What are the Benefits of a Subway in Mumbai, India?

By Maureen L. Cropper* and Palak Suri*

• Market reacted in anticipation of opening of Line 1 two years prior to the opening, leading to 4.6% increase in sale values.

• Opening of Line 1 led to an increase in property values within 1 km of Line 1 by 13-17% compared to the increase in values beyond 1 km but within 3 km of Line 1.

Discussion

• The magnitude of increase in prices goes down as the size of control group is expanded to include regions beyond 3 km, reflecting changes in other parts of the city.

• The increase in residential, commercial office, and open land-use prices was greater than the increase in industrial and commercial shop prices.

• To study the factors affecting residential prices, we estimate hedonic price regressions using data on 3,000 houses in a 2019 World Bank survey. Log price depends on distance from the nearest rail station and on an employment accessibility index, in addition to housing and other neighborhood characteristics.

• Employment accessibility is measured using a commute-time-weighted average of wages obtainable across the city, estimated using a gravity equation. See also Suri (2021).

• A house that is 1 km closer to a rail station sells for 5.6% more than an otherwise identical house. A one standard deviation increase in employment accessibility raises house price by 4%.

• We also compute the employment accessibility index for 2004, using a 2004 World Bank survey to study the changes in subzone-level employment accessibility.

• The employment accessibility index within 1 km of Line 1 increased faster over this period than in other parts of Mumbai.

• Improvements in employment accessibility and access to rail stations are plausible channels underlying the observed capitalization effects.

• How large are the increases in property values within 1 km of Line 1 and how do they compare with the aggregate benefits due to commute time savings?

• Lacking precise data on floor space within 1 km of Line 1, we conservatively approximate the increase in property values after the opening of Line 1 to be $20 billion (PPP). Annualizing this over 30 years using a 10% interest rate yields a value of $2 billion (PPP).

• This is approximately twice as large as Suri’s $1 billion (PPP) estimate of the value of travel time savings, highlighting the need for a more comprehensive framework to study the benefits of infrastructure projects.

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DID estimates of the effects of Line 1 on property values

<table>
<thead>
<tr>
<th>Year</th>
<th>Residential</th>
<th>Comm. Office</th>
<th>Comm. Shop</th>
<th>Industrial</th>
<th>Open Land</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-18</td>
<td>0.056***</td>
<td>0.052***</td>
<td>0.051***</td>
<td>0.056***</td>
<td>0.059***</td>
</tr>
<tr>
<td>2014-18</td>
<td>0.055***</td>
<td>0.052***</td>
<td>0.051***</td>
<td>0.056***</td>
<td>0.059***</td>
</tr>
<tr>
<td>Observations</td>
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<td>1,086</td>
<td>1,086</td>
<td>1,086</td>
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<tr>
<td>R2</td>
<td>0.82</td>
<td>0.81</td>
<td>0.81</td>
<td>0.80</td>
<td>0.77</td>
</tr>
</tbody>
</table>

S.e. clustered at the year and sub-zone level are in parentheses. All specifications have year and sub-zone f.e. Dependent variable is log(Assessed Land Value) in Rs. Per sqm.