Place-Based Redistribution

Cecile Gaubert, Patrick Kline and Danny Yagan

September 2020
Does place-based redistribution improve welfare?

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

- **Efficiency** [Traditional urban/trade focus]: Internalize agglomeration/congestion externalities

- **Equity** [Integrating PF tradeoff]:
  - Places are heterogeneous in income, opportunities, environment
  - A way to transfer resources to the disadvantaged
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

- **Quantification:** Optimal transfer to poorest 1% of tracts $\sim$ $5K/hh$ or 36% earnings subsidy
Contributions

- **Urban**: Enormous 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]
  - We characterize optimal redistribution in the workhorse urban model
  - Can be optimal to help poor people *and* poor places
Contributions

**Urban:** Enormous 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]

- We characterize optimal redistribution in the workhorse urban model
- Can be optimal to help poor people and poor places

**Public:** Residential choice is an area where tagging both is actually used and can be useful [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, Gordon-Kopczuk '14, Allcott-Lockwood-Taubinsky '19]

- Homogenous weak separability is unlikely to hold in residential choice
- Residential choice raises additional channels for desirability: Comparative advantage, non-linear commodity taxation, cost-of-living differences, within-earnings distributive preferences
Roadmap

1. Equity and efficiency effects of place-based redistribution (PBR)
2. Comparison to income-based redistribution
3. Quantification
1. Static model without market failures

**Urban economics**
- Heterogeneous preferences for locations $\{\varepsilon_j\}$
- Residential choice $j^*$
- Unobserved amenities
- Productivity differences across locations
  - [Incidence on landowners]
  - [Market failures (e.g. agglomeration)]

**Public economics**
- Heterogeneous skill $\theta$
- Endogenous labor supply
- Place-blind non-linear income tax
  - [Market failures (e.g. spillovers on kids)]
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:

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

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

- Budget constraint:

$$c + r_j h = z - T_j(z)$$
Planner’s problem

- Planner maximizes:

\[ SWF = \int \omega(\Theta) v^*(\Theta) \, dF(\Theta) = E[\omega v^*] \]

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

- Define social marginal welfare weights:

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

- \( \lambda^*(\Theta) \): welfare benefit of distributing $1 to household \( \Theta \), expressed in cost of public funds
Redistributive tools

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

- Lump-sum Place-Based Redistribution scheme (PBR), indexed by $\Delta$
  - Distressed residents receive lump-sum transfer $\frac{\Delta}{S}$ ($S$: share of households in Distressed)
  - Elsewhere residents pay lump-sum tax $\frac{\Delta}{1-S}$

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

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

\[
\frac{dSWF}{d\Delta} = \bar{\lambda}_1 - \bar{\lambda}_0 - \frac{dS}{d\Delta} \cdot \mathbb{E}\left[ T(z^*_0) - T(z^*_1) \mid \text{move} \right] > 0
\]
Impact of PBR on social welfare

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- Equity gains depend on average social marginal welfare weights (place as a “tag”):
  \[
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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:
  \[
  \frac{dS}{d \Delta} \cdot \mathbb{E} \left[ T(z_0^*) - T(z_1^*) \mid \text{move} \right] > 0
  \]

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
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 ⇒ no efficiency cost of PBR

2. **Moving costs** [Sjaastad ’62, Kennan-Walker ’10/’11, Bayer-McMillan-Murphy-Timmins ’16]
   $U(\text{Distressed}) < U(\text{Elsewhere})$, but households stay in Distressed because of high moving costs
   - no household wants to pay a moving cost to move to Distressed, even after PBR
   - no movers ⇒ no efficiency cost of PBR
When equity gains come at no efficiency cost: Special cases

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3. **Comp. advantage/Skilled jobs clustering** [Dahl ’02, Baum-Snow-Pavan ’11, Moretti ’12, 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:

**Proposition**

The optimal place-based transfer $\Delta^*$ obeys:

$$
\Delta^* = \frac{\bar{\lambda}_1(\Delta^*) - \bar{\lambda}_0(\Delta^*)}{\bar{\lambda}_1(\Delta^*) - \bar{\lambda}_0(\Delta^*)} - \frac{dS(\Delta^*)}{d\Delta} \mathbb{E} \left[ T(z_0^*) - T(z_1^*) \mid \text{move} \right] / \left[ \frac{dS(\Delta^*)}{d\Delta} / [S(\Delta^*) (1 - S(\Delta^*))] \right].
$$
2. When does PBR usefully complement income-based redistribution?
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- **Compare PBR to an income tax reform** $qT(z)$ that raises same tax at each earnings level
  \[ T(z) \propto S - s(z) \]
  where $s(z)$: share of $z$-earners who live in Distressed

- Compare effects on social welfare to determine PBR desirability:
  \[ \frac{dSWF}{d\Delta} \geq \frac{dSWF}{dq} = 0 \]
  Difference in Equity Benefits – Difference in Efficiency Costs $\geq 0$
In isolation, PBR’s equity gains depend on how $\lambda(\Theta)$ covaries with location choice of households:

$$C(\lambda, j^*)$$

Income tax reform redistributes identically across earnings $\Rightarrow$ PBR’s net gains are within earnings:

$$C(\lambda, j^* | z^*)$$
Difference in efficiency costs

- Income tax reform’s efficiency cost:
  - Increases marginal tax rates (so long as high earners sort into Elsewhere \( s'(z) < 0 \))
  - Reduces labor supply of stayers in both locations (+ triggers some moves)

- PBR’s efficiency costs minus income tax reform’s efficiency costs:

\[
\begin{align*}
&\left( \frac{dS}{d\Delta} - \frac{dS}{dq} \right) \mathbb{E} \left[ T(z^*_0) - T(z^*_1) \right| \text{move} \\
&\quad - \mathbb{E} \left\{ -T'(z^*) \frac{s'(z^*)}{S(1 - S)} \frac{Z_{1-\tau}}{1 + Z_{1-\tau} T''(z^*)} \right\}
\end{align*}
\]

\( \text{efficiency cost of movers, on net} > 0 \)

\( \text{labor supply of stayers distorted by income tax} > 0 \)
PBR desirability on top of optimal income tax is a horserace

Proposition

Place-based redistribution improves welfare in the presence of an optimally chosen income tax iff:

\[
\mathbb{E}[C(\lambda, j^*|z^*)] > \left( \frac{dS}{d\Delta} - \frac{dS}{dq} \right) \mathbb{E}[T(z_0^*) - T(z_1^*)|\text{move}] S(1 - S)
\]

\[
\text{PBR-specific equity benefit}
\]

\[
- \mathbb{E} \left\{ - T'(z^*) s'(z^*) \frac{Z_{1-\tau}}{1 + Z_{1-\tau} T''(z^*)} \right\}
\]

\[
\text{efficiency cost of movers > 0}
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- PBR improves welfare all the more as:
  - Migration rates are limited
  - Earnings losses of movers are limited
  - Labor supply responses are large
  - Place-based transfers yield within-earnings equity gains
Consider separable case in consumption and/or amenities to isolate key driving forces

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

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

**Cost-of-living effect:** \( P_0 > P_1 \Rightarrow \lambda^1_z > \lambda^0_z \) so long as \( \psi \) not too concave

- dollar spent goes further in buying consumption in low-price location
Consider separable case in consumption and/or amenities to isolate key driving forces

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**Cost-of-living effect:** \( P_0 > P_1 \Rightarrow \lambda_z^1 > \lambda_z^0 \) so long as \( \psi \) not too concave
  - dollar spent goes further in buying consumption in low-price location

**Amenity effect:** \( a_1 < a_0 \Rightarrow \lambda_z^1 > \lambda_z^0 \) if amenities and consumption are q-substitutes \( \left(\frac{\partial^2 \psi}{\partial g \partial a} < 0\right) \)
  - lower amenities in 1 raises marginal utility of consumption, e.g. car rides to avoid crime
Disamenities that can raise the marginal utility of consumption

High-Poverty Tracts Have More Murders

High-Poverty Tracts Have Higher Pollution

Air pollution (micrograms of ambient particulate pollution per cubic meter)

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

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

- with \( g(c, h) \) homothetic consumption aggregate

1. **Cost-of-living effect**: \( P_0 > P_1 \Rightarrow \lambda^1_z > \lambda^0_z \) so long as \( \psi \) not too concave
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3. **Equality and justice**: Residents of Distressed are more deserving [Wilson '87]
   - Concave social preferences over utility levels [e.g. Kleven-Kreiner-Saez '09]
   - High Pareto weights b/c of local causes of poverty [e.g. 1993 Empowerment Zones followed 1992 LA uprising]
High Pareto weights can be locally concentrated

High-Poverty Tracts Were 5x More Likely Redlined

Share designated a hazardous neighborhood for mortgage lending in 1935 ('redlined') vs Poverty rate
Do people have within-earnings distributive motives across place?

- Non-representative survey of Americans on Amazon MTurk [e.g. Kuziemko-Norton-Saez-Stantcheva ’15]

Think about America’s cities and towns, which are divided into neighborhoods.

A few neighborhoods are “distressed” and have low housing costs but also high poverty, high crime, high pollution, and struggling schools.

Many other neighborhoods are “thriving” and have high housing costs but also low poverty, low crime, low pollution, and great schools.

One percent of poor families live in the many thriving neighborhoods, mostly around rich families. One percent of poor families live in the few distressed neighborhoods, in concentrated poverty.

Let’s pretend that the government has some extra money for new tax credits. **It wants you to choose the option that would do the most good.** (No one will work less or move as a result of your choice.)

- A $1 tax credit for poor families everywhere
- A $100 tax credit for poor families in the distressed neighborhoods
- A $100 tax credit for poor families in the thriving neighborhoods
Survey results: Marginal dollars should go to distressed areas...

A $1 tax credit for poor families everywhere: 25% neighborhood question, 24% regional question.
A $100 tax credit for poor families in the distressed areas: 51% neighborhood question, 48% regional question.
A $100 tax credit for poor families in the thriving areas: 25% neighborhood question, 28% regional question.
...because of equality, justice, amenity, and dollar-goes-further motives

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Worse off</td>
<td>78%</td>
</tr>
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<td>Not their fault</td>
<td>44%</td>
</tr>
<tr>
<td>Amenities</td>
<td>39%</td>
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<td>Dollar goes further</td>
<td>34%</td>
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3. 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 $\Delta$

- Cross-space sorting on earnings
  - Productivity differences
  - Skill-taste correlation
Utility:

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

- Taste shock: \( \varepsilon_j \sim \text{EV1} \). Skill: \( \theta \sim \text{log-normal}(\mu_\theta, \sigma_\theta) \), 50 bins.
Utility:

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

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Calibration:

- Rent \( r_j \): ACS. \( w_j \): Productivity-rent gradient from Hornbeck-Moretti (2019).
- Population elasticity wrt wage \( \kappa = 0.5 \) [Kennan-Walker '11]
- Housing expenditure share \( \alpha = 0.3 \). Frisch labor supply elasticity \( \eta = 0.5 \) [Chetty et al. '11].
- Current \( T(z) \): $11K lump-sum transfer w/ brackets 39%, 11%, 35% [Piketty-Saez-Zucman '18]
- Skills and skill-taste corr. \( \mu_\theta, \sigma_\theta, a_j(\theta) \) calibrated to match each location’s ACS earnings dist.
Poverty is concentrated
The productivity gradient is substantial.
Real-world sorting requires substantial skill-taste correlation.
Equity gains: PBR alleviates poverty in Distressed

Social Marginal Welfare Weights at Zero PBR

Cumulative distribution

Social marginal welfare weight

- Highest-poverty community
- All other communities
Equity gains: PBR alleviates poverty in Distressed communities.

Social Marginal Welfare Weights at Optimal PBR

Cumulative distribution

Social marginal welfare weight

- Highest-poverty community
- All other communities
## Optimal PBR: Results

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<th>Increase in Distressed population</th>
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Conclusion: No presumption against helping poor places

- Place-based redistribution can deliver unique efficiency and equity benefits

- **Urban+Trade**: Different rationale for place-based policies, beyond correcting market failures

- **PF**: Real-world case where tagging on consumption both is used and can be useful