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A study of consumption decisions and wealth, individual data, political economy and theory

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Abstract. Recent studies have used regression decomposition to analyze recent data and found that over seventy percent of the black-white wealth differences remained unexplained (See, e.g., Gittleman & Wolff 2000; Altonji, Doraszelski & Segal 2000; and Blau & Graham 1990). Their results are limited to the variation in modern data. This study contributes improved methodology and historical empirical results to the literature on economic discrimination. In this paper, (i) presents structural regression decompositions, which are modifications to methods developed by Becker (1957) and Oaxaca (1973); (ii) presents a basic empirical test when analyzing structural regression decompositions; (iii) reports the estimated sources of black-white differences in wealth directly before and after emancipation; (iv) links these findings to recent studies. Empirical estimates confirm that the size and persistence of modern black-white wealth differences have historical roots. (v) presents decision-making considerations of "individuals" in an economy with grouped individuals, owners of firms, and social planner(s), conditional on wealth constraints with applied social economic considerations.
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JEL. J70, D90, E20, C20, H50, N30.

1. Introduction: Case one: Agent-specific constraints

MAX $\{x_{nij} \geq 0\}$ $\quad \mathrm{U} = \gamma_{\mathrm{U}} \prod_{SP=1} U_{\mathrm{SP}}^{\vartheta(SP)}$

subject to $\quad \mathbf{X}_{ijSP} \leq \mathbf{E}_{ijSP}$

Let: $\quad U_{\mathrm{SP}} = \gamma_{U(SP)} \prod_{j=1} (\prod_{i=1} \boldsymbol{u}_{ij(SP)}^{\vartheta ij(SP)})$

such that $\quad \mathrm{U} = \boldsymbol{\gamma^*} \prod_{SP=1} [\prod_{j=1} (\prod_{i=1} \boldsymbol{u}_{ij(SP)}^{\boldsymbol{\vartheta^*}})]$

where $\quad \boldsymbol{\gamma^*} = \gamma_{\mathrm{U}} \prod_{SP=1} \gamma_{U(SP)}$

$\quad \boldsymbol{\vartheta^*} = \vartheta_{ij(SP)} \vartheta_{(SP)}$

Further, let: $\quad \boldsymbol{u}_{ijSP} = \gamma_{\boldsymbol{u}ijSP} \prod_{n=1} (\boldsymbol{x}_{(n)ij} - S_{\boldsymbol{x}(n)ijSP})^{\alpha(n)}$

such that $\quad \mathrm{U} = \boldsymbol{\gamma'} \prod_{SP=1} [\prod_{j=1} (\prod_{i=1} (\prod_{n=1} (\boldsymbol{x}_{(n)ij} - S_{\boldsymbol{x}(n)ijSP})^{\boldsymbol{\alpha(n)'}}))]$

where $\quad \boldsymbol{\gamma'} = \gamma_{\mathrm{U}} [\prod_{SP=1} \gamma_{U(SP)} (\prod_{j=1} (\prod_{i=1} \gamma_{\boldsymbol{u}ijSP}))]$

$\quad \boldsymbol{\alpha(n)'} = \alpha(n) \vartheta_{ij(SP)} \vartheta_{(SP)}$

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Further, let: $\mathrm{E}_{ijSP} = \Sigma_{n=1}\, \boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP} + \boldsymbol{p}_{x(l)}\mathrm{e}_{x(l)ij} + \mathrm{e}_{ijSP}$ *for all n = 1,2,..,E ≠ 1*

Further, let: $\mathrm{X}_{ij} = \Sigma_{n=1}\, \boldsymbol{P}_{x(n)j}\boldsymbol{x}_{(n)ij} + \boldsymbol{p}_{x(l)j}\boldsymbol{x}_{(l)ij}$

where $\boldsymbol{P}_{x(n)j} = \boldsymbol{p}_{x(n)}(1+\delta_{xjg}+ \Sigma_{q=1} t'_{qx(n)})$

$\boldsymbol{P}_{x(E)} = \eta(\mathrm{B})$

Therefore, the decision becomes:

MAX $\{\boldsymbol{x}_{nij} \geq 0\}$ $\mathrm{U} = \gamma' \Pi_{SP=1}[\Pi_{j=1}(\Pi_{i=1}(\Pi_{n=1}(\boldsymbol{x}_{nij} - \boldsymbol{s}_{x(n)ijSP})^{\alpha(n)'}))]$

subject to $\Sigma_{n=1}\, \boldsymbol{P}_{x(n)j}\, \boldsymbol{x}_{(n)ij} + \boldsymbol{p}_{x(l)j}\boldsymbol{x}_{(l)ij} \leq \Sigma_{n=1}\, \boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP} + \boldsymbol{p}_{x(l)}\mathrm{e}_{x(l)ij} + \mathrm{e}_{ijSP}$

Further, let: $\Sigma_{n=1}\, \boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP} + \Sigma_{v=1}\boldsymbol{w}_v\boldsymbol{h}_{vij} = \mathrm{W}_{ij}$

where $\boldsymbol{w}_v = \boldsymbol{p}_{x(l)}$

$\boldsymbol{h}_{vij} = \mathrm{e}_{x(l)ij} - \boldsymbol{x}_{(l)ij}$

2. Case two: One universal constraint

MAX $\{\boldsymbol{x}_{nij} \geq 0\}$ $\mathrm{U} = \gamma_{\mathrm{U}}\Pi_{SP=1}\boldsymbol{U}_{\mathrm{SP}}^{\vartheta(SP)}$

Subject to $\mathrm{X} \leq \varepsilon$

Further, let: $\varepsilon = \Sigma_{SP=1}\boldsymbol{E}_{\mathrm{SP}} + \mathrm{e}$

$\boldsymbol{E}_{\mathrm{SP}} = \Sigma_{i=1}\Sigma_{j=1}\boldsymbol{E}_{ijSP} + \mathrm{e}_{\mathrm{SP}}$

$\boldsymbol{E}_{ijSP} = \boldsymbol{E}_{x(n)ijSP} + \Sigma_{i=1}\Sigma_{j=1}\, \boldsymbol{p}_{x(l)}\mathrm{e}_{x(l)ij} + \mathrm{e}_{ij}$ *for all n = 1,2,..,E ≠ 1*

$\boldsymbol{E}_{x(n)ijSP} = \Sigma_{n=1}\, \boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP}$

such that $\varepsilon = \Sigma_{i=1}\Sigma_{j=1}\Sigma_{n=1}\, \boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP} + \Sigma_{i=1}\Sigma_{j=1}\, \boldsymbol{p}_{x(l)}\mathrm{e}_{x(l)ij} + \mathrm{e}^*$

where $\mathrm{e}^* = \mathrm{e} + \Sigma_{SP=1}\mathrm{e}_{\mathrm{SP}} + \Sigma_{i=1}\Sigma_{j=1}\mathrm{e}_{ij}$

Further, let: $\mathrm{X} = \Sigma_{i=1}\Sigma_{j=1}\, \Sigma_{n=1}\boldsymbol{P}_{x(n)j}\boldsymbol{x}_{(n)ij} + \Sigma_{i=1}\, \Sigma_{j=1}\boldsymbol{p}_{x(l)j}\boldsymbol{x}_{(l)ij}$

where $\boldsymbol{P}_{x(n)j} = \boldsymbol{p}_{x(n)}(1+\delta_{xjg}+ \Sigma_{q=1} t'_{qx(n)})$

$\boldsymbol{P}_{x(E)} = \eta(\mathrm{B})$

Therefore, the decision becomes:

MAX $\{\boldsymbol{x}_{nij} \geq 0\}$ $\mathrm{U} = \gamma' \Pi_{SP=1}[\Pi_{j=1}(\Pi_{i=1}(\Pi_{n=1}(\boldsymbol{x}_{nij} - \boldsymbol{s}_{x(n)ijSP})^{\alpha(n)'}))]$

subject to $\Sigma_{i=1}\Sigma_{j=1}\, \Sigma_{n=1}\boldsymbol{P}_{x(n)j}\boldsymbol{x}_{(n)ij} + \Sigma_{i=1}\, \Sigma_{j=1}\boldsymbol{p}_{x(l)j}\boldsymbol{x}_{(l)ij} \leq \Sigma_{i=1}\Sigma_{j=1}\Sigma_{n=1}\boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP} + \Sigma_{i=1}\Sigma_{j=1}\, \boldsymbol{p}_{x(l)}\mathrm{e}_{x(l)ij} + \mathrm{e}^*$

Let: $\Sigma_{i=1}\Sigma_{j=1}\Sigma_{n=1}\, \boldsymbol{p}_{x(n)}\mathrm{e}_{x(n)ijSP} + \Sigma_{v=1}\Sigma_{i=1}\, \Sigma_{j=1}\boldsymbol{w}_v\boldsymbol{h}_{vij} = \Sigma_{i=1}\Sigma_{j=1}\mathrm{W}_{ij}$

where $\boldsymbol{w}_v = \boldsymbol{p}_{x(l)}$

$\boldsymbol{h}_{vij} = e_{x(l)ij} - \boldsymbol{x}_{(l)ij}$

3. A model of wealth

Let:

$$W_{ij} = (1\text{-}g\text{-}\Sigma_{q=1}t_{qI})I_{ij} + A_{ij} + (1\text{-}g)(\Sigma_{q=1}S_{qij} + C_{ij}) - G_{ij}$$

$$I_{ij} = \Sigma_{v=1}\, \boldsymbol{w'}_v\, \boldsymbol{h'}_{vij}$$

$$\boldsymbol{w'}_v = \boldsymbol{w}_v - \delta_{w(v)jg} - \Sigma_{q=1}t'_q$$

$$\boldsymbol{h'}_{vij} = \boldsymbol{h}_{vij} - \delta_{h(v)jg}$$

$$A_{ij} = [\, A_{0ij}(1\text{-}g\text{-}\Sigma_{q=1}t_{qA(0)}) + \Sigma_{a=1}N_{(1,a)ij}(R_i,M_i)(1\text{-}g\text{-}\Sigma_{q=1}t_{qN(1,a)})$$

$$+ \Sigma_{m=1}\gamma_{\pi(m)ij}\, \pi_{Z(m)ij}(1\text{-}g)\,]\,(1+\gamma_{\rho ij}\rho)(1\text{-}\Sigma_{q=1}t_{q\rho})$$

$$+ \Sigma_{b=1}N_{(2,b)ij}(R_i,M_i)(1\text{-}g\text{-}\Sigma_{q=1}t_{qN(2,b)}) - G_{\rho ij} - \delta_{Ajg}(\rho,A_{0ij})$$

$$A_{0ij} = A_{0ij}(\boldsymbol{x}_{l0},\gamma_{W(0)ijF}W_{0F}(I_0(\boldsymbol{w}_0,\boldsymbol{h}_0,S_0),A_0(A_{(-1)},N_0(R_0,M_0),\gamma_{0\,\pi(m)}\pi_{0Zm}),t_{0q},\delta_{0g},\gamma_{0\rho}),R,M)$$

$$\pi_{Z(m)ij} = (P_{Z(m)j}Z_{mij} + \Sigma_{q=1}S_{qZ(m)ij} - \Sigma_{d=1}\boldsymbol{P}_{Z(m,d)j}\boldsymbol{X}_{Z(m,d)ij})\,(1 - \Sigma_{q=1}t_{q\,\pi(m)})$$

$$\boldsymbol{P}_{Z(m)j} = \boldsymbol{p}_{Z(m)}(1 - \delta_{Z(m)jg} + \Sigma_{q=1}t'_{qZ(m)})$$

$$Z_{mij} = \gamma_{Zmij}\Pi_{d=1}\boldsymbol{X}_{Z(m,d)ij}^{\beta(d)}$$

$$\boldsymbol{P}_{Z(m,d)j} = \boldsymbol{p}_{Z(m,d)}(1 - \delta_{Z(m,d)jg} - \Sigma_{q=1}t'_{qZ(m)})$$

$$\boldsymbol{X}_{Z(m,d)ij} = \boldsymbol{x}_{Z(m,d)ij} - \delta_{Z(m,d)jg}$$

where
S is subsidies,
g is the tithe,
G is offerings,
q is governments,
C is social capital, i.e. food and medications from societal organizations,
ρ is the rate of return,
γ is the knowledge on scaling the rate of return, i.e. the 1996-97 INVESCO case study,
d is inputs,
N_1 is appreciative,
N_2 is non-appreciative

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