Tax Evasion and Capital Taxation

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Introduction

Wealth inequality evoking calls to tax capital more heavily

- Amplified by COVID-19 pandemic, which dramatically increased inequality but also created urgent need for new tax revenues to finance stimulus

Echoed by concerns that the rich would respond by concealing wealth offshore

- 4% of aggregate U.S. wealth held offshore under current tax code, reduces capital income tax revenues by $35 billion per year (Zucman, 2015)

This paper:

- Would raising capital income taxes or taxing wealth significantly increase tax evasion?
- Implications for public finances + inequality? For investment + wages in equilibrium?
- Implications of evasion for design of optimal tax systems?

What we do

Develop dynamic theory of wealth concealment + tax evasion

- Concealing assets in tax shelter reduces reported capital income + wealth
- Maintaining shelter + moving wealth into it is costly, only ultra-wealthy choose to conceal

Integrate into OLG model calibrated to represent US economy under current tax code

- Rate-of-return heterogeneity generates wealth concentration, distinction between capital income + wealth taxes (Cagetti-DeNardi, 2006, 2009; Guvenen et al, 2019)
- Concealment costs calibrated to match micro + macro facts about offshore tax evasion

Simulate consequences of capital income tax reform + wealth taxation

- Measure effects of evasion by comparing model to no-evasion counterfactual
- Today: Laffer curves, impact on inequality, optimal policies

What we find

Capital income tax reform

- No evasion: revenues would be maximized by ↑ tax rate by 30pp
- With evasion: current tax rate at peak of Laffer curve; ↑ or ↓ taxes would ↓ revenues
- ↑ taxes would ↓ reported wealth inequality but ↑ actual inequality

Flat wealth taxes

- No evasion: revenue-maximizing tax = 6.3%, optimal tax = 0.5%
- With evasion: revenue-maximizing tax = 2.7%, optimal tax = 0%
- Reported wealth inequality ↓ but actual inequality ↑

Progressive wealth taxes (rate + exemption threshold)

- No evasion: benefit virtually all households, optimal tax = 4.2% above $5M
- With evasion: hurt virtually all households, no welfare-improving tax
- Actual inequality ↓, but much less than reported inequality

Model

Overview

OLG households heterogeneous in labor productivity, entrepreneurial opportunity, entrepreneurial skill

Representative firm produces output using labor, homogeneous "corporate" capital, differentiated capital varieties purchased from entrepreneurs' businesses

Government pays SS benefits, lump-sum transfers financed by taxes on income, consumption, wealth

Tax evasion by concealing wealth in tax shelters

- Reported capital income reduced by amount transferred into shelter
- All wealth transferred in the past hidden from wealth taxation
- Fixed admin cost + proportional transfer cost; also reduces entrepreneurial collateral

Tax evasion in brief

Households have access to two forms of wealth

- Reported: a_r
- Hidden: a_h

Hidden wealth protected from wealth taxation

- Reported wealth tax liability = $\tau_a a_r$ regardless of a_h

Hiding wealth reduces capital income taxes

- Reported capital income tax liability = $\tau_k \max[\pi - \max(a_h' - a_h, 0), 0]$

Hiding wealth is costly

- Fixed cost θ + proportional cost $\eta \Rightarrow$ total cost = $\mathbb{1}_{\{a_h' > 0\}}\theta + \eta|a_h' - a_h|$
- Fraction $\chi < 1$ can be collateralized by entrepreneurs

Households: demographics + preferences

Overlapping generations of finitely-lived households

- Maximum lifespan of J years, survival probability ϕ_j decreasing with age
- Decedents replaced by newborns who inherit parents' wealth and (partially) abilities
- Mandatory retirement from labor market at age R

Preferences over consumption + leisure

$$U = \mathbb{E}\left\{\sum_{j=0}^{J} \beta^j \phi_j \frac{\left[c_j^{\mu}(1-\ell_j)^{1-\mu}\right]^{1-\sigma}}{1-\sigma}\right\}$$

- Do not care about descendents' utility $\Rightarrow$ bequests are accidental
- Tax evasion + estate taxation in model with intentional bequests next on agenda!

Households: labor market

Labor productivity: $\zeta_j \times e$

- ζ_j: deterministic life-cycle component
- e: persistent over life cycle + across generations

Workers ($j < R$):

- Choose labor supply $\ell \in [0, 1]$
- Earn labor income $W\zeta_j e\ell$

Retirees ($j \geq R$):

- Supply $\ell = 0$ units of labor
- Receive social security benefits $B(e)$ that depend on labor productivity at retirement

Households: entrepreneurship (Guvenen et al., 2019)

Entrepreneurial productivity: $\iota \times z$

- $\iota \in \{0, 1\}$: opportunity shock, Markov over life cycle
- z: skill, fixed over life cycle + persistent across generations

Produce $q = \iota z k$ units of differentiated good using k units of capital, sell at price $p(q)$

Reportable capital income:

$$\pi = \max_k \ \{p(\iota z k) \times \iota z k - (R + \delta)k + R a_r\} \quad \text{s.t.} \quad k - a_r \leq \lambda(z)(a_r + \chi a_h)$$

- External financing limited to multiple $\lambda(z)$ of collateral $a_r + \chi a_h$
- Self-financing restricted to reported wealth; $a_r - k$ lent to other businesses
- Concealed wealth also earns interest; total capital income = $\pi + R a_h$

Households: dynamic program

$$V_j(e,z,\iota,a_r,a_h) = \max_{c,\ell,a_r',a_h'} \left\{ u(c,1-\ell) + \beta \frac{\phi_{j+1}}{\phi_j} \mathbb{E}\left[V_{j+1}(e',z,\iota',a_r',a_h') | e,\iota \right] \right\}$$

subject to

$$c, a_r', a_h' \geq 0$$
$$\ell \in [0, \mathbb{1}_{\{j<R\}}]$$
$$c + a_r' + a_h' + \text{taxes} + \text{evasion cost} = \text{income} + a_h + a_r + T$$

$$\text{taxes} = \tau_c c + \tau_k \max\left[\pi - \max(a_h' - a_h, 0), 0\right] + \tau_a a_r + \tau_\ell W \zeta_j e \ell$$
$$\text{evasion cost} = \mathbb{1}_{\{a_h'>0\}} \theta + \eta \| a_h' - a_h \|$$
$$\text{income} = \mathbb{1}_{\{j<R\}} W \zeta_j e \ell + \mathbb{1}_{\{j \geq R\}} B(e) + \pi + T$$

Government

Tax instruments

- τ_ℓ: labor income
- τ_k: capital income
- τ_c: consumption
- τ_a: wealth

Expenditures

- G: public consumption, "thrown in the ocean"
- $\sum_{j=R}^{J} \int B(e)$: social security benefits
- T: lump-sum transfers to all households

Budget constraint

$$G + \sum_{j=0}^{J} \int \left(T + \mathbb{1}_{\{j \geq R\}} B(e) \right) d\Psi_j = \sum_{j=0}^{J} \int \left\{ \tau_c c + \tau_k \max \left[\pi - \max(a'_h - a_h, 0), 0 \right] + \tau_a a_r + \tau_\ell W \zeta_j e \ell \tau \right\} d\Psi_j$$

- Effects of changing τ_k / τ_a offset by changes in $\pi / a_r / \ell / c$ ("dynamic scoring")
- Changing τ_k / τ_a also causes households to change evasion behavior

Aggregation

Production technology:

$$Y = K^{\gamma} Q^{\alpha} L^{1-\alpha-\gamma}, \quad L = \sum_{j=0}^{R} \int \zeta_j e \ell \, d\Psi_j, \quad Q = \left(\sum_{j=0}^{J} \int q^{\nu} \, d\Psi_j \right)^{1/\nu}$$

- Q: bundle of entrepreneurial goods w/ standard CES demand curve $q(p)$
- K: homogeneous "corporate" capital rented directly from households
  - Corporations less financially constrained than private businesses (Boar + Midrigran, 2020)

Aggregate capital demand = aggregate supply of reported + hidden wealth

$$K + \sum_{j=0}^{J} \int k \, d\Psi_j = \sum_{j=0}^{J} \int (a_r + a_h) \, d\Psi_j$$

- Offshore wealth often ultimately reinvested back in US (Zucman, 2015)
- Similar results in small open economy model

Calibration

Overview

Approach: calibrate parameters so that stationary equilibrium represents US economy under current tax code

External calibration: assign standard parameter values and estimates from literature

Internal calibration: jointly choose key parameters so that model matches wealth inequality, micro + macro facts about tax evasion

Validation: compare non-targeted moments in model to data

External calibration

Demographics from US Census, $j = 0$ corresponds to age 25

Depreciation, labor + capital shares standard

- Corporate capital share = 7.1% (corporate income/GDP in NIPA tables)

Labor productivity distribution, taxes from Guvenen et al. (2019)

Intergenerational persistence of entrepreneurial skill = 0.1 (Fagereng et al., 2018)

Entrepreneurial opportunity process chosen to match hump shape in share of households with business income over life cycle

- Pr(opportunity at birth) = 8.7% (SCF 2016)
- Pr(lose opportunity) = 8.1% (Clementi and Palazzo)
- Pr(regain opportunity) = 2.3% (SCF 2016)

Internally calibrated parameters

Parameter	Description	Value	Target	Source
σ_z	Entr. ability std. dev.	0.445	Reported top 0.1% share = 20%	Saez + Zucman (2019)
β	Discount factor	0.975	Reported wealth/GDP = 3	Guvenen et al. (2019)
μ	Consumption share	0.432	Avg. labor supply = 40%	Guvenen et al. (2019)
λ	Collateral constraint	2.116	Debt/GDP = 1.29	Guvenen et al. (2019)
θ	Fixed evasion cost ($\times$ avg. wage)	1.027	HH with offshore wealth = 0.05%	Guyton et al. (2020)
η	Proportional evasion cost	0.106	Hidden/total wealth = 4%	Zucman (2015)
χ	Fraction of a_h collateralizable	0.320	Tax evasion by top 0.01% = 6%	Guyton et al. (2020)

- Target top 0.1% share of reported wealth; actual wealth more unequally distributed since only ultra-rich conceal
- Evasion would disappear if $\tau_k < \eta = 10.6\%$, but even small τ_a causes large $\uparrow$ in evasion because wealth concealed today is sheltered from taxation forever
- Less than $\frac{1}{3}$ of a_h collateralizable: large opportunity cost of evasion for high-skill entrepreneurs

Validation: untargeted moments related to offshore evasion

Statistic	Model	Data	Source
Agg. tax evasion (% GDP)	0.27	0.2	Zucman (2015)
Pct. evaders by income group			
90%–95%	0.00	0.2	Guyton et al. (2020)
95%–99%	0.03	0.4	
99%–99.5%	0.05	1.0	
99.5%–99.9%	6.25	1.5	
99.9%–99.99%	17.14	3.0	
Top 0.01%	18.82	7.0	
Tax evasion by income group (% taxes owed)			
90%–95%	0.00	0.2	Guyton et al. (2020)
95%–99%	0.01	0.4	
99%–99.5%	0.01	0.9	
99.5%–99.9%	5.39	1.7	
99.9%–99.99%	7.96	3.2	
Concealment by wealth group (% evaders' wealth)			
99%–99.5%	23.7	31.0–42.3	Alstadsæter et al. (2018)
99.5%–99.9%	22.8	30.9–46.5	
99.9%–99.95%	18.0	31.3–36.2	
99.95%–99.99%	23.4	32.8–36.6	
Top 0.01%	47.6	26.3–38.6	

Model consistent with

- Aggregate lost capital income tax revenues
- Extensive margin: likelihood of concealing assets offshore by income
- Intensive margin: fraction of taxes evaded by income
- Intensive margin: fraction of assets held offshore by wealth (evaders only)

Quantitative analysis

Overview

Analyze implications of tax evasion for

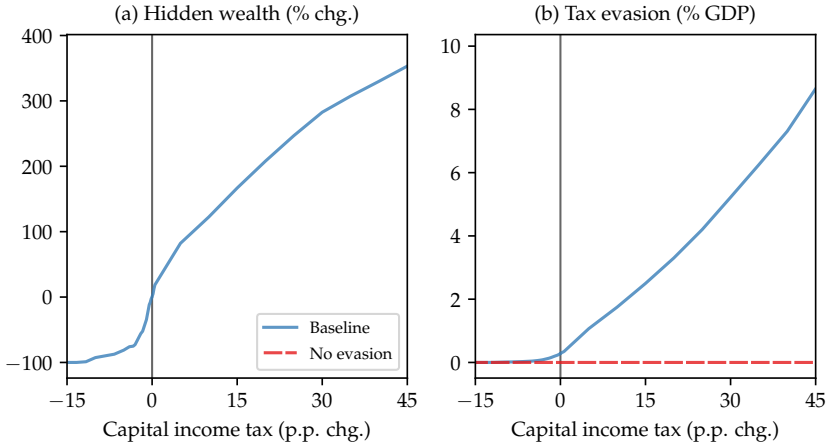
- Capital income tax reform
- Flat taxes on all households' wealth
- Progressive wealth taxes that exempt most households' wealth

Approach: compare baseline model to no-evasion counterfactual

- Counterfactual calibrated to match same targets (aside from those related to evasion)
- Revenues used to finance lump-sum transfers, holding other policy parameters fixed
- Long-run steady state analysis; transitions do not alter welfare implications

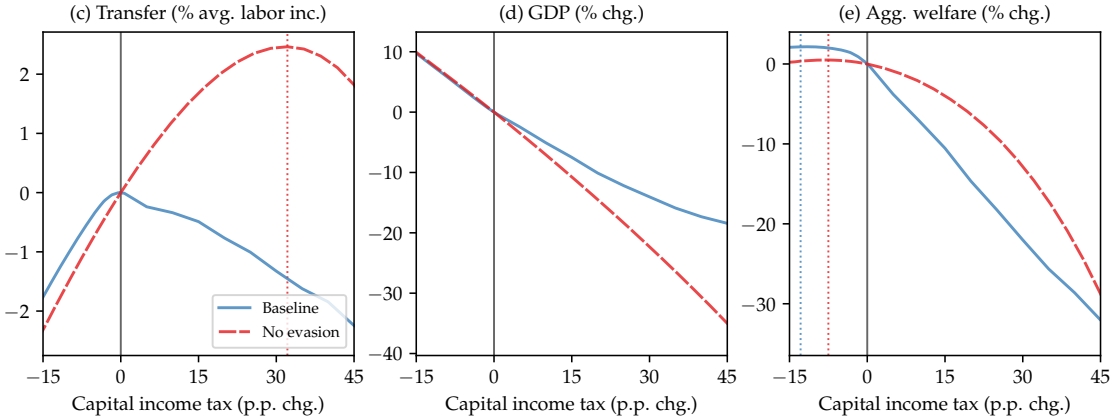
Validation: compare to empirical estimates of elasticity of taxable income/wealth

Capital income tax reform: tax evasion



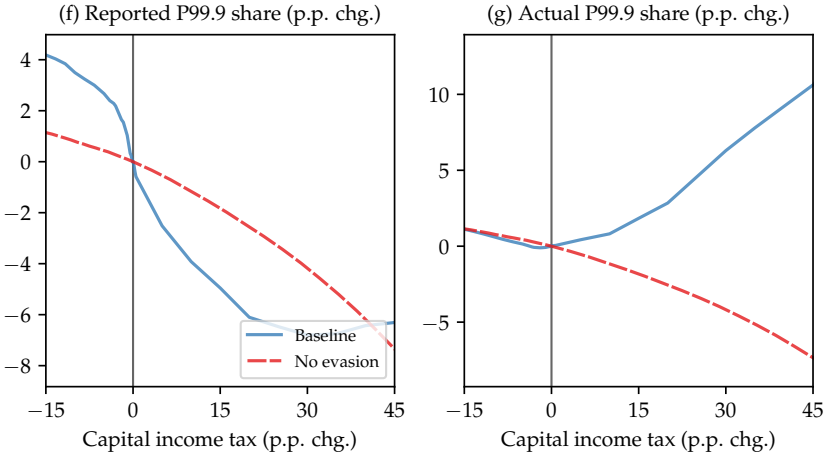
- 10p.p. ↑ in τ_k would double hidden wealth, ↑ tax evasion from 0.25% to 2.5% of GDP

Capital income tax reform: public finances, macro effects, welfare



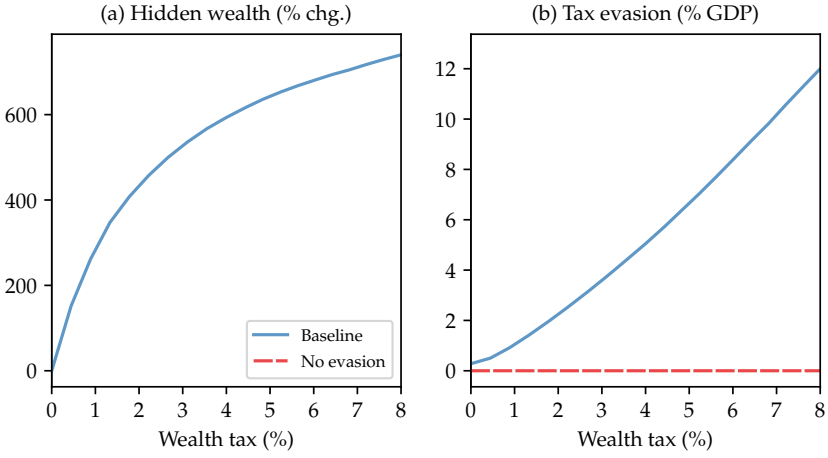
- No evasion: maximize revenues by $\uparrow \tau_k$ by 32pp
- Baseline: currently at peak of Laffer curve, even though $\uparrow \tau_k$ has smaller macro impact
- Optimal to reduce τ_k regardless of evasion

Capital income tax reform: wealth inequality



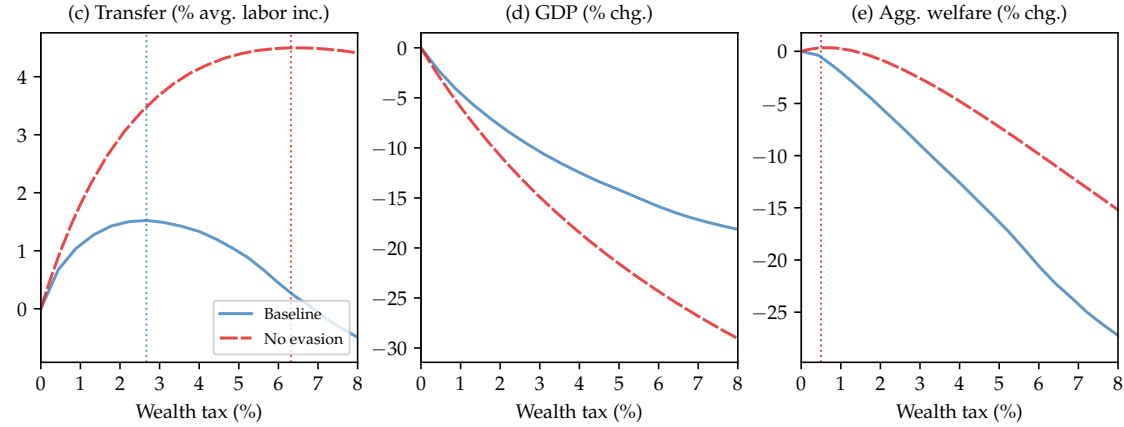
- Increasing τ_k reduces reported inequality, but raises actual inequality

Flat wealth taxation: tax evasion



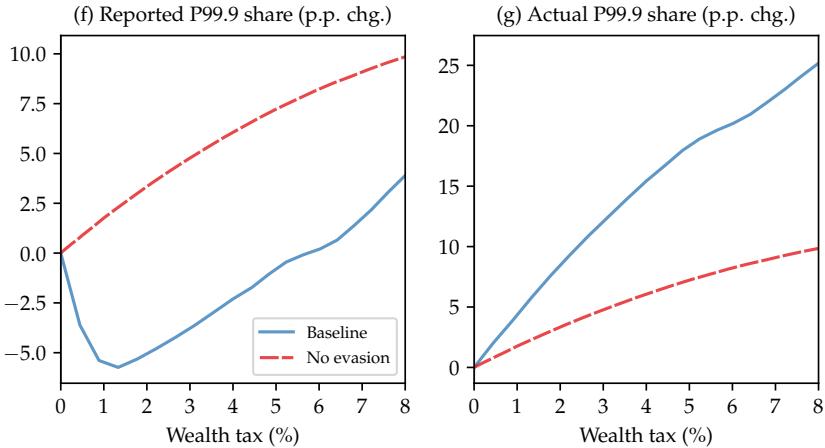
- Even small wealth taxes cause dramatic increase in hidden wealth
- Capital income tax evasion ↑ even though τ_k doesn't change; triples under revenue-maximizing τ_a

Flat wealth taxation: public finances, macro effects, welfare



- No evasion: revenues maximized at $\tau_a = 6.3\%$, optimal $\tau_a = 0.5\%$
- Baseline: revenues maximized at $\tau_a = 2.3\%$, taxing wealth at all $\downarrow$ welfare
- Even small wealth taxes have large macro effects

Flat wealth taxation: wealth inequality



- No evasion: inequality ↑ as low-return households hurt more (Guvenen et al., 2019)
- Baseline: reported inequality ↓ (except for high τ_a), but actual inequality ↑

Progressive wealth taxation

	Warren		Sanders		Optimal	
Variable	Baseline	No evasion	Baseline	No evasion	Baseline	No evasion
Base wealth tax rate (%)	2.00	2.00	1.00	1.00	–	4.21
Wealth tax threshold ($M)	50	50	32	32	–	5.1
Hidden wealth (% chg.)	105.76	–	119.65	–	–	–
τ_d evasion (% GDP)	0.44	–	0.56	–	–	–
τ_k evasion (% GDP)	0.54	–	0.59	–	–	–
Transfer (% avg. wage)	-0.13	0.33	-0.15	0.39	–	1.14
GDP (% chg.)	-0.58	-1.34	-0.71	-1.63	–	-5.10
Welfare (% CE)	-1.01	0.62	-1.20	0.70	–	1.77
Approval rate (%)	6.30	98.30	6.37	97.63	–	95.05
P99.9 share, reported (p.p. chg.)	-5.20	-2.74	-6.01	-3.29	–	-5.41
P99.9 share, actual (p.p. chg.)	-1.32	-2.74	-1.57	-3.29	–	-5.41

- No evasion: widespread welfare gains, optimal policy more aggressive than S+W
- Baseline: widespread welfare losses because revenues decline
- Actual inequality ↓, but much less than reported inequality

Comparison with elasticities of taxable income from the literature

Empirical literature uses elasticity of reported taxable income/wealth to capture changes in tax revenue caused by behavioral responses to tax reforms

$$ETI = \frac{\Delta \log Y}{\Delta \log(1-\tau)}$$

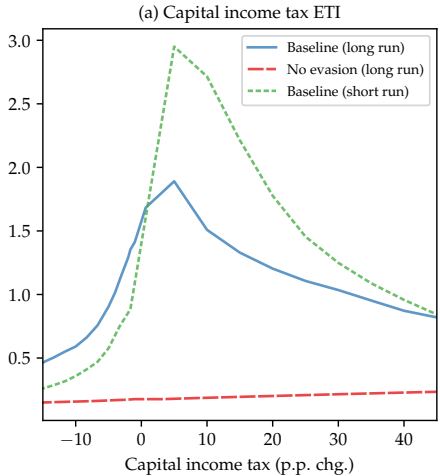
- Evasion that affects reported income/wealth
- Real responses (e.g. saving, labor supply) that affect actual income/wealth

How do our results compare to ETI estimates for capital income + wealth taxes?

To what extent are ETIs driven by evasion vs. real responses?

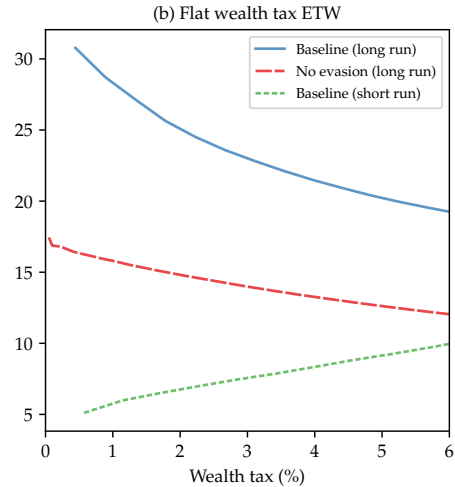
- Short-run: evasion only
- Long-run: evasion + real effects

Elasticities of reported capital income



- Agersnap-Zidar (2020): Capital gains tax ETI = 3.6 in SR, 2.6 in LR
- Model: 1-3 in neighborhood of current tax rate, higher in SR than LR
- Virtually all of the effect driven by evasion

Elasticities of reported taxable wealth



- Progressive: 12–13 in SR, 25–30 in LR
- Progressive (no evasion): 12–13 in LR

Study	Country	ETW
Seim (2017)	Sweden	0.1
Jacobsen et al. (2018)	Denmark	1
Londoño-Vélez + Ávila-Mehcha (2020)	Colombia	2
Zoutman (2016)	Netherlands	11.6
Durán-Cabré et al. (2019)	Spain	15.6
Brulhart et al. (2016)	Switzerland	34–35

- Most estimates focus on "bunching" near tax brackets in SR; unlikely to capture LR real effects
- Model (SR): middle of range in literature
- Model (LR): similar to CHE, which captures real effects by comparing aggregates across cantons
- Real effects just as important as evasion in LR

Sensitivity analysis

Overview

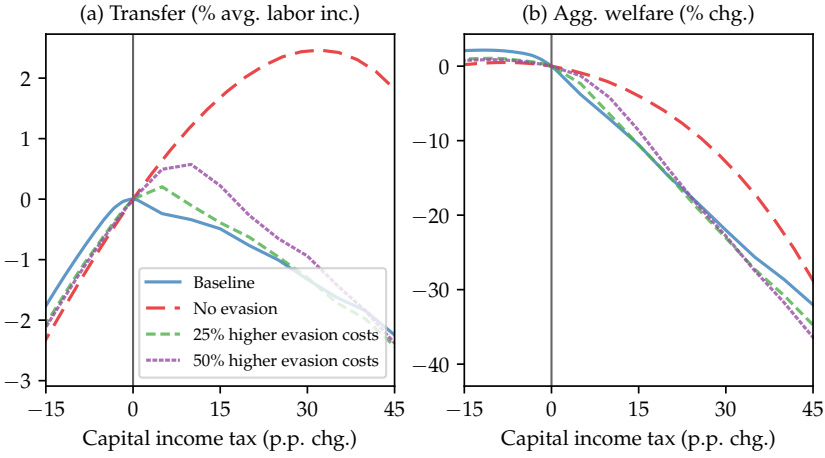
Higher evasion costs

- Precision of tax evasion moments used in calibration difficult to ascertain due to obfuscatory nature
- Analyze tax reforms in models with higher $\theta + \eta$, lower χ

Redistribution vs. reducing distortions

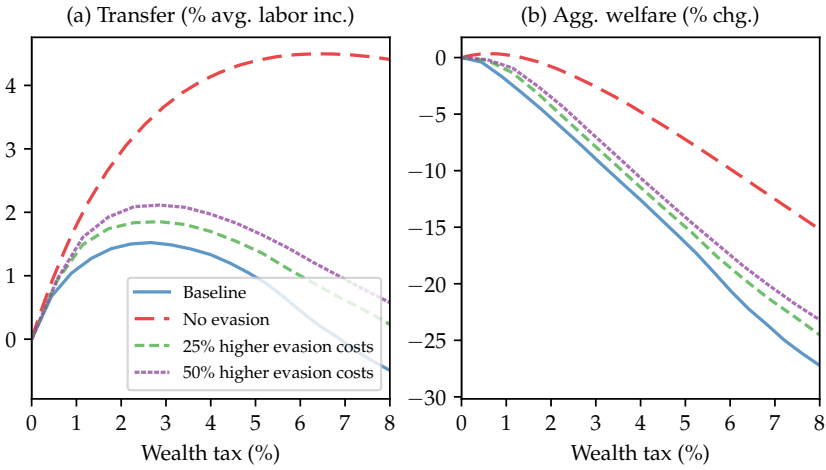
- Our approach motivated by rising calls for redistribution
- Common alternative: clear government budget by changing other distortionary taxes (Conesa et al., 2009; Guvenen et al, 2019)
- Use change in revenues to $\uparrow$ / $\downarrow$ τ_ℓ instead of funding lump-sum taxes/transfers

Higher evasion costs: capital income tax reform



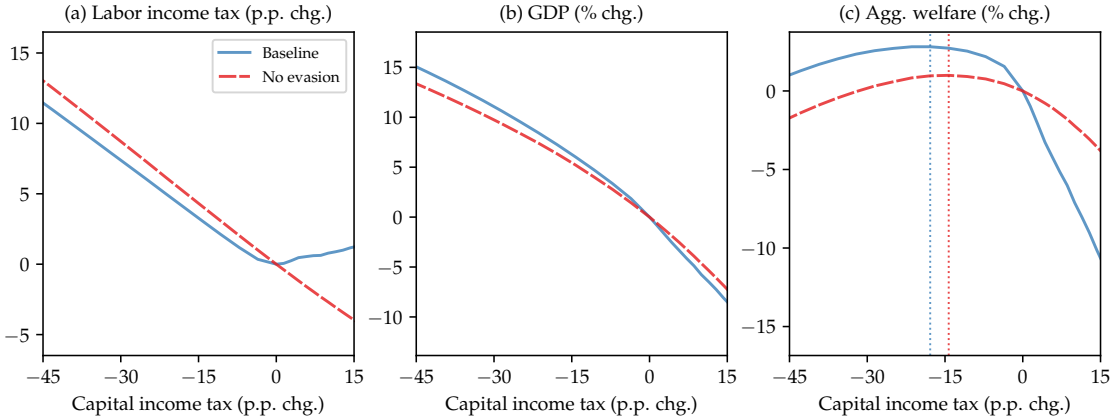
- Negligible increase in tax revenues even with 50% higher evasion costs
- Similar welfare consequences regardless of evasion costs

Higher evasion costs: wealth taxation



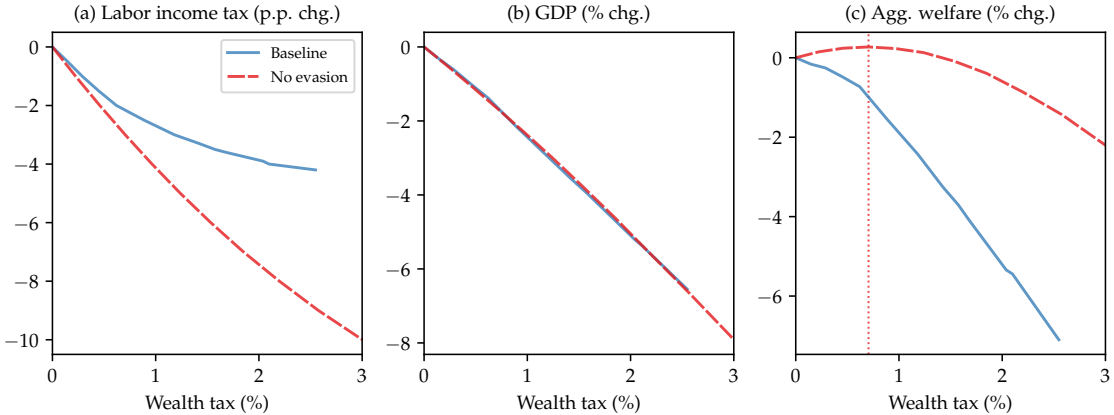
- Revenue-maximizing τ_a between 2.5–3%
- No welfare-increasing τ_a regardless of evasion cost (same for progressive taxes)

Changing τ_ℓ instead of T: capital income tax reform



- Either increasing or decreasing τ_k requires increasing τ_ℓ
- Macro effects similar regardless of evasion because of larger revenue increase (and thus larger τ_ℓ decrease) in absence of evasion

Changing τ_ℓ instead of T: wealth taxation



- Much smaller decrease in τ_ℓ due to evasion
- Macro effects again similar w/ and w/o evasion
- Still no welfare-increasing wealth tax in baseline model

Conclusion

Conclusion

Developed quantitative theory of offshore tax evasion, studied implications for capital income tax reform + wealth taxes

- Raising capital income taxes would reduce overall tax revenues
- Wealth taxes—even progressive ones targeted at the ultra-rich—would raise little revenue and would reduce welfare
- These policies would appear to reduce wealth inequality, but would actually increase it once concealed wealth is accounted for

Results align with estimates of how reported income + wealth respond to tax reforms

- Evasion is key driver of these responses
- Framework for analyzing how evasion interacts with real economy

Advice for policymakers: reforms must come with increased enforcement!

- Biden plan to raise capital gains tax includes $80B for IRS—will it be enough?