Transport and Urban Development

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Transport – all about making connections....

• Makes a city's markets accessible (labor, goods, and services) to other cities and to other neighborhoods in the city, as well as to outside export markets
  • Between cities -- connections enable firms to access local, regional, and global markets
  • Within cities -- connections enable people to access jobs; enable firms to attract workers, access other inputs, and sell products in local markets.

• Policymakers who envision stronger connections for their cities and neighborhoods face difficult choices.
  • Limited resources - - cannot invest in everything.
  • Which new or improved connections will yield the highest returns over time?
A city’s internal connections

Untangle Transport vs mobility vs Accessibility – focus is often on ‘movement and speed’ whilst the challenge is one of accessibility

‘Transport’: focus on vehicle movement and speed dealing with challenges of congestion or inadequate roads

‘Mobility’: Efficient movement of people and goods is beneficial; supportive of collective modes of transport (eg buses, rail).

‘Accessibility’: Ability to REACH opportunities is beneficial, not movement itself. In some contexts gaining access to opportunities can require lots of mobility. In some context gaining access might involve very short trips and lower mobility
The Zahavi conjecture – traveling an hour get very different accessibility outcomes

Average per capita daily travel times for a roundtrip is about **1 hour**

Source: Schafer and Victor 2000; Schäfer and others 2009.
In Nairobi, 42% walk to work...

Access 11% of jobs

Source: Avner and Lall 2016
In Nairobi, 70% walk or take the matatu to work...

<table>
<thead>
<tr>
<th>Mode</th>
<th>% of jobs within 60 minutes</th>
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<tbody>
<tr>
<td>Walk</td>
<td>11%</td>
</tr>
<tr>
<td>Matatu</td>
<td>20%</td>
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...limiting access to opportunities

In London, a central resident can reach 54% of all jobs within 45 minutes using public transit, in Nairobi, the corresponding share is 20%
Accessibility and mobility tied to how a city is physically organized

Mixed land use/random land use

- Decline in transport cost:
- Further reduction in transport cost: e.g. interstate highways, suburban rail

Monocentric

- High cost of commute, limited agglomeration externalities
- Low cost of commute, stronger agglomeration economies,

Polycentric

- Moderate cost of commute, spatially localized agglomeration externalities
LONDON
Peak 141,600 jobs/km²

NEW YORK
Peak 151,600 jobs/km²

HONG KONG
Peak 120,200 jobs/km²
Public transport connects millions of commuters to jobs – lots of movement

Tokyo

Beijing
Crowded and fragmented cities
Not much mobility - but a lot of congestion
Addressing congestion – how to think about it?

Don’t neglect land use

Policymakers worried a lot about congestion -- separates people from opportunity ..

- Nairobi – sitting in traffic costs US$4 million per workday (World Bank 2014)
- Kigali worried about it; so are London and Los Angeles

What can policymakers do?

- Pricing ? Ring roads? – all good ...-- but are these the sharpest solutions?
- India, Colombia – Duranton’s work show that travel speed variance between the fastest and slowest hours is not high- - travel delays caused by traffic don’t have a major role in explaining mobility difference across Indian cities
- Useful to think of how land is organized, zoned and used == need for density and better linkages between land use and transport plans
Chaotic use of land?
Paved roads occupy a smaller share of urban land in Africa than elsewhere — and usually drop off abruptly beyond the city center.

Source: Data from Antos, Lall, and Lozano-Gracia 2016 and Felkner, Lall, and Lee 2016.
Do large transport investments have a transformative effect on patterns of urban development?

Short run: travel behavior – ++policies

Long run: location decisions of residents – complementary policies
  • Densification
  • Sorting and Suburbanization
  • Induce investment in structures
  • Examples: Subways; Chinese ring roads, Kampala ring roads
A city’s external connections

Connecting settlements to integrate product markets

Rural – urban linkages – farm diversification and non-farm activities (Wang and Dorosh)

 Connecting cities – integrating domestic markets – often in the context of external market integration.
A city’s external connections

• High domestic transport costs pose a major challenge to the economic integration of subnational regions, and limits their potential for cities to support economic diversification.

• Roads -- building a road will increase the number of journeys and possibly the associated time savings (reduction in transport costs)

• Long term – can also make a place a more attractive location for investment and economic activity.
  • Induced changes in the location of activity and in productivity.
A city’s external connections

Transport corridors

Direct benefits
- Reduction in VOC
- Reduction in transport costs

Indirect benefits
- Concentration of at “extremities”
  OR
- Development corridors along segments

Direct benefits
- Effects on transit
  - Trade quantity
  - Value of trade

IS THIS A POLICY OBJECTIVE? HOW TO DO IT?

TERRITORIAL APPROACH
All about complementary policies

1) Land + municipal services
2) Business environment (incl. skills)
3) Institutions / Governance

THE WORLD BANK
A city’s external connections

- Non-competitive market structures of service providers (Lall, Munthali, & Wang, 2009) or excessive regulations (Combes & Lafourcade, 2005) can drive up user costs – reducing the benefits from investment.
  - Barriers to entry in the transport industry
  - Atkin and Donaldson -- cost of distance (per unit) is 3.5 times higher in Ethiopia compared to the US. This difference is bigger in Nigeria, where the costs are 5.3 times bigger than in the US.
    - While the poor quality of the roads explains part of the difference, low wages should reduce this difference in the labor intensive sector.
    - Intermediaries capture the majority of the gains from falling international trade barriers
    - Finding in line with Teravaninthorn and Raballand (2009) pointing at barriers to entry affecting logistic and transport costs on the main African corridors.

- Complementary policies beyond the expansion of transport infrastructure
Interface of research and policy

Big data for better insights...
- e.g. Satellite image analysis and “Big Pixel” (Hanson)
- e.g. Amazon cloud processing of mobility data – Duranton
- e.g. Call Detail Records (Lozano Gracia @WBG)

Surveys of freight and passenger movement
- Example from Cape Town

Analytic framework compatible with market distortions in developing countries

Systematic assessment of complementary policies – understand wider economic benefits
Estimated evening time distribution of Port-au-Prince population (100x100m Grid Cell)

Clustering method applied to Call Detail Records in order to identify key locations of users.
Commuters during daytime for work related activities (left) and during the evening (right).
But “technology” needs to ground truthing – or insights can be misleading

Lots of trips coming to and going from downtown

But people use downtown as transit hubs not as places of work

Source Joubert
Interface of research and policy

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