

Lecture 6: Optimal Transfers

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Fall 2016

GOALS OF THIS LECTURE

- 1) Wrap up the study of taxable income responses: migration responses to taxes.
- 2) Study the optimal design of transfer programs and introduce extensive margin responses into the model.
- 3) Empirical evidence on responses to transfers.

INTERNATIONAL MIGRATION

Public debate concern that top skilled individuals move to low tax countries (e.g., in EU context) or low tax states (within US Federation, see Moretti-Wilson 15, Young et al. 14)

Migration concern bigger in public debate than supply-side within a country debate

Little work on tax induced international migration of top skilled workers

Hard to get data but interesting variation due to proliferation of special low tax schemes for highly paid foreigners in Europe

Kleven-Landais-Saez AER'13 look at **football players** in Europe (highly mobile group, many tax reforms) ⇒ Find significant migration responses to taxes after football market was de-regulated in '95

Akcigit-Baslandze-Stantcheva AER'16 look at **innovators** (using patent data) mobility and find significant tax effects for top innovators

KLEVEN-LANDAIS-SAEZ-SCHULTZ '13

Exploit the 1991 Danish tax scheme: high earnings immigrants ($\geq 103,000$ Euros/year) taxed at flat 25% rate (instead of regular tax with top 59% rate) for 3 years

Use population wide Danish tax data and DD strategy: compare immigrants above eligibility earnings threshold (treatment) to immigrants below threshold (control)

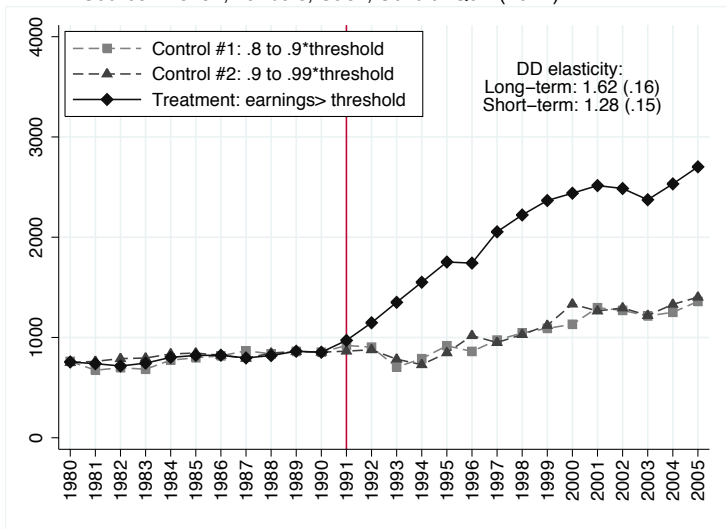
Key Finding: Scheme doubles the number of highly paid foreigners in Denmark relative to controls

⇒ Elasticity of migration with respect to the net-of-tax rate above one (much larger than the within country elasticity of earnings)

⇒ Tax coordination will be key to preserve progressive taxation in the EU

Figure 1 : Total number of foreigners in different income groups

Source: Kleven, Landais, Saez, Schultz QJE (2014)

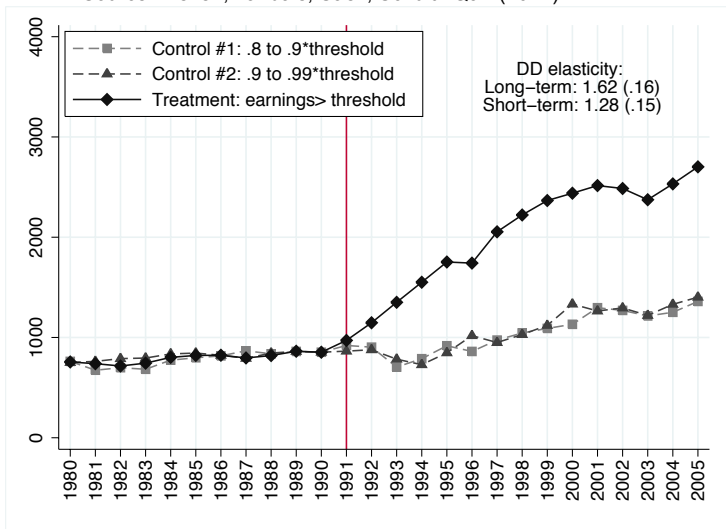


Control 1= annualized income between .8 and .9 of threshold

Control 2= annualized income between .9 and .995 of threshold.

Figure 1 : Total number of foreigners in different income groups

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Control 2= annualized income between .9 and .995 of threshold.

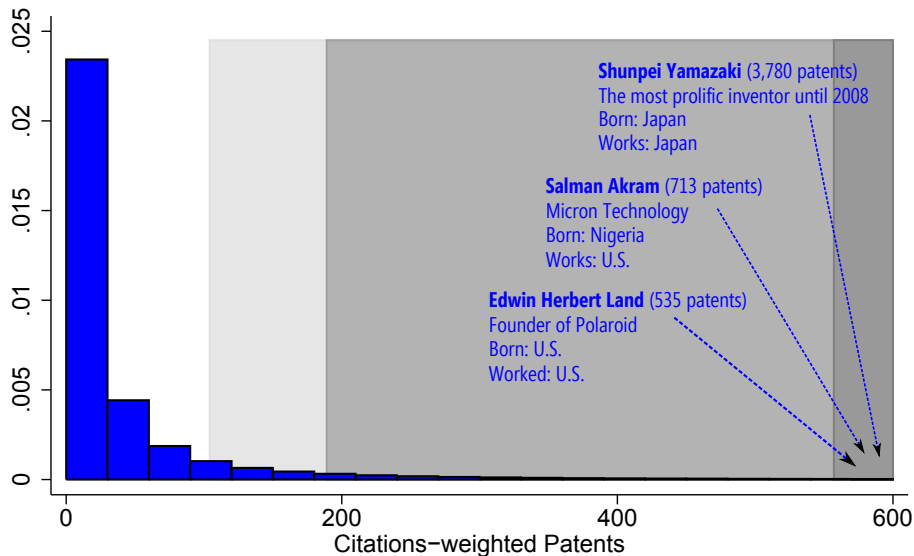
Study the Effects of Taxes on Migration using Patent Data

- Use a **unique international panel data** to overcome challenges:
 - ▶ **Patent data** from the USPTO and EPO, 1977-2000.
 - ▶ Track inventors in 8 big patenting countries: CA, CH, DE, FR, IT, JP, UK, US through residential addresses.
- Study effects of **top tax rates** on “**superstar**” inventors’ locations.
- Patent data gives direct measures of inventor quality.
- Detailed controls for *counterfactual* earnings in each potential location.

Three levels of analysis:

- ① Macro country-year level migration flows (country-by-year variation).
- ② Country case studies (quasi-experimental variation from reforms).
- ③ Micro inventor level location choice model
(differential impact of top MTR within country-year.
Inventor quality → ↑ propensity to be treated).

Superstar Inventors in a Highly Skewed Quality Distribution



Three Data sources: DID, EPO, PCT

- Inventors: employees, researchers, self-employed.
- “Assignee” is legal owner (firm or individual), can be \neq from inventor. Focus on employees.

Main Data: Disambiguated Inventor Data

- USPTO: 4.2 million patent records, 3.1 million inventors in 1975-2010.
- 18% of worldwide direct patent filings (26% of all patents).
- Disambiguated names with residential addresses (Lai *et al.*, 2012).

Additional Data 1: European Patent Office (EPO) data

- Very recent disambiguation, higher representation of EU patents.

Additional Data 2: Patent Cooperation Treaty (PCT) data

▶ USPTO Stats

▶ EPO Stats

▶ Details

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Inventor Quality Measures and Ranking

Patent quality increases inventor income, directly and *indirectly*.

Quality measures

(dynamic and lagged)

- 1 Citations-weighted patents (benchmark)
- 2 Patent count
- 3 Average citations per patent
- 4 Max citations per patent
- 5 Patent breadth (claims-weighted patents)
- 6 Impact breadth (# tech classes citing patent).

▸ Correlations

▸ Patent breadth, breadth of impact

Inventor Ranking

- Group countries by patenting intensity (robust):
 1. U.S., 2. JP, 3. EU + CA
- Assign inventors to group based on home country.

→ Dynamic, Persistent, Life-time ranking

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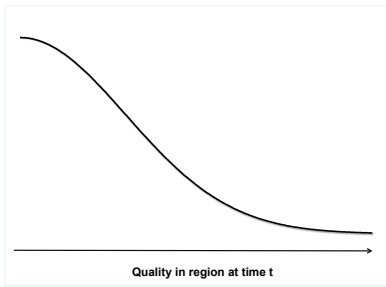
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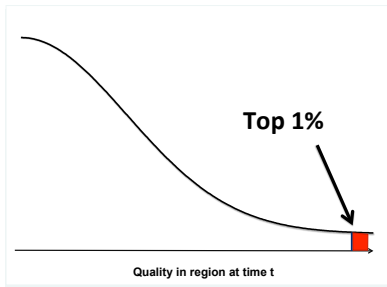
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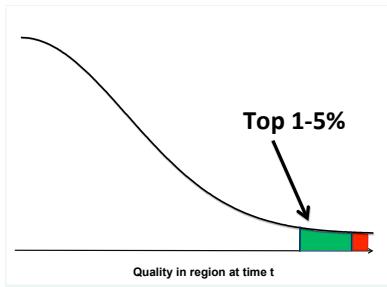
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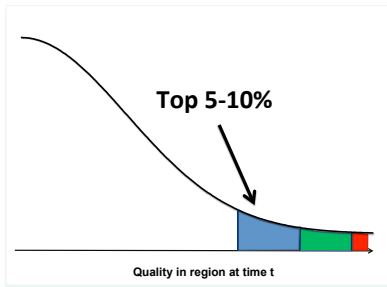
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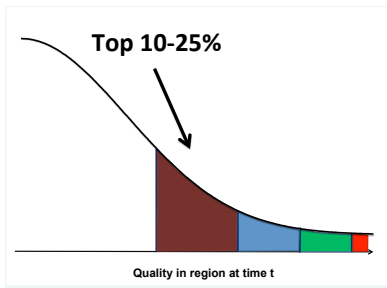
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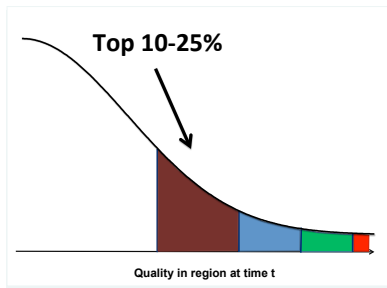
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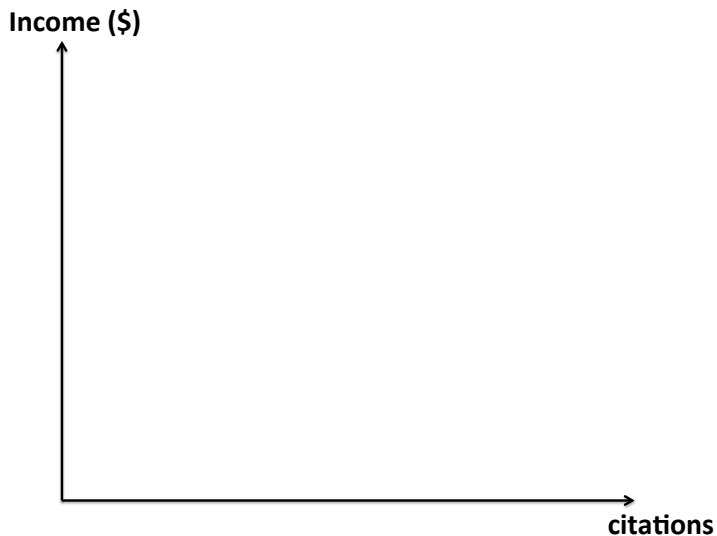
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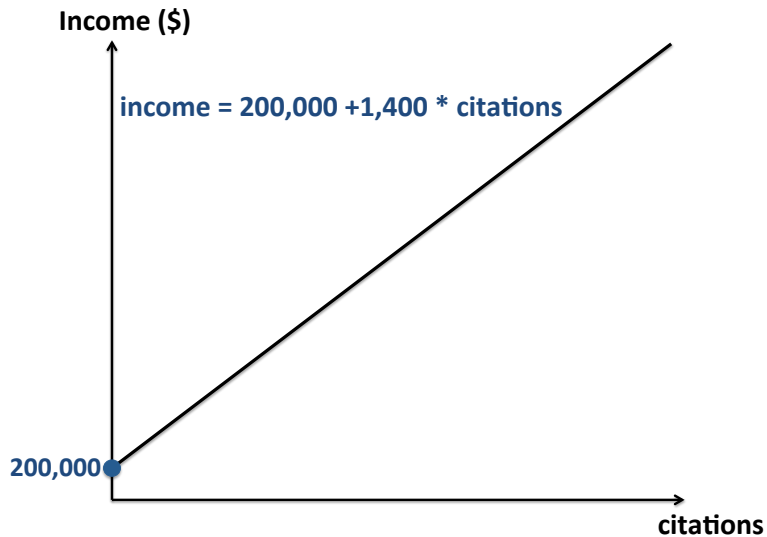


Link between Inventor Quality and Income in IRS data

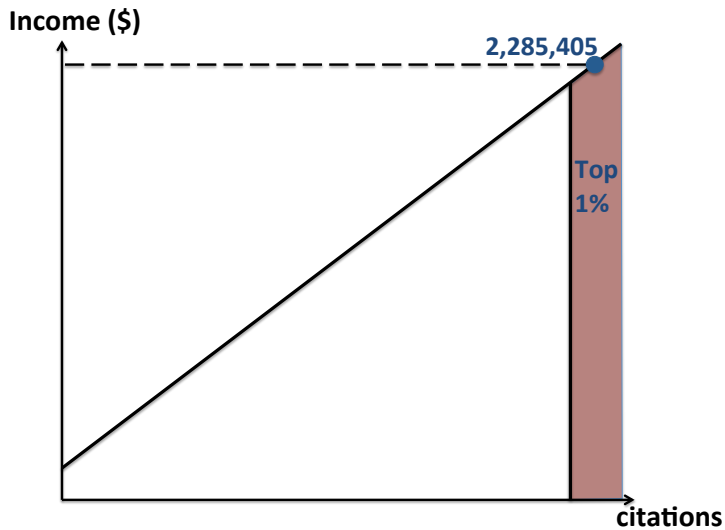


Source: Bell *et al.* (2015).

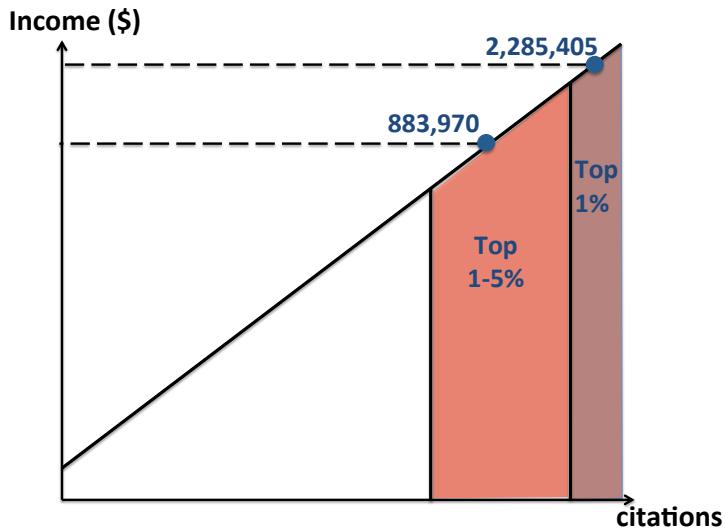
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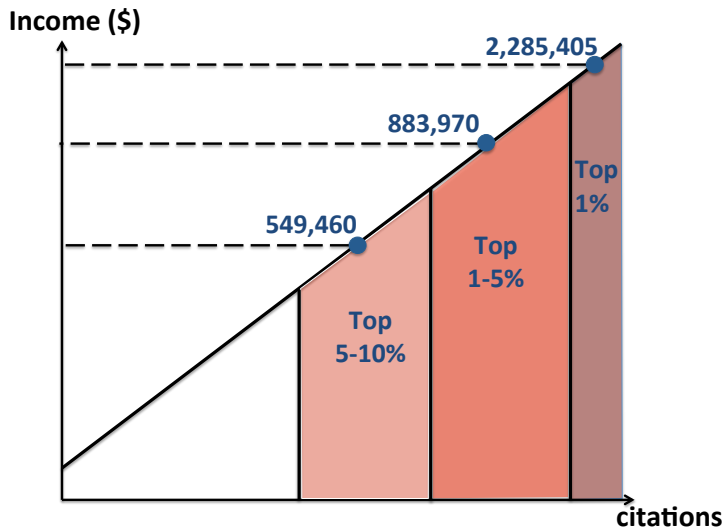
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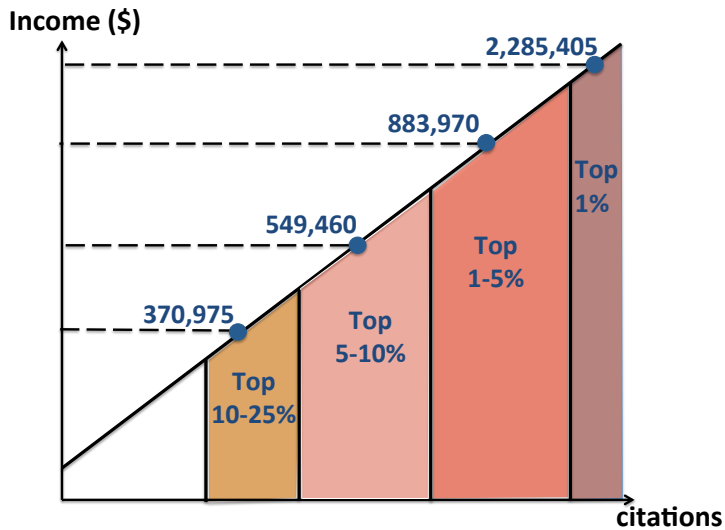
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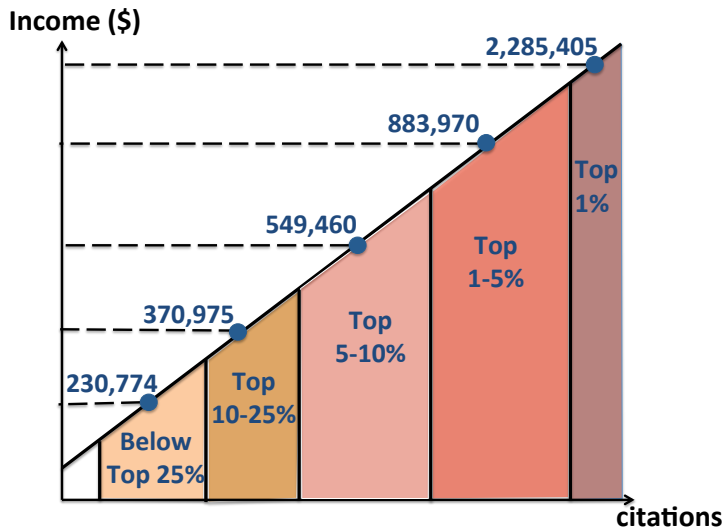
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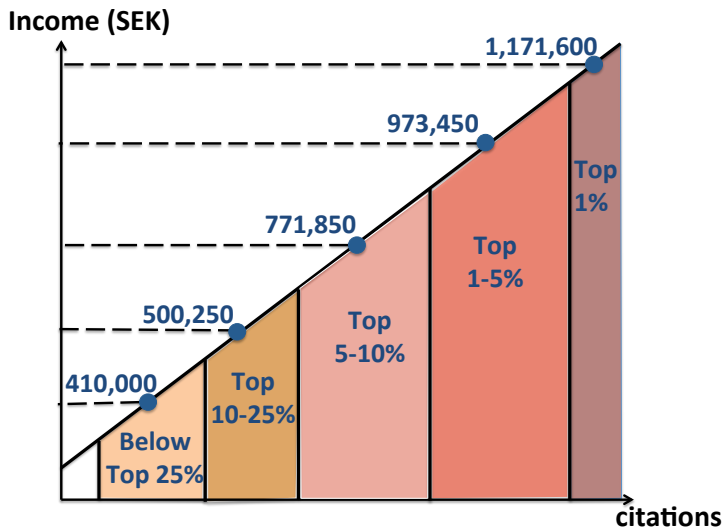
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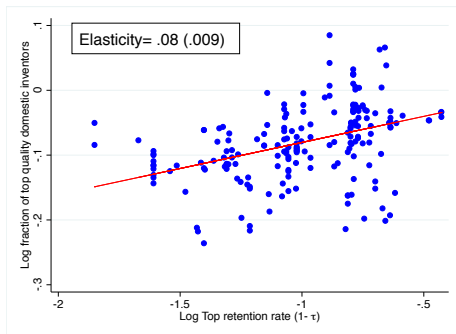


Link between Inventor Quality and Income in Swedish and Finnish Admin data

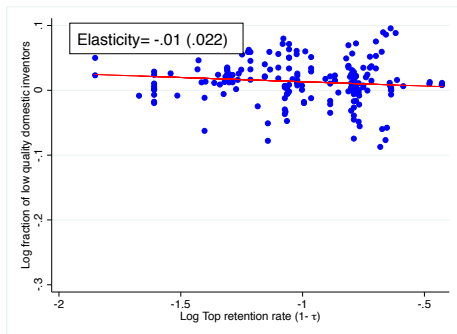


Source: Olof Ejermo and Otto Toivaanen.

Top $(1 - \tau)$ and % of Domestic Inventors in Home Country



(a) Top quality inventors

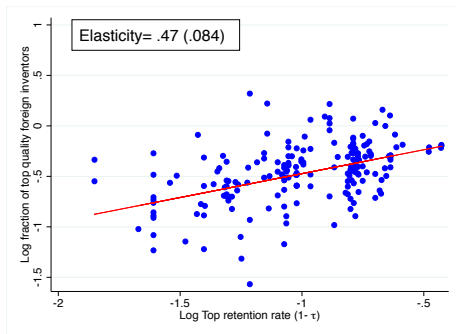


(b) Low quality inventors

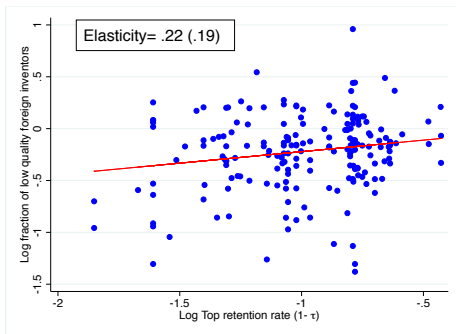
Additional macro level results in the paper:

- Domestic and Foreign inventors.
- For different quality levels, in different datasets.
- With leads and lags.

Top $(1 - \tau)$ and % of Foreign Inventors



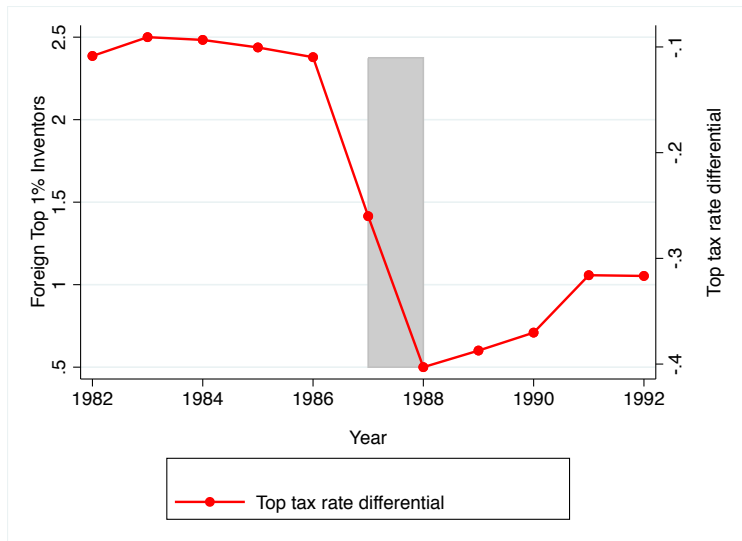
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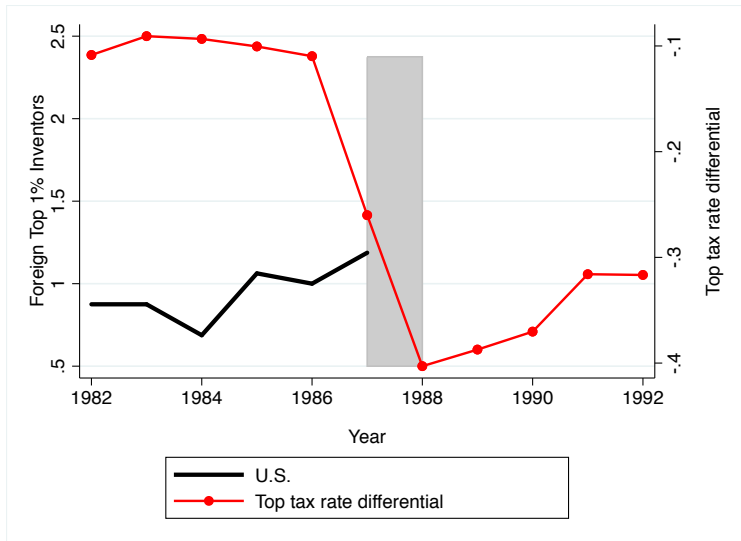
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Log outcomes at the country-year level. Partial residual plots controlling for country's patent stock, GDP per capita, country fixed effects, year fixed effects. Elasticities reported (standard errors clustered at the country level).

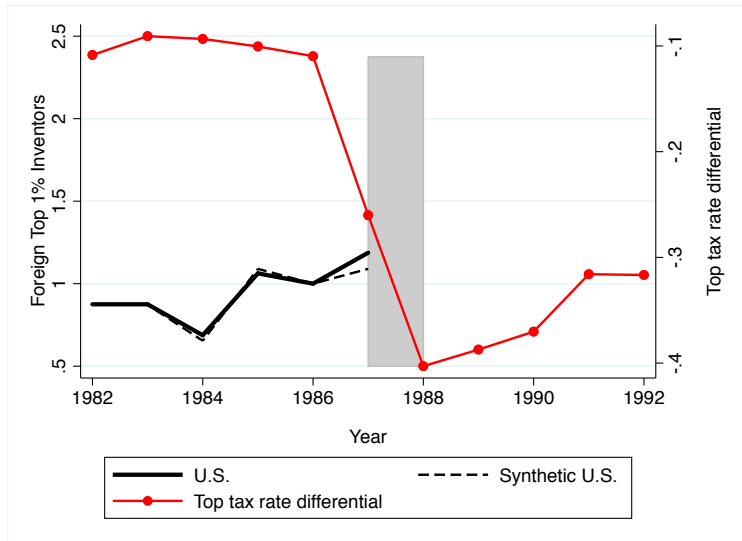
Case Study: U.S. TRA 1986



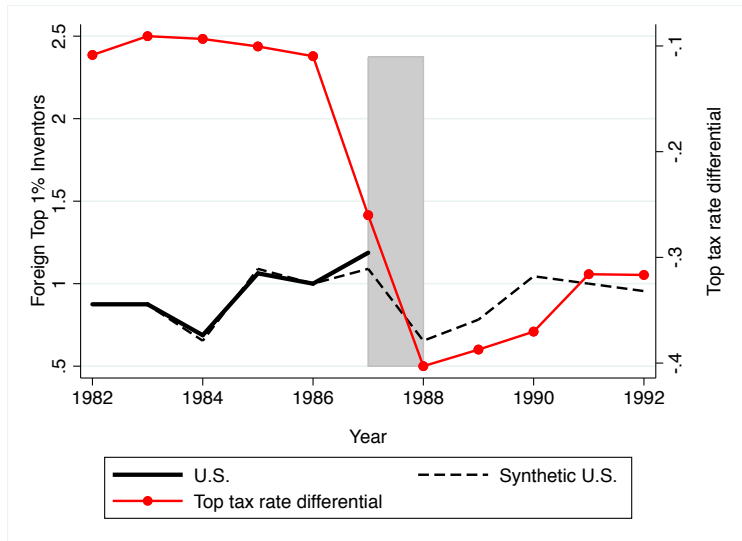
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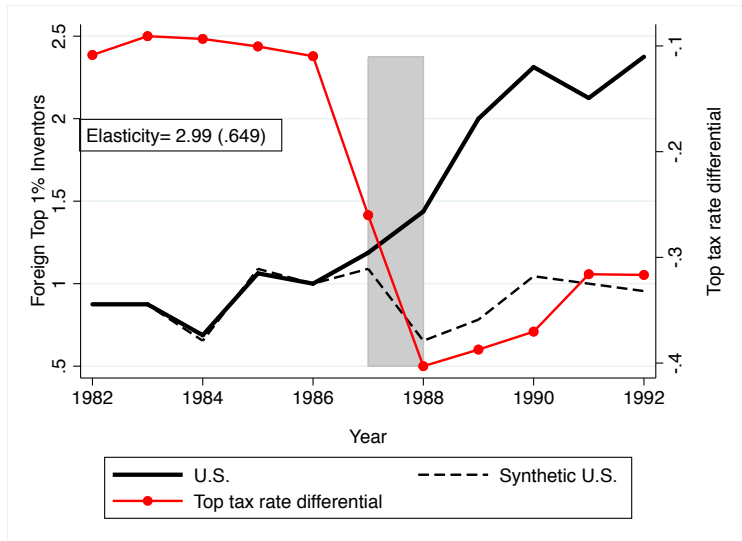
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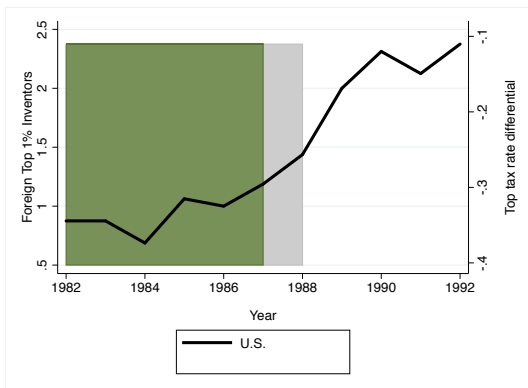
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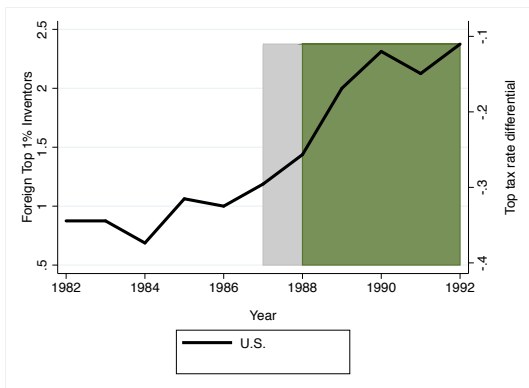
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Structural break in growth of foreign top 1% relative to lower quality inventors.

Inventor quality	Pre T.R.A 1986	Post T.R.A 1986
Top 1%	6.8%	16.4%
Below Top 1%	10.5%	11.3%

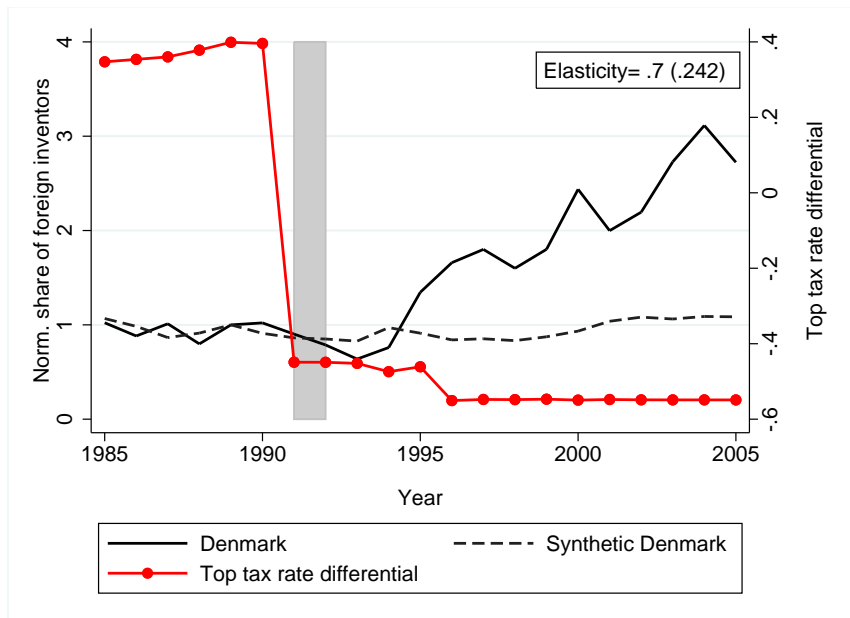
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Case Study: Denmark's 1992 Preferential Tax Reform



$$Pr(y_{it} = c) = f(\alpha_{rit} \log(1 - \text{top MTR}_{ct}^i) + \beta_c \mathbf{x}_{ti} + \eta \mathbf{x}_{cti} + \zeta \mathbf{x}_{ct})$$

\mathbf{x}_{ti} : individual covariates (\times country FE), control for *counterfactual* earnings. Age, tech field, works for multinational, ranking

+ quality \times country FE

+ quality \times country FE \times trend

+ quality \times country FE \times trend \times tech field.

\mathbf{x}_{cti} : individual-country pair covariates: home dummy, patent stock in inventor's tech field, distance, common language.

- \mathbf{x}_{ct} : country covariates.

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- **Country-by-year variation:** patent stock, GDP per capita, country FEs, year FEs, country-specific time trends.
 - ▶ Contemporaneous country-specific policies?
 - ▶ Loads general equilibrium effects and sorting on coefficient of top tax (e.g.: inflow of higher ability inventors could displace low ability inventors if rigid demand).

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- **Superstars vs. Non-superstars**: include country \times year FE.

- ▶ Logic: Top 1% and slightly lower quality inventors very comparable.

- ▶ Only inventors actually in top tax bracket are directly affected by top tax.

- ▶ Higher quality \rightarrow Higher income \rightarrow higher propensity to be treated by top MTR (MTR \approx ATR).

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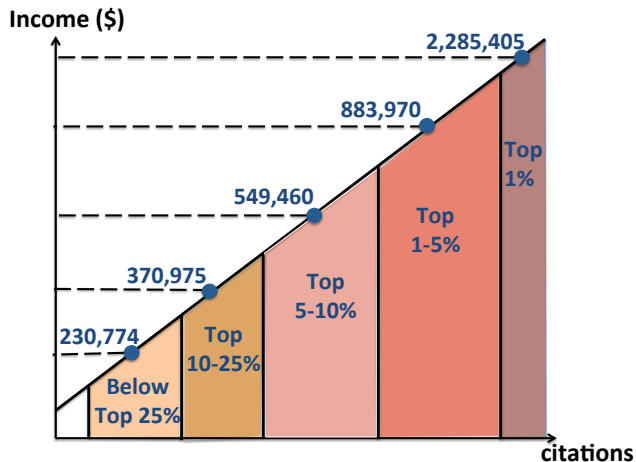
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Choice of the Control Group?



Trade-off in the choice of the control group.

→ Provide set of effects of $(1 - MTR)$ on all quality groups.

→ Provide elasticity of top 1% relative to several control groups

$g \in \{\text{top 5-10\%, top10-25\%, below top 25\%}\}$.

Country-by-year Variation and General Equilibrium Effects

	(1)	(2)	(3)	(4)
Log Retention Rate \times Top 1	0.894*** (0.206)	0.895*** (0.208)	0.969*** (0.210)	0.955*** (0.212)
Log Retention Rate \times Top 1-5	0.443*** (0.133)	0.452*** (0.134)	0.522*** (0.133)	0.502*** (0.134)
Log Retention Rate \times Top 5-10	0.148 (0.114)	0.162 (0.114)	0.233** (0.111)	0.209* (0.112)
Log Retention Rate \times Top 10-25	-0.123 (0.0934)	-0.0987 (0.0933)	-0.0222 (0.0890)	-0.0460 (0.0895)
Log Retention Rate \times Below Top 25	-0.405*** (0.113)	-0.349*** (0.119)	-0.267** (0.119)	-0.278** (0.120)
Quality \times Country FE	NO	YES	YES	YES
Quality \times Country FE \times Year	NO	NO	YES	YES
Quality \times Country FE \times Year \times Field FE	NO	NO	NO	YES
Domestic elasticity s.e	.02 (.0047)	.02 (.0047)	.024 (.005)	.024 (.005)
Foreign elasticity s.e	.75 (.174)	.754 (.175)	.811 (.177)	.811 (.177)
Observations	8644280	8616336	8616336	8616336

Superstars vs. Non-Superstars

	(1)	(2)	(3)	(4)
Log Retention Rate × Top 1	1.376*** (0.478)	1.508*** (0.486)	1.451*** (0.489)	1.404*** (0.489)
Log Retention Rate × Top 1-5	0.926** (0.449)	1.065** (0.455)	1.004** (0.458)	0.950** (0.457)
Log Retention Rate × Top 5-10	0.629 (0.449)	0.773* (0.455)	0.713 (0.457)	0.654 (0.456)
Log Retention Rate × Top 10-25	0.357 (0.441)	0.511 (0.447)	0.454 (0.448)	0.396 (0.447)
Log Retention Rate × Below Top 25	0.0775 (0.444)	0.263 (0.451)	0.210 (0.449)	0.166 (0.449)
Quality × Country FE	NO	YES	YES	YES
Quality × Country FE × Year	NO	NO	YES	YES
Quality × Country FE × Year × Field FE	NO	NO	NO	YES
Control: Top 5-10				
Domestic elasticity	.02	.02	.02	.02
s.e	(.005)	(.005)	(.005)	(.005)
Foreign elasticity	.63	.62	.62	.63
s.e	(.18)	(.18)	(.19)	(.19)
Control: Top 10-25				
Domestic elasticity	.03	.02	.02	.02
s.e	(.005)	(.005)	(.005)	(.005)
Foreign elasticity	.85	.84	.83	.84
s.e	(.18)	(.18)	(.18)	(.18)
Control: Below Top 25				
Domestic elasticity	.03	.03	.03	.03
s.e	(.005)	(.005)	(.006)	(.006)
Foreign elasticity	1.09	1.05	1.04	1.04
s.e	(.190)	(.196)	(.201)	(.203)
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	(1)	(2)	(3)	(4)
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Quality × Country FE × Year × Field FE	NO	NO	NO	YES
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Quality × Country FE × Year	NO	NO	YES	YES
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Observations	8644280	8616336	8616336	8616336

The Role of Companies

	(1)	(2)
Log Retention Rate × Top 1	1.400*** (0.500)	0.980* (0.537)
Log Retention Rate × Top 1-5	0.868* (0.473)	0.548 (0.493)
Log Retention Rate × Top 5-10	0.514 (0.473)	0.199 (0.491)
Log Retention Rate × Top 10-25	0.181 (0.468)	-0.0974 (0.481)
Log Retention Rate × Below Top 25	-0.254 (0.472)	-0.560 (0.485)
Log Retention Rate × Not Multinational	-0.216* (0.129)	
Log Retention Rate × Activity abroad		-1.470*** (0.137)
Quality × Country FE	YES	YES
Quality × Country FE × Year	YES	YES
Quality × Country FE × Year × Field FE	YES	YES
Control: Top 5-10	Domestic elasticity s.e	.018 (.0045)
	Foreign elasticity s.e	.420 (.154)
Control: Top 10-25	Domestic elasticity s.e	.024 (.0045)
	Foreign elasticity s.e	.579 (.151)
Control: Below Top 25	Domestic elasticity s.e	.034 (.0047)
	Foreign elasticity s.e	.828 (.159)
Observations	7059856	6168504

The Role of Companies

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Log Retention Rate × Top 1-5	0.868* (0.473)	0.548 (0.493)
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	Foreign elasticity s.e	.828 (.159)
Observations	7059856	6168504

OPTIMAL TRANSFERS: MIRRLEES MODEL

Mirrlees model predicts that optimal transfer at bottom takes the form of a “Negative Income Tax”:

- 1) Lumpsum grant $-T(0)$ for those with no earnings
- 2) High MTRs $T'(z)$ at the bottom to phase-out the lumpsum grant quickly

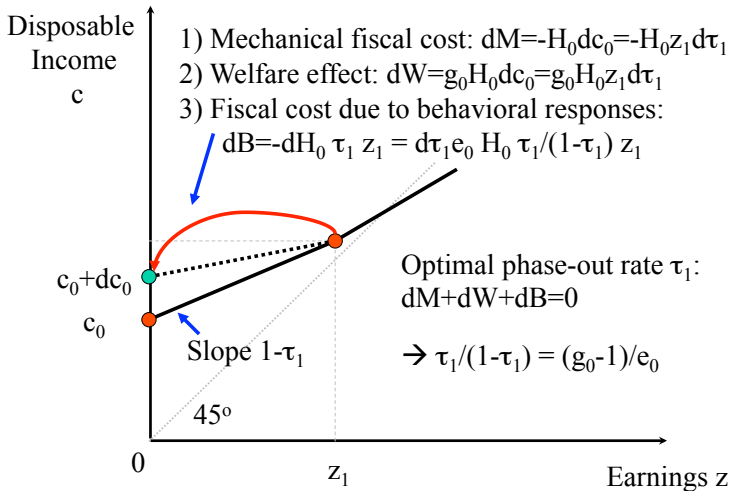
Intuition: high MTRs at bottom are efficient because:

- (a) they target transfers to the most needy
- (b) earnings at the bottom are low to start with so intensive response does not generate large output losses

Diamond-Saez JEP'11: $T'(0) = (g_0 - 1) / (g_0 - 1 + e_0)$ with e_0 elasticity of the fraction non-working wrt to $1 - T'(0)$ and g_0 social marginal welfare weight on non workers

[$\Rightarrow T'(0)$ large: e.g. $g_0 = 3$ and $e_0 = .5 \Rightarrow T'(0) = 80\%$]

Reform: Increase τ_1 by $d\tau_1$ and c_0 by $dc_0=z_1d\tau_1$



Optimal Transfers: Participation Responses

Empirical literature shows that participation labor supply responses [due to fixed costs of working] are large at the bottom [much larger and clearer than intensive responses]

Diamond JpubE'80, Saez QJE'02, Laroque EMA'05 incorporate such extensive labor supply responses in the optimal income tax model

Participation depends on participation tax rate: $\tau_p = [T(z) - T(0)]/z$: individual keeps fraction $1 - \tau_p$ of earnings when moving from zero earnings to earnings z :

$$z - T(z) = -T(0) + z - [T(z) - T(0)] = -T(0) + z \cdot (1 - \tau_p)$$

Key result: in-work subsidies with $T'(z) < 0$ (such as EITC) become optimal when labor supply responses are concentrated along extensive margin and social marginal welfare weight on low skilled workers > 1 .

SAEZ QJE'02 PARTICIPATION MODEL (skip)

Model with discrete earnings outcomes: $w_0 = 0 < w_1 < \dots < w_I$

Tax/transfer T_i when earning w_i , $c_i = w_i - T_i$

Participation labor supply: Skill i individual compares c_i and c_0 when deciding to work \Rightarrow Participation tax rate τ_i such that $c_i - c_0 = w_i \cdot (1 - \tau_i)$

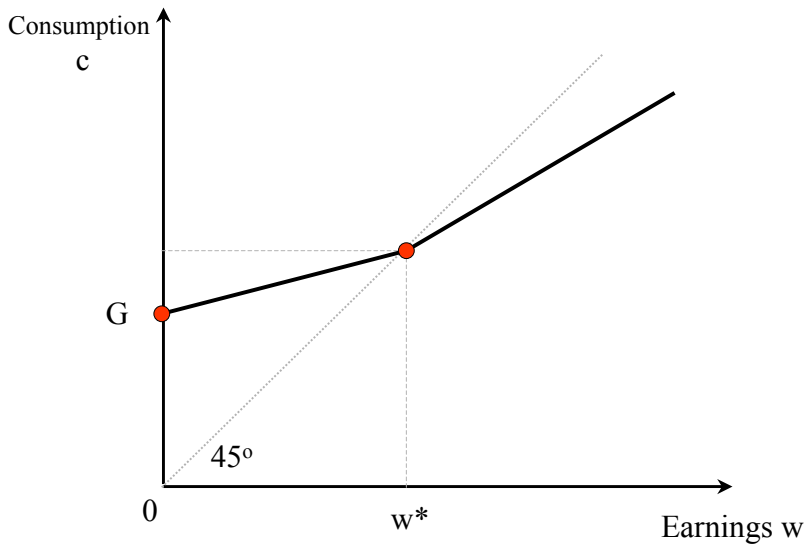
Person works iff $c_i - \theta \geq c_0$ where θ is fixed cost of working

\Rightarrow In aggregate, fraction $h_i(c_i - c_0)$ of population earns w_i

Participation elasticity $e_i = (c_i - c_0) / h_i \cdot \partial h_i / \partial (c_i - c_0)$

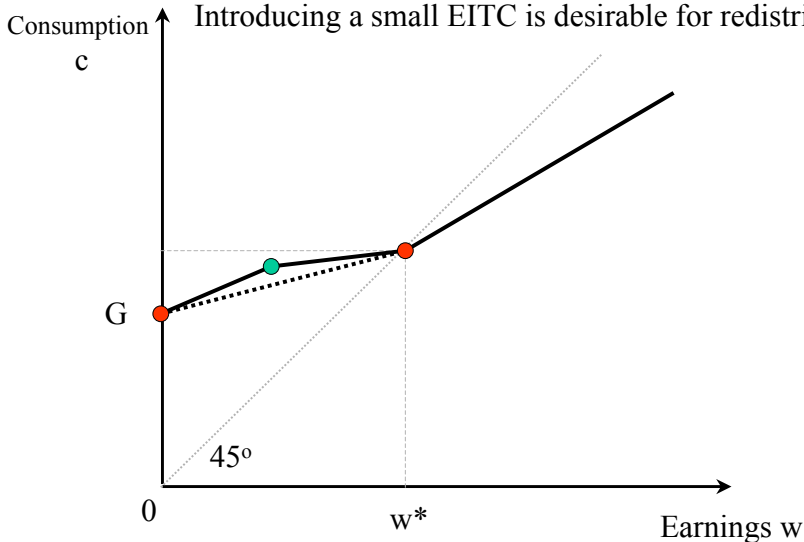
Social Welfare function is summarized by social marginal welfare weights at each earnings level $g_i \downarrow i$, and average to one $\sum_i g_i h_i = 1$ (if no income effects)

Starting from a Means-Tested Program



Starting from a Means-Tested Program

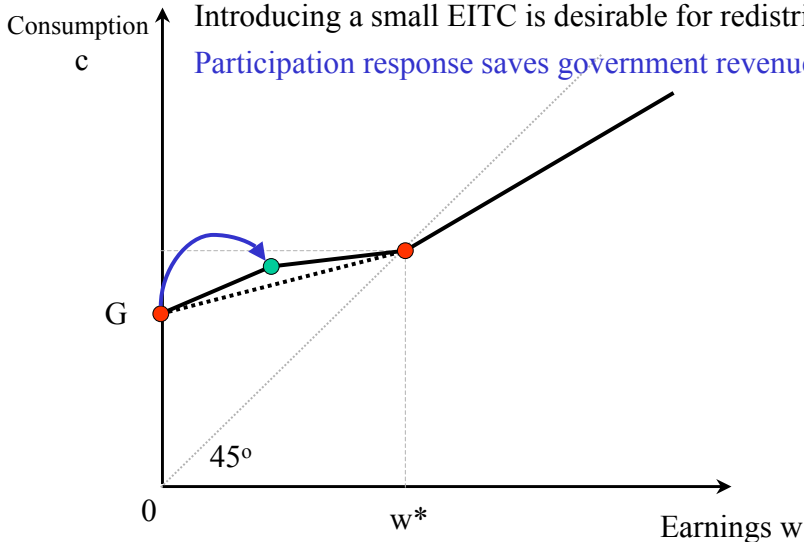
Introducing a small EITC is desirable for redistribution



Starting from a Means-Tested Program

Introducing a small EITC is desirable for redistribution

Participation response saves government revenue



Starting from a positive phasing-out rate $\tau_1 > 0$:

- 1) Increasing transfers by dc_1 at z_1 is desirable for redistribution: net effect $(g_1 - 1)h_1 dc_1 > 0$ if $g_1 > 1$
- 2) Participation response saves government revenue

$$\tau_1 z_1 dh_1 = e_1 \tau_1 / (1 - \tau_1) h_1 dc_1 > 0$$

→ Win-win reform ...if intensive response is small

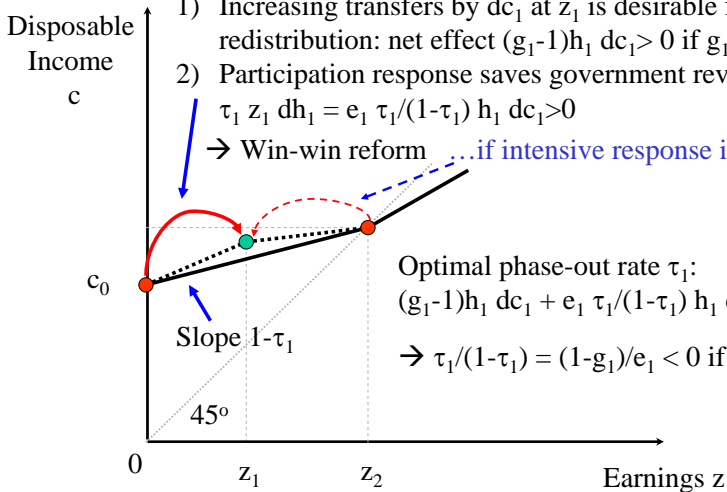


Figure 3a: Optimal Tax/Transfer Derivation

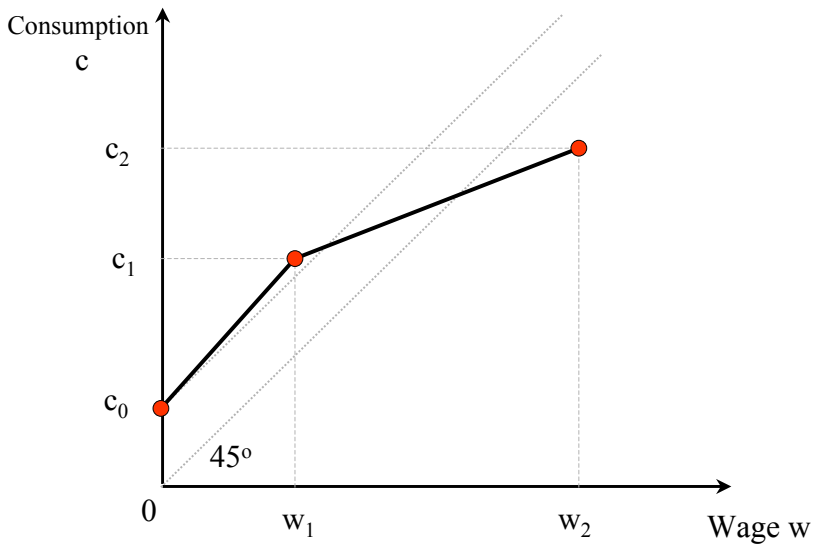


Figure 3a: Optimal Tax/Transfer Derivation (assuming $g_1 > 1$)

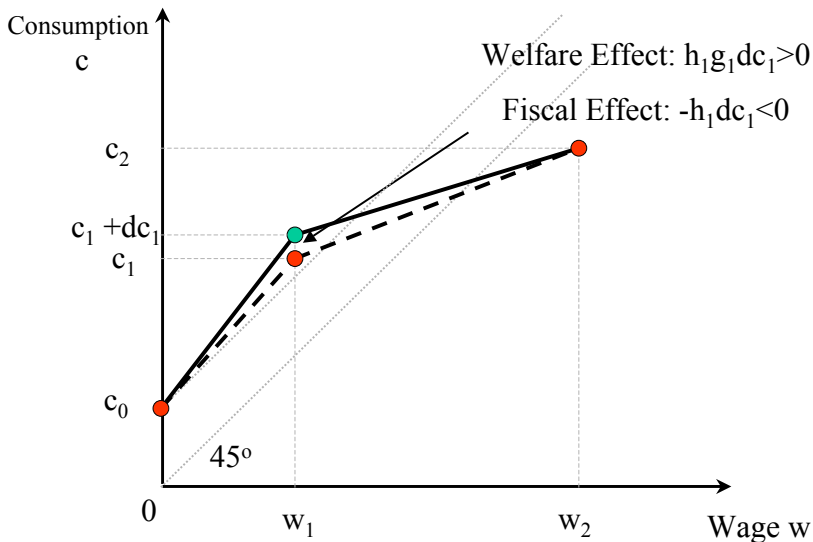


Figure 3a: Optimal Tax/Transfer Derivation (assuming $g_1 > 1$)

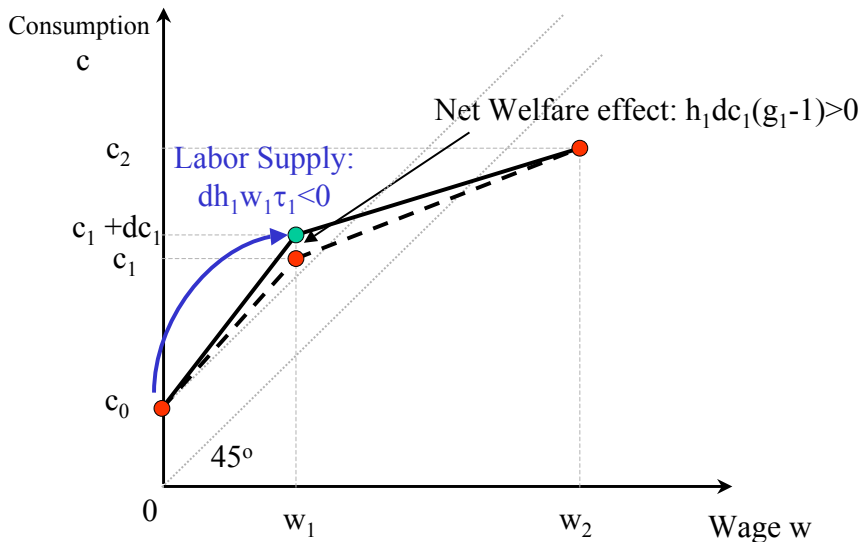
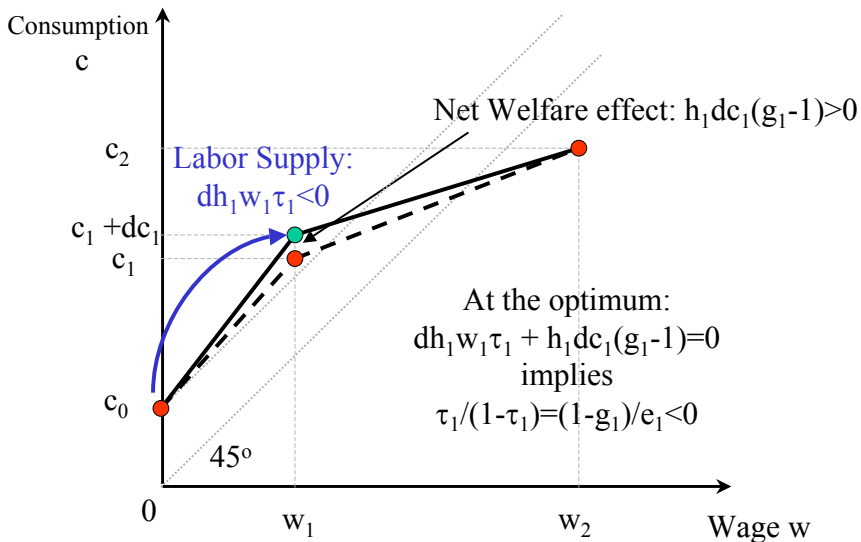


Figure 3a: Optimal Tax/Transfer Derivation (assuming $g_1 > 1$)



SAEZ QJE'02: OPTIMAL TAX DERIVATION

Small reform $dc_i = -dT_i > 0$. Three effects:

1) Mechanical Change in tax revenue $dM = h_i dT_i$

2) Behavioral Effect: $dh_i = -e_i h_i dT_i / (c_i - c_0) \Rightarrow$ Tax loss:
 $dB = -(T_i - T_0) dh_i = -e_i h_i dT_i (T_i - T_0) / (c_i - c_0)$

3) Welfare Effect: each worker in job i loses dT_i so welfare loss
 $dW = -g_i h_i dT_i$ [No first order welfare loss for switchers]

FOC: $dM + dB + dW = 0 \Rightarrow$

$$\frac{\tau_i}{1 - \tau_i} = \frac{T_i - T_0}{c_i - c_0} = \frac{1}{e_i} (1 - g_i)$$

$g_1 > 1 \Rightarrow T_1 - T_0 < 0 \Rightarrow$ in-work subsidy

ACTUAL TAX/TRANSFER SYSTEMS

1) Transfer programs used to be of the traditional form with high phasing-out rates (sometimes above 100%) \Rightarrow No incentives to work (even with modest elasticities)

Initially designed for groups not expected to work [widows in the US] but later attracting groups who could potentially work [single mothers]

2) In-work benefits have been introduced and expanded in OECD countries since 1980s (US EITC, UK Family Credit, etc.) and have been politically successful \Rightarrow (a) Redistribute to low income workers, (b) improve incentives to work

TAGGING

We have assumed that $T(z)$ depends only on earnings z .

In reality, govt can observe many other characteristics X also correlated with ability [gender, race, age, disability, family structure, height,...] and set $T(z, X)$. Two theory results:

- 1) If characteristic X is **immutable** then redistribution across the X groups will be complete [until average social marginal welfare weights are equated across X groups]
- 2) If characteristic X can be **manipulated** [behavioral response or cheating] but X correlated with ability then taxes will still depend on both X and z .

References: Akerlof AER'78 (welfare), Nichols-Zeckhauser AER'82 (welfare), Weinzierl '11 (age), Mankiw-Weinzierl '10 (height), Kaplow '08 (chapter 7)

TAGGING WITH IMMUTABLE CHARACTERISTICS

Consider X binary immutable (Talls vs. Shorts)

With $T(z)$ independent of X , Talls have higher ability on average \Rightarrow
Average social marginal welfare weights $\bar{g}^T < \bar{g}^S \Rightarrow$ Transfer from Talls to
Shorts is desirable (surtax on Talls which finances an allowance on Shorts)

Optimal height transfers should be up to point where $\bar{g}^T = \bar{g}^S$

Mankiw-Weinzierl '09 compute the optimal $T^{Tall}(z)$ and $T^{Short}(z)$ based
on calibrated mode: optimal transfer $T^{Tall}(z) - T^{Short}(z)$ not trivial ($\simeq 10\%$
of income)

They also show that you can get a (very modest) **Pareto** improvement
using taxes on height and income instead of only income

PROBLEM WITH TAGGING

In practice public would oppose height based redistribution because height does not cause high earnings \Rightarrow

- 1) **Horizontal Equity** concerns [people with same “ability-to-pay” should pay the same tax] impose constraints on feasible policies [not captured by utilitarian framework]
- 2) Constrained optimization analysis [$T(z)$ instead of $T(z, X)$] remains valid even with heterogeneity in preferences
- 3) In practice $T(z, X)$ depends on X only when X is **directly** related to welfare [family structure, # kids, medical expenses] or ability to earn [disability status] (“ability-to-pay” intuition)

IN-KIND REDISTRIBUTION

Majority of actual transfers are in-kind (health care, child care, education, public housing, nutrition subsidies)

1) **Rational Individual perspective:**

- (a) In-kind transfer is **tradeable** at market price \Rightarrow in-kind equivalent to cash
- (b) In-kind transfer **non-tradeable** \Rightarrow in-kind inferior to cash.

IN-KIND REDISTRIBUTION

2) **Social perspective:** 4 justifications:

a) Commodity Egalitarianism: some goods (education, health, shelter, food) seen as **rights** and ought to be provided to all

b) Paternalism: society imposes its preferences on recipients [recipients prefer cash]

c) Behavioral: Recipients do not make choices in their best interests (self-control, myopia) [recipients understand that in-kind is better for them]

d) Under standard welfarist objective: Efficiency considerations in a 2nd best context

EFFICIENCY OF IN-KIND REDISTRIBUTION

Depends on what income tax tools are available:

- 1) No income tax: Income z not observable (devo countries) \Rightarrow In-kind provision or subsidies for necessities desirable
- 2) Linear tax model (Ramsey): Guesnerie–Roberts EMA'84 \Rightarrow rationing goods encouraged by the tax system is desirable [and forcing consumption of goods discouraged by tax]
- 3) Nonlinear income tax: Under Atkinson–Stiglitz assumption [weak-separability and homogeneity $U^h(v(c_1, \dots, c_K), z)$] \Rightarrow Any distortion (quota, rationing, subsidy) involving c choices not desirable provided $T(z)$ optimal

If good c_k related to leisure/ability [soup kitchen with queuing requirement] then A–S fails and in-kind redistribution possibly desirable even with optimal $T(z)$

IMPOSING ORDEALS ON TRANSFER RECIPIENTS

Many actual transfer programs impose requirements on beneficiaries (complex application, job search, training, or work requirements) and hence have low take-up (often $< 50\%$)

1) If social objective is welfarist and income z observable: ordeals unlikely to be desirable:

Compare ordeal to benefit cut: (a) only benefit cut saves money mechanically, (b) both reduce welfare of recipients, (c) both reduce take-up [good fiscally]

Need implausible sorting effects for ordeal to be desirable [e.g., ordeal does not hurt much deserving beneficiaries and discourages undeserving take-up, conditional on z]

2) If z is not observable then ordeal could be desirable (kitchen soup line)

3) With non-welfarist objective [such as poverty alleviation], ordeal can be desirable [Besley-Coate AER'92]

WORK RESTRICTIONS AND MINIMUM WAGE

Minimum wage creates rationing of low skilled work. Could minimum wage be desirable on top of nonlinear tax/transfer?

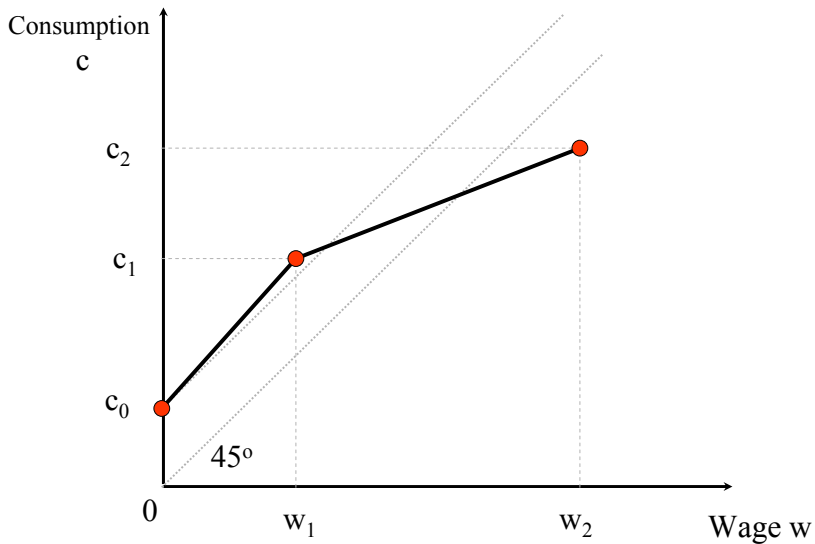
Lee and Saez [pubE'12] use a job choice model [Saez QJE '02 with endogenous wages]. Two results:

1) Minimum wage desirable if (a) govt wants to redistribute to low skilled workers ($g_1 > 1$) and (b) rationing created by min wage is **efficient**

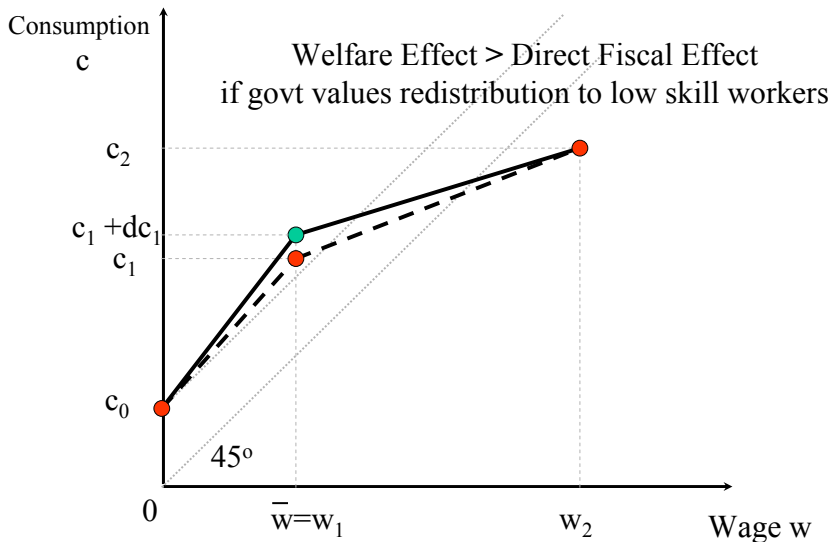
2) If labor supply responses along extensive margin only then minimum wage with positive tax rate on low skilled work $\tau_1 > 0$ is 2nd best Pareto inefficient

⇒ EITC and min wage are complementary

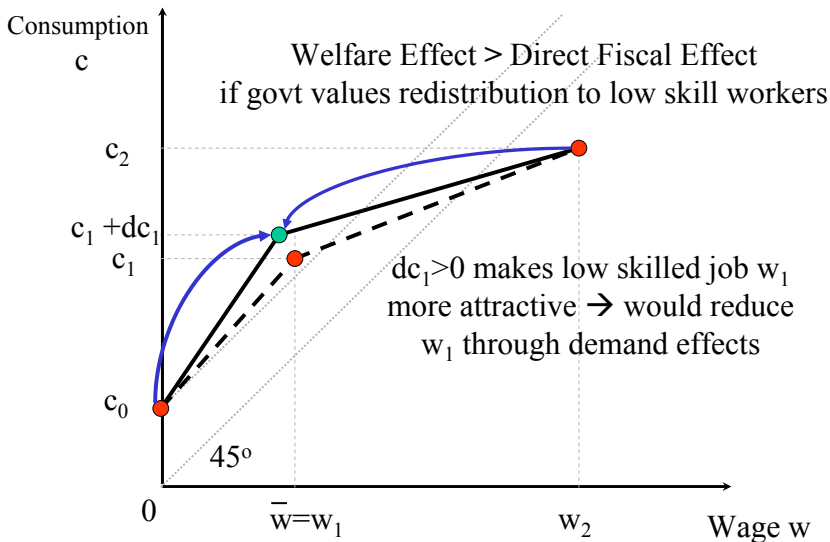
2. Optimal Tax/Transfer System (no min wage)



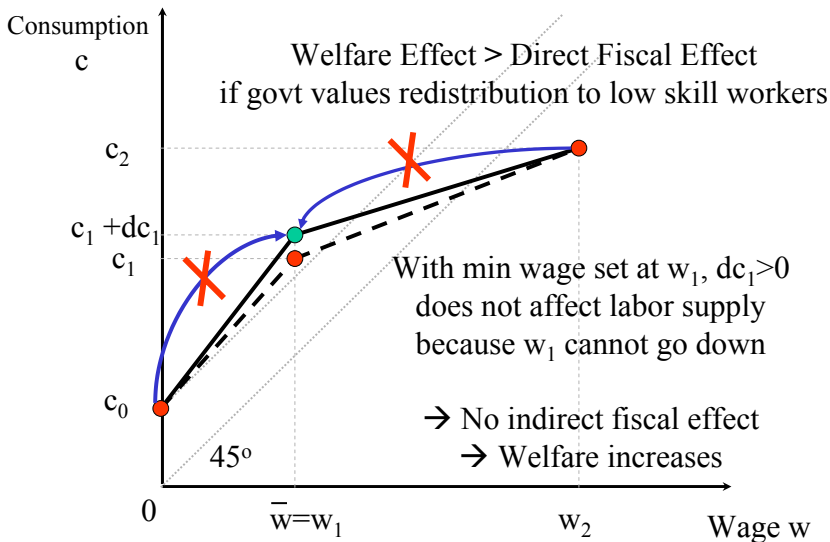
2. Set Min wage $\bar{w}=w_1$ and increase c_1 by dc_1



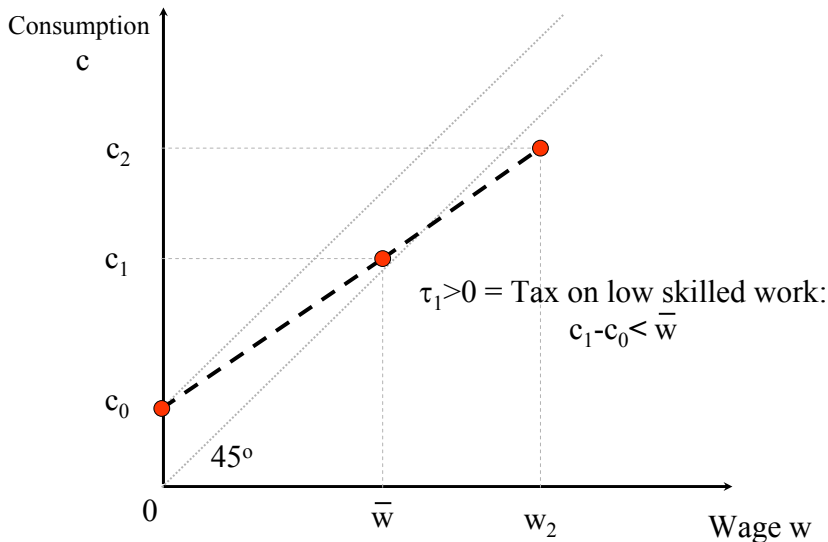
2. Desirability of Min Wage with Optimal Taxes



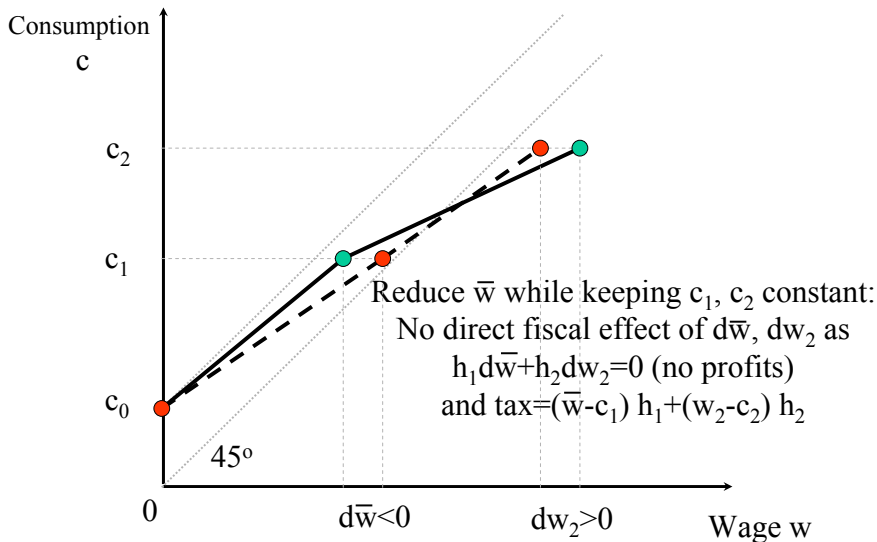
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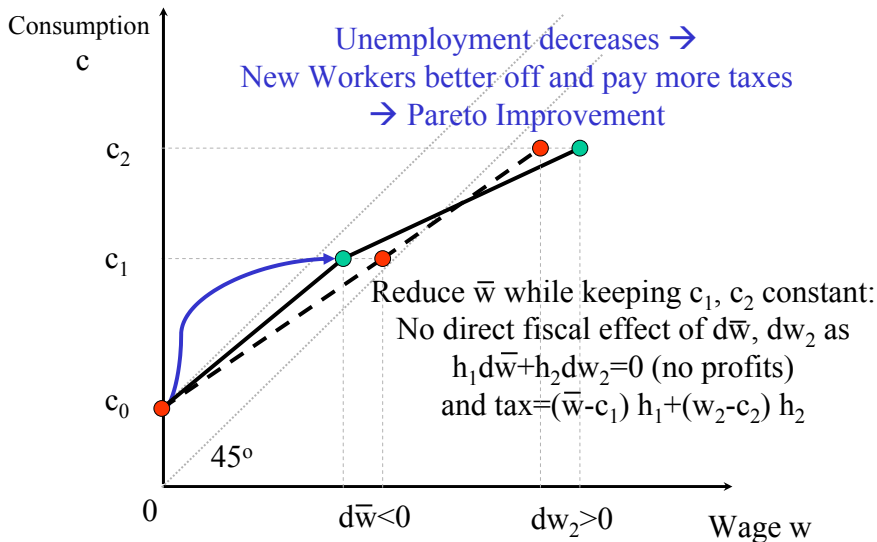
3. Pareto Improving Policy when $\tau_1 > 0$ and min wage binds



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3. Pareto Improving Policy when $\tau_1 > 0$ and min wage binds



FAMILY TAXATION: MARRIAGE AND CHILDREN

Two important issues in policy debate:

- 1) Marriage: What is the optimal taxation of couples vs. singles? Should secondary earnings be treated differently?
- 2) Children: What should be the net transfer (transfer or tax reduction) for family with children (as a function of family income and structure)?

Theoretical literature is not great in part because utilitarian framework is not satisfactory

TAXATION OF COUPLES

1) Economies of scale and sharing in consumption within families \Rightarrow Welfare best measured by family income relative to size [\equiv **normalized income**]

\Rightarrow Taxes/Transfers should be based on normalized family income which can create a marriage penalty / subsidy

Note: Impossible to have a tax/transfer system that

(1) is family income based $T(z^h + z^w)$

(2) has marriage neutrality $T(z^h, z^w) = T(z^h) + T(z^w)$

(3) is progressive (i.e., not strictly linear)

Proof: (1)+(2) $\Rightarrow T(z^h + z^w) = T(z^h) + T(z^w) \Rightarrow T(z) = \tau \cdot z$

TAXATION OF COUPLES

2) If marriage responds to tax/transfer differential \Rightarrow better to reduce marriage penalty and move toward individualized system

Particularly important cohabitation is close substitute to marriage (Scandinavian countries)

3) Labor supply of secondary earners more elastic than labor supply of primary earner \Rightarrow Secondary earnings should be taxed less (standard Ramsey intuition, Boskin-Sheshinski JpubE'83)

But labor supply elasticity differential is decreasing as earnings gender gap decreases [Blau and Kahn JOLE'07]

In OECD countries: income tax systems have become **individual based** but means tested transfers have remained **family based**

TRANSFERS OR TAX CREDITS FOR CHILDREN

1) Children reduce **normalized income** \Rightarrow Transfer for children T_{kid} should be positive

In practice, transfers for children are always positive

2) Should $T_{kid}(z)$ increase with income z ?

Pro: they reduce normalized income most for upper earners [e.g., France computes taxes as $N \cdot T(z/N)$ where N is # family members, kids count as .5 $\Rightarrow T_{kid}(z)$ increases with z].

Cons: lower earners need child transfers most [most OECD countries have means-tested transfers conditional on number of kids $\Rightarrow T_{kid}(z)$ decreases with z , US has $T_{kid}(z)$ inverted U-shape due to EITC and Child Tax Credit]

TRANSFERS OR TAX CREDITS FOR CHILDREN

- 3) Family does not make decisions as a single unit (Chiappori JPE'92): transfers to mothers has bigger effects on children's consumption than transfers to fathers [Lundberg et al. '97, Duflo '03]
- 4) Children create externalities [positive: pay-as-you-go retirement programs, negative: global warming]. If fertility responds to transfers, case for subsidizing/taxing children
- 5) Child care costs are positively related to work \Rightarrow Such costs should be subsidized by Atkinson-Stiglitz [often they are in practice]:

Public pre-kindergarten in Europe is a huge in-work subsidy for mothers \Rightarrow Large effect on mothers' labor force participation (bigger effect than US EITC)

CHILDREN AND LIMITS OF UTILITARIAN MODEL

If fertility decisions unrelated to children tax/transfers \Rightarrow Social marginal utility should be equated across families with 0 children, families with 1 child, etc.

If ability uncorrelated with children \Rightarrow Families with kids will get fully compensating transfers

If ability positively correlated with children \Rightarrow Families with kids might be taxed more heavily [as in the height tax case]

Seems an absurd model to think about transfers for children \Rightarrow Need to come up with more realistic alternative

EITC Behavioral Studies

Strong evidence of response along extensive margin, little evidence of response along intensive margin (except for self-employed) ⇒ Possibly due to lack of understanding of the program

Qualitative surveys show that:

Low income families know about EITC and understand that they get a tax refund if they work

However very few families know whether tax refund ↑ or ↓ with earnings

Such confusion might be good for the government as the EITC induces work along participation margin without discouraging work along intensive margin

Chetty, Friedman, Saez AER'13 EITC heterogeneity

Use US population wide tax return data since 1996 (through IRS special contract)

1) Substantial heterogeneity in fraction of EITC recipients bunching (using self-employment) across geographical areas

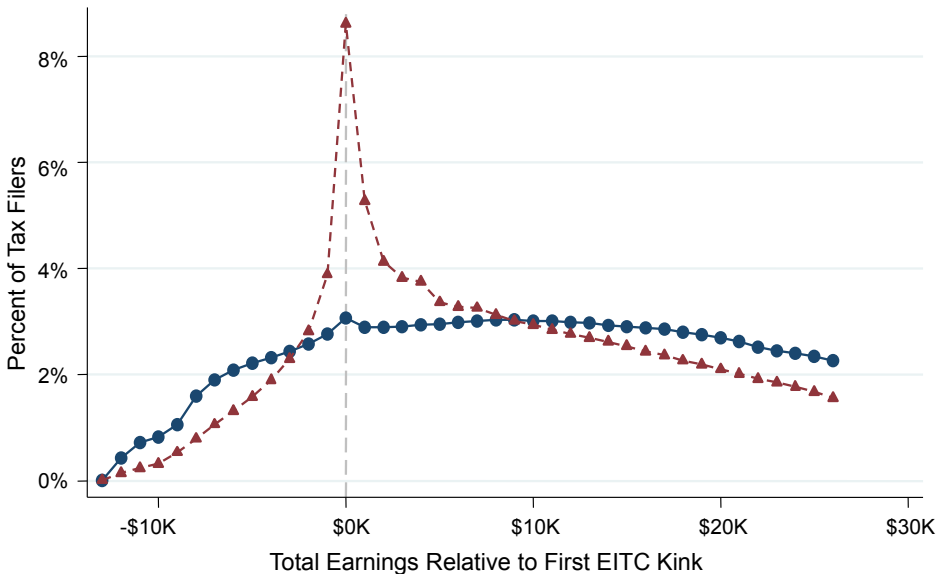
⇒ Information on EITC varies across areas and grows overtime

2) Places with high self-employment EITC bunching display **wage earnings** distribution more concentrated around plateau

3) Omitted variable test: use birth of first child to test causal effect of EITC on wage earnings

⇒ Evidence of wage earnings response to EITC along intensive margin

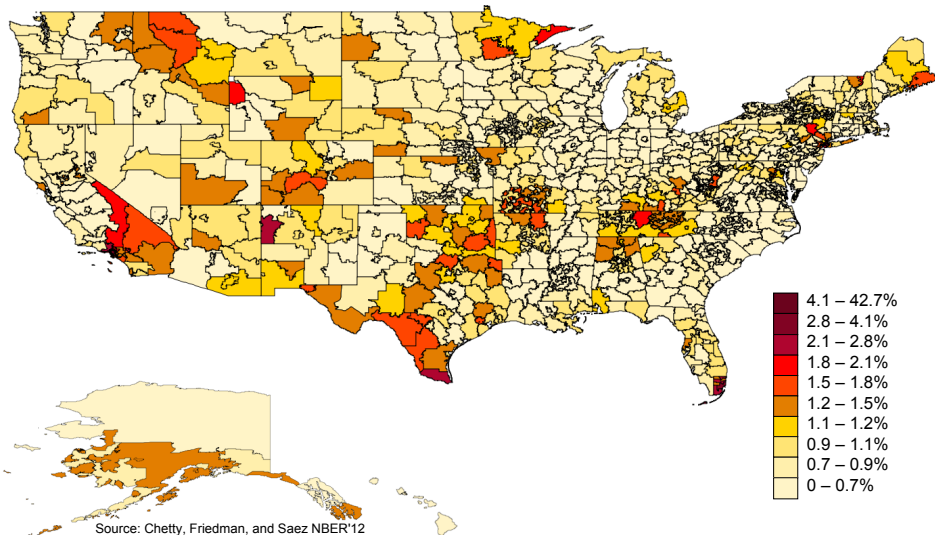
Earnings Distributions in Lowest and Highest Bunching Deciles



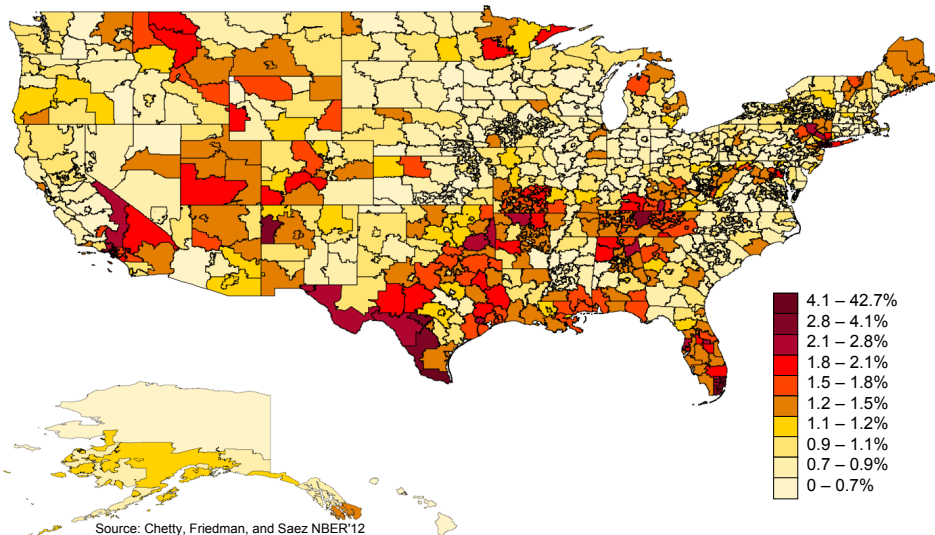
Source: Chetty, Friedman, and Saez NBER '12

—●— Lowest Bunching Decile —▲— Highest Bunching Decile

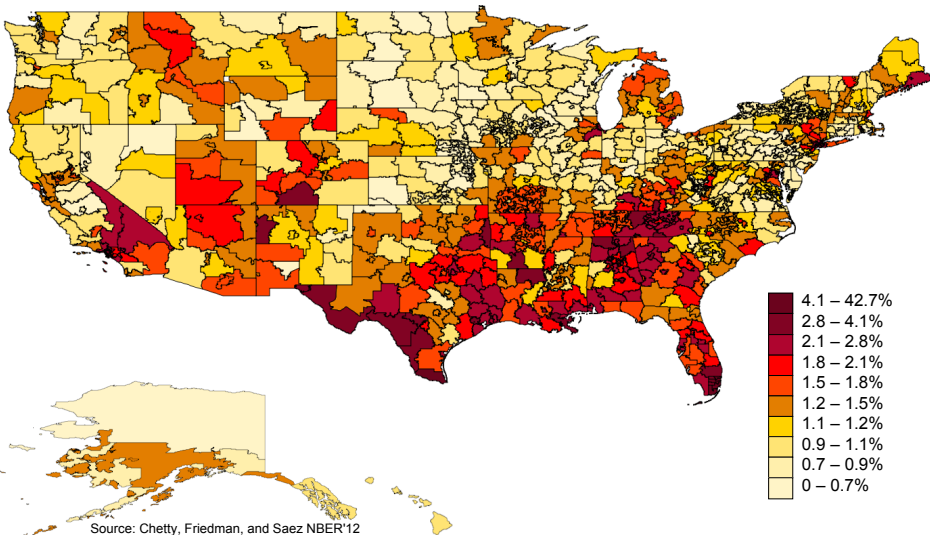
Fraction of Tax Filers Who Report SE Income that Maximizes EITC Refund in 1996



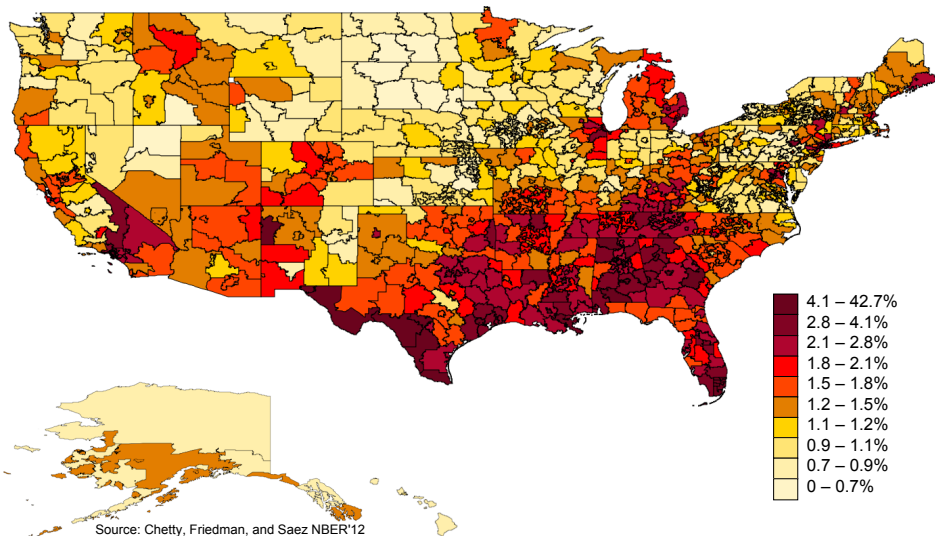
Fraction of Tax Filers Who Report SE Income that Maximizes EITC Refund in 1999



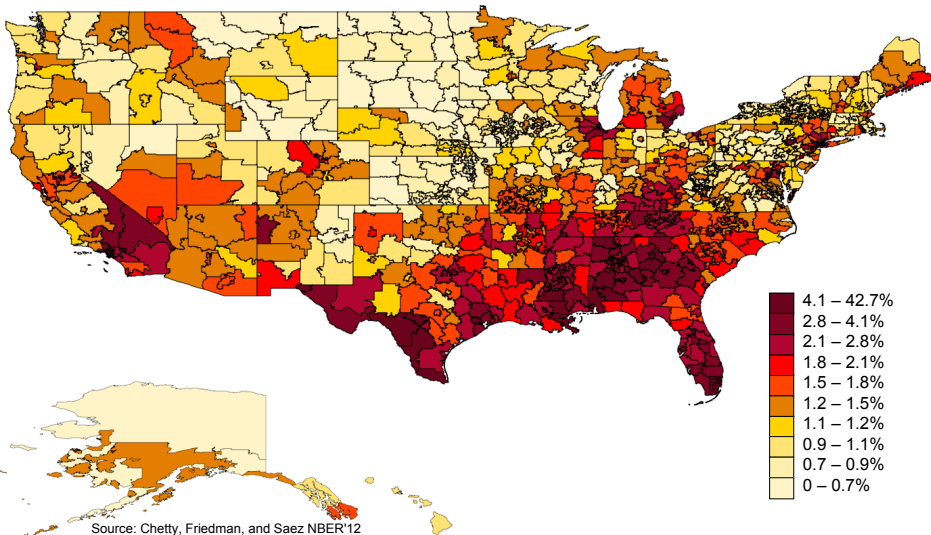
Fraction of Tax Filers Who Report SE Income that Maximizes EITC Refund in 2002



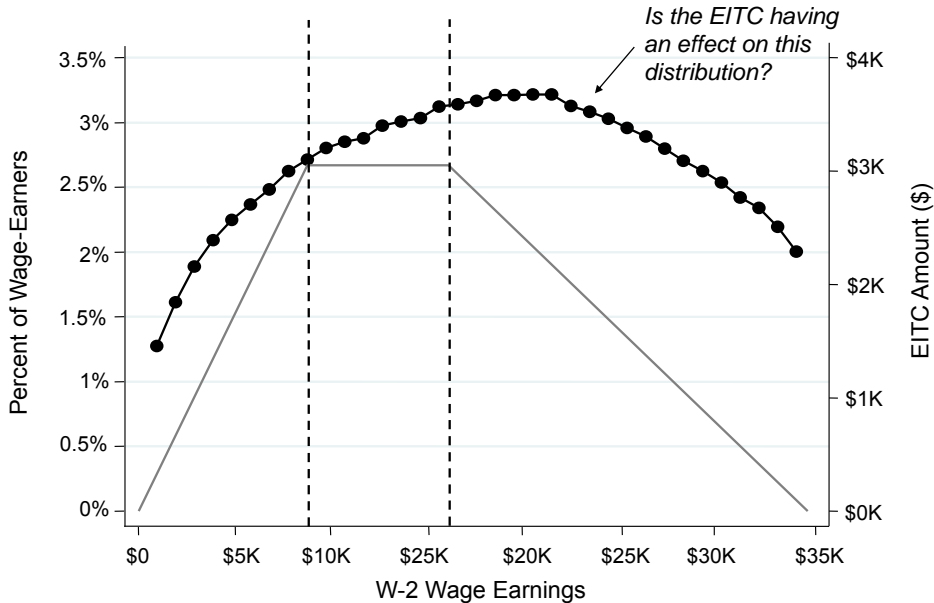
Fraction of Tax Filers Who Report SE Income that Maximizes EITC Refund in 2005



Fraction of Tax Filers Who Report SE Income that Maximizes EITC Refund in 2008

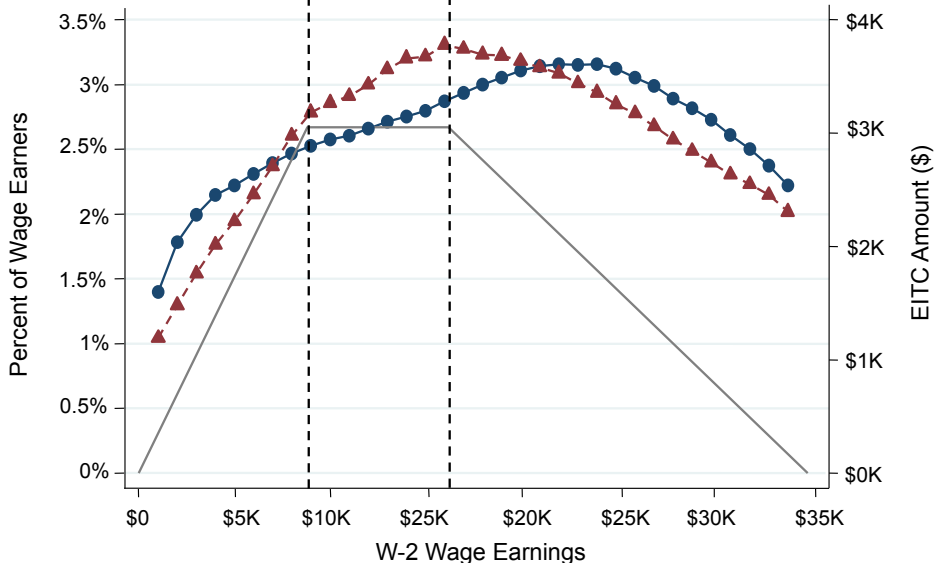


Income Distribution For Single Wage Earners with One Child



Source: Chetty, Friedman, and Saez NBER'12

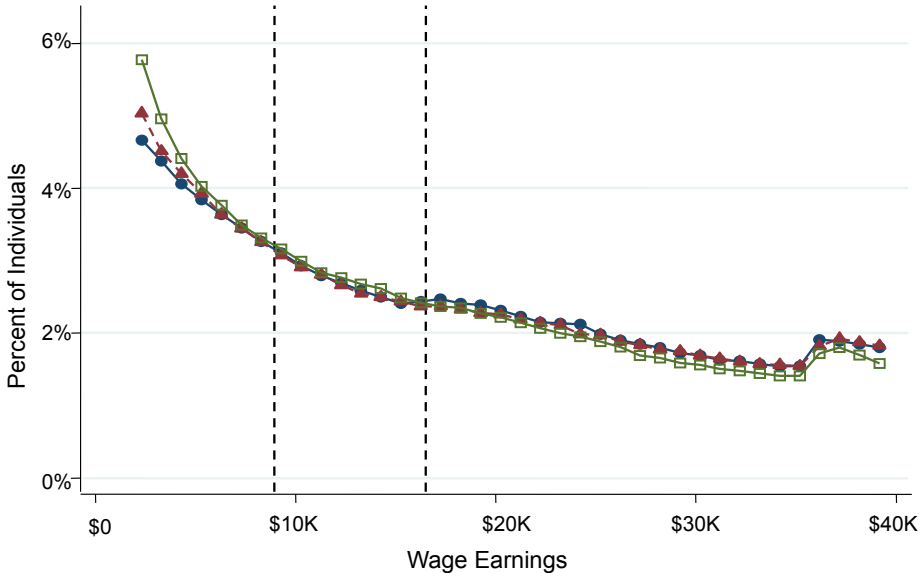
Income Distribution For Single Wage Earners with One Child High vs. Low Bunching Areas



Source: Chetty, Friedman, and Saez NBER'12

—●— Lowest Bunching Decile
 - -▲- - Highest Bunching Decile

Earnings Distribution in the Year Before First Child Birth for Wage Earners



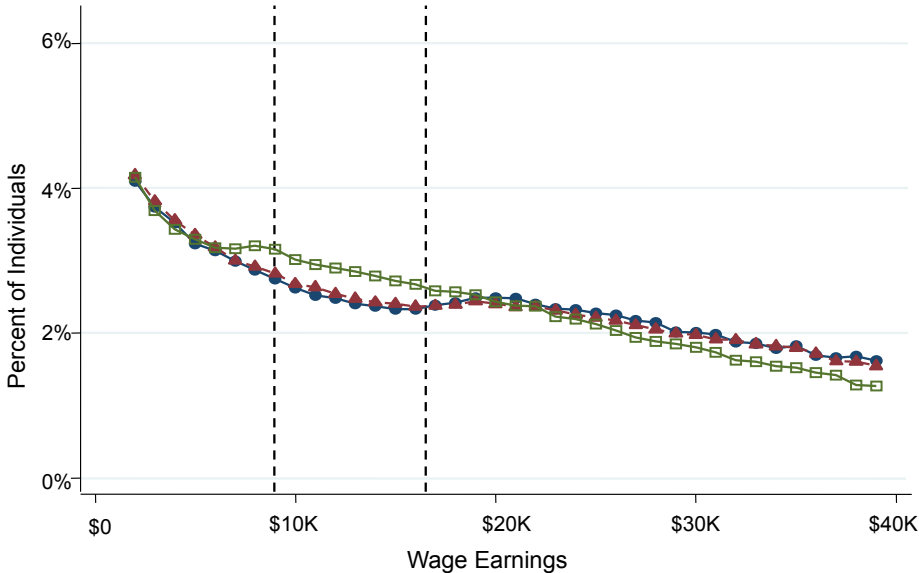
Source: Chetty, Friedman, and Saez NBER'12

Lowest Sharp Bunching Decile

Middle Sharp Bunching Decile

Highest Sharp Bunching Decile

Earnings Distribution in the Year of First Child Birth for Wage Earners



Source: Chetty, Friedman, and Saez NBER'12

● Lowest Sharp Bunching Decile ▲ Middle Sharp Bunching Decile □ Highest Sharp Bunching Decile

IMPLICATIONS OF ROLE OF INFORMATION

Empirical work:

Information should be a key explanatory variable in estimation of behavioral responses to govt programs

When doing empirical project, always ask the question: did people affected understand incentives?

Cannot identify structural parameters of preferences without modeling information and salience

Normative analysis:

Information is a powerful and inexpensive policy tool to affect behavior

Should be incorporated into optimal policy design problems

Culture of Welfare across Generations

Conservative concern that welfare promotes a culture of dependency: kids growing up in welfare supported families are more likely to use welfare

Correlation in welfare use across generations is obviously not necessarily causal

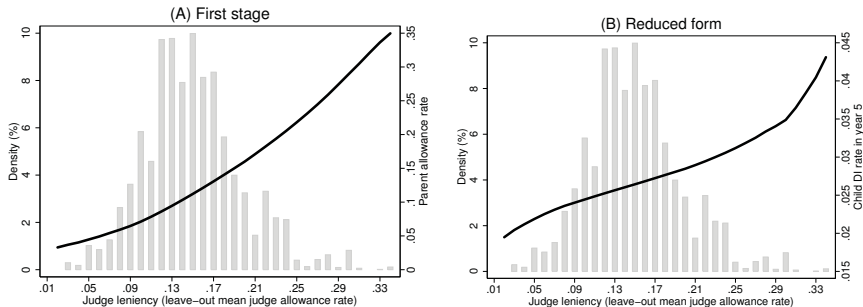
Dahl, Kostol, Mogstad QJE'2014 analyze causal effect of parental use of Disability Insurance (DI) on children use (as adults) of DI in Norway

Identification uses random assignment of judges to denied DI applicants who appeal [some judges are severe, some lenient]

Find evidence of causality: parents on DI increases odds of kids on DI over next 5 years by 6 percentage points

Mechanism seems to be learning about DI availability rather than reduced stigma from using DI [because no effect on other welfare programs use]

Figure 3: Effect of Judge Leniency on Parents (First Stage) and Children (Reduced Form).



Notes: Baseline sample, consisting of parents who appeal an initially denied DI claim during the period 1989-2005 (see Section 3 for further details). There are 14,893 individual observations and 79 different judges. Panel (A): Solid line is a local linear regression of parental DI allowance on judge leniency. Panel (B): Solid line is a local linear regression of child DI receipt on their parent's judge leniency measure. All regressions include fully interacted year and department dummies. The histogram of judge leniency is shown in the background of both figures (top and bottom 0.5% excluded from the graph).

Source: Dahl, Kostol, Mogstad (2013)

REFERENCES

All papers referenced in this lecture were cited in the Reading Lists of Lectures 1-5.