People, Places, and Public policy: Some Simple Welfare Economics of Local Economic Development Programs

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Why improve places to help people, instead of directly helping people?

A place based-policy targets a place (e.g., federal empowerment zones, state enterprise zones, TVA), as opposed to policies which target individuals (e.g., UI, EITC)

An efficiency argument for place-based policy

- Holds if market imperfections have an important spatial component
- Example: agglomeration effects, under-provision of local public goods

An equity argument for place-based policy

- Reduction of spatial inequality may be an end goal in itself
- But targeting disadvantaged households through location is tricky if there is i) worker/firm mobility, and ii) within-location household heterogeneity

Research questions

Place-based policy typically designed with partial-equilibrium effects in mind, but general-equilibrium effects arise due to worker/firm mobility over space

A question about efficiency

- Do the the national benefits of local policies outweigh the costs?

An question about equity

- Who benefits from place-based policies? Is spatial targeting effective?

Today's plan

Benchmark model with complete markets

The case with market imperfections

Environment

- Two cities (a and b)
- Continuum of perfectly mobile workers with measure 1
- Each worker inelastically supplies 1 unit of labor and rents 1 unit of housing
- Indirect utility of worker i in city c

$$U_{ic} = \underbrace{w_c - r_c + A_c - t}_{\nu_c} + e_{ic}$$

  where $e_{ic} \sim$ type 1 EV with scale parameter s is an idiosyncratic taste shock
- National government provides firms with wage subsidy τ_c and runs a balanced budget

$$\tau_a w_a N_a + \tau_b w_b N_b = t$$

Production

- Cobb Douglas technology

$$Y_c = X_c N_c^{\alpha} K_c^{1-\alpha}$$

- K_c is elastically supplied by a global capital market at price ρ
- Inverse labor demand curve (from firm's FOC wrt N_c and K_c)

$$\ln w_c = C + \frac{\ln X_c}{\alpha} - \frac{1-\alpha}{\alpha} \ln \rho - \ln(1-\tau_c)$$

  Doesn't depend on N_c!

Housing

- Housing supply curve

$$r_c = z_c N_c^{k_c}$$

  as $k_c \to 0$ housing supply becomes more elastic
- Representative absentee landlord, with profits

$$\Pi_c = \int_0^{N_c} \left(r_c - z_c x^{k_c} \right) dx = \frac{k_c}{k_c + 1} r_c N_c$$

  as $k_c \to 0$ marginal costs become constant, and thus equal to average costs

Equilibrium

A worker i chooses a over b if $\nu_a + e_{ia} > \nu_b + e_{ib}$

$$e_{ib} - e_{ia} < \nu_a - \nu_b \implies N_a = \Lambda\left(\frac{\nu_a - \nu_b}{s}\right)$$

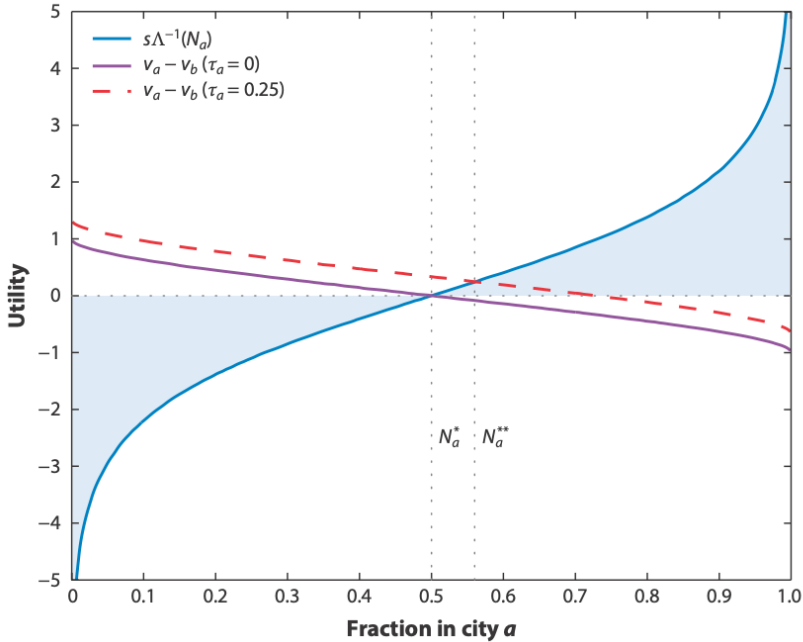
Inverting the logistic cdf $\Lambda(\cdot)$ we obtain,

$$s\Lambda^{-1}(N_a) = (w_a - w_b) - (r_a - r_b) + (A_a - A_b)$$

Plugging in inverse labor demand and housing supply,

$$\underbrace{s\Lambda^{-1}(N_a)}_{Q_{e_{ib}-e_{ia}}(N_a)} = \underbrace{\frac{e^C}{\rho^{\frac{1-\alpha}{\alpha}}}\left(\frac{X_a^{\frac{1}{\alpha}}}{1-\tau_a} - \frac{X_b^{\frac{1}{\alpha}}}{1-\tau_b}\right)}_{w_a - w_b} - \underbrace{\left(z_a N_a^{k_a} - z_b(1-N_a)^{k_b}\right)}_{r_a - r_b} + (A_a - A_b)$$

- LHS is an "inverse supply" curve of people for city a relative to b, upward sloping in N_a
  - as N_a increases, I move towards workers with higher distaste for city a
- RHS is an "inverse demand" curve of people for city a relative to b, downward sloping in N_a (there are only dispersion, and no agglomeration forces in this model)


$s\Lambda^{-1}(N_a)$
$v_a - v_b\ (\tau_a = 0)$
$v_a - v_b\ (\tau_a = 0.25)$
Utility
5
4
3
2
1
0
−1
−2
−3
−4
−5
N_a^*
N_a^{**}
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Fraction in city *a*

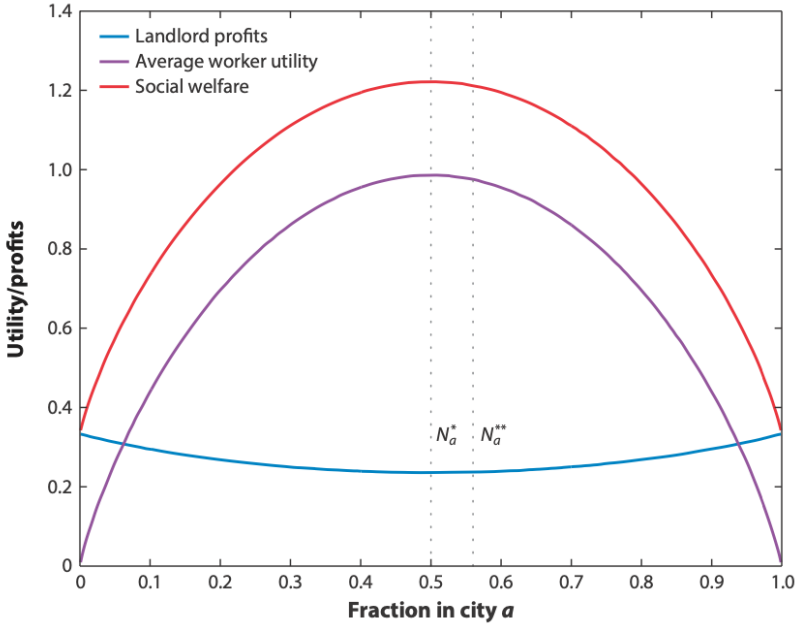
Welfare

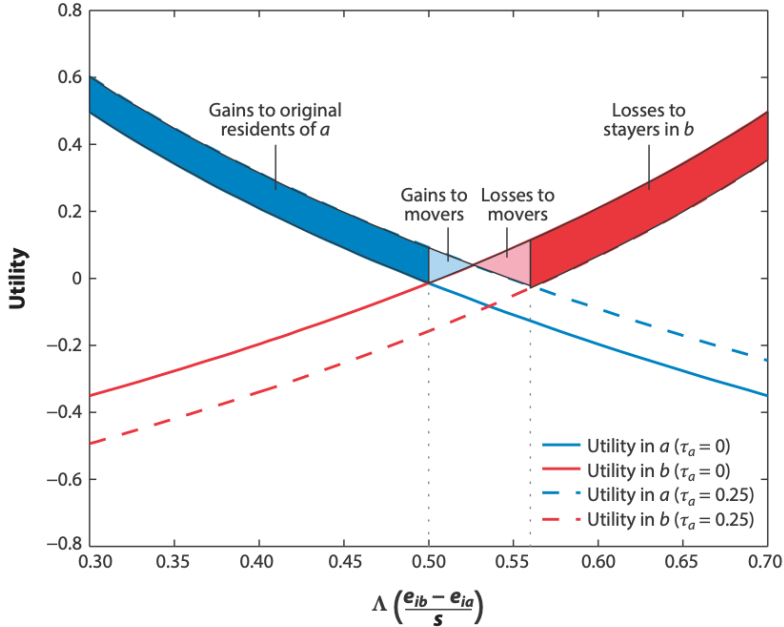
When locations are identical the laissez-faire equilibrium ($\tau_a = \tau_b = 0$) is $N_a^* = N_b^* = \frac{1}{2}$

What if we wanted to redistribute towards people in a, using a wage subsidy $\tau_a > 0$?

New equilibrium at $N_a^{**} > N_a^*$ creates a deadweight loss by construction, since we are in a world without externaliites

The more interesting question is, regardless of the efficiency loss, is this policy at least successful in redistributing towards workers in city a? That is, is it well targeted?


Landlord profits
Average worker utility
Social welfare
Utility/profits
Fraction in city a
N_a^*
N_a^{**}
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0


Gains to original residents of a
Losses to stayers in b
Gains to movers
Losses to movers
Utility
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
Utility in a ($\tau_a = 0$)
Utility in b ($\tau_a = 0$)
Utility in a ($\tau_a = 0.25$)
Utility in b ($\tau_a = 0.25$)
$\Lambda\left(\frac{e_{ib} - e_{ia}}{s}\right)$

Analytical results

Let average worker utility be $V \equiv E \max\{U_{ia}, U_{ib}\}$

$$\frac{dV}{d\tau_a} = N_a \frac{d(w_a - r_a)}{d\tau_a} + N_b \frac{d(w_b - r_b)}{d\tau_b} - \frac{dt}{d\tau_a}$$

$$= \underbrace{-(k_a r_a - k_b r_b) \frac{N_a N_b}{s + k_a r_a N_b + k_b r_b N_a} \frac{1}{1 - \tau_a}}_{\text{Cost of living increase in } a} - \underbrace{w_a \tau_a \frac{dN_a}{d\tau_a}}_{\text{DWL}}$$

The most efficiency policy is one which raises w_a while $\frac{dN_a}{d\tau_a} = 0$

Example: the US Empowerment zone program granted tax credits for zone employers, but restricted them on wages paid to workers who worked AND lived in the zone, thus restricting arbitrage from out of zone day-commuters

Today's plan

Benchmark model with complete markets

The case with market imperfections

Agglomeration in production

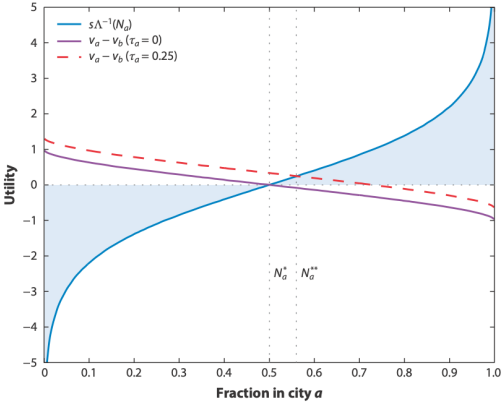
TFP as a function of density

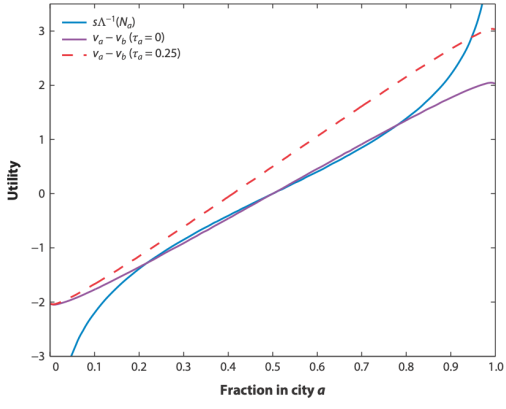
$$\ln X_c = g\left(\frac{N_c}{R_c}\right) \quad \text{where } R_c \text{ is surface area}$$

In this case our "inverse demand" equation might no longer be downward sloping

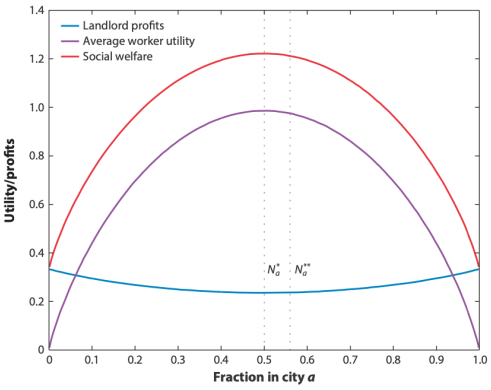
- agglomeration forces (TFP gains) might dominate dispersion forces (housing rents)
- in this case, a city may become more attractive as its size grows
- opens the door for multiple equilibria and inefficiency of market outcomes

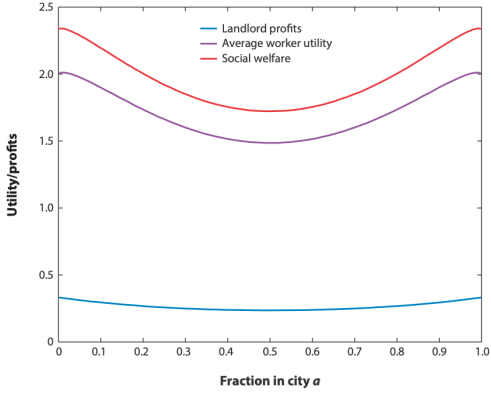
Benchmark case (left) vs. agglomeration effects (right)





Benchmark case (left) vs. agglomeration effects (right)





Conclusion

- Important equity-efficiency trade-offs in using place-based policies
- Place-based policies should be designed taking into account worker mobility
- Subsidizing poor places is an ineffective way of transferring resources to poor people, unless there are some important local market imperfections