Infill and urban consolidation in Melbourne
Spillovers and adjustment effects

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Introduction

• Urban development challenge:
  • Containing the environmental footprint of cities: greenbelts and growth boundaries.
  • Population growth: housing access, affordability and (transport) locations.

• This talk: focuses on urban redevelopment and densification in Melbourne.
  • Have the nimbyist got it right? Equity issue: is there a negative externality?
  • Does densification appear to generate a supply effect? Thus reducing overall price increases in well-located areas?
Overview

1. Introduction
2. Context/select literature
3. Data
4. Method
5. Results
6. Conclusions
Infill/consolidation can generate supply and demand effects simultaneously.

- Local property prices reflect demand for localities (live/work) and cost of supply.
  - Infill/consolidation may relax supply constraints by providing additional locality (e.g., higher density).
  - Effect depends on scale – difference between 1-for-1 replacement and higher density developments.
  - Consolidation/redevelopment may raise price expectations – price push/gentrification (latent price-distance gradient).
Select literature

• A literature on infill/residential redevelopment related to publicly subsidised housing.
  • Tidying-up effect (increase demand) (Simon et al. 1998, Ding et al. 2000, Ellen et al. 2001); visual effect esp from multi-dwelling buildings (Dye and McMillan 2006); partial price convergence (Schwartz et al. 2006).

• Less on private sector infill/densification across the neighbourhood price spectrum.
  • Ooi and Le (2013) – Singapore: positive effect due to price exploration/future amenity value.
  • Zahirovich-Herbert and Gibler (2014) – Baton Rouge: increases prices of non-similar properties, supply effect on similar properties.
  • Ahvenniemi et al. (2018) – no positive or negative effect in 7 case study areas and 6000 transactions.

• Redevelopment/knock-downs as indicator of obsolescence (Rosenthal and Helsley 1994, Dye and McMillan 2006)
  • Redevelopment sites may thus be blighted sites.

• Mixed evidence on impact of urban containment:
Geocode some 800k sales 2006-2015 (data issues)

Red = sold twice 2006-2015
Green = sold once
Geocoded development data (ca 71.6k)

Yellow= new development, different typologies

<table>
<thead>
<tr>
<th>Yield based typology</th>
<th>Sales after dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knockdown &amp; rebuild</td>
<td>131,128</td>
</tr>
<tr>
<td>Lower density (2-4)</td>
<td>167,102</td>
</tr>
<tr>
<td>Medium density (5-49)</td>
<td>37,687</td>
</tr>
<tr>
<td>Higher density (50+)</td>
<td>6,496</td>
</tr>
</tbody>
</table>
DiD approach: sales with development within 100-500m compared to sales in same LGA, Zone & POA outside

Yellow = new development

LGA
Zoning
Postcode

100 meters

500 meters
Identification

- Difference-in-difference hedonic identification of the impact of new residential investment in existing neighbourhoods on nearby properties, Eq (1):

\[ \ln PH_i = \alpha + \beta_i X'_i + \gamma A + \delta D_{ij} + \nu ADY_{1ijt} + ADN_{ijt0,1} + ADNC_{ijt1,10} + \sigma + \varphi + \xi + \tau + \sigma \times \tau + \epsilon_{it} \]

- A = whether a property is sold after a development has started within 100-500m [0,1]
- D = whether sold property is within 100-500 meter radius of any development site [0,1]
- ADY1 = whether property is sold after a development has started AND is within radius [0,1] – spillover Y1.
- ADN = Whether property is sold after development starts Y2-10 AND is within radius – spillover over time.
- ADNC = Whether property sold after development is completed Y2-10 AND is within radius.
- \( \sigma, \varphi, \xi \) and \( \tau \) are fixed effects for local authority (30), planning schemes (91), postcodes (254) and years, respectively. \( \epsilon \) is an error term.
- X = additional factors that explaining property prices: property type/age, neighbourhood characteristics, distance to amenities (CBD, trains, roads, trams, parks, hospitals, schools, flooding).
• Some evidence that properties close to denser areas systematically are cheaper than other properties in same LGA/POA/Zone.

• However, little evidence that development reduces prices further in Y1.
  • Exemption high density development with a negative effect within 200m (ca 5%)
Results: baseline Y2-10

- Positive effect on property prices following knockdown & rebuilds and medium density development. Effect strongest in 100-200m radius.
- Low density development largely flat over time (small positive effect in 100m ring, not shown)
- High density development has negative effect on properties very close by, but effect weakens with distance and turns positive.
- Small additional positive effect within 100-200m following completion of developments.
Results: houses only Y2-Y10

- Melbourne housing stock 67% houses.
- Densification a separate submarket?
- Continued positive effect of nearby developments.
- Negative effect within 200m disappears for higher density development.
Controls

• Prices fall:
  • Distance to CBD
  • Greater area density
  • Distance from train and tram stops
  • Flooding zone

• Price increase:
  • Distance from arterial roads
  • Higher SEIFA status
  • Heritage (11.5%)
  • Size of property lot
Conclusion

• Price pushing effects/externality:
  • Removal of obsolete/neglected properties.
    • Properties subject to development generate price premium: 10% average increase.
  • Densification may be accompanied by additional area amenities (parks, design, personal services) that generate positive neighbourhood effects.

• Income effect:
  • Densification raises local price expectations?
  • Income effect: total and/or average income increases that sustains additional personal services/gentrification.
  • Multiple infills/area or precinct development additional positive effect: 3%.
  • Cannot separate price-push or income effect, but closely connected.

• Little evidence of supply effect.
  • Even large developments typically only have very contained impacts.
  • Impact seems to disappear when considering houses only. Suggests densification is only limited substitute for detached housing.
  • Considerable period of under-investment in housing stock. Insufficient scale to generate supply effect?

• Low-density development (2-4) are typically found in lower price areas.
  • Redevelopment of low-density generate little wider effect. Low scale and no additional area benefits?

The absence of a clear density-supply effect is positive for those who favour densification, but problematic if density is an argument for affordability in the housing system more widely.