The Economic Effects of Wealth Taxes and Wealth Tax Evasion

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March 19, 2020

Introduction

Wealth inequality evoking calls to tax rich households' wealth

- Elizabeth Warren and Bernie Sanders proposed wealth taxes during 2020 Democratic primary election
- Supported by leading economists like Piketty (2014) and Saez and Zucman (2019)

Widespread criticism concerning tax evasion, macro effects

- Enforcing wealth taxes could prove difficult
- Reducing incentive to save could reduce investment
- Macro effects could be amplified if wealthy hide assets offshore

This paper:

- How would a wealth tax affect the macroeconomy?
- How would effects depend on the extent and nature of tax evasion?

What we do

Calibrate OLG model with rate-of-return heterogeneity to match current U.S. wealth distribution

- Households earn income by working and operating businesses
- Builds on Guvenen et al. (2019), Cagetti and DeNardi (2006, 2009), Benhabib et al. (2011, 2015, 2016)

Simulate consequences of wealth taxation in two scenarios:

1. **Onshore avoidance**: reduces wealth tax revenues but no other effect
2. **Offshore evasion**: also reduces capital supply and demand

Positive analysis: Warren and Sanders proposals

Normative analysis: Optimal progressive wealth tax

Preview of results: Warren and Sanders policies

Wealth inequality and public finances

- SR: no effect on inequality, up to 1.5% of GDP in revenues
- LR: top 1% share $\downarrow$ by up to 1/2, revenues as low as 0.08% of GDP

Macro variables

- Onshore avoidance: no SR impact, GDP $\downarrow$ by up to 1.4% in LR
- Offshore evasion: GDP $\downarrow$ immediately, and by up to 2.7% in LR

Welfare

- Onshore avoidance: welfare $\uparrow$, 60+% of households approve
- Offshore evasion: welfare $\downarrow$, approval as low as 7%
- Poor working households gain little or lose; rich entrepreneurial households gain substantially

Preview of results: optimal policy

Allow for two forms of progressivity:

- Exempt wealth below threshold (e.g. $50M in Warren proposal)
- Increasing marginal tax rate above threshold

Onshore avoidance:

- Exempts first $11M, marginal rates between 2%–7%
- Larger $\downarrow$ in GDP, inequality than Warren + Sanders

Offshore evasion:

- Exempts first $25M, marginal rates between 0.7%–2.3%
- Smaller $\downarrow$ in GDP, inequality than Warren + Sanders

Model

Overview

Overlapping generations of households

- Heterogeneous in labor and entrepreneurial abilities
- Save to smooth consumption, leave bequests, finance entrepreneurial capital

Representative firm

- Produces output using labor and capital purchased from households

Government

- Pays retirement benefits and purchases public consumption good
- Taxes income, consumption, and wealth
- Households evade wealth tax by hiding portion of taxable wealth
- Evasion may $\downarrow$ wealth that can be deployed in financial markets

Closed economy: endogenous interest rate, r

Demographics and preferences

Households can live for up to J years, but may die at any age

- Survival probability, $\phi(j)$, decreasing with age
- Dying households replaced by newborns with $j = 0$ who inherit parents' wealth and (to some extent) abilities
- Parents discount children's utility and their own at same rate, β

Mandatory retirement from labor market at age R

- Retirees receive SS benefits, can still earn capital income

Households value private and public consumption:

$$u(c, g) = \frac{c^{1-\sigma}}{1-\sigma} + \chi \frac{g^{1-\sigma}}{1-\sigma}$$

- Assume separability as in Heathcote et al. (2017)
- Public consumption does not affect households' decisions $\Rightarrow$ macro effects of wealth taxes do not depend on χ

Public finances

"Standard" taxes

- τ_r: interest income
- τ_k: entrepreneurial income
- τ_c: consumption
- $\tau_{\ell,j}(e)$: labor income, $\uparrow$ in e, j (progressive)

Wealth tax

- Marginal tax rate $\tau_a(a)$ depends on household's wealth

Revenues finance retirement benefits and public consumption, g_t

Assume budget balances period-by-period

Wealth tax evasion

Households hide portion of taxable wealth that depends on tax rate and evasion elasticity, ξ

- Fraction ξ of taxable wealth hidden for each p.p. of wealth tax rate
- Wealth tax payment, $\tilde{\tau}_a(a)$, and hidden wealth, $\tilde{a}(a)$, given by

$$\tilde{a}(a) = \int_0^a \xi \tau_a(a')\,\mathrm{d}a'$$
$$\tilde{\tau}_a(a) = \int_0^a \left[1 - \xi \tau_a(a')\right] \tau_a(a')\,\mathrm{d}a'$$

Q: Can households deploy hidden wealth in capital markets?

We consider two different scenarios:

- **Onshore avoidance:** $\hat{a}(a) = a$ (hidden wealth deployable)
- **Offshore evasion:** $\hat{a}(a) = a - \tilde{a}(a)$ (hidden wealth not deployable)

Labor and retirement income

Labor market ability, $\zeta_j \times e$

- ζ_j: deterministic life-cycle component
- e: idiosyncratic shock
  - Drawn from ergodic distribution $\bar{F}(e)$ at birth
  - Follows Markov process $F(e'|e)$ until retirement

Net labor income

$$y_{j,\ell,t}(e) = (1 - \tau_{\ell,j}(e))W_t\zeta_j e$$

Retirement benefits depend on labor ability upon retirement and economy-wide average labor income:

$$y_{R,t}(e) = \kappa(e) \sum_{j=0}^{R-1} \int_{\mathcal{E}} y_{j,\ell,t}(e) \, \mathrm{d}F(e)$$

Capital income

Capital income depends on entrepreneurial productivity, x, and deployable wealth, $\hat{a}(a)$

Same entrepreneurial productivity process as Guvenen et al. (2019):

$$x = \begin{cases} z^{\omega} & \iota = 1 \\ z & \iota = 2 \\ 0 & \iota = 3 \end{cases}, \qquad \Pi(\iota'|\iota) = \begin{bmatrix} 1 - p_1 - p_2 & p_1 & p_2 \\ 0 & 1 - p_2 & p_2 \\ 0 & 0 & 1 \end{bmatrix}$$

- z: fixed ability partially inherited from parent, $z \sim G(z|z^{parent})$
- ι: opportunity shock that amplifies or negates fixed ability
  - $\omega > 1$: degree of amplification in good state $\iota = 1$
  - Absorbing bad state $\iota = 3$: losing opportunity is permanent
  - Above-median z: born with $\iota_0(z) = 1$ ("entrepreneurs")
  - Below-median z: born with $\iota_0(z) = 3$ ("workers")

Capital income, cont'd.

Produce $q = xk$ differentiated capital goods using k units of capital, sell at price downward-sloping $p(q)$ to representative firm

Use deployable wealth to self-finance capital or borrow at r_t

- Collateral constraint: $k \leq \bar{k}(z, \hat{a}(a))$ depends on ability z and wealth a
- Self-financing entrepreneurs can lend excess deployable wealth to other households' businesses

Net capital income:

$$y_{k,t}(z,\iota,a) = \max_{k \leq \bar{k}(z,\hat{a}(a))} \Big\{ (1-\tau_k)\left[p_t(q)q - \delta k - r\max(k-\hat{a}(a),0)\right] + (1-\tau_r) r \max(\hat{a}(a)-k,0) \Big\}$$

Offshore wealth tax evasion $\downarrow$ deployable wealth, and thus $\downarrow$ demand for entrepreneurial capital

Household problem

Working-age household's value function:

$$V_{j,t}(e,z,\iota,a) = \max_{c,a'\geq 0} \Big\{ u(c,g_t) + \beta\phi_j \sum_{\iota'\in\mathcal{I}} \Pi_\iota(\iota'|\iota) \int_{\mathcal{E}} V_{j+1,t+1}(e',z,\iota',a')\, \mathrm{d}F(e'|e)$$
$$+ \beta(1-\phi_j) \sum_{\iota'\in\mathcal{I}} \int_{\mathcal{E}\times\mathcal{Z}} V_{0,t+1}(e',z',\iota_0(z'),a')\, \mathrm{d}\bar{F}(e')\mathrm{d}G(z'|z) \Big\}$$
$$\text{s.t.} \quad (1+\tau_c)c + a' = y_{\ell,j,t}(e) + y_{k,t}(z,\iota,a) - \tilde{\tau}_a(a).$$

Retiree's value function similar, with $y_{\ell,j,t}(e)$ replaced by $y_{R,t}(e)$ and e constant until death

Policy functions:

- $\ell_{j,t}(e) = \zeta_j e$: labor supply
- $q_t(j,z,\iota,a) = xk$: entrepreneurial capital
- $a'_t(j,e,z,\iota,a)$: saving
- $\tau_{j,t}(e,z,\iota,a)$: total income taxes (labor + interest + entrepreneurial)

Aggregation

Firm produces using labor, entrepreneurial + corporate capital:

$$Y_t = Q_t^{\alpha} K_t^{\gamma} L_t^{1-\alpha-\gamma}, \quad L_t = \sum_{j=0}^{R-1} \int_{\mathcal{E}} \ell_{j,t}(e) \, \mathrm{d}\Psi_t(j, e, z, \iota, a)$$

$$Q_t = \left(\sum_{j=0}^{J} \int_{\mathcal{S}} q_{j,t}(z, \iota, a)^{\nu} \mathrm{d}\Psi_{j,t}(e, z, \iota, a) \right)^{\frac{1}{\nu}}$$

- $\nu > 0$: substitutability between varieties of entrepreneurial capital
- K_t: corporate capital rented from households; captures public firms that face lower financial frictions than private businesses

Chooses inputs to maximize profits taking prices as given:

$$p_t(q_{j,t}(z, \iota, a)) = \alpha K_t^{\gamma} Q_t^{\alpha-\nu} L_t^{1-\alpha-\gamma} q_{j,t}(z, \iota, a)^{\nu-1}$$
$$r_t = \gamma K_t^{\gamma-1} Q_t^{\alpha} L_t^{1-\alpha-\gamma}$$
$$W_t = (1 - \alpha - \gamma) K_t^{\gamma} Q_t^{\alpha} L_t^{-\alpha-\gamma}$$

Market clearing

Capital market clearing condition:

$$\sum_{j=0}^{J} \int_{\mathcal{S}} \hat{a}(a)\, \mathrm{d}\Psi_{j,t}(e,z,\iota,a) = K_t + \sum_{j=0}^{J} \int_{\mathcal{S}} k_t(z,\iota,a)\, \mathrm{d}\Psi_{j,t}(e,z,\iota,a)$$

- LHS (supply): total deployable wealth
- RHS (demand): corporate capital + entrepreneurial capital
- Offshore evasion reduces both supply and demand

Government budget:

$$\sum_{j=0}^{J} \int_{\mathcal{S}} \left[\tau_{j,t}(e,z,\iota,a) + \tilde{\tau}_a(a) - g_t - \mathbb{1}_{\{j \geq R\}} y_{R,t}(e)\right] \mathrm{d}\Psi_{j,t}(e,z,\iota,a) = 0$$

- Wealth tax $\Rightarrow Y_t \downarrow \Rightarrow$ reduces income taxes $\tau_{j,t}(e,z,\iota,a)$
- Reduces effect of wealth tax on public consumption g_t

Equilibrium

Given parameters and initial distribution $\Psi_0(\cdot)$, equilibrium is:

- Sequence of value and policy functions, $\{V_t(\cdot), \ell_t(\cdot), q_t(\cdot), a'_t(\cdot)\}_{t=0}^{\infty}$
- Sequence of aggregate prices and quantities, $\{W_t, r_t, Q_t, K_t, L_t, \}$
- Sequence of distributions $\{\Psi_t(\cdot)\}_{t=0}^{\infty}$

that satisfy household's problem; firm's FOCs; capital market clearing; gov't BC; and law of motion for distribution

Always converges to stationary equilibrium in long run

- Length of transition governed by distance of initial distribution from long-run, stationary counterpart

Calibration

Overview

Approach: calibrate parameters so that stationary equilibrium without wealth tax represents current U.S. economy

External calibration: assign standard parameter values and estimates from literature

Internal calibration: jointly choose key parameters so that model matches wealth distribution

Validation: compare non-targeted moments in model to U.S. data

Externally assigned parameters

Parameter	Description	Value	Target or source
(a) Demographics and preferences			
J	Lifespan	60	86 years of life
R	Retirement age	41	Retirement at age 66
ϕ_j	Survival prob.	Varies	U.S. Dept. of HHS
σ	Risk aversion	2	Standard
(b) Labor income			
e	Stoch. labor ability	$\{0.08, 0.22, 0.384, 1.0\}$	U.S. Census Bureau (2017)
$F(e'\|e)$	Labor ability trans. probs.	Varies	Burkhauser et al. (1996)
ζ_j	Life-cycle labor ability	$1 + \min\{0.38j/30, 0.38\}$	Guvenen et al. (2015)

Parsimonious labor income process matches # of low-income households, their relative income, and inflow/outflow rate

- e set to match income shares by quartile in Census data
- $F(e'|e)$ set to match prob. of moving down one quartile (Burkhauser et al., 1996)

Externally assigned parameters, cont'd.

Parameter	Description	Value	Target or source
(c) Entrepreneurial ability			
ρ_z	Intergen. persist.	0.15	Fagareng et al. (2018)
ω	Fast lane amplification	5	Guvenen et al. (2019)
p_1	Prob. of losing good entr. shock	0.05	Guvenen et al. (2019)
p_2	Prob. of losing neutral entr. shock	0.03	Guvenen et al. (2019)
(d) Entrepreneurial income and production			
γ	Corporate capital share	0.053	Corporate profits/GDP
α	Entrepreneurial capital share	0.347	Total capital share $= 0.4$
ν	CES curvature	0.9	Guvenen et al. (2019)
δ	Depreciation rate	0.05	Guvenen et al. (2019)
ρ_z	Intergen. persist.	0.15	Fagereng et al. (2016)
(e) Taxes			
τ_c	Consumption tax	0.075	McDaniel (2007)
τ_k	Capital income tax	0.25	McDaniel (2007)
τ_r	Investment income tax	0.15	Data
$\tau_{\ell,j}(e)$	Labor income tax	Varies	Data

Internally calibrated parameters

Parameter	Description	Value	Target statistic	Source
β	Discount factor	0.955	Wealth/GDP = 4.79	SCF (2016)
σ_z	Std. entr. ability	0.0692	Top 0.1% share = 20%	Saez & Zucman (2019)
λ	Collateral constraint	1.296	Debt/assets = 0.31	Asker et al. (2011)

Collateral constraint parameterization from Guvenen et al. (2019):

$$\bar{k}(z_k, \hat{a}(a)) = \left[1 + \lambda \left(\frac{k-1}{\#\mathcal{Z} - 1}\right)\right] \hat{a}(a),\ z_k \in \mathcal{Z}$$

Each parameter effects all moments $\Rightarrow$ joint calibration required

Each parameter affects one moment more than others $\Rightarrow$ approximate 1-1 mapping between parameters and moments

Model matches all targeted statistics exactly

Validation

Statistic	Model	Data	Source
(a) Wealth distribution			
Top 1% share	35%	39%	SCF (2016)
Top 10% share	62%	77%	
Top 20% share	74%	88%	
Bottom 50% share	6%	1%	
Gini coefficient	0.73	0.86	
(b) Other statistics			
Warren tax rev./GDP using inv. dist.	1.09	1	Saez & Zucman (2019)
Entrepreneurship rate	15.4%	16.7%	Cagetti & De Nardi (2006)
Bequests/Net wealth	1.7%	1.2%	Nishiyama (2000)
Revenue from τ_k, τ_r/Total revenue	22%	25%	Guvenen et al. (2017)

Target only top 0.1% share, but reasonably close on other moments

Consistent with other salient wealth accumulation statistics

Positive analysis: Warren and Sanders proposals

Overview

Goal: How would a wealth tax affect the economy? How would the nature + extent of evasion shape these effects?

Case studies: leading Democratic policymakers' proposals

- Warren: 2% tax on \$50M–\$1B, 3% tax on \$1B+
- Sanders: 8 progressive brackets, starting with 1% tax on \$32M–\$50M and ending with 8% tax on \$10B+

Nature of evasion: onshore avoidance and offshore evasion

Extent of evasion: elasticities from literature: $\xi \in \{0, 7.5, 35\}$

Transition dynamics, not just long-run steady states

Long-run inequality + public finances

Scenario	Top 0.1% share (p.p. chg.)	Tax revenue (% GDP)	Public goods (% chg.)
(a) Warren policy			
No evasion ($\xi = 0$)	-5.465	0.704	4.541
Onshore avoidance			
$\xi = 7.5$	-5.036	0.621	3.960
$\xi = 35$	-3.328	0.194	0.655
Offshore evasion			
$\xi = 7.5$	-6.390	0.488	2.183
$\xi = 35$	-9.153	0.084	-2.468
(b) Sanders policy			
No evasion ($\xi = 0$)	-6.765	0.811	5.059
Onshore avoidance			
$\xi = 7.5$	-5.837	0.709	4.394
$\xi = 35$	-3.322	0.086	0.381
Offshore evasion			
$\xi = 7.5$	-7.426	0.360	2.075
$\xi = 35$	-10.109	0.075	-2.699

- More-progressive Sanders policy causes larger ↓ in inequality
- ↓ in inequality weaker under onshore avoidance, stronger under offshore evasion

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- Offshore evasion has larger impact on wealth tax revenue
- Sanders policy raises less revenue under offshore evasion
- Total tax revenues $\downarrow$ under offshore evasion with high elasticity

Long-run macro impact

Scenario	GDP (% chg.)	Interest rate (p.p. chg.)	Wealth (% chg.)
(a) Warren policy			
No evasion ($\xi = 0$)	-1.072	0.147	-4.217
Onshore avoidance			
$\xi = 7.5$	-0.971	0.135	-3.880
$\xi = 35$	-0.655	0.092	-2.656
Offshore evasion			
$\xi = 7.5$	-1.461	0.130	-4.072
$\xi = 35$	-2.348	0.079	-4.497
(b) Sanders policy			
No evasion ($\xi = 0$)	-1.344	0.175	-5.160
Onshore avoidance			
$\xi = 7.5$	-1.182	0.160	-4.601
$\xi = 35$	-0.705	0.096	-2.809
Offshore evasion			
$\xi = 7.5$	-1.731	0.138	-4.678
$\xi = 35$	-2.667	0.088	-5.071

- More-progressive Sanders policy has larger macro impact
- Onshore avoidance mitigates impact; offshore evasion worsens it

Measuring welfare consequences

Welfare measures:

- Individual welfare: private consumption equivalent
- Aggregate welfare: Rawlsian consumption equivalent
- Approval rate: fraction of households who support policy change

Calibrate utility value of public consumption, χ, using Heathcote et al. (2017) approach

- One-to-one mapping between χ and optimal public/private consumption ratio:

$$\frac{\chi^{\frac{1}{\sigma}}}{1+\chi^{\frac{1}{\sigma}}} = \frac{g}{g + \sum_{j=0}^{J} \int_{\mathcal{S}} c_j(e,z,\iota,a)\, \mathrm{d}\Psi_j(e,z,\iota,a)}$$

- No-wealth-tax benchmark $\chi = 0.029$
- Similar results using experiment-specific χ such that public-private consumption ratio in new steady state is optimal

Long-run aggregate welfare

Scenario	Benchmark χ Welfare (% chg.)	Benchmark χ Approval (%)	Experiment-specific χ Welfare (% chg.)	Experiment-specific χ Approval (%)	$\chi = 0$ Welfare (% chg.)	$\chi = 0$ Approval (%)
(b) Warren policy						
No evasion	0.508	69.2	0.563	74.0	0.018	16.9
Onshore avoidance						
$\xi = 7.5$	0.471	67.9	0.514	72.1	0.042	17.3
$\xi = 35$	0.097	30.0	0.099	30.4	0.024	17.3
Offshore evasion						
$\xi = 7.5$	0.030	26.0	0.045	27.4	-0.209	12.2
$\xi = 35$	-1.007	7.0	-0.999	7.1	-0.728	11.1
(b) Sanders policy						
No evasion	0.544	63.2	0.613	68.3	0.001	16.1
Onshore avoidance						
$\xi = 7.5$	0.490	63.6	0.543	67.9	0.016	16.8
$\xi = 35$	0.052	23.3	0.053	23.4	0.009	16.7
Offshore evasion						
$\xi = 7.5$	-0.055	20.7	-0.040	21.5	-0.282	11.8
$\xi = 35$	-1.139	7.2	-1.130	7.2	-0.834	11.2

- No evasion or mild onshore avoidance: welfare $\uparrow$, 60+% support
- Offshore evasion: welfare $-$ or $\downarrow$, low support
- Small gains under no evasion/onshore avoidance even if households do not value public goods, although low support

Long-run welfare by wealth group

Percentile	Warren	Sanders
(a) Onshore avoidance		
0–20	-0.324	-0.434
20–40	-0.206	-0.317
40–60	-0.132	-0.166
60–80	+0.245	+0.250
80–90	+0.565	+0.662
90–95	+0.509	+0.605
95–99	+1.476	+1.687
99–99.9	+2.531	+2.950
99.9–100	+0.419	+0.153
(b) Offshore evasion		
0–20	-0.789	-0.961
20–40	-0.598	-0.776
40–60	-0.549	-0.714
60–80	-0.205	-0.338
80–90	+0.232	+0.150
90–95	+0.400	+0.374
95–99	+1.084	+1.097
99–99.9	+1.705	+1.789
99.9–100	-3.739	-5.524

- Focus on medium-evasion ($\xi = 7.5$) case with benchmark χ
  - Same qualitative differences between groups in other experiments
- Poor households lose regardless of the nature of evasion
- Rich (but not ultra-rich) always gain
- Ultra-rich gain under onshore avoidance even though they pay wealth taxes

Long-run welfare by ability

$z \backslash e$	e_1 (20% of pop.)	e_2 (20% of pop.)	e_3 (20% of pop.)	e_4 (40% of pop.)
(a) Onshore avoidance				
z_1 (0.7% of pop.)	+0.044	+0.118	+0.346	+0.509
z_2 (6.2% of pop.)	+0.057	+0.123	+0.348	+0.473
z_3 (24.1% of pop.)	+0.078	+0.167	+0.361	+0.556
z_4 (37.9% of pop.)	+0.127	+0.194	+0.442	+0.644
z_5 (24.1% of pop.)	+0.665	+0.679	+0.841	+0.962
z_6 (6.2% of pop.)	+1.188	+1.158	+1.267	+1.381
z_7 (0.6% of pop.)	+1.925	+1.813	+1.853	+1.970
z_8 (0.02% of pop.)	+2.083	+2.104	+2.268	+2.390
z_9 (0.0004% of pop.)	+2.462	+2.451	+2.603	+2.724
(b) Offshore evasion				
z_1 (0.7% of pop.)	-0.435	-0.383	-0.202	-0.069
z_2 (6.2% of pop.)	-0.408	-0.364	-0.201	-0.115
z_3 (24.1% of pop.)	-0.378	-0.319	-0.137	-0.022
z_4 (37.9% of pop.)	-0.327	-0.276	-0.104	+0.005
z_5 (24.1% of pop.)	+0.534	+0.484	+0.582	+0.621
z_6 (6.2% of pop.)	+1.234	+1.137	+1.174	+1.149
z_7 (0.6% of pop.)	+1.980	+1.795	+1.748	+1.728
z_8 (0.02% of pop.)	+2.331	+2.318	+2.373	+2.384
z_9 (0.0004% of pop.)	+2.601	+2.482	+2.464	+2.438

- Focus on Warren policy with $\xi = 7.5$ and benchmark χ
- Workers gain slightly under onshore avoidance, lose under offshore evasion
- Entrepreneurs gain regardless of nature of evasion; gains increasing in z

Long-run entrepreneurs' welfare by opportunity shock

$z \backslash \iota$	3 (50.5% of pop.)	2 (26.4% of pop.)	1 (23.1% of pop.)
(a) Onshore avoidance			
z_5 (24.1% of pop.)	+0.614	+0.966	+1.126
z_6 (6.2% of pop.)	+0.915	+1.690	+1.973
z_7 (0.6% of pop.)	+1.456	+2.534	+3.224
z_8 (0.02% of pop.)	+1.821	+2.917	+3.877
z_9 (0.0004% of pop.)	+2.112	+3.546	+5.210
(b) Offshore evasion			
z_5 (24.1% of pop.)	+0.217	+1.005	+1.075
z_6 (6.2% of pop.)	+0.617	+2.015	+2.204
z_7 (0.6% of pop.)	+1.200	+2.899	+3.370
z_8 (0.02% of pop.)	+1.806	+3.711	+3.990
z_9 (0.0004% of pop.)	+2.027	+3.879	+4.474

- High-ability entrepreneurs with amplified productivities ($\iota = 1$) gain far more than other households
- Those who have lost their opportunities ($\iota = 3$) still gain because of higher interest rate and because their children are more likely to be high-ability

Role of GE forces in shaping distributional consequences

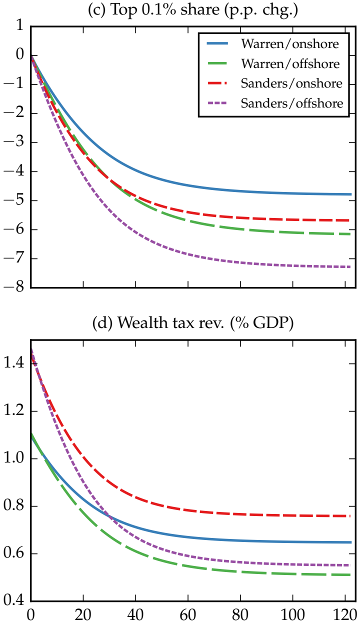
Welfare effects driven by four forces:

1. Increased public consumption (good)
2. Reduces wages (bad)
3. Increased interest rates (potentially mixed, but net good)
4. Increased price of entrepreneurial capital (good)

Beneficial forces primarily help rich entrepreneurs, harmful forces primarily affect poor workers

- All households benefit from 1 partial eq'm
- 2 affects primarily workers partial eq'm
- 3 benefits primarily rich households partial eq'm
- 4 benefits primarily entrepreneurs partial eq'm

Transition dynamics of inequality + public finances



Wealth inequality

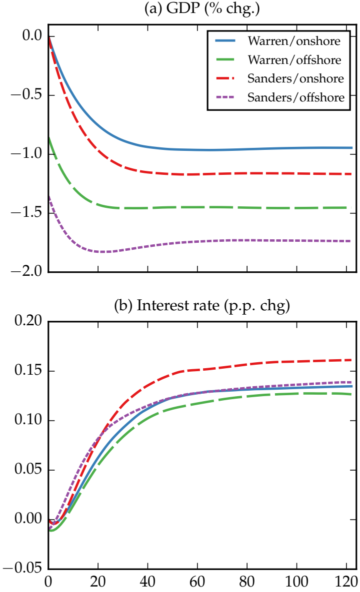
- No immediate change in either evasion scenario
- Declines gradually over time

Public finances

- Substantial SR revenue before wealth distribution changes
  - Consistent with Saez-Zucman estimate for Warren policy
- Revenue falls over time because tax base shrinks
- More pronounced decline in revenue under offshore evasion

Focus on medium evasion ($\xi = 7.5$) with benchmark χ as before

Transition dynamics of macro variables



Onshore avoidance

- No immediate macro response
- LR response driven only by ↓ in wealth

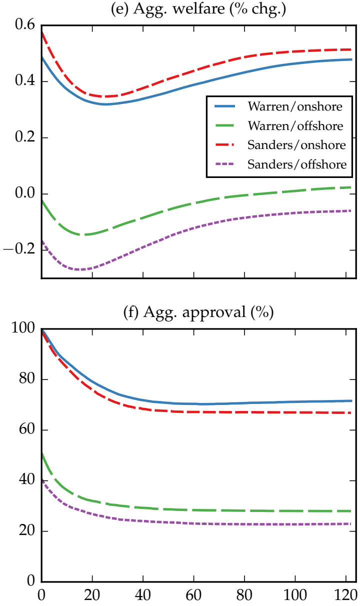
Offshore evasion

- Immediate contraction due to ↓ in deployable wealth
- Y converges more quickly than under onshore avoidance
- Overshooting, especially under Sanders policy

Dynamics of W, K, and Q, mirror Y dynamics

r rises more slowly than Y falls in both scenarios

Transition dynamics of welfare



- Onshore evasion: higher welfare gains and 100% approval in SR
- Offshore evasion: lower welfare gains and majority oppose in SR
- Non-monotone dynamics driven by timing of GE effects
  - $W, g \downarrow$ more quickly than $r \uparrow$, especially under offshore evasion
  - Poor workers lose more quickly than rich entrepreneurs gain

Normative analysis:
Optimal progressive wealth taxation

Overview

Goal: How should wealth taxes be structured? How does optimal structure depend on nature of evasion?

Wealth tax parameterization with two forms of progressivity:

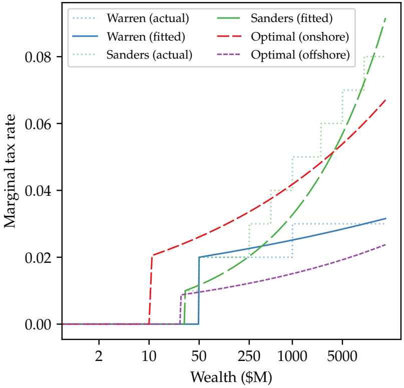
$$\tau_a(a) = \tau_a \left(a/\underline{a}\right)^{\psi}$$

- $\underline{a}$: exemption threshold (e.g. $50M in Warren proposal)
- ψ: elasticity of marginal tax rate to wealth above threshold
- τ_a: marginal tax rate at threshold

Optimize over $(\underline{a}, \tau_a, \psi)$ in onshore avoidance + offshore evasion

- Steady state analysis only
- Restrict attention to low evasion elasticity ($\xi = 7.5$)

Optimal wealth tax structure



Policy	Threshold ($\bar{a}$, $M)	Initial tax (τ, %)	Prog. exp. (ψ)
(a) Onshore avoidance			
Warren	50.000	2.000	0.076
Sanders	32.000	1.000	0.344
Optimal	10.879	2.048	0.158
(b) Offshore evasion			
Warren	50.000	2.000	0.076
Sanders	32.000	1.000	0.344
Optimal	27.497	0.872	0.152

- Onshore avoidance: lower threshold and higher tax rates for low-medium wealth levels than Sanders+Warren
- Offshore evasion: similar threshold to Sanders, lower tax rates than Sanders+Warren for all wealth levels

Economic effects of optimal wealth taxes

Policy	GDP (% chg.)	Top 0.1% share (p.p. chg.)	Tax revenue (% GDP)	Welfare (% chg.)
(a) Onshore avoidance				
Warren	-0.971	-5.036	0.621	0.471
Sanders	-1.182	-5.837	0.709	0.490
Optimal	-2.063	-7.251	1.238	0.634
(b) Offshore evasion)				
Warren	-1.461	-6.390	0.488	0.030
Sanders	-1.731	-7.426	0.360	-0.055
Optimal	-1.235	-4.856	0.516	0.127

- Onshore avoidance: larger drops in GDP + inequality, but more revenue than Sanders/Warren
- Offshore evasion: smaller drops in GDP + inequality, still more revenue than Sanders/Warren

Conclusion

Summary

Wealth taxation growing part of public policy discussion

- Proponents claim taxing rich households would raise significant revenue and reduce wealth inequality
- Critics argue that evasion could limit effectiveness of wealth taxation, exacerbate potential macro effects

This paper: quantitative model of wealth taxation and onshore/offshore wealth tax evasion

Key findings:

- Macroeconomic consequences could be mild + gradual or severe + swift depending on nature and extent of tax evasion
- Welfare gains would be unequally distributed: rich, high-ability entrepreneurs would gain while poor workers would lose
- Optimal policy would exempt fewer households, levy higher tax rates, and would have greater economic impact under onshore avoidance than offshore evasion

Lessons for policymakers

1. **Nature and degree of wealth tax evasion are crucial:** Evasion reduces wealth tax revenue, but also plays key role in shaping timing and extent of macro + welfare consequences.

2. **Tension between inequality reduction and revenue generation:** Wealth taxes raise most revenue in short run, but revenues fall over time as wealth distribution gets less concentrated

3. **Tradeoff between wealth tax goals and macro consequences:** More-progressive policies raise more revenue and reduce inequality more, but also cause output to decline more

4. **Welfare gains would be unequally distributed:** Aggregate welfare could rise, but rich entrepreneurs would reap most of the benefit and poorer workers would lose.

Appendix

Partial eq'm analysis: impact of higher g

$z \backslash e$	e_1 (20% of pop.)	e_2 (20% of pop.)	e_3 (20% of pop.)	e_4 (40% of pop.)
(a) Onshore avoidance ($\%\Delta g = 3.960$)				
z_1 (0.7% of pop.)	+0.265	+0.331	+0.432	+0.498
z_2 (6.2% of pop.)	+0.266	+0.332	+0.434	+0.501
z_3 (24.1% of pop.)	+0.267	+0.333	+0.437	+0.504
z_4 (37.9% of pop.)	+0.268	+0.335	+0.439	+0.507
z_5 (24.1% of pop.)	+0.345	+0.422	+0.547	+0.628
z_6 (6.2% of pop.)	+0.398	+0.482	+0.618	+0.707
z_7 (0.6% of pop.)	+0.467	+0.556	+0.698	+0.791
z_8 (0.02% of pop.)	+0.506	+0.593	+0.733	+0.822
z_9 (0.0004% of pop.)	+0.451	+0.534	+0.668	+0.753
(b) Offshore evasion ($\%\Delta g = 2.183$)				
z_1 (0.7% of pop.)	+0.142	+0.179	+0.237	+0.274
z_2 (6.2% of pop.)	+0.143	+0.180	+0.237	+0.275
z_3 (24.1% of pop.)	+0.143	+0.180	+0.238	+0.276
z_4 (37.9% of pop.)	+0.143	+0.181	+0.239	+0.277
z_5 (24.1% of pop.)	+0.185	+0.228	+0.298	+0.344
z_6 (6.2% of pop.)	+0.214	+0.261	+0.336	+0.385
z_7 (0.6% of pop.)	+0.232	+0.277	+0.348	+0.395
z_8 (0.02% of pop.)	+0.164	+0.194	+0.241	+0.272
z_9 (0.0004% of pop.)	-0.027	-0.023	-0.012	-0.005

- High z lose in offshore evasion: tax liability $> \uparrow g$
- Everyone else benefits
- Higher-z households gain more in CE terms because they have low MU

Partial eq'm analysis: impact of higher g and lower W

$z \backslash e$	e_1 (20% of pop.)	e_2 (20% of pop.)	e_3 (20% of pop.)	e_4 (40% of pop.)
(a) Onshore avoidance (%$\Delta W = -0.971$, %$\Delta g = 3.960$)				
z_1 (0.7% of pop.)	-0.465	-0.390	-0.315	-0.230
z_2 (6.2% of pop.)	-0.442	-0.375	-0.277	-0.281
z_3 (24.1% of pop.)	-0.431	-0.349	-0.239	-0.184
z_4 (37.9% of pop.)	-0.418	-0.343	-0.214	-0.163
z_5 (24.1% of pop.)	-0.284	-0.226	-0.101	-0.092
z_6 (6.2% of pop.)	-0.159	-0.100	0.000	+0.057
z_7 (0.6% of pop.)	+0.043	+0.084	+0.165	+0.186
z_8 (0.02% of pop.)	+0.023	+0.047	+0.138	+0.193
z_9 (0.0004% of pop.)	+0.063	+0.090	+0.183	+0.221
(b) Offshore evasion (%$\Delta W = -1.461$, %$\Delta g = 2.183$)				
z_1 (0.7% of pop.)	-0.960	-0.903	-0.857	-0.825
z_2 (6.2% of pop.)	-0.954	-0.911	-0.871	-0.872
z_3 (24.1% of pop.)	-0.953	-0.897	-0.853	-0.810
z_4 (37.9% of pop.)	-0.936	-0.891	-0.833	-0.820
z_5 (24.1% of pop.)	-0.793	-0.768	-0.701	-0.730
z_6 (6.2% of pop.)	-0.749	-0.730	-0.683	-0.669
z_7 (0.6% of pop.)	-0.434	-0.462	-0.456	-0.488
z_8 (0.02% of pop.)	-0.647	-0.668	-0.667	-0.679
z_9 (0.0004% of pop.)	-0.711	-0.768	-0.802	-0.839

- Workers lose in both evasion scenarios because wages are their main source of income
- Entrepreneurs gain under onshore avoidance because wages are less important to them

Partial eq'm analysis: impact of higher g and r

$z \backslash e$	e_1 (20% of pop.)	e_2 (20% of pop.)	e_3 (20% of pop.)	e_4 (40% of pop.)
(a) Onshore avoidance ($\Delta r = 0.135$, $\%\Delta g = 3.960$)				
z_1 (0.7% of pop.)	+0.717	+0.783	+0.985	+1.221
z_2 (6.2% of pop.)	+0.723	+0.778	+1.014	+1.185
z_3 (24.1% of pop.)	+0.727	+0.796	+1.004	+1.186
z_4 (37.9% of pop.)	+0.747	+0.807	+1.061	+1.234
z_5 (24.1% of pop.)	+0.866	+0.888	+1.066	+1.202
z_6 (6.2% of pop.)	+0.902	+0.976	+1.214	+1.322
z_7 (0.6% of pop.)	+1.342	+1.380	+1.572	+1.572
z_8 (0.02% of pop.)	+1.410	+1.439	+1.634	+1.799
z_9 (0.0004% of pop.)	+1.741	+1.752	+1.976	+2.109
(b) Offshore evasion ($\Delta r = 0.130$, $\%\Delta g = 2.183$)				
z_1 (0.7% of pop.)	+0.577	+0.615	+0.773	+0.977
z_2 (6.2% of pop.)	+0.588	+0.612	+0.799	+0.939
z_3 (24.1% of pop.)	+0.591	+0.628	+0.776	+0.941
z_4 (37.9% of pop.)	+0.605	+0.631	+0.828	+0.965
z_5 (24.1% of pop.)	+0.686	+0.677	+0.798	+0.898
z_6 (6.2% of pop.)	+0.711	+0.743	+0.912	+0.973
z_7 (0.6% of pop.)	+1.066	+1.067	+1.185	+1.268
z_8 (0.02% of pop.)	+1.035	+1.010	+1.113	+1.217
z_9 (0.0004% of pop.)	+1.204	+1.131	+1.218	+1.273

- All households benefit because return on saving rises
- High-z households benefit significantly even though external financing is more costly
  - Likely to lose opportunities at some point, and higher r increases return on passive lending

Partial eq'm analysis: impact of higher g and P

$z \backslash e$	e_1 (20% of pop.)	e_2 (20% of pop.)	e_3 (20% of pop.)	e_4 (40% of pop.)
(a) Onshore avoidance ($\%\Delta P = 0.972$, $\%\Delta g = 3.960$)				
z_1 (0.7% of pop.)	+0.323	+0.386	+0.487	+0.553
z_2 (6.2% of pop.)	+0.336	+0.399	+0.501	+0.569
z_3 (24.1% of pop.)	+0.351	+0.419	+0.517	+0.585
z_4 (37.9% of pop.)	+0.368	+0.433	+0.542	+0.602
z_5 (24.1% of pop.)	+0.833	+0.900	+1.031	+1.119
z_6 (6.2% of pop.)	+1.162	+1.209	+1.333	+1.346
z_7 (0.6% of pop.)	+1.574	+1.553	+1.610	+1.654
z_8 (0.02% of pop.)	+1.636	+1.775	+1.957	+2.058
z_9 (0.0004% of pop.)	+1.522	+1.608	+1.722	+1.779
(b) Offshore evasion ($\%\Delta P = 1.720$, $\%\Delta g = 2.183$)				
z_1 (0.7% of pop.)	+0.240	+0.273	+0.330	+0.368
z_2 (6.2% of pop.)	+0.262	+0.294	+0.356	+0.346
z_3 (24.1% of pop.)	+0.287	+0.326	+0.365	+0.416
z_4 (37.9% of pop.)	+0.315	+0.348	+0.412	+0.444
z_5 (24.1% of pop.)	+1.043	+1.076	+1.152	+1.192
z_6 (6.2% of pop.)	+1.572	+1.557	+1.597	+1.542
z_7 (0.6% of pop.)	+1.974	+1.906	+1.880	+1.866
z_8 (0.02% of pop.)	+2.212	+2.331	+2.435	+2.482
z_9 (0.0004% of pop.)	+1.928	+1.960	+1.972	+1.958

- High-z households benefit significantly because they operate large businesses
- Even worker households benefit, because there is a chance their children will be entrepreneurs (and will gain directly from higher prices for their goods)