Exclusionary Policies in Urban Development: Brazil

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Issues

- Vast urban slums housing migrants in urbanizing countries

- What causes slums?
  - Is it more than a transition stage under low incomes?

- "Failure" in governance
  - Poor planning and management
  - Inadequate fiscal resources, institutions
    - Do these just reflect low incomes, low human capital and overwhelming pace of urbanization?

Issues (continued)

- Intentional (or, "strategic")
  - "Exclude" migrants from favored cities
  - Favored cities of *national* govt.
    - Capital markets; import/export licenses, allocation of public services (high quality schools)
    - Jobs and services draw in migrants
    - Over-crowding of facilities, congestion
      - Ades and Glaeser, Davis and Henderson
    - (why favored?)

  - locals resist in-migration: make it unattractive
    - Force migrants into un-serviced slums
      - Sewer, water

Issues (continued)

- Current focus: sub-Sah. Africa, China, India
  - E.g., Beijing: "urban villages" vs. incorporate migrants into city
    - Explicit strategy to dampen population growth (Cai Fang, 2006)
    - Informal sector housing only, in un-serviced urban villages (utilities, schools...)

- Problems with the strategy:
  - Inequality; health
  - Cost of later catch-up
  - Generates negative externalities: could backfire

- Lessons of recent "past": Brazil (1970-2000)

Exclusion: USA literature

- Traditional Tiebout: (Epple & Nechyba, 2004) and new "Super-star" cities (Gyourko, Mayer, Sinai (2006))
  - San Francisco (high amenities), slow growth of population; high growth of real housing prices

- Exclusion by zoning and other *formal* sector restrictions

Exclusion: Developing countries differ

- Zone formal sector → informal sector
- Informal sector is "permitted"
  - Favelas (invasions)
  - loteamentos (explicit development)
    - Brazil '79 national law: 125 sq m. min
- Not service informal sector
  - "illegal" to service prior to 1988
    - Sewer and water
  - 1988+ democratization

- Low income suburbs

Plan of talk; preview of results

- Distinguish (Census years)
  - Pre-democracy provision of services: 1980-1991
  - Post-democracy locality growth: 1991-2000

1. Background on Brazil urbanization

2. Servicing for migrants/low income households in 1991
   - 1980 conditions
   - Local elites exercise exclusion:
     - **Evidence of strategic elements?**

3. Effect of poor servicing on urban growth and population **composition** for '91-'00

Data

- '70, '80, '91, 00 censuses (long form)
  - Also geographic data (soils, climate, etc.)
  - 1999, 2005 urban yearbook
    - Retrospective data on land use regulations
    - But ex post info

- "locality" as unit of analysis.
  - Municipios → locality (definitions change over time)
  - 123 urban areas [UA] with 447 localities:
  - **59 UA's with multiple localities (383 in 2000)**

Urban population growth in Brazil urban areas

a) Urban areas [slope coefficient (standard error) of -.00644 (.017); R^2=0]


UA Urb Pop Growth 1980-2000 and Initial Pop in 1980
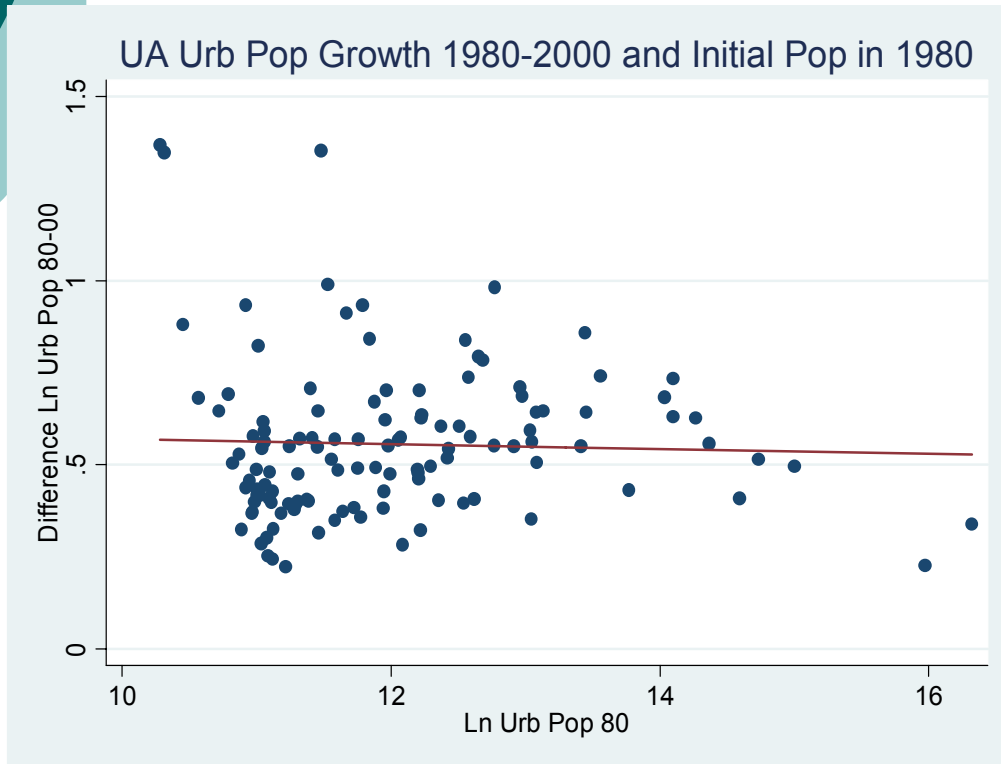
De Mata, Deichmann, Henderson, Lall, Wang (2007)

Urban area growth from:
1) Knowledge accumulation
   Education levels and growth
2) Market potential
   local demand
   transport costs
3) Supply of people
   from agriculture

Parallel growth:
No longer focused on south.

Urban population growth in Brazil:
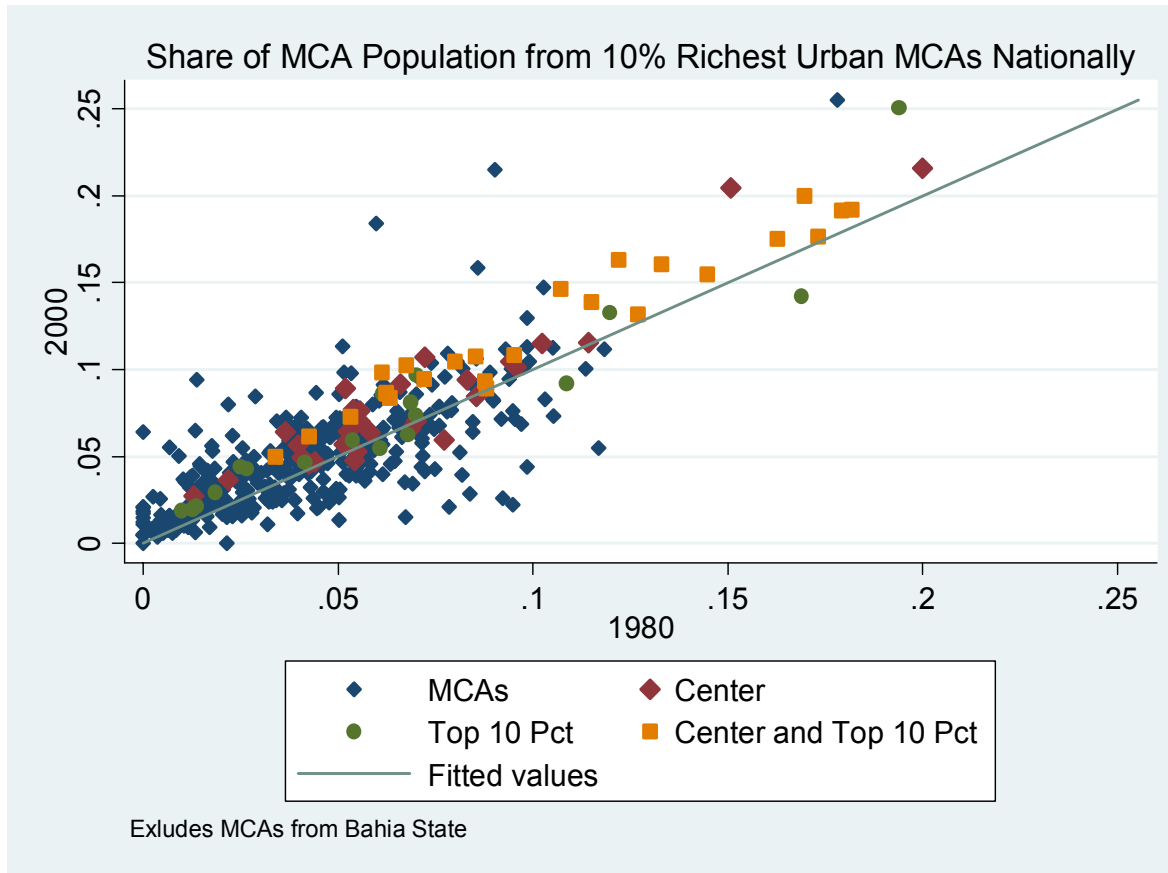## localities

b) **Localities** [slope coefficient (standard error) of -.0898 (.011); R^2=.14]

MCA Urb Pop Growth 1980-2000 and Initial Pop in 1980
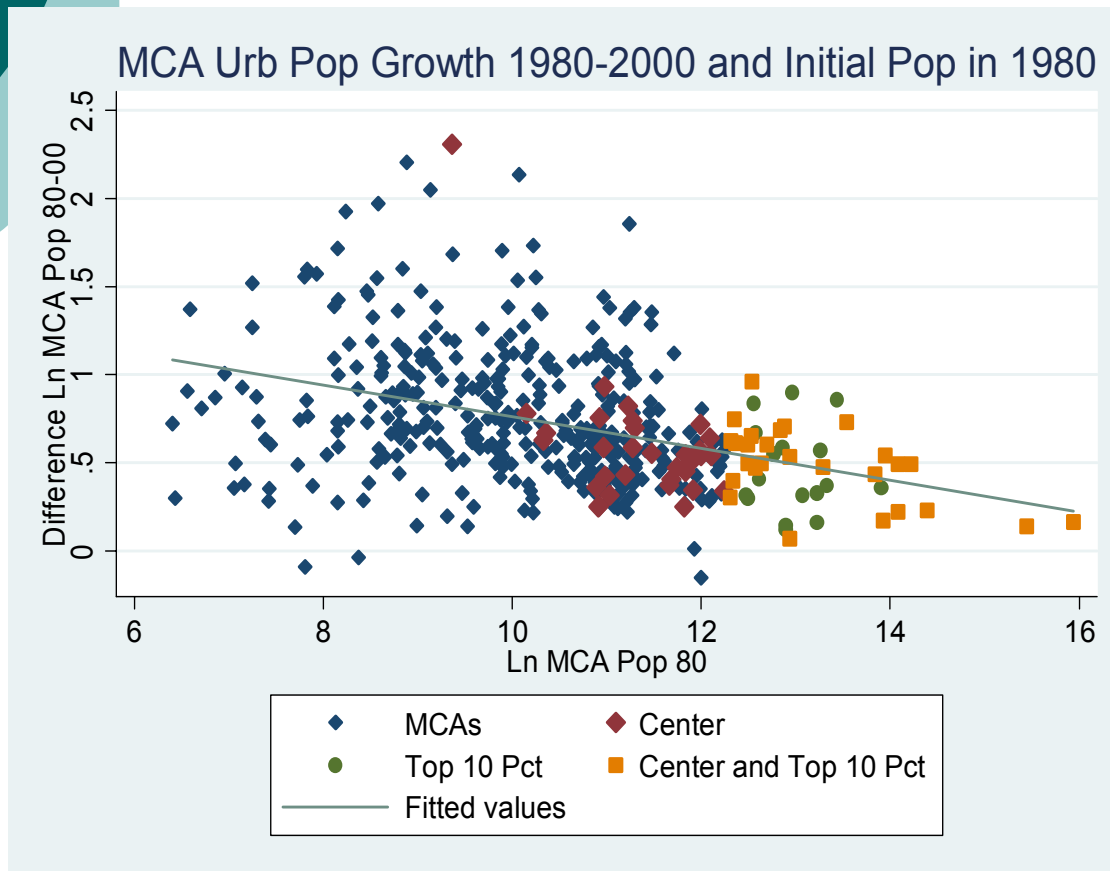
Within UA:
-- proliferation of localities
-- big: slow growing.
-- big, not just center cities

Urban stratification in Brazil

[Rich: in top 10% of h.h. by income in national urban population]

Share of MCA Population from 10% Richest Urban MCAs Nationally

Exludes MCAs from Bahia State

Big localities: -- rich and growing richer

                  -- from previous slide, also slow growing (**super-star**)

Defining the informal sector

- Census
  - "Irregular" configurations (<5%?)
  - No title to land (8% of home owners in 1991: perception?)
  - Infrastructure services (Dowall, 2006)
    - Central water connection
    - Full service (electricity, central water and sewer)
      - Highly valued from hedonic modeling

Service levels: to whom?

Table 2. Servicing of housing in Brazil in urban areas
   (All urban households living in localities over 50% urbanized & 10% service levels)
a. All housing: over time provision; 1991 breakdown

	Percent with central water connection	Percent with full service: electricity, water and central sewer	Share of housing	Number of localities Water [full service]
1970 all	59	41		226 [149]
1980 all	81	53		365 [214]
1991 all	**91**	**62**		428 [250]
2000 all	92	64		435 [359]
1991 breakdown				
Own house, not land	82	34	8.1	
rent	94	67	21	
Migrants: bottom 20%	81	43	3.9	
Non-migrants: bot. 20%	87	52	15	

Can't tell migrants where to live (vs. China):
   Therefore, under-service likely living quarters

Servicing of small versus large houses

Table 2. Servicing of housing in Brazil in urban areas (continued)
All urban households living in localities over 50% urbanized & 10% service levels.
b. Services by house quality

All urban housing in significant size MCA's					
	Percent with water			**Percent with full service**	
	1980	**1991**		**1980**	**1991**
Low quality housing: (15%) 1-2 rms. 1980; 1-3 rms. 1991	61	81		17	32
High quality housing: (20%) 6-7 rms. 1980; 7-9 rms. 1991	86	95		54	64

Determinants of servicing for small houses: Pre-democracy era
ʼ91 provision (ʼ80 conditions)

- Focus on Water (locally supplied)
- Demand & supply:
  - median income (+);
  - scale: no. urban households (+)
  - geography (soil, rock, weather, rivers, density)
    - Efficacy of wells
  - institutions

Evidence of strategic exclusion

- Negative interaction: scale and income
  - Servicing of small houses: lower in richer, larger localities
- "Reaction" by rich to having more poor "nearby" (rest of UA)

- "Counterfactuals"
  - Not same patterns for servicing of larger houses
  - Not important in democratic era (2000 Cenus)
    - National effort to regularize

Evidence on exclusion (quantifying interactive effects): **Servicing of small houses**

Effect of changes in locality size and in % poor in rest of UA, at different locality median income levels

	Effect at *low* median income (1.5 s.d.'s *below* mean)	**Effect at *high* median income** (+1.5 s.d.'s *above* mean)
Large increase in size (1.5 s.d.'s below mean size to +1.5 s.d.'s above)	.09	**-.11**
Change in % poor, rest UA: from 1.5 s.d.'s below mean % poor to + 1.5 s.d.'s above	.27	**-.13**

a. Log median income at 1.5 standard deviations below the mean is 8.93 and at 1.5 standard deviations above is 10.1. Log number of households at 1.5 standard deviations below the mean is 7.2 and at 1.5 standard deviations above is 11.4. Percent poor in rest of urban area at 1.5 standard deviations below the mean is .01 and at 1.5 standard deviations above is .42.

Growth and composition: 91-00
(on 91 covariates)

- Growth
  - Urban growth framework (de Mata et al., 2007)
  - Applied to **within** urban area differences in locality growth
    - **R**: "Regulation": **lack** of service to **small** houses
    - Control locality characteristics, UA fixed effects

$$d \ln(N_{i,t}) = \beta X_{i,t-1} + \gamma R_{i,t-1} + \varepsilon_{it}$$

$$(-)$$

- Identification
  - Catch-up problem: growth associated with slow provision
    - Instrument: geology and weather

Table 7. Urban growth effects ('91-'00): Share of small houses with no water ('91)

Econometric estimates: growth rate in no. of households		
	OLS	IV (2SLS)
R: Share small houses no water 1991	.053	-.642**
Locality avg. education, Ln (no. urban h.h's) Ln (land area), Share h.h's rural in locality, Economic shock 1991-2000, urban area fixed effects	yes	yes
N	353	355

A one standard deviation increase in share of small houses not serviced reduces pop. growth by .12

[mean (s.d.) of growth: .40 (.17) ; mean (s.d) of not serviced: .23 (.19)]

Instruments are: 1970 illiteracy rate, 1970 conditions in rest of urban area, share of rock which is porous, share of rock porous interacted with weather conditions.

Composition '91-'00

○ Two groups: **L**ow education: h.h. head not finish primary school [vs. **H**igher]: 45-55% split in '91

- Growth of low education **relative** to higher education, based on **relative** service levels

$$d \ln(N_{ij,t}^{L}) - d \ln(N_{ij,t}^{H}) = \gamma \ln(R_{ij,t-1}^{L} / R_{ij,t-1}^{H})$$

$$+ \beta_0 \ln(N_{ij,t-1}^{L} / N_{ij,t-1}^{H}) + \beta_2 \ln(density_{ij}) + \varepsilon_{ijt}$$

- *i* locality, *j* UA

○ Change in income Gini

Econometric results

Growth in low relative to high educ. h.h.'s		
	OLS	**2SLS**
R: **Ln (share small houses/ share large houses, without water, '91)**	-.060** (.024)	-.174** (.082)
Controls: Ln (# low educ /# higher educ), ln(density) 1991	yes	yes
Urban area fixed effects	no	yes
N [clusters= 58]	334	331

Change in Gini 00-91		
	OLS	2SLS
Ln (share small/large houses, no water)	.0050**	.017**
Controls: UA fixed effects, Gini 91	yes	yes

Magnitude of Effects

○ A one standard deviation increase in **relative** lack of servicing (lack of servicing of small vs large houses):

- leads growth of low relative to higher education h.h.'s to decline by .17
    - ○ About 0.6 of a standard deviation of that growth rate
    - ○ [Evidence that under-provision to small houses negatively affects absolute growth of both low and higher education households (externality)]

- Leads Gini to increase by .015

Conclusions

- Evidence consistent with hypothesis of exclusionary behavior
  - in the non-democratic 1980's, Brazilian localities acted to strategically under-service smaller houses (intended for migrants)

- Impact of under-servicing
  - Relative underservicing of small to large houses:
    - Slows locality growth
    - Lowers growth of low education relative to high education households
  - Is there an externality effect?
    - Servicing of small houses on higher educated