Cities for development

Tony Venables, Oxford & IGC

- 2.7 bn new urban dwellers by 2050 -- 1.4 mn per week
  - India: 200k per week 2001-11
- The cities that are constructed will be long-lived.
- Need to be places to live and places to work

- Overview:
  - Component parts and urban form
  - How do cities get built?
    - Historical experience + developing country issues
Cities for development

• Three components
  – Residential: need to house incoming migrants
  – Commercial: jobs and productivity
  – Infrastructure: transport + utilities

  Components come together as ‘urban form’
  Where does activity takes place?... density, interaction

• Urban form sets the balance between:
  • Increasing returns: proximity & high productivity
  • Decreasing returns: commuting and congestion

• Land is the scarce factor – efficient use.
• But multiple market failures: need markets & regulation & public investments
Productivity benefits of density and proximity:
- Economies of scale in provision of power, utilities
- Large markets allow economies of scale, linkages and clusters
- Thick labour markets – matching, learning, training
- Knowledge spillovers
- Economic and social networks

Cities in the developed world:
- Highly productive
- Source of innovation
- Doubling city size increases productivity by 3 - 8% (Rosenthal & Strange survey)
- Berlin study – natural experiment: (Redding et al) 9-11%

Cities in the developing world:
- Greater variability (and less evidence)
- India: concerns that ‘suburbanisation’ of employment means agglomeration benefits are lost.
Housing matters because:

- Well-being
  - and family development
- Productivity
  - Access to employment
  - Facilitates rural-urban migration
- High share of national assets - private and relatively dispersed ownership
  - UK - $5trn, 1/3 national wealth private residential structures.
- Direct job creation: Structures
  - High domestic content
  - Labour intensive
- Long-lived investments
Infrastructure

• Broadly defined:
  – Productive capital: Capital investments in transport, water, sanitation, power,
  – Social infrastructure: schools, hospitals

• Public or private provision
  – Local infrastructure: street layout, lighting
  – City-wide: transport networks, main water, sanitation

• Decisive role in shaping the city – but difficult to assess/ quantify its effects:
  – Ex-post evaluation
  – Ex-ante Cost Benefit Analysis
    Eg transport
    • Direct cost saving for existing traffic
    • Value of traffic created
    • Wider benefits: Facilitates agglomeration/ productivity
Urban form

How do the elements combine? Basic urban model (Alonso – Muth – Mills):

- Commercial activity (& employment) clusters to get benefits of scale/ agglomeration:
  - Central business district: monocentric -- polycentric

- Residential land around employment centres
  - Commuting costs increase with distance
  - Workers choose where to live
    - Land rents diminish with distance
    - Density high in centre, diminishing

- Infrastructure:
  - Determines city layout.
  - Land rents sufficient to pay for optimal level of infrastructure.

- NB: combination of market and public choices
  - Increasing returns/ externalities in CBD
  - Markets can achieve efficient residential mix – if infrastructure in place
  - Infrastructure can be funded by rents – but who receives rent/ supplies infrastructure?
Urban form: employment density

**LONDON**
Peak 141,600 jobs/km²

**NEW YORK**
Peak 151,600 jobs/km²

**HONG KONG**
Peak 120,200 jobs/km²

Visualisation by Duncan A Smith for LSE Cities
Urban form: residential density

**LONDON**
Peak 27,100 pp/km²

**NEW YORK**
Peak 59,150 pp/km²

**HONG KONG**
Peak 111,100 pp/km²

Visualisation by Duncan A Smith for LSE Cities
Data Sources: UK Census 2011; US Census 2010; Hong Kong Census 2006.
Urban form: residential density

Comparative population densities in the built-up areas of selected metropolitan areas:


Urban form: residential density

500 per ha = 50,000 per km²
Urban form: residential density with non-market outcomes

Brasilia

Moscow

Johannesburg
Urban form: residential density: Asia is dense

Comparative average population densities in built-up areas in 48 metropolitan areas

Source: "Order Without Design" Alain Bertaud, 2003
How was London built?

• 1840: @ $500

• 1841 life expectancy at birth
  • London 36
  • Manchester, Liverpool, Glasgow ~ 27
  • Rural UK, 48

• Highly urbanised

• 19th century, London population 1mn → 6mn

• Commercial and government centre clustered along river/port

• Grew by in-migration:

• Successfully accommodated its growing population

• Built private formal mass housing -- Four key ingredients:
1) Property rights:

- Generally clear and enforceable
- Landowners → lease (99 yrs) to developers → builders (contractors or sub-lease)
  - Landowners: farmers – ducal estates
- Developers:
  - highly speculative -- money made on basis of growing city and rising land values
  - Parcels of land large enough for developers to coordinate layout of roads, basic services
- Owner occupancy and tenancy:
2) Infrastructure

- ‘Large developers’
  - Put in place local infrastructure
    - Marked out roads, lots
    - Sanitation water

- Private investment in horse-drawn omnibus, railways: (over-ground 1830s → underground 1860s →)
  - Access to work
  - Landowners & developers often shareholders in railway companies.
3) Building standards and costs

- Building regulations: 1216 → : London building code 1774 →
  - Set minimum standards safety/ quality

- Construction sector:
  - Very wide distribution of firms
    - Thomas Cubitt: builder and developer: Belgravia, 2000 employees
    - Leading 100 builders employed 30,000
    - 80% of firms < 50 workers
    - 30-50% builders built 1 or 2 small houses per annum
  - Many terraces of similar houses constructed by different builders.
  - Standardization of design and easy entry of firms
4) Financial innovation:

• Sources of funds for developers/ builders
  • Insurance companies (not commercial banks)
  • Interest rates to large developers 4 – 5%
  • Lease rather than sale, reduced developers’ need for capital

• Building societies
  • Originally societies of builders, pooling credit
  • Evolved into saving vehicle for small savers/ lending for home purchase → large scale owner occupation
Affordability ‘4th rate house’

- £170 construction cost + £15 land + £15 land development
- 2/3 mortgage @5% $\rightarrow$ £7pa
- Wages:
  - Skilled craftsman £100
  - Unskilled labourer £50
  - Senior clerk £150
    (rent £25)
FATHER THAMES INTRODUCING HIS OFFSPRING TO THE FAIR CITY OF LONDON.
London:

Failure to put in city-wide infrastructure ➔ need for public investment

Special-purpose city wide authorities 1840s ➔ , London County Council 1889 ➔

• Public Health:
  • Role of water in transmitting disease identified 1840s – 50s.
  • 1848, Metropolitan Board of Works
  • The Great Stink, 1858
    • 1859-65: 450 miles of sewers built in 3 years: Replaced 200,000 cesspits
  • 1950s: Clean Air Act

• Transport:
  • Main line railway stations in the wrong places
  • Underground 1863 ➔
    Consolidation of independent lines 1900 ➔ London Transport 1933 ➔ Nationalisation 1948

• Zoning and land use:
  • Planning act 1909, 1932, 1943
  • Town and country planning act 1947 ➔ ‘Green Belt’
  • Consensus that controls too tight? Hard to reverse
Private sector achieved:

- Large and reasonable quality housing stock
- Internalised (very) local externalities/ public goods
- Transport system good enough.

But:

- City wide externalities/ public goods only addressed in response to problems as they arose.
- Legacy of inefficiencies in location of much infrastructure
**Focus on two features:**

- **Residential:**
  - Many cities, near total failure to construct private sector formal mass housing
  - Implications for well-being/ rural-urban migration/ construction jobs/ city shape

- **Urban form:** are cities evolving an efficient urban form?
  - Do workers have good enough access to jobs?
  - Are jobs clustering to get productivity benefits?
  - Are cities sufficiently dense?

- **Issues deserve case-by-case analysis**
  - Just run through the London checklist
Developing economies: residential

Conditions for formal sector private mass housing:

1: Property rights

- Land rights: privatized but not clarified?
  - Often subject to multiple claims
  - Difficult to consolidate
  - Development gains – little property tax
  - Property as collateral: need clear title and ability to foreclose fast and efficiently

- Tenancy
  - Highly politicized
  - Rent control / tenant protection undermine the market
2: Infrastructure

- Local infrastructure – road layout, sanitation
  - Private, public – or neither

- City-wide infrastructure
  - Lagging not leading
  - Inefficient delivery
  - Fail to capture development gain
3: Financial innovation.

- Failure of intermediation
  - Commercial Banks unwilling to lend – transactions costs?
    - Need specialized mortgage finance?
  - Inflation:
    - Makes mortgages unaffordable
    - Need indexation of principle and repayments?
  - Policy undermining market:
    - Nigeria: govt offers 6% mortgages when inflation 18%.

- Lending to the construction sector?
Developing economies: residential

4: Building standards and costs:

• Building standards
  – Forward looking
  – Too high?
  – Bifurcated supply: regulations ignored → property hard to value & trade.

• Input costs
  – Land
  – Materials
  – Labour skills

• The construction sector
  – Lack of small/medium firms

Failure on some combination of these four broad points mean that major part of residential construction market is missing.
Developing economies: urban form

**Doughnuts** (Delhi, Dar es Salaam) **versus cones** (Shanghai, Bangkok)?

- Obstacles to sufficiently dense urban centres:
  - Many of previous points
  - Inappropriate regulation:

  FSI : floor space index

  (FAR floor area ratio)

<table>
<thead>
<tr>
<th>City</th>
<th>Central business district FSI</th>
</tr>
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<tbody>
<tr>
<td>São Paulo, Brazil</td>
<td>1:1³</td>
</tr>
<tr>
<td>Mumbai, India</td>
<td>1:1.33</td>
</tr>
<tr>
<td>Chennai, India</td>
<td>1:1.5</td>
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<tr>
<td>Delhi, India</td>
<td>1:1.2–1:3.5</td>
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<tr>
<td>Amsterdam, Netherlands</td>
<td>1:1.9</td>
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<tr>
<td>Venice, Italy</td>
<td>1:2.4</td>
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<td>Paris, France</td>
<td>1:3</td>
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<tr>
<td>Shanghai, China</td>
<td>1:8</td>
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<tr>
<td>Vancouver, Canada</td>
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<td>San Francisco, United States</td>
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<td>Chicago, United States</td>
<td>1:12</td>
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<td>Hong Kong SAR, China</td>
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<tr>
<td>Los Angeles, United States</td>
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<td>Tokyo, Japan</td>
<td>1:20</td>
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<tr>
<td>Singapore</td>
<td>1:12–1:25</td>
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</tbody>
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Developing economies: urban form

Map 3.1 Maximum FSIs in Mumbai

Source: © Alain Bertaud. Reproduced with permission from Bertaud (2004); further permission required for reuse.
Note: FSI = floor space index.
Developing economies: urban form

Estimates of cost of FSI restrictions in Bangalore:

(Bertaud & Brueckner, calibration of simple urban model)

• Restrictions bind over 24% of city
• Absence would have led to city with 10% smaller area
• Commuting saving 1.5-4.5% household income

• Further productivity benefits of denser city? – losses from ‘suburbanisation’ of commercial activity
Research agenda:

• Data: use technology to gain better understanding of urban form:
• Understand impact (on local inhabitants and wider city form) of:
  – land tenure
  – building regulations
  – infrastructure
• Design of
  – Urban public finance
  – Housing finance
• Evolution of informal settlements.
• Political economy: within city & city/ central government

Policy agenda:

• Multiple components in evolving a well-functioning city
• Multiple necessary conditions for each component
• Must all be substantially met → joined up policy
  – Legal/ financial/ housing / central government/ city government
• High level coordination needed