Place-Based Redistribution

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Motivation

- Widespread use of place-based policies: 30% of EU budget, U.S., UK, France...

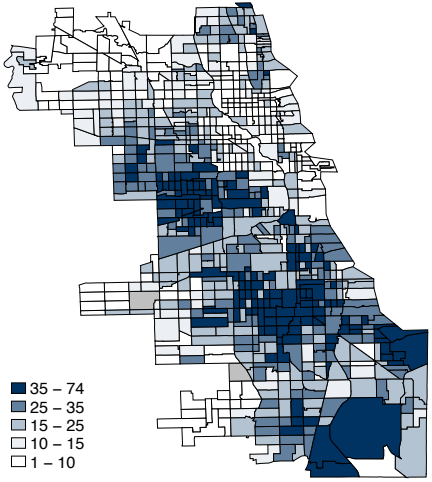
- Two rationales for place-based policies:

  1. **Efficiency**: **[Traditional focus]**
     - Internalize agglomeration/congestion externalities
     - Limit under-provision of local public goods
  2. **Equity**: **[This paper]**
     - Places are heterogeneous in income, opportunities, environment
     - A way to transfer resources to the disadvantaged

- **Question**: Does place-based **redistribution** improve welfare?

Redistributive motive: Poverty is spatially concentrated

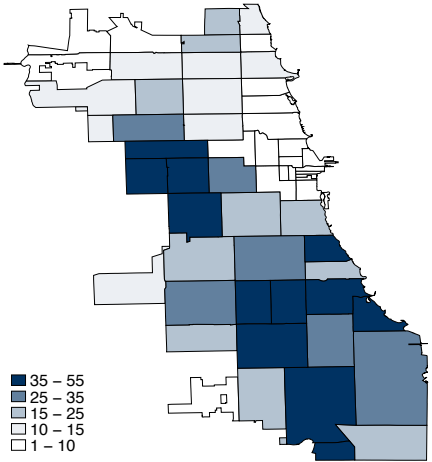
West/South Chicago:
50% Poverty Rates



- Ex: U.S. Empowerment Zones 1993-present
- Cover 1% of pop. $3,000 per full-time worker.

We already redistribute based on income

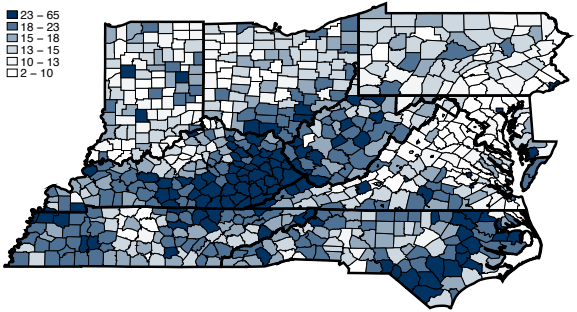
West/South Chicago:
50% Filers with Negative Income Tax



- Should South Side residents get *extra* transfer?

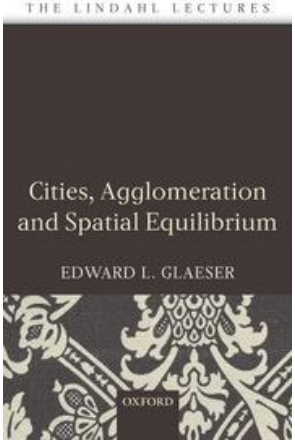
Same is true in distressed rural areas

Appalachia:
50% Poverty Rates



- Should Appalachia residents get *extra* transfer?

Traditional view: No, because of efficiency costs



"'Help Poor People, Not Poor Places'...is something of a mantra for many urban and regional economists... [Place-based] aid is inefficient because it increases economic activity in less productive places and decreases economic activity in more productive places." – Glaeser (2008)

Our paper: Place-based redistribution can help equity-efficiency tradeoff

- **Theory:** Place-based can usefully complement income-based redistribution
  - **Lower efficiency cost** of equity gains, if limited mobility or limited earnings loss from moving
  - **Unique equity gains** from within-earnings redistribution
    - Survey evidence

- **Quantification:** Optimal transfer to 1% living in poorest tracts $\sim \$3,000 - \$5,500$/household
  - Magnitude depends in particular on which forces drive sorting
  - Comparative advantage constitutes in itself a motive for place-based redistribution

Contributions

- **Urban:** Large literature studying place-based policies [Flatters et al. '74, Glaeser-Gottlieb '08, Albouy '09, Desmet-RossiHansberg '13, Kline-Moretti '14, Neumark-Simpson '15, Ossa '15, Gaubert '18 Austin-Glaeser-Summers '19, Bergman et al. '19, Fagelbaum et al. '19, Hsieh-Moretti '19, Fajgelbaum-Gaubert '20, Slattery-Zidar '20]
  - Main focus: efficiency
  - We characterize optimal *redistribution* in the workhorse urban model

- **Public:** Tagging; commodity taxation [Atkinson-Stiglitz '76, Akerlof '78, Mirrlees '76, Christiansen '84, Diamond-Sheshinski '95, Parsons '96, Cremer-Gahvari '98, Saez '02, Laroque '05, Kaplow '06/'08, Mankiw-Weinzierl '10, Kleven-Kopczuk '11, Rotschild-Scheuer'13, Gordon-Kopczuk '14, Allcott-Lockwood-Taubinsky '19]
  - Tagging: Residential choice is an area where tagging is used. Study its theoretical rationale.
  - Place-based tax vs. commodity tax:
    - Place-based tax needs not be linear in consumption
    - Place: productivity differences beyond cost-of-living difference, comparative advantage

Roadmap

1. Equity gains and efficiency costs of place-based redistribution (PBR)
2. Comparison to income-based redistribution
3. Quantification

Model setup

- Model combining key elements from Urban + Public Finance:
  - Heterogeneous skill θ, unobserved
  - Endogenous labor supply $\Rightarrow$ pre-tax income z^*, observed
  - Heterogeneous preferences for locations $\{\varepsilon_j\}$, unobserved
  - Residential choice j^*, observed
- Not in analysis
  - [Market failures (e.g. agglomeration spillovers, local public goods)]
  - [Incidence on landowners (see paper)]

Household preferences

- Unit mass of households $\Theta = (\theta, \varepsilon_0, \varepsilon_1) \sim F(\Theta)$ choose earnings z, consumption of c,h and location j to maximize utility:

$$U\left(c, h, a_j, \frac{z}{w_j(\theta)}\right) + \varepsilon_j$$

- Budget constraint:

$$c + r_j h = z - T_j(z)$$

- Two locations $j \in \{0, 1\} = \{Elsewhere, Distressed\}$
  - Amenities: $a_0 \geq a_1$
  - Housing rents r_j: $r_0 \geq r_1$
  - Productivity: $w_0(\theta) \geq w_1(\theta)$

Planner's problem

- Planner maximizes:

$$SWF = \int \omega(\Theta)\, v^*(\Theta)\; dF(\Theta) = \mathbb{E}[\omega v^*]$$

  - $\omega(\Theta)$: Pareto weight on Θ. v^*: Indirect utility.

- Define social marginal welfare weights $\lambda^*(\Theta)$: **welfare benefit of an extra \$1 to household** Θ:

$$\lambda^*(\Theta) \equiv \frac{\omega(\Theta)\frac{\partial v^*(\Theta)}{\partial I}}{\phi}$$

Redistributive tools

- Income tax $T(z)$, place-blind

- Lump-sum **P**lace-**B**ased **R**edistribution scheme (PBR), indexed by Δ
  - Distressed residents receive lump-sum transfer $\frac{\Delta}{S}$ (S: share of households in Distressed)
  - Elsewhere residents pay lump-sum tax $\frac{\Delta}{1-S}$

Q. What is the first-order welfare effect of a small PBR reform starting from a place-blind system?

Impact of PBR on social welfare

Proposition

Implementing a small place-based transfer improves welfare if and only if

$$\frac{dSWF}{d\Delta} = \bar{\lambda}_1 - \bar{\lambda}_0 - \frac{dS}{d\Delta} \cdot \mathbb{E}\Big[T\left(z_0^*\right) - T\left(z_1^*\right) | move\Big] > 0$$

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- Equity gains depend on average social marginal welfare weights (place as a "tag"):

$$\bar{\lambda}_1 - \bar{\lambda}_0$$

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- Equity gains depend on average social marginal welfare weights (place as a "tag"):

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- Efficiency cost depends on mobility responses and earnings responses:

$$\underbrace{\frac{dS}{d\Delta}}_{\text{movers}} \cdot \mathbb{E}\Big[\underbrace{T\left(z_0^*\right) - T\left(z_1^*\right)}_{\text{efficiency cost} > 0} | \text{move}\Big]$$

When equity gains come at no efficiency cost: Special cases

1. **Neighborhood Zones**

   PBR between affluent/poor residential neighborhoods with same access to business district:

   - no earnings loss upon moving $\Rightarrow$ no efficiency cost of PBR

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   $U(\text{Distressed}) < U(\text{Elsewhere})$, but households stay in Distressed because of high moving costs

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3. **Comp. advantage/Skilled jobs clustering** [Moretti '12, De la Roca-Puga'17, Autor '19]

   High-skilled/high-wage jobs only in Elsewhere; low-skilled jobs in both areas, same low wage.

   - high-skill not incentivized to move to Distressed; only low-skill move
   - no earnings loss of movers $\Rightarrow$ no efficiency cost of PBR

Optimal PBR Scheme

- Increase PBR until additional equity gains are outweighed by additional efficiency costs:
  - Efficiency costs include impact of movers on PBR budget

Proposition

The optimal place-based transfer Δ^* obeys:

$$\Delta^* = \frac{\bar{\lambda}_1(\Delta^*) - \bar{\lambda}_0(\Delta^*) - \frac{dS(\Delta^*)}{d\Delta}\mathbb{E}\left[T\left(z_0^*\right) - T\left(z_1^*\right)|move\right]}{\frac{dS(\Delta^*)}{d\Delta}/\left[S(\Delta^*)\left(1 - S(\Delta^*)\right)\right]}.$$

When does PBR usefully complement income-based redistribution?

- Couldn't an income tax reform dominate this place-based reform?

- **Compare PBR to an income tax reform** $q\tilde{T}(z)$ that raises same tax at each earnings level

$$\tilde{T}(z) \propto S - s(z)$$

  where $s(z)$: share of z-earners who live in Distressed

- PBR useful in complement to place-blind redistribution if:

$$\text{Difference in Equity Benefits} - \text{Difference in Efficiency Costs} \geq 0$$

1. Difference in Efficiency costs

PBR desirability: reduce efficiency costs

- Difference in Efficiency costs:
  - PBR: as above, cost of movers ; Income tax: distorts labor supply

$$\underbrace{\left(\frac{dS}{d\Delta}-\frac{dS}{dq}\right)\mathbb{E}\left[T\left(z_0^*\right)-T\left(z_1^*\right)|\text{move}\right]}_{\text{efficiency cost of movers, on net}>0}-\underbrace{\mathbb{E}\left\{-T'\left(z^*\right)\frac{s'\left(z^*\right)}{S(1-S)}\frac{Z_{1-\tau}}{1+Z_{1-\tau}T''\left(z^*\right)}\right\}}_{\text{labor supply of stayers distorted by income tax}>0}$$

  - Horserace. Low if: limited migration/earnings losses of movers; large labor supply responses

- In commodity taxation lit., what drives sorting is important for net efficiency cost [Saez '02]
  - Homogeneous pref. & sorting only driven by income effect: commodity tax does not help
  - If sorting driven by other forces (e.g. heterogeneous preference): commodity tax may help
  - Silent on sorting driven by comparative advantage

- Come back to this question in quantification:
  - Embed sorting forces from urban literature – heterogeneous preferences for location amenities; comparative advantage; non-homothetic preferences for housing

2. Difference in Equity Benefits

PBR desirability: unique equity gains

- In isolation, PBR's equity gains depend on how $\lambda(\Theta)$ covaries with location choice of households:

$$\mathbb{C}\left(\lambda, j^*\right)$$

- Income tax reform takes care of *across* earnings redistribution
  - $\Rightarrow$ PBR's unique (net) equity gains are *within* earnings

$$\mathbb{C}\left(\lambda, j^* | z^*\right)$$

- Unique equity gain of PBR if, at the same income level z, households living in Distressed have a higher λ than those who live in Elsewhere

Rationale for within-earnings redistribution $\lambda_1(z) \geq \lambda_0(z)$

- Consider case where labor supply is separable to isolate key driving forces

$$U = \psi\left(g\left(c, h\right), a_j\right) - e\left(\frac{z}{w\left(\theta\right)}\right)$$

  - with $g(c, h)$ homothetic consumption index

1. **Cost-of-living effect**: $P_0 > P_1 \Rightarrow \lambda_1(z) \geq \lambda_0(z)$ if ψ not too concave
   - Households are poorer in real terms in Elsewhere
   - A govt dollar spent in Distressed goes further, as prices are lower
   - Dominates when ψ not too concave.

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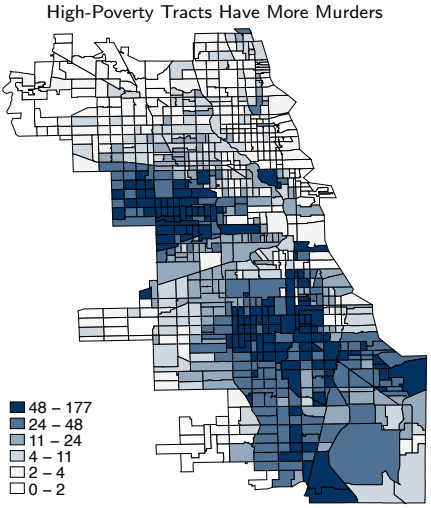
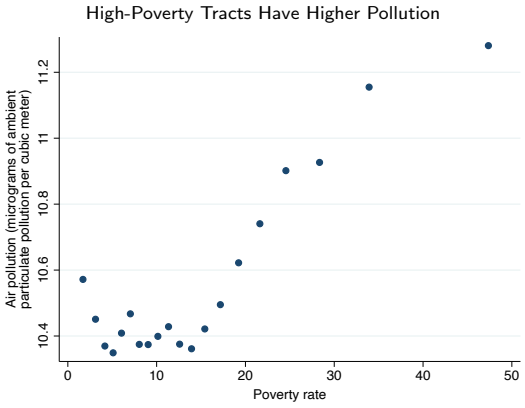
2. **Amenity effect**: $a_1 < a_0 \Rightarrow \lambda_1(z) \geq \lambda_0(z)$ if amenities - consumption q-substitutes ($\frac{\partial^2 \psi}{\partial g \partial a} < 0$)
   - Disamenities raise the marginal utility of consumption
   - e.g. car rides to avoid crime, healthcare needs and pollution

Disamenities that can raise the marginal utility of consumption





Rationale for within-earnings redistribution (Why place can be special)

- Consider separable case in consumption and/or amenities to isolate key driving forces

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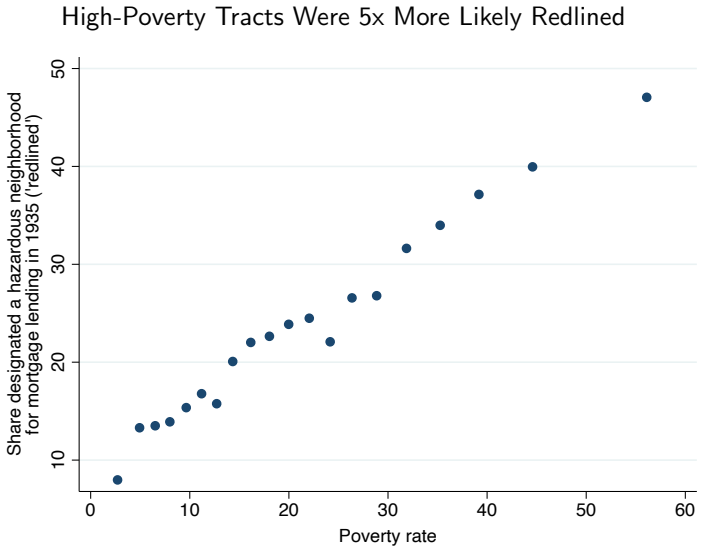
   - lower amenities in 1 raises marginal utility of consumption, e.g. car rides to avoid crime
3. **Equality and justice**: Residents of Distressed are more deserving [Wilson '87]
   - suffer from past injustices, unfair treatment
   - can be folded into high Pareto weights $\omega(\Theta)$ [Saez and Stantcheva '16]

High poverty neighborhoods and past injustices



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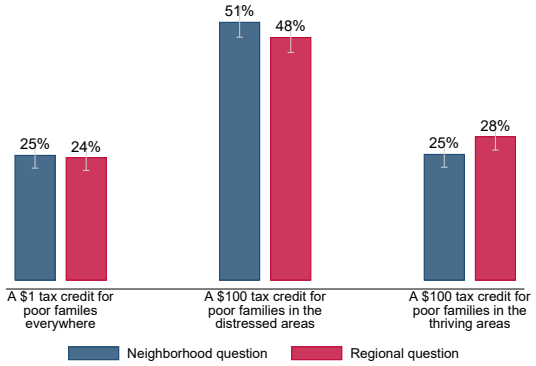
Survey: preferences for redistributionwithin-earnings/across place?

- Survey of 1,100 Americans on Amazon MTurk [e.g. Kuziemko-Norton-Saez-Stantcheva '15]

- Elicit social preference between 3 reforms. All 3 reforms have the **same budget** and are for families with an **identical low income**:
  1. distributed to poor families everywhere
  2. targeted to poor families living in distressed areas
  3. targeted to poor families living in thriving areas



- Suggests social preference for redistribution across place, within earnings, towards Distressed areas

rationale

Quantification: How large might optimal place-based transfers be?

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- Compute optimal transfer scheme to the 1% who live in poorest group of tracts
  - Rank U.S. Census tracts by poverty rates (2013-2017 ACS)
  - Combine into 100 location groups, each with 1% of the population
- Utilitarian planner maximizes $SWF = \mathbb{E}[v^*]$ using three-bracket income tax $T(\cdot)$ and also PBR Δ
  - Baseline SWF features no within-earnings/across place redistributive motive.
  - Focus on PBR as a means to reduce efficiency costs.

Parametric assumptions

- Baseline utility:

$$u_j(\Theta) = \ln\left(c^{1-\alpha}h^{\alpha} - \frac{\eta}{1+\eta}\left(\frac{z}{w_j(\theta)}\right)^{\frac{1+\eta}{\eta}}\right) + a_j(\theta) + \frac{1}{\kappa}\varepsilon_j$$

  - Taste shock: $\varepsilon_j \sim$ EV1.
  - Productivity advantage of locations is skill-neutral: $w_j(\theta) = \theta w_j$
  - $\lambda_1(z) = \lambda_0(z)$
  - Skill-specific mean taste for amenities $a_j(\theta)$ drives sorting

- Add comparative advantage:
  - Productivity advantage of locations is skill-biased: $w_j(\theta) = w_j\theta^{b_j}$
  - Induces sorting of high-skill into high-wage communities

- Add income-based sorting:
  - Use Stone-Geary instead of Cobb-Douglas in consumption: $c^{1-\alpha}(h - \underline{h})^{\alpha}$
  - Housing is a necessity, induces sorting of low-skill into low-rents communities

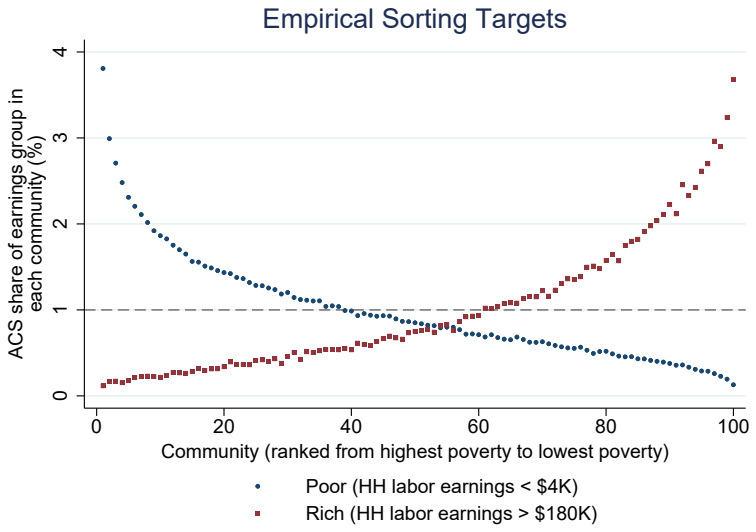
Calibration

$$u_j(\Theta) = \ln\left(c^{1-\alpha}h^{\alpha} - \frac{\eta}{1+\eta}\left(\frac{z}{\theta w_j}\right)^{\frac{1+\eta}{\eta}}\right) + a_j(\theta) + \frac{1}{\kappa}\varepsilon_j; \qquad \theta \sim \text{log-normal}(\mu_\theta, \sigma_\theta).$$

- **Baseline Calibration:**
  - Rents $\{r_j\}$: ACS.
  - Wage shifters $\{w_j\}$: from productivity-rent gradient [Hornbeck-Moretti'19]
  - $\kappa = 0.5$: matches population elasticity wrt wage [Kennan-Walker '11]
  - Housing expenditure share $\alpha = .3$. Frisch labor supply elasticity $\eta = .5$ [Chetty et al. '11].
  - Current $T(z)$: \$11K lump-sum transfer w/ brackets 44%, 16%, 27% [Piketty-Saez-Zucman '18]
  - Skill-specific valuation of amenities $\{a_j(\theta)\}$ (and $\mu_\theta, \sigma_\theta$): residual to match distribution of ACS earnings (9 earnings bins) and total population across locations.

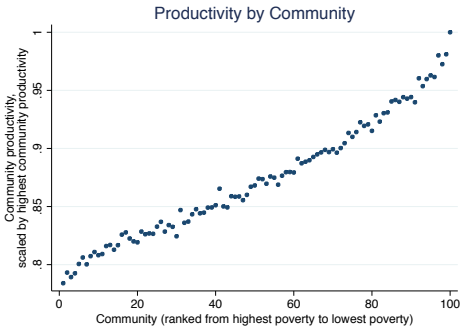
- **Extensions:**
  - Comparative advantage: $\{b_j\}$ indexed on $\{w_j\}$ to match estimate in [DeLaRoca-Puga'17]
  - Non-homothetic preferences: $(\alpha, \underline{h})$ match housing share between 0.15 and 0.52

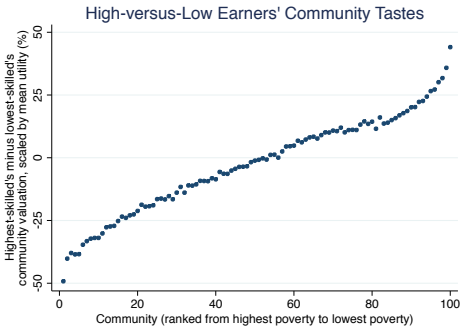
Substantial income sorting in the data...



... Rationalized by place productivity + skill-specific valuation of amenities

Baseline calibration



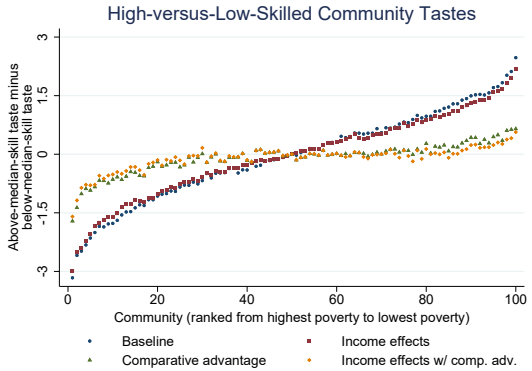


Optimal PBR: Baseline Results

	Optimal level of PBR	Social marginal welfare weight difference narrowed	Increase in Distressed population
	(1)	(2)	(3)
Baseline	$5,500	71%	9%
Capped earnings subsidy	36%	54%	7%
Change top income tax bracket only	$3,600	49%	6%
2x productivity differences	$4,800	63%	8%
2x migration	$4,000	53%	13%

Extensions account for other sorting forces

- Add comparative advantage of high skill in high-wage cities
- Add income-based sorting
- Residual role of skill-specific valuation of amenities is muted compared to baseline



Optimal PBR with additional sorting forces

	Optimal Level of PBR	
	Calibration	Eliminate skill-taste correlation after calibration
	(1)	(2)
Baseline	$5,500	$400
Income effects	$3,700	-$400
Comparative advantage	$4,200	$1,600
Income effects + Comparative advantage	$3,100	$700

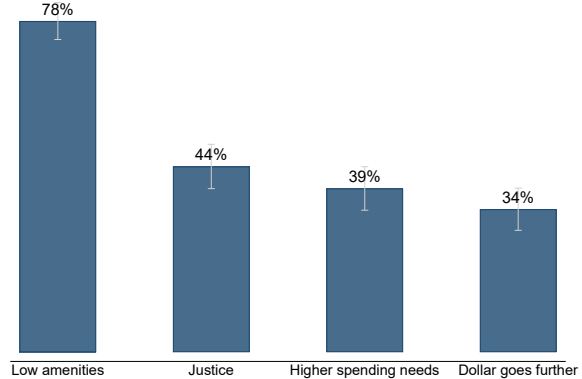
- Optimal PBR in the range of $3,100-$5,500 depending on sorting forces
- Comparative advantage in isolation provides motive for PBR

Conclusion

- **Place-based redistribution can deliver unique equity and efficiency benefits**
  - Efficiency of taxation: Better targeting when mobility or wage differences are low
  - Equity: Unique gains when marginal utilities differ across place, within-earnings
- **No presumption against helping poor places**

Appendix

Why direct subsidies to the poor to distressed areas?



back

Optimal PBR

- The optimal place-based transfer Δ^* obeys:

$$\Delta^* \approx \frac{\bar{\lambda}_1(0) - \bar{\lambda}_0(0) + \mathbb{E}\left\{\frac{dS(\cdot,0)}{d\Delta}\left[T\left(z_1^*\right) - T\left(z_0^*\right)\right]\right\}}{\frac{1}{S(1-S)}\left\{\frac{dS}{d\Delta} - \mathbb{C}\left[\frac{dS(.,0)}{d\Delta}, (1-S)\lambda_1(\cdot,0) + S\lambda_0(\cdot,0)\right]\right\} - \left(\bar{\Lambda}_1(0) + \bar{\Lambda}_0(0)\right) - \mathbb{E}\left\{\frac{d^2S(\cdot,0)}{d\Delta^2}\left[T\left(z_1^*\right) - T\left(z_0^*\right)\right]\right\}},$$

  - where: $\Lambda(\Theta) = \frac{\partial\lambda(\Theta)}{\partial I}$ and $\bar{\Lambda}_j = \mathbb{E}\left[\Lambda(\cdot)\,|j^* = j\right]$
  - both evaluated at $\Delta = 0$.

back