# Taxing Wealth Unlocks Capital Gains: An Efficiency Rationale for Wealth Taxes

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  Bach, Bozio, Guillouzouic, Leroy and Malgouyres 2024; Saez, Yagan, Zucman 2021)
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This paper takes an alternative view: Focus on efficiency costs

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# Capital lock-in and wealth taxes

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  Realization → Income tax payment ↑ → Mechanical ↓ in net wealth → wealth tax payment ↓

**Key Trade-off**

- Income tax generates portfolio distortion + intertemporal distortion
- Wealth tax alleviates port. distortion (eff. ↑), but adds to intertemp. distortion

# Contribution

- Efficiency case for wealth taxes exists, but runs through *liquidity constraints*

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- Optimal combination of taxes (Gerritsen, Jacobs, Spiritus, Rusu, 2025; Ferey, Lockwood, Taubinsky, 2024)

  - Interaction between taxes makes cross-base elasticities play a key role

($\neq$ own-elasticity: Seim 2017; Jakobsen[2], Kleven, Zucman 2020; Londoño-Vélez, Ávila-Mahecha 2021; Ring 2025)

# Outline

1. Two-period model with heterogeneous investors
2. Efficient portfolio choice with wealth taxes
3. Optimal combination of capital income and wealth taxes
4. Market value vs Historical value wealth taxes

# Two-period model with heterogeneous investors

- Investors consume in both periods $U(C_1, C_2)$
- Lend or borrow with bonds $B^i$ at the market-interest rate $r$; Initial wealth $W_1^i$:

Return the investor earned so far

$$W_1^i \equiv (1 + R_1^i) A^i$$

Principal investment

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Principal investment

- Can keep or sell a fraction of the initial investment, $\phi^i$ is the fraction sold
  - Keeping the investment generates a net return of $R_2^i$
  - Bonds allow investor to consume without realizing gains

# Taxation: Four instruments

1. Capital income tax $\tau_k$ on realized capital gains and interest

2. Wealth tax $\tau_a$ on the *principal* of wealth (historical value)

$$A^i \text{ in period 1;} \qquad \left(1-\phi^i\right)\left(1+R_1^i\right)A^i + B^i \text{ in period 2}$$

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3. Tax on unrealized gains $\tau_R$
   - Impractical, but instructive: it targets gains directly

4. Lump-sum transfer $T$

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Choose savings in bonds $(\boldsymbol{B}^i)$ and sales of investments $(\boldsymbol{\phi}^i)$ to maximize utility

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- First period budget constraint:

$$\boldsymbol{\phi^i}\left(1+R_1^i\right)A^i - \boldsymbol{B^i} + T = C_1^i + \tau_k \overbrace{\boldsymbol{\phi^i} R_1^i A^i}^{\text{Realized Cap. Gains}} + \tau_a A^i + \tau_R \underbrace{\left(1-\boldsymbol{\phi^i}\right) R_1^i A^i}_{\text{Unrealized Cap. Gains}}$$

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- Second period budget constraint

After-tax return: $(1-\tau_k)R_2^i - \tau_a$ — After-tax return: $(1-\tau_k)r - \tau_a$

$$\left(1 + \widetilde{R_2^i}\right) \underbrace{\left(1 + R_1^i\right)\left(1 - \boldsymbol{\phi^i}\right) A^i}_{\text{Value of Unsold Assets}} + \left(1 + \widetilde{r}\right) \boldsymbol{B^i} = C_2^i + \tau_k \underbrace{R_1^i \left(1 - \boldsymbol{\phi^i}\right) A^i}_{\text{Deferred Cap. Income}}$$

# Intertemporal Budget Constraint

$$\underbrace{\left(\phi^i + \frac{1+\widetilde{R}_2^i}{1+\tilde{r}}\left(1-\phi^i\right)\right)\left(1+R_1^i\right)A^i + T}_{\text{NPV Assets}} \quad = \quad C_1^i + \frac{C_2^i}{1+\tilde{r}} + \tau_a A^i$$

$$+ \underbrace{\left(\left(\tau_R + \frac{\tau_k}{1+\tilde{r}}\right)\left(1-\phi^i\right) + \tau_k\phi^i\right)R_1^i A^i}_{\text{NPV tax on first period return}} .$$

- Net-present value of expenditure equals net-present value of assets (plus transfers)
- Net-present value of taxes depends on fraction of capital gains realized in period 1, $\phi^i$
  - Because of this, $R_1^i$ is a state-variable

# Portfolio Choice: Reservation strategy on returns

$$\overline{R}\left(R_1^i\right) \equiv r - \tau_k r \frac{R_1^i}{1+R_1^i} + \frac{\tau_k \tau_a + (1+(1-\tau_k)\, r - \tau_a)\, \tau_R}{1-\tau_k} \frac{R_1^i}{1+R_1^i}$$

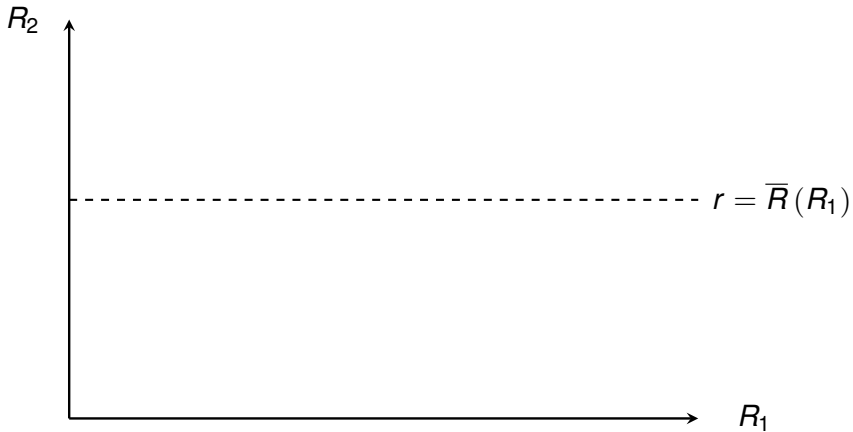
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- When the rate of return lies below the reservation return you sell

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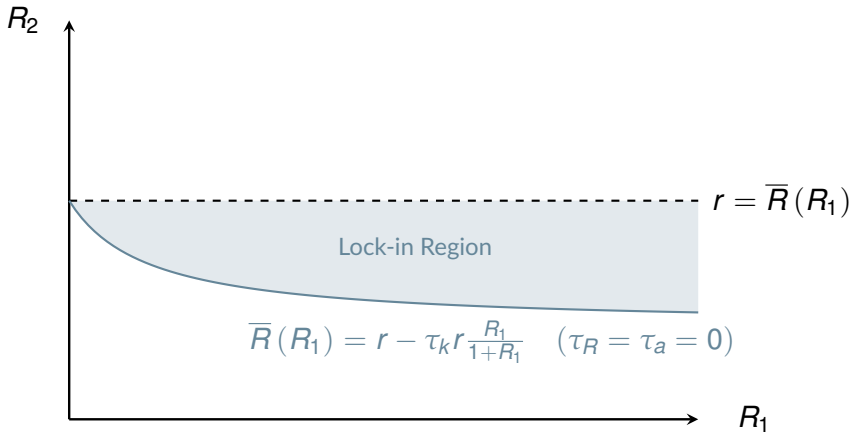
- When the rate of return exceeds the *reservation return* you keep the initial investment
- When the rate of return lies below the reservation return you sell
- Efficient portfolio choice implies that $\overline{R}\left(R_1^i\right) = r$
- But through taxation the reservation return depends on past returns

# Portfolio choice under realized and unrealized capital gains taxation



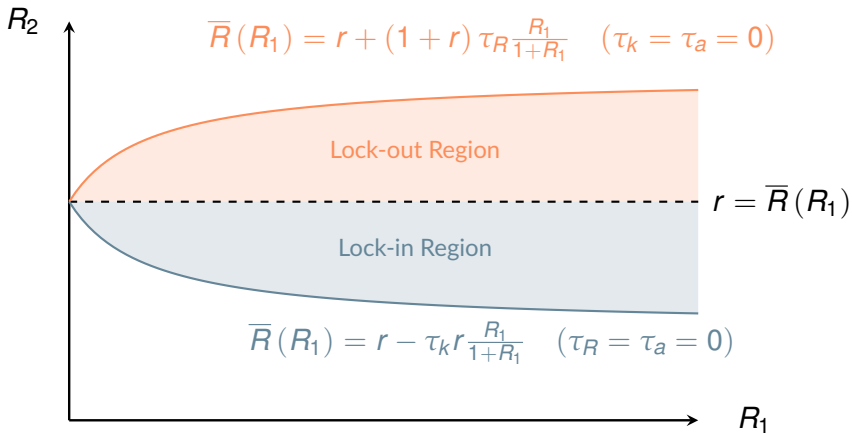

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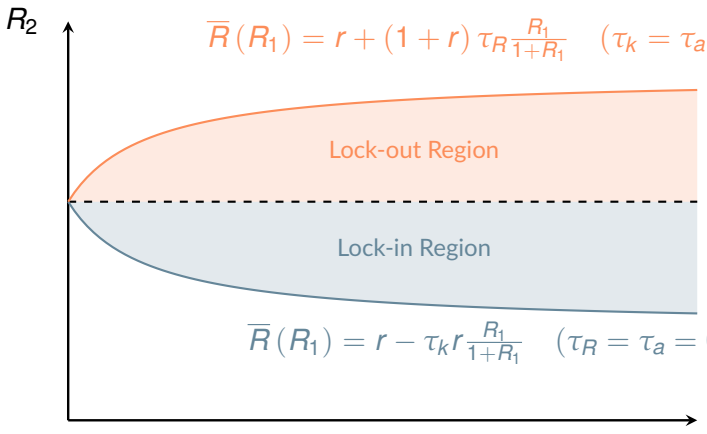

- $\tau_k$ generates lock-in

# Portfolio choice under realized and unrealized capital gains taxation




- $\tau_k$ generates lock-in; $\tau_R$ generates lock-out.

# Portfolio choice under realized and unrealized capital gains taxation




$\tau_a$ generates neither lock-in nor lock-out on its own.

- $\tau_k$ generates lock-in; $\tau_R$ generates lock-out.

# Efficient Portfolio Choice

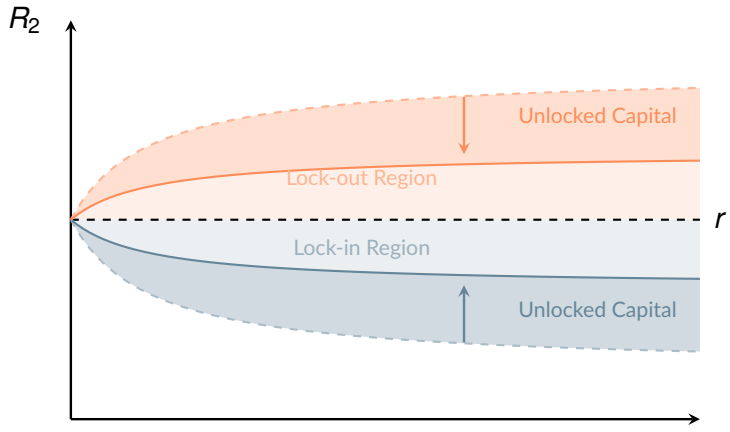
The reservation rate of return $\overline{R}$ equals the market interest rate $r$ for all investors if either

1. Both capital income and unrealized gains tax rates equal zero: $\tau_k = \tau_R = 0$
2. Or the wealth tax rate equals

$$\tau_a^\star(\tau_k, \tau_R) = (1 - \tau_k)r - \frac{\tau_R}{\tau_k - \tau_R}$$

- When $\tau_R = 0$ this simplifies to $\tau_a^\star(\tau_k, 0) = (1 - \tau_k)r \approx 1.6\%$

# Effect of wealth taxation on portfolio choice




- Increasing $\tau_a$ alleviates lock-in and lock-out pushing reservation return $(\overline{R})$ towards $r$

# Wealth taxes make it attractive to pay taxes now

- Set $\tau_a = \tau_a^\star(\tau_k, \tau_R)$, then

$$\underbrace{\left(\left(\tau_R + \frac{\tau_k}{1 + (1-\tau_k)\, r - \tau_a^\star}\right)\left(1 - \phi^i\right) + \tau_k \phi^i\right) R_1^i A^i}_{\text{NPV tax on first-period return}} = \tau_k R_1^i A^i$$

- NPV of tax on $R_1$ independent of $\phi^i \rightarrow$ Initial capital gain is no longer a state variable
- Period-1 tax payments shrink the period-2 wealth-tax base one-for-one
  - Wealth tax effectively reduces discounting of delayed payments $(\tilde{r}(\tau_a^\star) = 0)$
- The wealth tax rewards paying now

# Results extend to dynamic problem with stochastic returns

details

- Continuous time $t \in [0, T]$, stochastic returns, partial realization, risk-averse investor

$$\text{Cumulative return:} \quad P_t \equiv \exp\left(\int_0^t R_u \, du\right) \longrightarrow \frac{dP_t}{P_t} = \mu(t)\, dt + \sigma \, d\mathcal{W}_t$$

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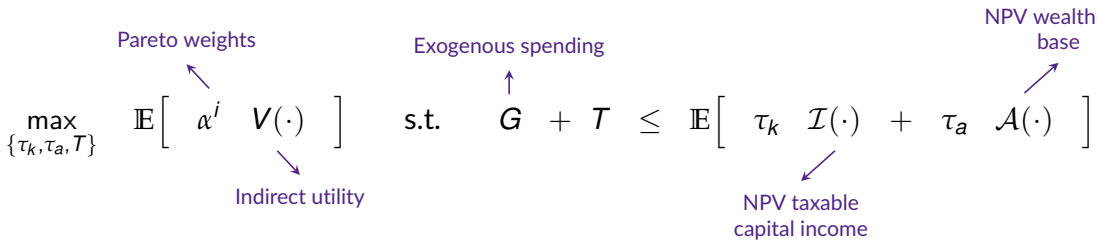
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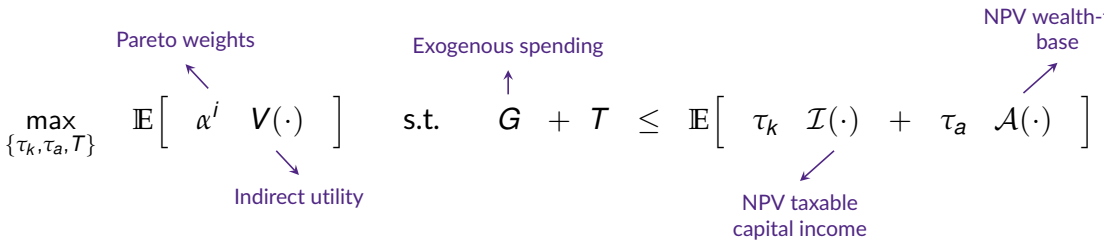
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- Realization is stochastic control problem: Embedded gain $P_t$ becomes an extra state
  - That *is* lock-in … (Constantinides 1983; Dammon, Spatt, Zhang 2001)
- At $\tau_a^\star = (1 - \tau_k)\, r$, $P_t$ drops out: realization depends only on future returns
- And it does so without changing the investor's risk exposure (only $\tau_k$ affects risk)

# How to balance capital income and wealth taxes?



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- Setting $\tau_a = \tau_a^\star(\tau_k, \tau_R)$ restores portfolio choice efficiency
- Combining a large $\tau_k$ with $\tau_a^\star$ generates a large intertemporal distortion
- Potential trade-off between portfolio distortion and intertemporal distortion

Note: From here on, assume $\tau_R = 0$.

# Optimal-tax formulas: intuition

Increasing the wealth tax $\tau_a$ generates three effects:

1. Saving response: Reduces taxable income and wealth $\left(\varepsilon_{y,1-\tau} \equiv -\frac{\partial y}{\partial \tau}\frac{1-\tau}{y} > 0\right)$

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2. Realization response: More attractive to realize gains $\left(\xi_{\mathcal{Y},1-\tau} \equiv -\frac{\frac{\partial R(R_1)}{\partial \tau} f^{R_2}\left(\overline{R}(R_1)\right)\Delta\mathcal{Y}(1-\tau)}{\mathbb{E}[\mathcal{Y}(\cdot) \mid A, R_1]}\right)$
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Capital-income tax $\tau_k$ has similar intertemporal effects, but opposite portfolio responses

**Key:** Cross-elasticities measure how wealth tax affects capital income tax base

# Is a wealth tax $\tau_a > 0$ desirable for a given capital-income tax $\tau_k$?

Cross-elasticity of taxable cap. inc. $(\mathcal{I})$ to $1 - \tau_a$ $<$ 0

details

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- This is *not* the own-elasticity of taxable wealth $\longrightarrow$ A new target for empirical work

  (Seim 2017, Jakobsen et al 2020, Londoño-Vélez and Ávila-Mahecha 2021, Ring 2024)

  - At small $\tau_a$ own-base distortions vanish; cross-base responses remain first order
  - Cross-base elasticities can dominate (Lefebvre, Lehmann and Sicsic 2025)

- Desirable even if the government does not care about wealth inequality

▸ details

# Market-value wealth taxation

A market-value wealth tax bundles two conceptually different taxes:

$$\underbrace{\tau_m W_1^i}_{\text{market-value wealth tax}} = \underbrace{\tau_m A^i}_{\text{historical wealth tax}} + \underbrace{\tau_m R_1^i A^i}_{\text{accrued capital-gains tax}}$$

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- Capital gains are taxed once on accrual $(\tau_m)$ and again upon realization through $(\tau_k)$
- Portfolio efficiency is restored when $\widetilde{r}_m = 0$:

$$\tau_m^\star(\tau_k) \;=\; (1-\tau_k)\frac{r}{1+r} \;<\; \tau_a^\star(\tau_k)$$

- But taxing based on returns generates misallocation and discourages innovation (GKKO)

# Conclusion

- Realization-based taxation generates a portfolio distortion
- Governments can alleviate the distortion using a wealth tax
- Key factor: Cross-elasticity between the capital-income tax base and the wealth tax
- Results extend unchanged to stochastic returns and assets with partial realization
  - Wealth taxes alleviate portfolio distortion without changing investors' risk exposure

# Continuous time: consumption and partial realization

Choose consumption $C_s$ and cumulative proportional sales $L_s$ to maximize

$$\sup_{\{C_s, L_s\}} \mathbb{E}_t \left[ \int_t^T e^{-\delta(s-t)} u(C_s)\, ds \right], \qquad u' > 0, \quad u'' < 0.$$

Private holdings $A_s$, liquid wealth $B_s$, and cumulative private returns $P_s$:

$$\begin{aligned}
\frac{dP_s}{P_s} &= \mu(s)\, ds + \sigma\, dW_s, \qquad P_0 = 1, \\
dA_s &= \mu(s) A_s\, ds + \sigma A_s\, dW_s - A_{s_-}\, dL_s, \\
dB_s &= \left[ \tilde{r} B_s - \tau_a A_s - C_s \right] ds + \left[ 1 - \tau_k \left( 1 - \frac{1}{P_s} \right) \right] A_{s_-}\, dL_s.
\end{aligned}$$

- $A_s / P_s$ is the remaining tax basis; $1 - 1/P_s$ is the embedded-gain share.
- Sales may be partial: $L_s$ is nondecreasing, with $0 \le \Delta L_s \le 1$.
- Bonds finance consumption without forcing realization; solvency still applies.

back

# Embedded gains create a return to tax deferral

Measure resources by after-tax liquidation wealth:

$$Y_s \equiv B_s + \left[1 - \tau_k \left(1 - \frac{1}{P_s}\right)\right] A_s.$$

A sale changes the composition of $Y_s$, not its level. Its dynamics are

$$dY_s = \left[\tilde{r} Y_s + (1-\tau_k) A_s \big(\mu(s) - r\big) - C_s + \underbrace{\tau_k \tilde{r} A_s \left(1 - \frac{1}{P_s}\right)}_{\text{Embedded-gain deferral incentive}}\right] ds + (1-\tau_k)\sigma A_s \, dW_s.$$

- Holding accrued gains raises the drift of wealth without changing its diffusion at given $A_s$.
- A higher $\tau_a$ reduces this incentive by lowering $\tilde{r}$.
- At $\tau_a^\star = (1-\tau_k) r$, the embedded-gain term vanishes at every date.

back

# Optimal taxes: own-base and cross-base effects

Welfare gains equal behavioral revenue losses per unit of mechanical revenue.

$$\underbrace{1-\bar{g}^{\mathcal{A}}}_{\text{Mechanical welfare gain}} = \underbrace{\frac{\tau_a}{1-\tau_a}\left(\bar{\varepsilon}^{\mathcal{A}}_{\mathcal{A},1-\tau_a}+\bar{\xi}^{\mathcal{A}}_{\mathcal{A},1-\tau_a}\right)}_{\text{Own-base response}} + \underbrace{\frac{\tau_k}{1-\tau_a}\frac{\bar{\mathcal{I}}}{\bar{\mathcal{A}}}\left(\bar{\varepsilon}^{\mathcal{I}}_{\mathcal{I},1-\tau_a}+\bar{\xi}^{\mathcal{I}}_{\mathcal{I},1-\tau_a}\right)}_{\text{Cross-base response}}$$

$g^i = \alpha^i U_{C_1}/\eta$, where $\eta$ is the value of public funds. $\bar{\varepsilon}$: intertemporal response; $\bar{\xi}$: portfolio response.

- Own-base and cross-base elasticities matter for the optimal level of each tax.
- Fiscal importance depends on relative tax bases.
- At a zero tax rate only cross-elasticities matter.
- Similar equation for optimal $\tau_k$.

back

# Unlocking capital exhausts fiscal gains but not welfare gains

For the marginal investor, selling rather than holding changes the tax bases by

$$\Delta\mathcal{I} = \left(r - \frac{\tau_k \tau_a}{1-\tau_k}\right)\frac{R_1 A}{1+r}, \qquad \Delta\mathcal{A} = -\tau_k \frac{R_1 A}{1+r}.$$

The resulting jump in total tax revenue is

$$\underbrace{\tau_k \Delta\mathcal{I}}_{\text{Capital-income receipts}} + \underbrace{\tau_a \Delta\mathcal{A}}_{\text{Wealth-tax receipts}} = \tau_k \left(r - \frac{\tau_a}{1-\tau_k}\right)\frac{R_1 A}{1+r}.$$

back

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$$\tau_a^\star = (1-\tau_k)r \quad \longrightarrow \quad \tau_k \Delta\mathcal{I} + \tau_a^\star \Delta\mathcal{A} = 0.$$

- At the $\tau_a = \tau_a^\star$, fiscal gain from inducing a marginal investor to realize is exhausted.
- Intertemporal and redistributive considerations still matter.

back