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
  - Africa, 350k per week projected
- Africa 1/3rd way through its urbanisation process
- Cities will have to deliver:
  - Productivity: long run economic growth will be driven in cities
  - Liveability: housing and services
- Cities are complex: intense economic and social interaction
  - Huge benefits – and potential costs
Cities for development

• Cities have three sorts of components -- stocks of structures
  – Residential: housing
  – Business: workplaces -- jobs and productivity
  – Infrastructure: transport systems, utilities, public services

• Urban form: interaction of these components according to their location, quality...
  • Workers get to jobs: Work-places have access to markets, inputs, land: Households access amenities, services...

• How are the components coordinated?
  – Markets: especially land – the scarce factor; housing
  – Public investment: infrastructure, utilities, public services; housing
  – Regulation

• Plan of talk
  – Framework for seeing how the component parts fit together
  – Discuss each of the three components in turn
  – Draw policy conclusions
Framework: the basic (monocentric) urban model

- City is residences/ workplaces/ infrastructure, spread around a centre.

- Jobs largely (?) concentrated in the CBD

- Residential areas spread around (horizontal axis)

- City jobs offer productivity & wage $W_U$

- City draws in workers: outside wage $W_0$

- City grows as $W_U > W_0$ but urban costs increase with city size.

- Commuting costs of workers increase the further they are from the centre.

- Equilibrium city size: marginal (edge) worker indifferent between $W_0$ and $W_U$ minus commuting cost
Framework: the basic (monocentric) urban model

- Messages:
  - Cities create economic surplus as they are productive, $W_u > W_0$.
  - Some of this surplus dissipated in commuting (and other) urban costs.
  - Remaining surplus is urban ‘rent’.
  - Rent gradient from CBD to edge $\rightarrow$ density gradient CBD to edge.
  - Surplus is greater the lower are commuting costs ($T$) and the higher is density ($D$) [NB – need to net out construction costs]

- Issues:
  - Residential: what are the barriers to achieving high density and acceptable quality housing?
  - Business: what determines urban productivity, $W_u$? What do people in cities do?
  - Infrastructure: where and when to build, and how to finance?

But first, look at some cities, in particular density
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:

- Jakarta (Jakotabek)
- Shanghai
- Bangkok - 1988
- Paris - 1990
- Warsaw
- Barcelona
- Atlanta
- Los Angeles
- New York Metropolitan Area

From "Order Without Design", Alain Bertaud, 2001
Urban form: residential density: Asia is dense
Urban form: residential density

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

**Johannesburg**

**Moscow**

**Brasilia**
Housing matters because:

- **Well-being**
  - family development
  - Attracting and holding skilled labour

- **Access to employment & amenities**
  - Importance of density

- **High share of national assets - private and relatively dispersed ownership**
  - UK - $5trn, 1/3 national wealth private residential structures.

- **Direct job creation: construction**
  - High domestic content
  - Labour intensive
Residential

Conditions for delivery of high density/acceptable quality housing?

1: Property rights

- Need to be supportive of investment in long-lived structures
- Land rights: privatized but not clarified?
  - Often subject to multiple claims
- Barrier to capital investment, building tall
- Difficult to consolidate blocks of land – needed for large scale projects
- Hard to run property tax
- Property as collateral: need clear title and ability to foreclose fast and efficiently
- Rental tenancy
  - Highly politicized
  - Rent control / tenant protection undermine the market
2: Finance

- Need effective financial 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%.

3: Local infrastructure

- Road layout, sanitation:
- Economies of scale
- Who provides it? Private, public – or neither
4: Building regulations:

- Many good reasons for building & land use regulation
  - Building regulations and imperfect information
  - Matching density to infrastructure
  - Externalities of over-crowding

- But: many countries have regulations that are too tight:
  - Regulations ignored: bifurcated supply → property difficult to value and trade
  - Floor area ratios (FAR, or floor space index FSI) that are very low

**EG:** Estimates of cost of FSI restrictions in Bangalore: (Bertaud & Brueckner, calibration of 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
5: Construction sector:
   - Need supply response from cost-effective construction sector
   - Input costs high?
     - Land
     - Materials
     - Labour skills
   - Lack of small/medium firms?

Implications:
   - Failure on some combination of these points mean that major part of residential property market is missing.
   - Implications for both livability and density.
   - Structures (and associated communities) are long-lived → mistakes are long-lasting:
II: Jobs and production

What determines city productivity? What do people in cities do?

Concentration of economic (and social) activity brings high productivity

• **Mechanisms:**
  – Large markets allow economies of scale, linkages and clusters
  – Thick labour markets – matching, learning, training
  – Economic and social networks
  – Knowledge spillovers
  – Economies of scale in provision of power, utilities

• **Evidence:** -- from high income countries:
  – Large cities are highly productive
  – Doubling city size increases productivity by 3 - 8% (Rosenthal & Strange survey)
  – Berlin study – natural experiment: (Redding et al) 9-11%
  – Source of innovation
  – City-wide or sectoral?
Implications?

- Productivity increasing with city size: positive reciprocal externality → market outcome inefficient

- Reducing commuting cost/ raising density brings additional benefit by increasing city size and productivity: ‘growing a cluster’

- Possibility of low-level trap: coordination failure → hard to start ‘new’ cities.
  → primate city too large?
Jobs and production

Accurate for developing countries? What do developing country cities do?

- Tradables vs non-tradables:
  - Tradables:
    - ‘Export’ oriented, e.g. manufactures, services
    - Increasing returns to scale
  - Non-tradables:
    - Government, local services, retail, construction, informal sector services
  - Demand for non-tradables come from:
    - Tax revenues
    - Resource revenues
    - Market activities for local areas/entrepot trade
    - Government, local services, retail, construction, informal sector services
    - & from workers in NT and T sectors
  - Likely decreasing returns to non-tradables:
    - Inelastic demand $\rightarrow$ price falls as supply expands
Jobs and production

- Evidence?
  - High share of informal service sector activity in many developing country cities
  - Low share of tradables linked to resource revenues (demand for non-tradables $\rightarrow$ urban Dutch disease)

Figure 6: Natural Resource Exports and the Sectoral Composition of Urban Areas

Gollin, Jedwab, Vollrath 2014
• Implications?

  – Inelastic demand for non-tradables $\rightarrow$ diminishing returns and downward sloping wage curve, $W_N$

  – Elastic demand for tradables + increasing returns to scale $\rightarrow$ upwards sloping wage curve, $W_T$

  – At A the city is small but too expensive to support tradable production.

  – If could get to B, would have tradable sector, larger city, higher real income.

  – Possibility of being stuck in low level trap: ‘urbanisation without industrialisation’

\[ W_U = \max[W_N, W_T] \]
Policy implications?

- Create urban locations that are productive → access to workers/markets/other firms

- Want to achieve equilibrium at B and prevent lock-in at A.
  - Good central area transport → high rents → density
  - Encourage density: NB: Low density problem likely to be particularly acute if non-tradable activities are dispersed not concentrated in CBD
  - Importance of sequencing: hard to retro-fit a large sprawling city.

Conclusions

- African cities evolved as ‘local’ – poorly designed to become ‘global’
III: 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

- Finance:
  - Gains from city productivity get transferred to rents and capitalised in land values.
  - Land is the perfect tax base
    - Fair – why should incumbent land-owners take the capital gains?
    - Efficient – a tax on pure economic surplus
    - Sufficient to fund infrastructure investments (only want to do investments with benefit (increase in land values) > cost.
  - Implementation
    - Land not structures
    - Timing: construction costs up front, rents through time
III: Infrastructure

• Selection of infrastructure projects (eg transport):
  What is benefit of particular project?
  – Direct cost saving for existing traffic
  – Value of traffic created
  – Wider benefits: Facilitates agglomeration/ productivity
  – Coordinating mechanism: commitment to future shape of city
    – Private investment (& location decisions) based on expectations about future city
    – Infrastructure to coordinate – create confidence (?) – for private investors.
  – To play this role, infrastructure must lead not lag development.

• Ex ante appraisal and ex post evaluation
Coordinating mechanisms and urban policy:

• Markets
  – Need well functioning markets – efficient allocation of land.
  – But not the whole story: public goods, externalities, coordination failures

• Public infrastructure
  – Direct benefits of service provision – transport, schools, health, garbage collection
  – Enables clusters and productivity – ‘wider benefits’.
  – Shapes and coordinates private sector investments – if leading not just lagging

• Regulation
  – Micro-level, building regulations etc.
  – Macro-level: vision for growth of the city

• New cities
  – More cost-effective to build new than to retro-fit?
  – African urban population will (at least) treble