ratio of population to dwellings remained suppressed is consistent with changing preferences, with wealth effects from monetary policy, and even with a period of temporary rental market housing shortage as leases struck during the low point of the market by tenants occupying larger homes than they previously did move towards completion.

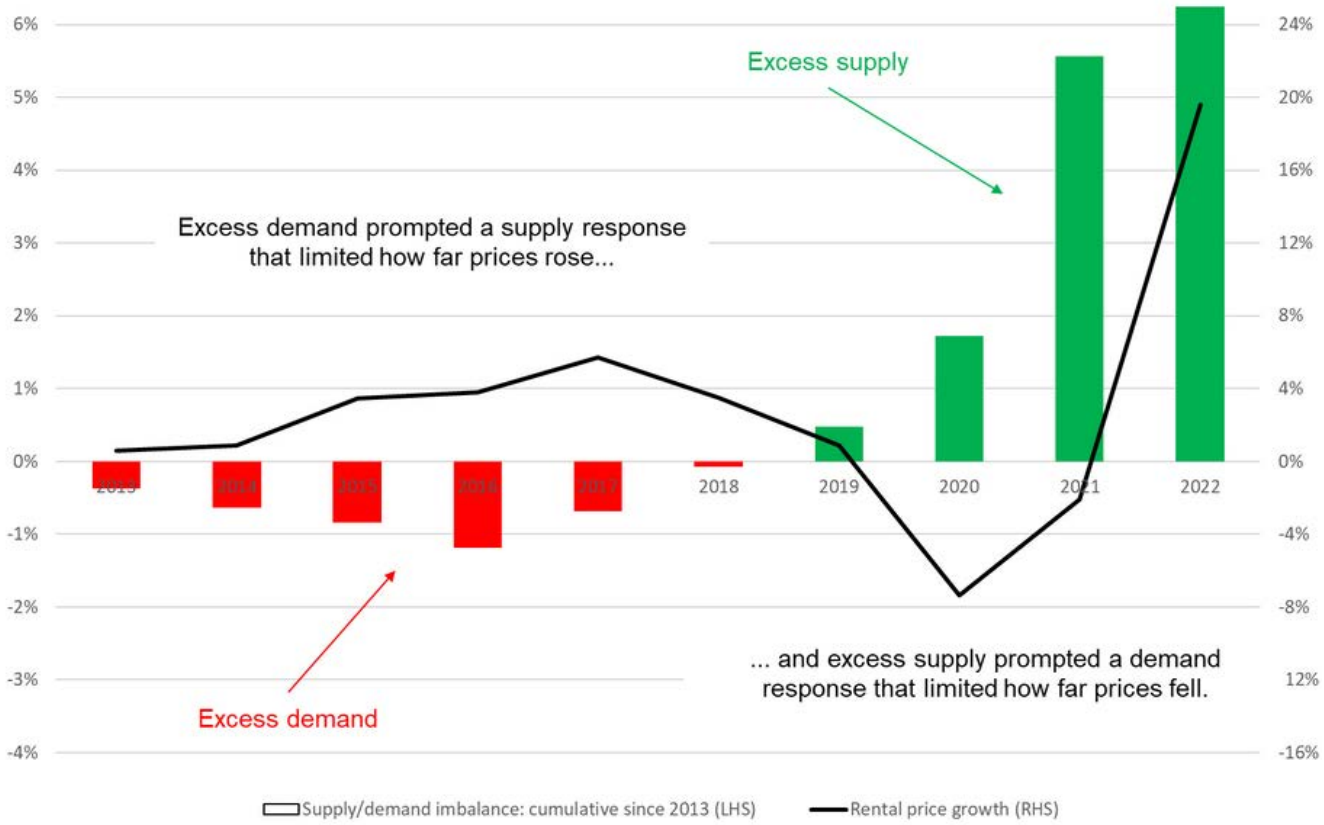
The jury remains out until we see how demand evolves over time. Because remote work is now standard practice, the preference shift should be enduring, and should remain visible in per-capita rents and rent differentials across areas and housing types after the market has adjusted to the record-high rents of early 2023.

Beyond the pandemic context, there is suggestive evidence of highly elastic housing consumption responses in the stability of the ratio of rent to household disposable income over time (Murray 2022).

This stability indicates that as incomes grow or rents fall, households tend to buy more or better-located housing to maintain a virtually fixed budget share – in other words, housing consumption adjusts fast enough that income and rent fluctuations can't be readily seen in the data on the rent ratio.

Figure 16: Excess supply did far less to lower prices than excess demand did to increase them

Excess supply (dwelling growth less population growth) cumulative from 2013; YoY rent growth



Source: Vic Department of Transport and Planning Housing Development Data; ABS estimated dwelling stock June 2022; ABS Regional Population 2021-22; SQM

Demand-side responses: migration

The idea of spatial equilibrium is central to urban economics.

It is best summarised in the phrase "migration equalises quality of life". 'Equalising' in this context describes both a direction of movement and an impact. People migrate from worse to better, and as they do, quality of life differences narrow, as their migration changes wages, rents, congestion and crowding disamenity in both the origin and destination locations.

Was migration to Melbourne in search of lower living costs part of the demand-side adaptive response?

It is not clear that the available data can tell us. Net internal migration remained negative over 2021-22, driven by internal departures around 30,000 higher than usual – but all the action was on the departures side. Internal arrivals to mid-2022 were back to 2019 levels (94,000). It is notable that arrivals were no higher, despite there possibly being 'pent-up' migration from the 30,000 shortfall in arrivals relative to usual levels over the previous two years.

Given the rapid recovery in Melbourne rents over 2022-23, we are unlikely to learn more about migration responses from eyeballing future data in this way.

However the high degree of 'churn' in migration offers interesting corroborating evidence for endogenous migration responses being potentially significant in scale.

With high churn, even small changes in rates of migration in-flow and out-flow in response to changing quality of life can produce large changes in the net inflow.

Melbourne's data illustrates this.

In the year to mid-2019, around 1.9% of Melbourne residents left for other parts of Australia. They were replaced by a similar number of arrivals, for a net internal migration flow of approximately zero.

Over the year to mid-2021 the inflow was 22% lower and the outflows 16% higher. These were small changes in percentage terms - but were large enough in population terms that net internal migration contributed 0.7 percentage points (almost half) of the 1.6% decline in Melbourne's population.

Lessons

We have more, bigger and better houses than ever before, yet housing remains a hot-button political issue.

That makes sense: there remains much housing hardship, and we are witnessing a generational change in the ease of accessing homeownership. We are also living through the uncomfortable math of asset pricing as interest rates fall to civilisational lows. And as ever there is cash to be made from land and lobbying.

There are many well-informed voices with nuanced views on these issues - and there are others acting out their deregulatory instincts in ways that benefit vested interests in land.

'Supply-side reform' has been amplified in importance by the latter. Dealing with inequality, population growth, public provision and tax settings have been cast as supporting acts.

But how much can supply-side reform actually achieve amid growing inequality in purchasing power?

Melbourne's experience suggests: not much. An enormous excess supply of housing was eaten up by those with means to do so, offering little relief for those in housing stress. Excess supply equivalent to two to three years of additional construction lowered housing costs by only one-tenth for around one year, doing very little for housing affordability.

As supply responds to excess demand to limit rising prices, so too did demand respond to excess supply to limit falling prices – only much faster. Adaptive responses rapidly ate up affordability gains.

To be clear: this is suggestive evidence only. The pandemic changed housing demand, too. We need more work to establish how much this led people to expand their housing footprint.

But if an excess supply shock on this scale can do so little for prices, even accounting for changing preferences, how can we hope to deal with the pointy end of housing stress through additional market supply?

Emphasising market supply and justifying this by housing poverty seems like a 'trickle down' approach to helping those in need. More supply means cheaper housing for the poor – only once the rich have had their fill.

Housing affordability has two sides: income and costs. We saw through the pandemic how readily we can address the income side, and in Melbourne's experience how little we can budge the cost side.

There are good reasons to improve planning systems and reshape urban form, but improving housing affordability is not one of them – we can't fix through the housing market problems that originate elsewhere.

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