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 varies 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
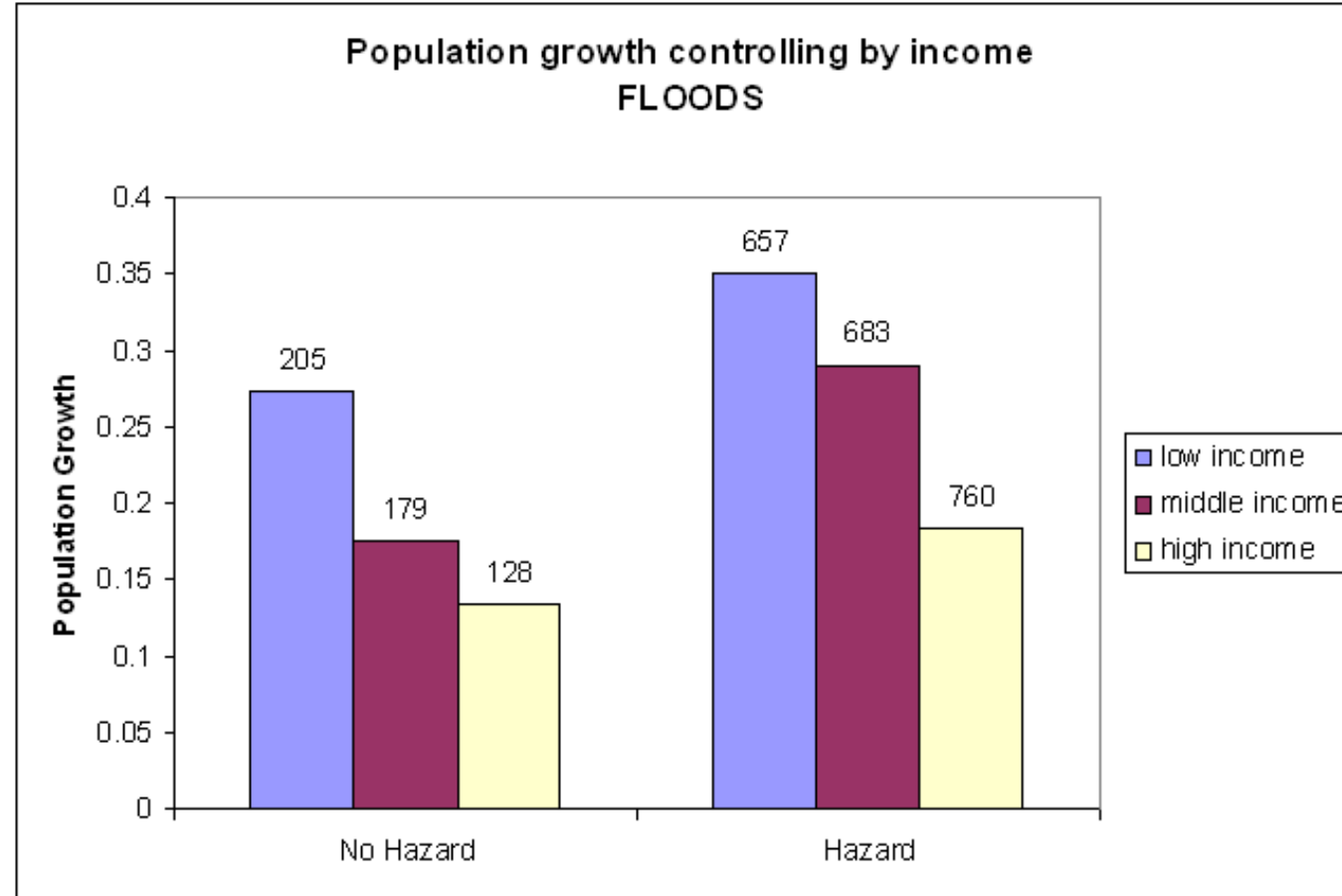
**May reflect natural advantage…..**
Source: Population growth rates for cities with population over 100,000 from Henderson (2003) combined with hazard distribution data from Dilley et al. (2005)

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

	Cope / move	Mitigate	Transfer risk / insure
Advanced urbanizers "Superstars"	X	✓	✓
Secondary or intermediate cities	✓	✓	X (information failures, market size)
Market towns / incipient urbanization	✓	X (costs exceed benefits)	X
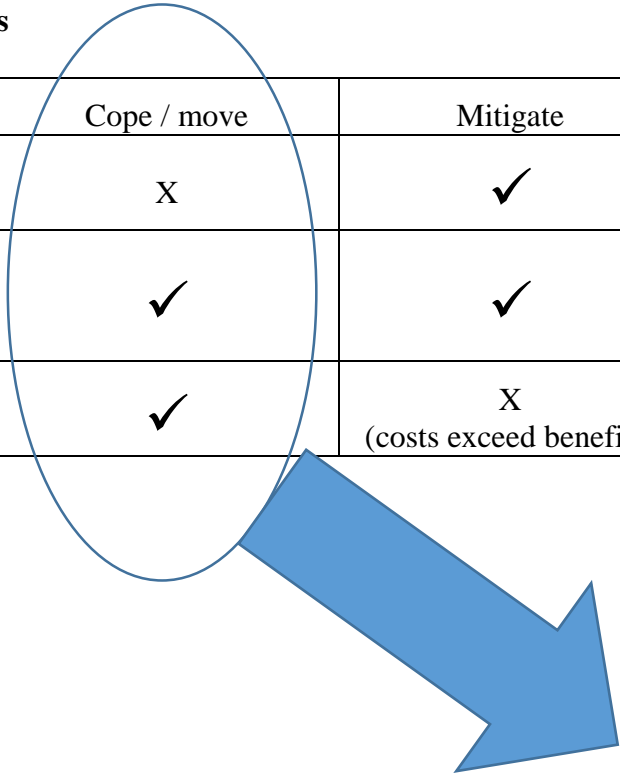
Lot of research focuses on "relocation"

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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