Using Consumption Data to Derive Optimal Income and Capital Tax Rates*

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*Disclaimer: The views expressed herein are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of Chicago or the Federal Reserve System.

Introduction: A Puzzle

Workhorse (static) theory of optimal income taxation: Mirrlees, Saez (2001)

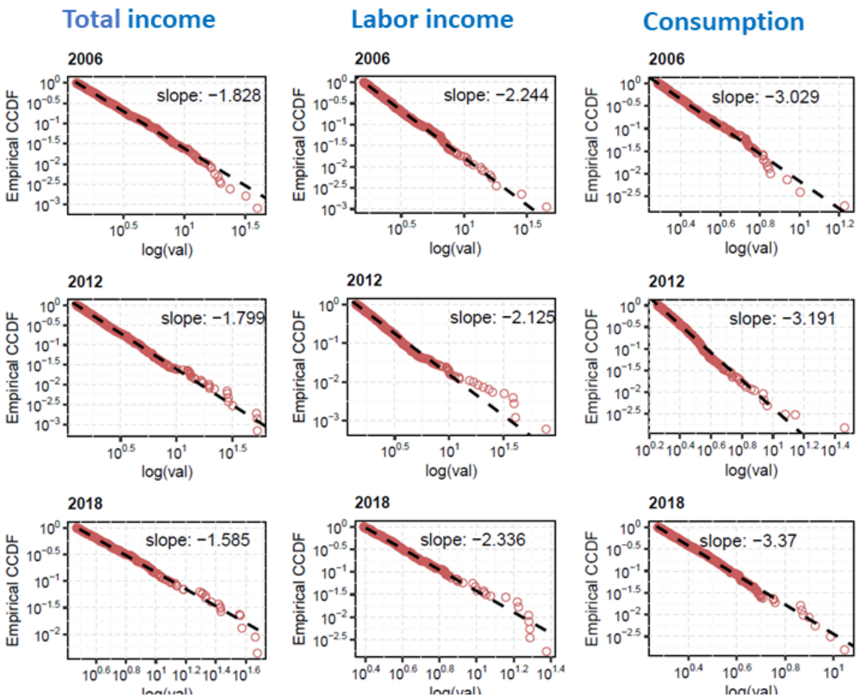
$\hookrightarrow$ Optimal income tax rate in terms of income data: Pareto coefficient, elasticities

$$\tau_Y^{\text{Saez}} = \frac{1}{1 - \zeta_Y^{\text{inc}} + \rho_Y \zeta_Y^{\text{sub}}}$$

Alternative data source can (maybe should) be used to discipline the model: consumption

$\hookrightarrow$ Issue: empirically, consumption has a much thinner tail than income: $\rho_Y < \rho_C$

Should we use income or consumption data for optimal income taxes?


Total income
Labor income
Consumption
2006
slope: −1.828
slope: −2.244
slope: −3.029
2012
slope: −1.799
slope: −2.125
slope: −3.191
2018
slope: −1.585
slope: −2.336
slope: −3.37
Empirical CCDF
log(val)

Roadmap

This paper: Two-period generalization connects Saez (2001) with Atkinson-Stiglitz (1976)

Theorem 1: Top tax rates in terms of income and consumption-based sufficient statistics

Theorem 2: $\tau_Y \lesseqgtr \tau_Y^{\text{Saez}}$ if & only if $\tau_S \gtreqless 0$. Saez and A-S are two sides of the same coin!

Consumption data are critical to identify departure from this joint benchmark at the top

Quantitatively: optimal to shift part of the tax burden from labor income to savings

Policy Implications

Recommendation 1: Very high earnings should be subject to rising marginal rates and higher rates than current U.S. policy for top earners.

For the U.S. economy, the current top income marginal tax rate on earnings is about 42.5 percent,[3] combining the top federal marginal income tax bracket of 35 percent with the Medicare tax and average state taxes on income and sales.[4] As shown in Saez (2001), the optimal top marginal tax rate is straightforward to derive.

Recommendation 3: Capital income should be taxed.

While the Atkinson–Stiglitz theorem requires an absence of a systematic pattern between earnings abilities and savings propensities, there appears to be a positive correlation between labor skill level (wage rate) and savings propensities. With this plausible assumption, implying that those with higher earnings abilities save more out of any given income, then taxation of saving helps with the equity–efficiency tradeoff by being a source of indirect evidence about who has higher earnings abilities and thus contributes to more efficient redistributive taxation (Saez, 2002b).[18]

Model

Agents indexed by rank $r \in [0, 1]$, heterogeneous preferences $U(C, Y; r) + V(S; r)$

Single-Crossing: MRS $-U_Y / U_C$ strictly decreasing in r, V_S / U_C weakly monotonic in r

Planner maximizes social welfare subject to budget balance and incentive compatibility

Theorem 1. Optimal top tax rates τ_Y, τ_S in terms of $\zeta_Y^{\text{sub,inc}}$, $\zeta_C^{\text{sub,inc}}$, $\zeta_S^{\text{sub,inc}}$ and ρ_Y, ρ_C, ρ_S

But: budget constraint $\Rightarrow$ income, consumption, and savings data are *not* independent!

A Tale of Three Tails

Case 1: Consumption share of income goes to 1, or $\rho_Y = \rho_C < \rho_S$ and $\zeta_Y^{\text{sub,inc}} = \zeta_C^{\text{sub,inc}}$

Then $\tau_Y = \tau_Y^{\text{Saez}}$: The model converges to the standard static setting in (Y, C) at the top

Consumption data are redundant: top tax rates identified from income and savings data

Case 2: Consumption and saving shares remain interior at the top, or $\rho_Y = \rho_C = \rho_S$

Consumption and savings data are equally informative for the optimal top tax rates

Case 3: Consumption share of income goes to 0, or $\rho_Y = \rho_S < \rho_C$ and $\zeta_Y^{\text{sub,inc}} = \zeta_S^{\text{sub,inc}}$

Savings data are redundant: top tax rates identified from income and consumption data

Income vs. Savings Taxation: A Tradeoff

Theorem 2. If the consumption share does *not* converge to 1 at the top (**Cases 2 or 3**),

$$\tau_Y \lesseqqgtr \tau_Y^{Saez} \quad \text{if and only if} \quad \tau_S \gtreqqless 0$$

Intuition: (i) Choose labor supply Y and after-tax earnings M; (ii) Allocate M into C and S.

τ_Y^{Saez} holds $\iff$ stage (i) reduces to a static problem $\iff$ $\text{MRS}_{C,S}$ is rank-independent

Case 3: Consumption vanishes and model converges to static setting in (Y, S) at the top

$$1 - \tau_Y^{\text{Saez}} = \frac{1 - \tau_Y}{1 + \tau_S}$$

Hence: Income (resp., consumption) data identify combined wedge (resp., decomposition)

Sufficient-Statistic Formulas

Corollary to Theorem 1. In the empirically relevant case 3 (assuming $\zeta_{CY} = 0$):

$$\tau_Y = \tau_Y^{\text{Saez}} \left[1 - \zeta_Y^{\text{inc}} \left(1 - \frac{\rho_Y \zeta_Y^{\text{sub}}}{\rho_C \zeta_C^{\text{sub}}} \right) \right] \qquad \text{and} \qquad \tau_S = \frac{\zeta_Y^{\text{inc}}}{\rho_Y \zeta_Y^{\text{sub}} - \zeta_Y^{\text{inc}}} \left(1 - \frac{\rho_Y \zeta_Y^{\text{sub}}}{\rho_C \zeta_C^{\text{sub}}} \right)$$

Hence: $\tau_Y < \tau_Y^{\text{Saez}}$ and $\tau_S > 0$ if and only if $\frac{\rho_C}{\rho_Y} > \frac{\zeta_Y^{\text{sub}}}{\zeta_C^{\text{sub}}}$ or equivalently $\frac{\rho_C}{\rho_Y} \text{EIS} > \frac{\zeta_Y^{\text{sub}}}{\zeta_Y^{\text{inc}}}$

Large ρ_C / ρ_Y indicates small gains of taxing income and saving taste increasing with rank

Quantitatively: $\rho_C / \rho_Y = 1.5$ and $\zeta_Y^{\text{sub}} / \zeta_Y^{\text{inc}} = 1.3$ imply a threshold $\text{EIS} = 0.9$

Extensions

Heterogeneous returns to savings

General preferences over N goods

Taxation over the life-cycle

Stochastic shocks and inverse Euler equation

Heterogeneous initial capital

Conclusion

Significantly lower consumption inequality than income inequality implies both:

1. Smaller gains from redistributing labor income than in Saez (2001) $\Rightarrow \tau_Y < \tau_Y^{\text{Saez}}$

2. Taste for savings (relative to consumption) rises with labor productivity $\Rightarrow \tau_S > 0$

More generally: tradeoff between labor (Saez '01) and savings (Atkinson-Stiglitz '76) taxes

Income data identify the combined wedge between income and savings taxes

Consumption data identify the optimal breakdown between the two tax rates