Credit Constraints, Learning, and Spatial Misallocation

Aguilar (2026)

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  2. **extended AKM w/ Spanish Household Panel (De la Roca and Puga, 2017, + assets)**
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This paper w/ $wh_1 \equiv 1$ and $y_1 \equiv k + wh_1$:

$$\begin{aligned} \max_{c_1, c_2, b, \ell} \quad & u(c_1) + \beta u(c_2) \\ \text{s.t.} \quad & c_1 = y_1 - b - \boldsymbol{p(\ell)} \\ & c_2 = \boldsymbol{\ell a} + Rb \\ & b \geq -\underline{b} \end{aligned}$$

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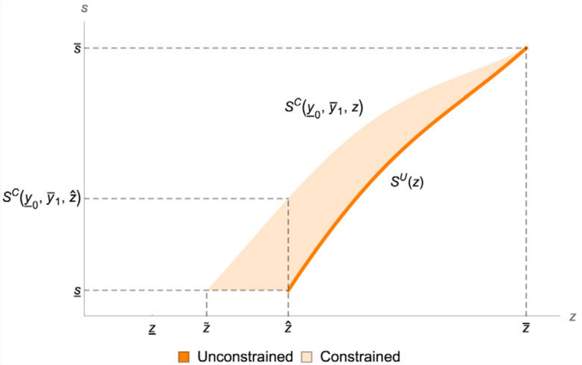
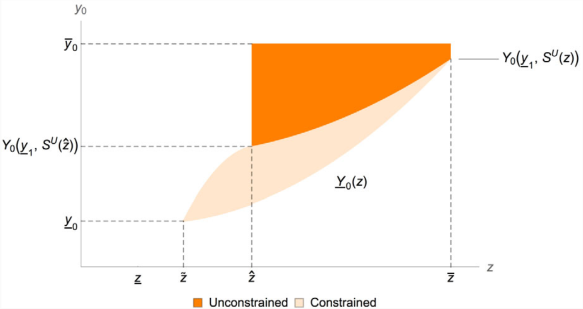
Both predict a **"mobility Euler equation"** that holds even if borrowing constrained ($b = -\underline{b}$):

$$\frac{u'(c_1^*)}{\beta u'(c_2^*)} = \frac{a}{p'(\ell^*)}$$



(a) Allocation of skills to cities



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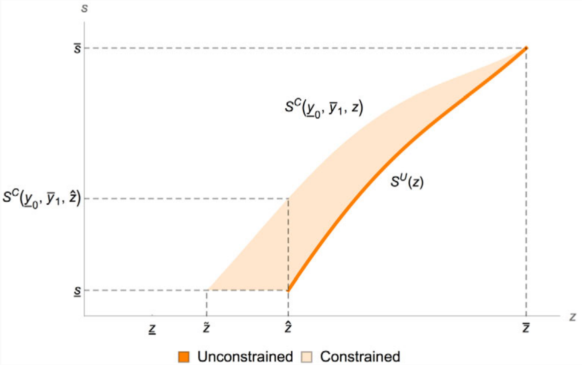

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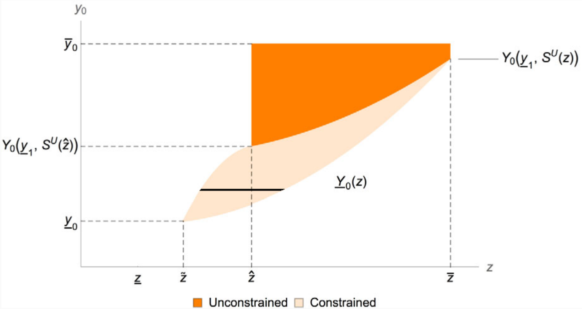

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this paper's main prediction: of constrained w/ y_1, **highest a sorts to lowest ℓ iff $\sigma < 1$**

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$$\underbrace{u'(y_1 + \underline{b} - \boldsymbol{p(\ell^*)})\boldsymbol{p'(\ell^*)}}_{\text{MC of } \ell} = \underbrace{u'(y_2 + \boldsymbol{\ell^* a} - R\underline{b})\boldsymbol{a}}_{\text{MB of } \ell}$$

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- ...but notice that MC$_\ell$ is **independent of $\boldsymbol{a}$** $\rightarrow$ just need to consider MB$_\ell$:

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- Now sorting pattern **depends on rel. size of non-labor income** (e.g., welfare programs)

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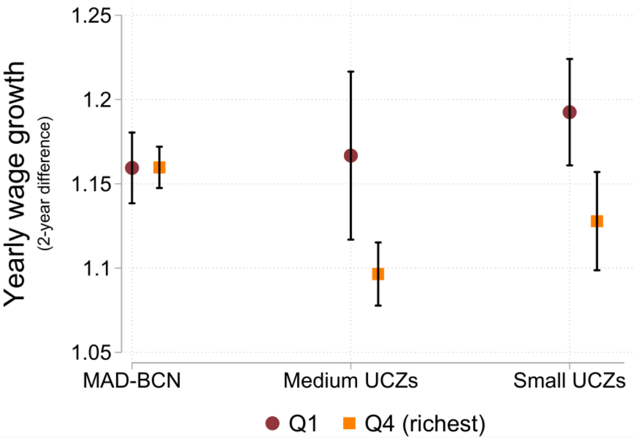

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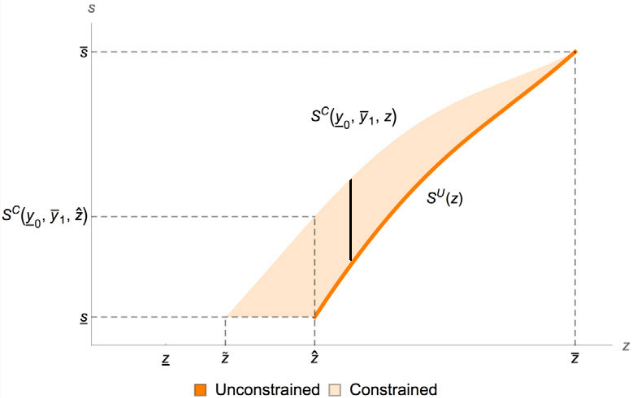

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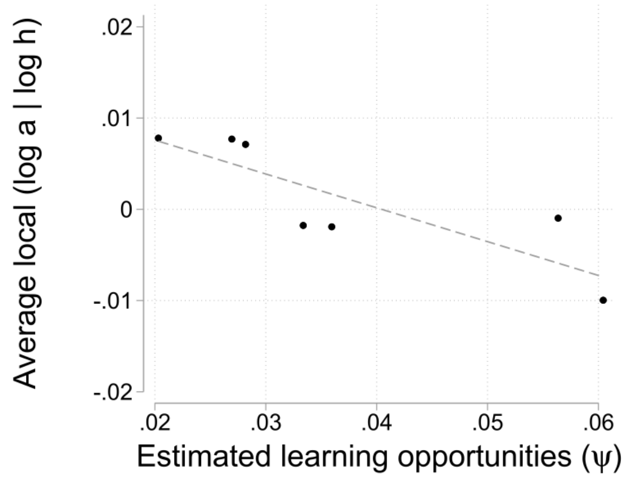

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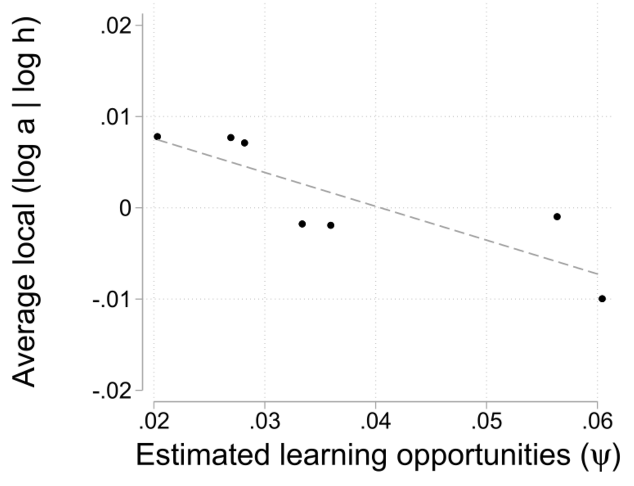
- but ***this should only be true for constrained!*** $\rightarrow$ need to condition on liquid wealth



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$$V(b_t, \ell_t, y_t, a) = \max_{\{b_{t+1}, \ell_{t+1}\}} \mathbb{E}_0 \left[\sum_{t=0}^{\infty} \beta^t u(c_t) \right]$$

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This paper, slightly stripped down*

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. . . vs. embedding standard macro-labor in space

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Huggett, Ventura, and Yaron (2011) in space*

$$V(b_t, h_t, a) = \max_{\{b_{t+1}, \ell_t, s_t\}} \mathbb{E}_0 \left[\sum_{t=1}^{T} \beta^t u(c_t) \right]$$

s.t. $c_t + b_{t+1} + \boldsymbol{p(\ell_t)} = \boldsymbol{w(\ell_t)}\, \boldsymbol{h_t}\, \boldsymbol{(1 - s_t)} + R b_t$

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- **...in the extended AKM + quantitative model**

$$\hat{\gamma}_h = (\hat{\psi}_{\ell(i,j)}\hat{a}_i)^{\hat{\delta}_j} - 1 \quad \text{vs.} \quad \gamma_h = \psi_{\ell(i,j)} a_i s_{i,j}^{\alpha} h_{i,j}^{\alpha-1}$$

  - age exponent δ_j captures endogenous response of $s^*(y_1, y_2, a)$
  - $\hat{a}_i$ is partly capturing heterogeneity in h_i...
  - ...but De la Roca and Puga (2017) already did this

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- ongoing work: **"Skills, sorting, and optimal dynamic spatial policy"**
  - consider planning problem in **QSM w/ life-cycle wage growth + borrowing constraints**
  - decentralize constrained efficient allocation with combination of...
    1. **"body tax"** for an agent's contribution to net congestion
    2. **"brain subsidy"** for an agent's contribution to dynamic spillovers

Recap

A nice quantitative model of **location as an asset** w/ **great panel data from Spain**

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Thanks!

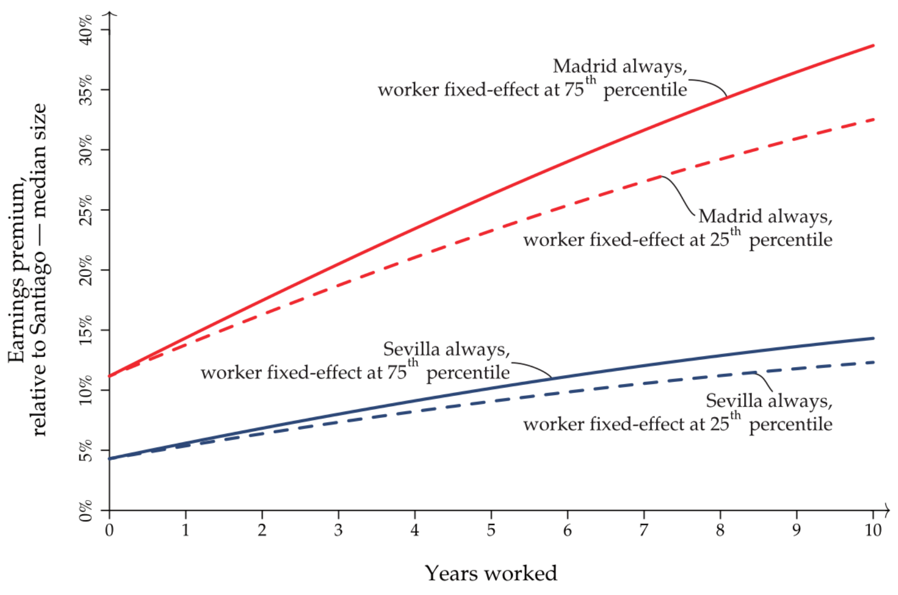
Appendix

Bilal and Rossi-Hansberg (2021)

Households maximize lifetime utility with a discount factor given by $\beta \leq 1$. For simplicity, we specify the period utility function as $u(c) = \log c$ but virtually all our results go through for any concave utility function that satisfies Inada conditions. The problem of a household is then to choose consumption in each period, purchases of the risk-free bond, and location in period 1, to solve

$$\begin{aligned} V(y_0, y_1, s) = \max_{c_0, c_1, a, z} \; & \log c_0 + \beta \log c_1 \\ \text{s.t. } & c_0 + a + q(z) = y_0, \\ & c_1 = zs + y_1 + Ra, \\ & a \geq \underline{a}. \end{aligned} \tag{1}$$

just interact worker FE w/ city-specific slope (De la Roca and Puga, 2017)



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