Valuing and Managing Urban Risk

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Discussion – Session 3
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Growth of cities – alongside increasing risk

• Polluted river in an Indian city – major health impacts

• Polluted air – cities in 19th century England – dampened movement of people and jobs into cities

• Flooding in cities across the world – short term economic losses vs. (limited) relocation of economic activity
Agglomeration, dis-amenities, and sorting

• Tension
  • Agglomeration economies --- better jobs, higher wages, buyer supplier networks, information ..
  • Urban dis-amenities – contaminated water, polluted air, natural hazard risk

• Sorting
  • How do people and firms respond to urban risk?
    • Erlich – Becker cope-mitigate-transfer framework of risk management
    • “build back better” vs. “better build elsewhere”
  • Do agglomeration economies outweigh greater risk?
  • What are core market and coordination failures?
Coal smoke and cost of industrial revolution

• Industrialization, jobs, and economic growth

• Congestion/ pollution – reducing quality of life

• Tradeoff
  • Slows down city growth? People and jobs

• Relevance for today’s (rapid) urbanizers
Do environmental bads slow city growth?

• If industrial coal use was lower by 10% --
  • UK urbanization would be higher by 4 percent points (over 60 years)
    • People valued relative wages gains vs. health risk

• Environmental bads also made cities costlier for firm
  • Real wages higher in dirty cities
  • (standard compensating differential)
  • Impacts on competitiveness
Spatially differentiated impacts?

• Industries vary in coal use – metal works vs apparel

• Were there major differences in coal intensive industries across cities?
  • Were cities in the North dirtier?

• Was there a spatial sorting of skills across cities?
  • Unskilled workers towards dirtier cities

• What were spatially differentiated impacts on growth of cities?
  • Regional?
  • Did large cities lose “fewer” people relative to a counterfactual?
Environment policy, river pollution and Infant health

• Policy enforcement / compliance
  • Local government monitoring and enforcement

• Did tanneries “really” clean up?
  • Who checked? And how?
  • Pollution control boards – capable? Incentives? Rents?

• Did tanneries move?
  • Where?

• What was the cost of clean up vs. cost of moving to a new place?
Pollution reduction or displacement?

• Table 3
  • BOD declines in Kanpur
  • BOD increases in downstream districts

• Issue:
  • Overall reduction vs. relocation of polluting factories to downstream locations
    • Broader discussion on implications of un-coordinated policies
Pollution/ Development tradeoff?

• What were the local job losses associated with the Kanpur environment regulation?
  • Can we do complementary analysis using ASI industrial data to examine firm location decisions/ jobs changes
  • See also Hanlon’s paper in this session

• What were other major events that may have contributed to changing industrial geography
  • Post liberalization abolition of the license raj.
Spatial interactions

• Data aggregation?
  • Pollution data from monitors (modeling spatial association among data collection points) vs. health data at the district level
  • Issues in data aggregation..

• Spatially explicit approaches
  • Spatially correlated errors
  • BOD measures may be spatially interlinked – consider spatially lagged observations (around Kanpur)
Flooded cities

• Novel data set on flooding – covering 30 years with location and timing of flood events
  • Urban extent data – GRUMP and CIESIN
    • Note new urban extent data from European Space Agency.

• Economic activity disproportionately concentrated in low elevation – flood prone cities

• Floods dampen economic activity in the short term – but cities rebound quite quickly

• Persistence – economic activity does not tend to relocate
Other research shows that flooding does not deter urban population growth.

May reflect natural advantage.....

Source: Population growth rates for cities with population over 100,000 from Henderson (2003) combined with hazard distribution data from Dilley et al. (2005)
How do people and investors trade-off hazard risk and gains from economic density?
Risk Management Framework: inspired by Ehrlich and Becker

Table 1: Typology of cities

<table>
<thead>
<tr>
<th>Category</th>
<th>Cope / move</th>
<th>Mitigate</th>
<th>Transfer risk / insure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced urbanizers “Superstars”</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Secondary or intermediate cities</td>
<td>✓</td>
<td>✓</td>
<td>X (information failures, market size)</td>
</tr>
<tr>
<td>Market towns / incipient urbanization</td>
<td>✓</td>
<td>X (costs exceed benefits)</td>
<td>X</td>
</tr>
</tbody>
</table>

Lot of research focuses on “relocation”
Why don’t people move or invest in mitigation?

• Informality/ slums
  • Access to jobs vs. consumption of risk: informal settlements in flood prone parts of a city may reflect distorted land markets and land use regulation

• Unclear property rights
  • Limited incentive to invest in mitigation

• Limited coverage of social/ basic services
  • Sanitation, sewers, drainage
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