Taxation of Top Incomes and Tax Avoidance

Alessandro Di Nola[1] Georgi Kocharkov[2]
Almuth Scholl[1] Anna-Mariia Tkhir[3]
Haomin Wang[1]

[1]University of Konstanz

[2]Deutsche Bundesbank

[3]Goethe University Frankfurt

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Motivation

- Over the last 40 years, the top 1% income share has more than doubled in the U.S.
  - Alvaredo, Atkinson, Piketty and Saez (2013)
- Academic and political debate: proposals to raise marginal income tax rates at the top
  - Diamond and Saez (2011)
- Caution: Elasticity of taxable income (ETI) is high at the top (Mertens and Olea (2018))
  - Labor supply and investment response
  - **Tax avoidance** response.

▸ income inequality ▸ elasticity

Research Question

- How does tax avoidance affect tax revenue and productive efficiency?
- What are the aggregate and distributional consequences of an increase in the **top marginal tax rate** and in **tax progressivity** in the presence of **tax avoidance**?

Many Top Earners are Business Owners

- **Business income** is an important source of income at the top (Smith et al. (2019)).
  - In the top 1%: 40% is business income
  - In the top 0.1%: 60% is business income

figure

- Main types of businesses: **C-corps and Pass-through** (Sole-proprietors, S-corps).
  - Pass-throughs account for more than 50 percent of total business income, (it was only 22 percent in 1980).

Pass-through Business

- **Pass-through business:** business income is taxed at the **individual income tax rates**
  - Sole Proprietorships
  - S-corporations
- Sole Proprietorships:
  - are easy to organize, have single owner
  - all net income is labor income also subject to payroll taxes
- S-corporations:
  - can report labor income and *capital income*

  $\Rightarrow$ **Intensive margin of tax avoidance of S-corps**: shift towards capital income to avoid payroll taxes, but subject to IRS audit.
  - Smith et al (2019): S-corp is the most common form among top-income pass-through businesses.

C-corporations

- **C-corps** pay corporate taxes on earnings before distributing remaining amounts as dividends that are then taxed at the dividend tax rate $\Rightarrow$ **double-taxation**.
- Dividend tax rates are lower at the top compared to the income tax rates.
- **Intensive margin of tax avoidance of C-corps**: C-corps can shift towards wage income to avoid double-taxation, but subject to IRS audit.
- C-corps have easier access to **external finance**.

▸ LFO response

What We Do

- Build a heterogeneous agent model with:
  - Occupational choice: Worker or Entrepreneur
  - Extensive margin of tax avoidance: entrepreneurs can choose to be sole-proprietors, S-corps, or C-corps.
  - Intensive margin of tax avoidance of S- and C-corps: declare income as labor income or capital income.
- With the model, we evaluate
  - the aggregate impacts of eliminating tax avoidance on the intensive and extensive margins,
  - an increase in the top marginal tax rate and tax progressivity.
- Optimal tax policy. (In progress)

Main Findings (Preliminary)

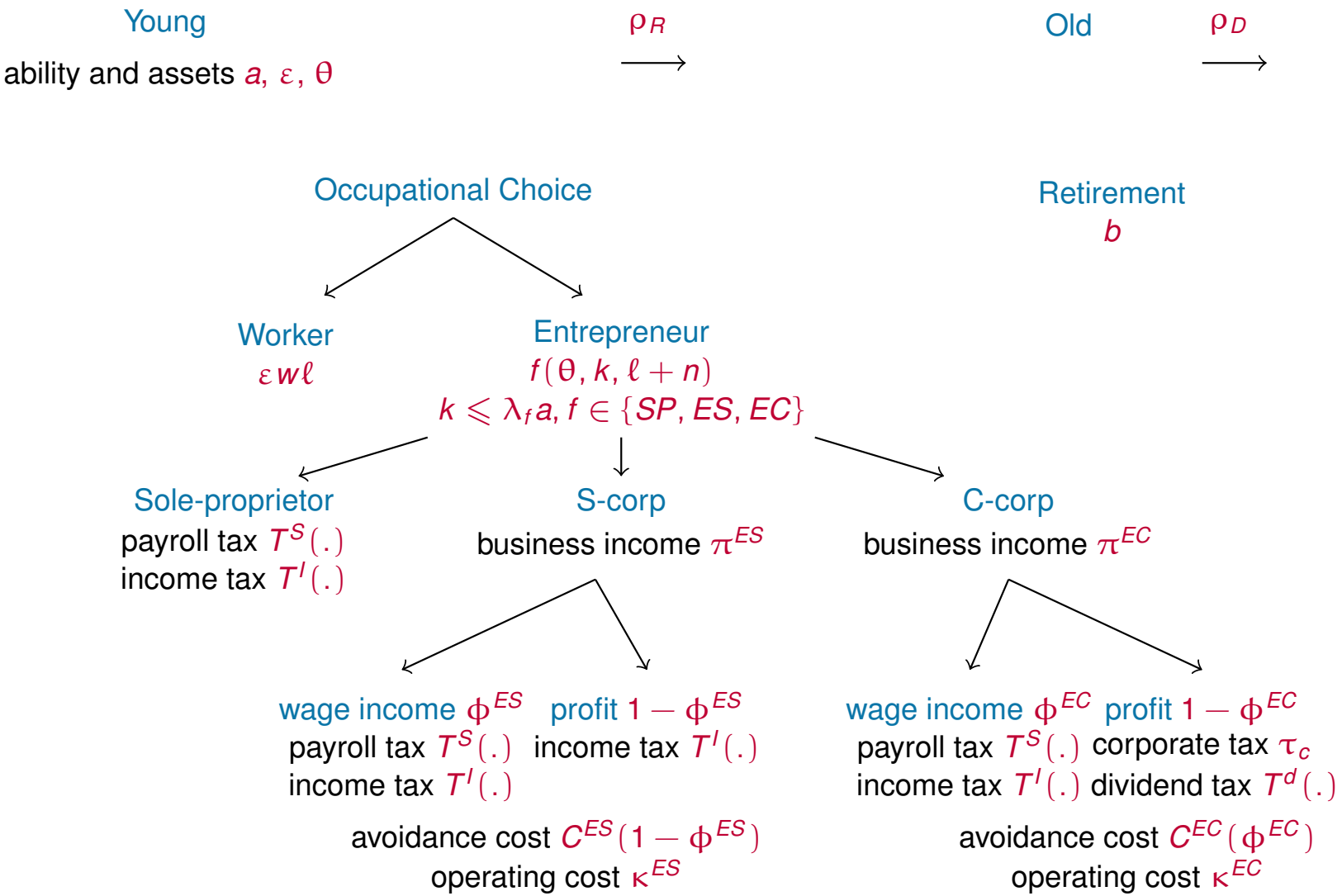
- **Tax avoidance on the intensive margin** (income shifting) lowers tax revenue, but has little macroeconomic implications.
- However, **tax avoidance on the extensive margin** significantly lowers productive efficiency and tax revenue.
  - To avoide double taxation, entrepreneurs choose pass-throughs over C-corps at the cost of tighter financial constraints.

- **In the presence of tax avoidance**, a revenue-neutral increase in tax progressivity can fail to lower inequality.
- **Without tax avoidance opportunities**, progressive taxation is more effective in reducing inequality, but at an efficiency loss (efficiency-equity tradeoff).

Related Literature

- Optimal taxation at the top:
  Kindermann and Krueger (2021), Brueggemann (2020), Imrohoroglu et al. (2018), Guner et al. (2016), Badel et al.(2020), Mertens and Olea (2018).
- Legal forms of business organization:
  Chen et al. (2018), Smith et al. (2019), Gorea (2014), Dyrda and Pugsley (2019, 2021)
- This paper studies the role of tax avoidance for aggregate outcomes and in the design of optimal taxation.
  - We consider a rich array of tax avoidance opportunities including both legal form choice and income shifting.
  - We allow for the interaction between occupational choice and tax avoidance.

Model Overview



Demographic Structure

- Households go through two life stages: young and old.
- Young agents become old with probability $\rho_R \in (0, 1)$.
- Old agents die with probability $\rho_D \in (0, 1)$.
- Deceased agent is replaced by a newborn who inherits the assets.

Households

- Preferences over consumption and leisure: $u(c, 1-\ell)$.
- Endowment:
  - one unit of time
  - working ability $\varepsilon \in \left\{\varepsilon_1, \ldots, \varepsilon_{N_\varepsilon}\right\}$
  - entrepreneurial ability $\theta \in \left\{\theta_1, \ldots, \theta_{N_\theta}\right\}$
  - abilities follow a Markov process: $\Gamma(\varepsilon', \theta' | \varepsilon, \theta)$.
- Occupational choice:
  - Worker
  - Entrepreneur
- Entrepreneurs choose LFO:
  - Sole-proprietor, EP
  - S-corporation, ES
  - C-corporation, EC

Workers

$$V^W(a,\varepsilon,\theta) = \max_{c,a',\ell} \left\{ u(c, 1-\ell) + \beta(1-\rho_R)\,\mathbb{E}\left[V\left(a',\varepsilon',\theta'\right)\right] + \beta\rho_R V^R\left(a'\right) \right\}$$

$$y_W = w\varepsilon\ell - T^s(w\varepsilon\ell) + ra,$$
$$c + a' = y_W + a - T^I(y_W),$$
$$a' \geqslant 0,\ \ell \in [0,1].$$

Sole-proprietors

$$V^{EP}(a,\varepsilon,\theta) = \max_{c,a',k,\ell,n} \left\{ u(c,1-\ell) + \beta(1-\rho_R)\,\mathbb{E}\left[V\left(a',\varepsilon',\theta'\right)\right] + \beta\rho_R V^R\left(a'\right) \right\}$$

$$\pi^{EP} = f(\theta,k,\ell+n) - (r+\delta)\,k - wn,$$

$$y^{EP} = \pi^{EP} - T^s\left(\pi^{EP}\right) + ra,$$

$$c + a' = y^{EP} - T^I\left(y^{EP}\right) + a,$$

$$k \leqslant \lambda a,\ a' \geqslant 0.$$

S-corporations

$$V^{ES}(a,\varepsilon,\theta) = \max_{c,a',k,\ell,n,\phi^{ES}} \left\{ u(c,1-\ell) + \beta(1-\rho_R)\,\mathbb{E}\left[V\left(a',\varepsilon',\theta'\right)\right] + \beta\rho_R V^R\left(a'\right) \right\}$$

$$w^{ES} = \phi^{ES}\left[f(\theta,k,\ell+n) - (r+\delta)k - wn\right],$$

$$\pi^{ES} = (1-\phi^{ES})\left[f(\theta,k,\ell,n) - (r+\delta)k - wn\right],$$

$$y^{ES} = \pi^{ES} + w^{ES} - T^s\left(w^{ES}\right) + ra,$$

$$c + a' - a = y^{ES} - T^I\left(y^{ES}\right) - C^{ES}\left(1-\phi^{ES}\right) - \kappa^{ES},$$

$$k \leqslant \lambda^{ES} a,\ a' \geqslant 0,$$

$$0 \leqslant \phi^{ES} \leqslant 1,$$

C-corporations

$$V^{EC}(a,\varepsilon,\theta) = \max_{c,a',k,\ell,h,\phi^{EC}} \left\{ u(c,1-\ell) + \beta(1-\rho_R)\,\mathbb{E}\left[V\left(a',\varepsilon',\theta'\right)\right] + \beta\rho_R V^R\left(a'\right) \right\}$$

$$\begin{aligned} w^{EC} &= \phi^{EC}\left[f(\theta,k,\ell+n) - (r+\delta)k - wn\right], \\ \pi^{EC} &= (1-\phi^{EC})\left[f(\theta,k,\ell,n) - (r+\delta)k - wn\right], \\ y^{EC} &= (1-\tau_c)\,\pi^{EC} + w^{EC} - T^s\left(w^{EC}\right) + ra, \end{aligned}$$

$$\begin{aligned} c + a' - a \quad = \quad & y^{EC} - T^d\left((1-\tau_c)\,\pi^{EC}\right) - T^I\left(w^{EC} - T^s\left(w^{EC}\right) + ra\right) \\ & - C^{EC}\left(\phi^{EC}\right) - \kappa^{EC}, \end{aligned}$$

$$k \leqslant \lambda^{EC}\cdot a,\ \ a' \geqslant 0,$$

$$0 \leqslant \phi^{EC} \leqslant 1.$$

Retirees

$$V^R(a) = \max_{c,a'} \left\{ u(c) + \beta(1-\rho_D) V^R(a') + \beta\rho_D \mathbb{E}\left[V(a', \varepsilon', \theta') \right] \right\}$$

$$c + a' = b + (1+r)a - T^I(b + ra),$$

$$a' \geqslant 0.$$

Corporate Sector and Government

- Large corporate sector:

$$F(K^C, N^C) = \left(K^C\right)^{\alpha} \left(N^C\right)^{1-\alpha}$$

- The government budget is balanced:

$$\int \left[T^I(s) + T^s(s) + T^c(s) + T^d(s)\right] d\mu(s) = G + B$$

Functional Forms

- Utility:

$$u(c, 1-\ell) = \frac{c^{1-\sigma_1}}{1-\sigma_1} - \chi \frac{\ell^{1+\sigma_2}}{1+\sigma_2}$$

- Production:

$$f(\theta, k, \ell, n) = \theta(k^{\gamma}(\ell+n)^{1-\gamma})^{v}$$

- Avoidance cost:

$$C^{ES}(1-\phi) = \psi_0^{ES}(1-\phi)^2$$
$$C^{EC}(\phi) = \psi_0^{EC}\phi^2$$

- HSV income tax (approximated based on the *statutory* tax function in 2013):

$$T^{I}(y) = y - \lambda_{hsv} y^{1-\tau_{hsv}}$$

▸ 2013 Tax Rates

External Parameters

Parameter	Description	Value	Source
Preferences			
σ_1	Risk aversion	2	Standard value
σ_2	Inverse of Frisch elasticity	1.67	Frisch elasticity = 0.59
Production			
α	Capital share (corporate)	0.33	Standard value
δ	Capital depreciation	0.06	Standard value
Working ability			
ρ_ε	Persistence	0.94	Kitao (2008)
σ_ε	Standard deviation	0.02	Kitao (2008)
Demographics			
ρ_o	Prob. of getting old	0.022	Brueggeman (2020)
ρ_d	Prob. of survival	0.911	Brueggeman (2020)
Taxation			
τ_{hsv}	Income tax progressivity	0.06	Estimated, SCF 2013

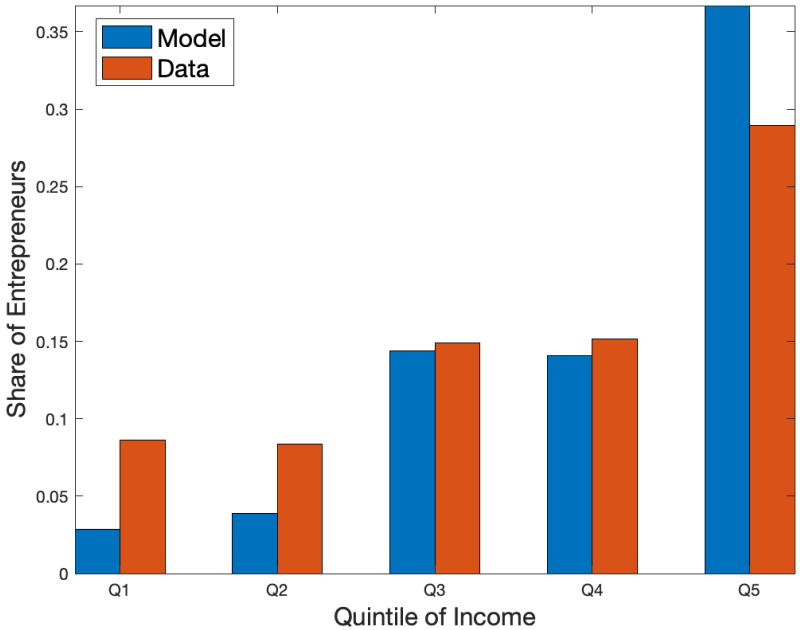
Calibrated Parameters

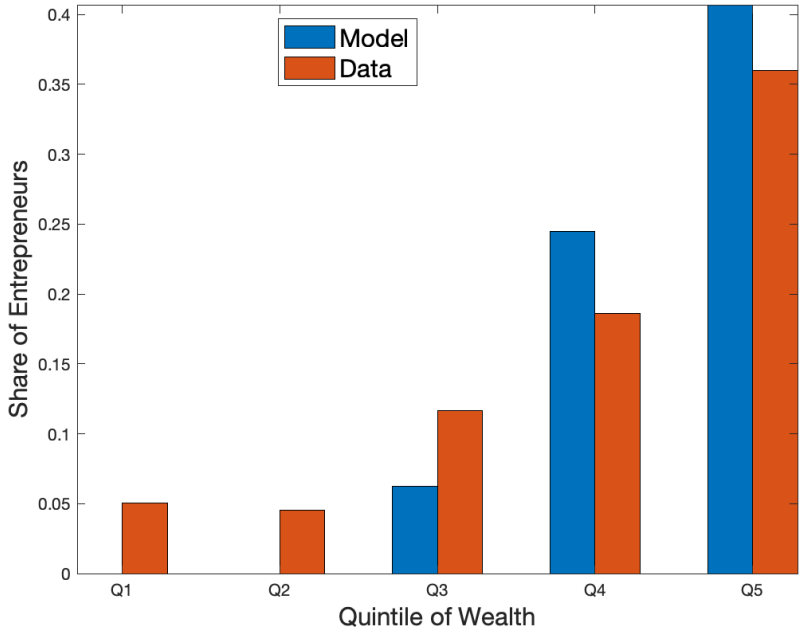
Parameter	Description	Value	Target
Preferences			
β	Discount factor	0.907	Interest rate
χ	Disutility from working	50	Average hours worked
Production			
v	Span of control	0.88	Median income ratio
γ	Capital share, entre sector	0.375	Share of hiring entre
Entrepreneurial ability			
μ_θ	Unconditional mean	-0.085	Share of entre
ρ_θ	Persistence	0.84	Exit rate entre
σ_θ	Dispersion	0.35	Gini wealth entre
Financial Frictions			
$\lambda^{EP}, \lambda^{ES}$	Collateral constraint (Pass-through)	1.4	wealth share Pass-through
λ^{EC}	Collateral constraint (Corp)	2.39	wealth share C-corp and entre
Tax avoidance and corp costs			
κ^{ES}	Operating cost for S-corps	0.02	Share of S-corps
κ^{EC}	Operating cost for C-corps	0.025	Share of C-corps
ψ_0^{es}	Intercept of $C(\cdot)$ S-corp	0.19	Income split, S-corp
ψ_0^{ec}	Intercept of $C(\cdot)$ C-corp	8	Income split, C-corp
Superstar shock			
ϵ^*	Value of the shock	10	Share of entre at top 1%
p_{ϵ^*}	Probability of the shock	0.01	Gini income
$\bar{p}_{\epsilon^*}$	Probability of dropping back	0.59	top 1% income share
Taxation			
λ_{hsv}	Income tax, level	0.855	Tax revenues to GDP

Model Fit

	Data	Model
Interest rate	0.030	0.034
Average hours worked	0.330	0.331
Share of entrepreneurs	0.152	0.144
Share of sole-prop.	0.674	0.667
Share of S-corp	0.236	0.231
Share of C-corp	0.090	0.102
Wage share S-corp	0.363	0.341
Wage share C-corp	0.199	0.216
Median income ratio W/E	1.557	1.582
Share of hiring entre	0.512	0.524
Exit rate entre	0.220	0.232
Gini wealth	0.842	0.822
Gini wealth entre	0.781	0.707
Wealth share entre	0.536	0.510
Wealth share C-Corps (cond. on entre.)	0.199	0.186
Share of entre in top 1% income	0.668	0.669
Gini income	0.544	0.483
Top 1% income share	0.191	0.211
Income tax revenues to GDP	0.249	0.236

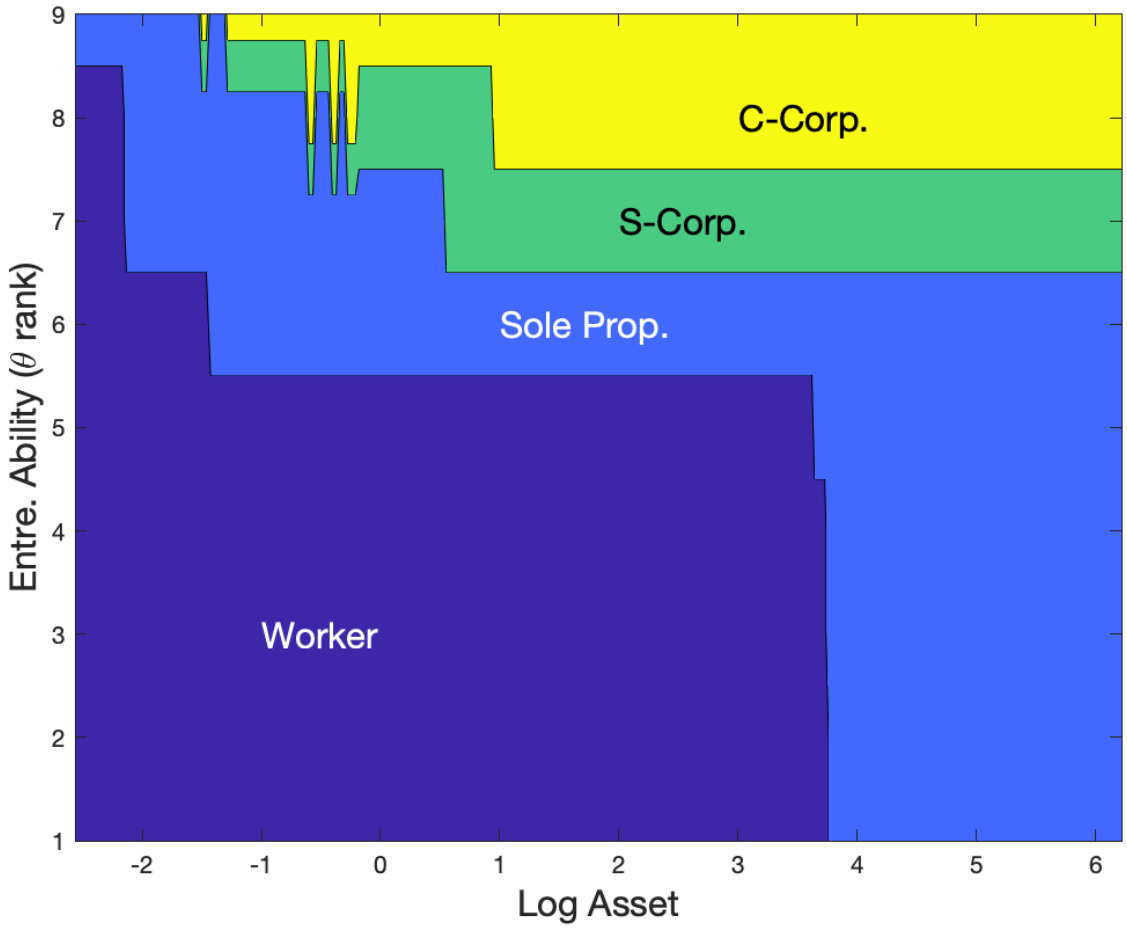
Occupation Choice by Income and Wealth





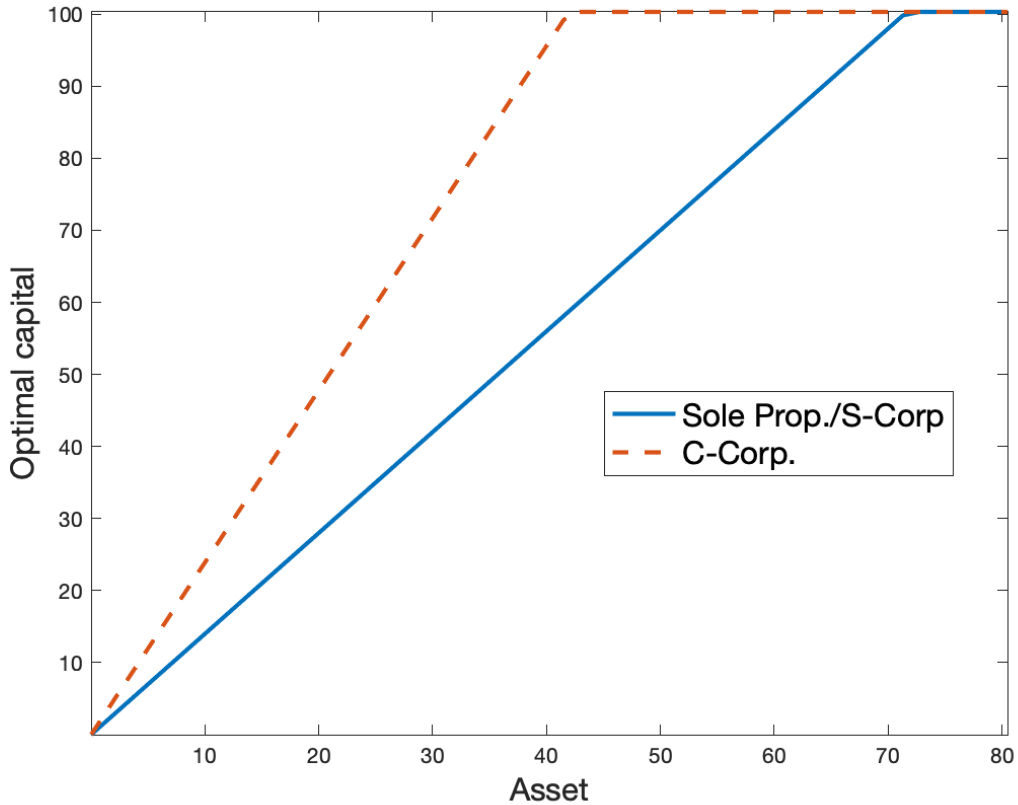
- Higher concentration of entrepreneurs at the top of income and wealth distributions.

Optimal Occupation and Legal Form Choice



- Individuals with high entrepreneurial ability and high wealth choose to be entrepreneurs.
- Among entrepreneurs, those with the highest ability and wealth run C-corps.

Optimal Capital Choice



- If unconstrained, the optimal capital choice doesn't depend on legal form.
- C-Corps face looser collateral constraints $\Rightarrow$ can invest more in capital.

Eliminating Tax Avoidance

We consider two counterfactual scenarios:

1. **No intensive margin of tax avoidance**: S-corps are subject to the same tax treatment as sole-prop., and C-corps cannot report labor income.
2. **No tax avoidance on any margin**: All entrepreneurs are subject to the same tax treatment as sole-prop., i.e. pay income and payroll taxes.

Eliminating Tax Avoidance: Result

	Benchmark	**No Income Shifting** (1)	**No Tax Avoidance on all margins** (2)
Share of Entre	0.144	0.148	0.171
Dist. of LFO:			
Sole-Prop.	0.667	0.889	0.316
S-Corp	0.231	-	-
C-corp	0.102	0.111	0.684
$\mathbb{E}(\theta \mid entre)$	1.522	1.519	1.525
$\mathbb{E}(k \mid entre)$	6.591	6.288	9.281
Ave. income	0.411	0.408	0.435
r	0.034	0.035	0.023
w	1.245	1.237	1.319
Tot. tax revenue	0.149	0.155	0.161

Eliminating Tax Avoidance: Summary

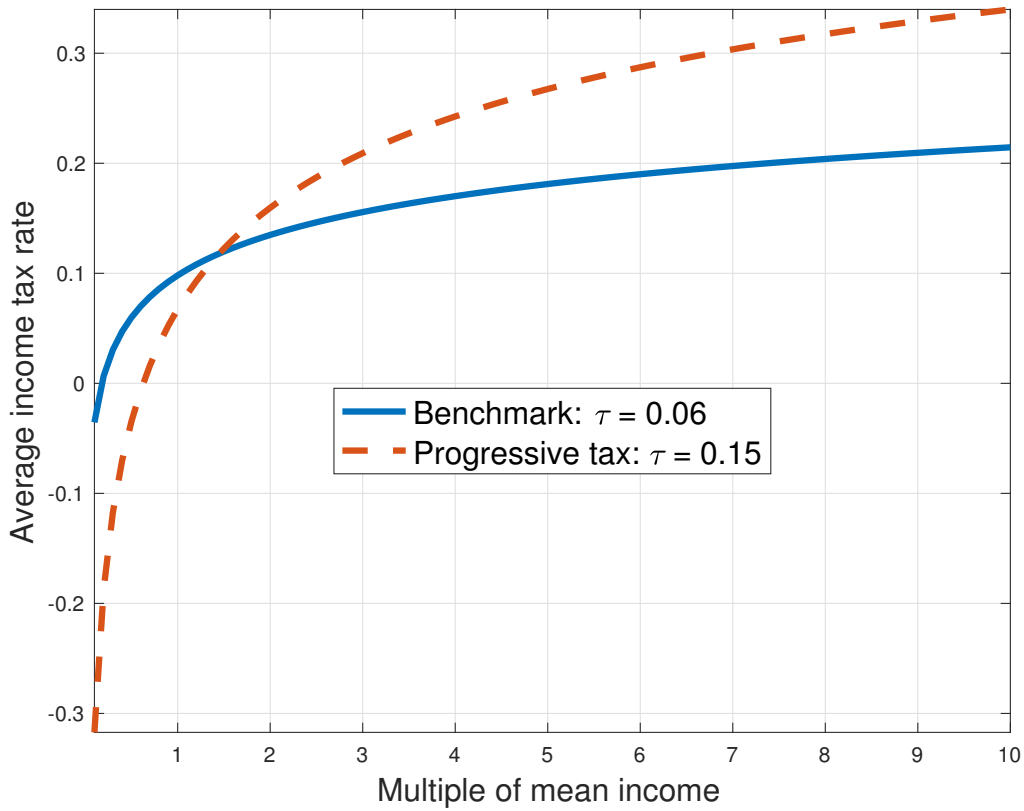
1. Eliminating income shifting:
   - S-corps become sole proprietors but little increase in the share of entrepreneurs.
   - Little macroeconomic impact.
   - Small increase in tax revenue (4%).

2. Eliminating all tax avoidance:
   - More entrepreneurs and a greater share of C-corps.
   - Significant improvement in average income due to easier access to capital as a result of more C-corps.
   - Large increase in tax revenue (8%).

Increasing Tax Progressivity with and without Tax Avoidance

We consider revenue-neutral increases in income tax progressivity under:

1. the **benchmark economy**, and
2. the **no-tax-avoidance economy** (scenario 2), where all businesses pay income taxes.



Increasing Tax Progressivity: Result

	Benchmark Economy		**No Tax Avoidance**	
	$\tau_{hsv} = 0.06$	$\tau_{hsv} = 0.15$	$\tau_{hsv} = 0.06$	$\tau_{hsv} = 0.15$
	(1)	(2)	(3)	(4)
Inequality measures:				
Gini Wealth	0.822	0.825	0.829	0.776
Top 1% Wealth Share	0.329	0.340	0.331	0.250
Gini Income	0.483	0.499	0.515	0.510
Top 1% Income Share	0.211	0.217	0.224	0.206
Aggregate outcomes:				
Ave. Income	0.411	0.398	0.435	0.407
Capital entre.	0.761	0.803	1.273	1.051
Share Entre.	0.144	0.149	0.171	0.196
Dist. of legal forms:				
Sole Prop.	0.667	0.698	0.316	0.309
S-Corp.	0.231	0.078	-	-
C-Corp.	0.102	0.224	0.684	0.691

Increasing Tax Progressivity: Summary

1. Increasing tax progressivity in the Benchmark economy:
   - Entrepreneurs move from S-corps to C-corps to avoid the higher income taxes.
   - Slightly higher inequality!
   - More C-corps $\Rightarrow$ more capital in the entrepreneurial sector but higher operating costs.
   - Average income goes down, suggesting a drop in economic efficiency.

2. Increasing tax progressivity in the no-tax-avoidance economy:
   - Little change in legal form distribution.
   - Significantly lower inequality but a drop in average income (economic efficiency) $\Rightarrow$ equity-efficiency tradeoff.

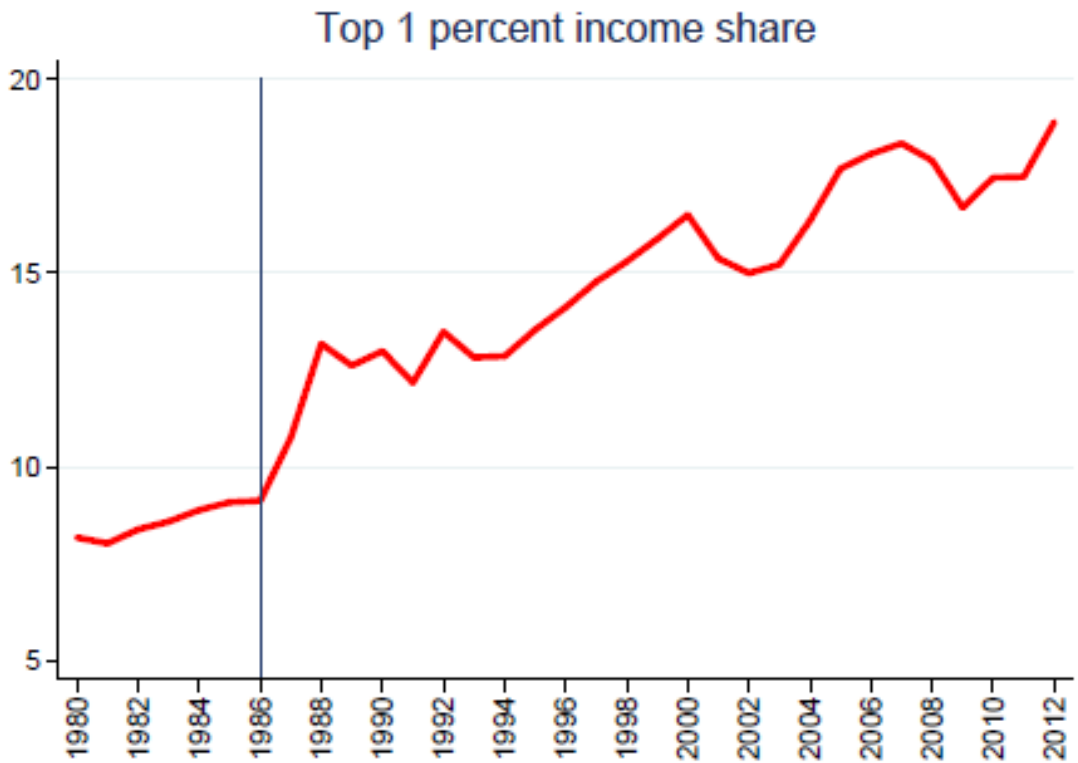
Conclusions

- We build a heterogeneous agent model with choices of occupation and legal forms of businesses.
- The model allows for two margins of tax avoidance:
  - **Intensive**: S- and C-corp owners can report income as labor or capital income to lower tax burden.
  - **Extensive**: Entrepreneurs can choose to run pass-throughs to avoid double taxation of C-corps.
- Tax avoidance on the extensive margin lowers productive efficiency, and makes progressive taxation ineffective at lowering inequality.

- **Next steps:**
  - Optimal top marginal tax rate with tax avoidance.
  - Optimal allocation of entrepreneurial talent across occupations and legal forms.

Appendix

The Rise in Inequality



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Income Elasticity

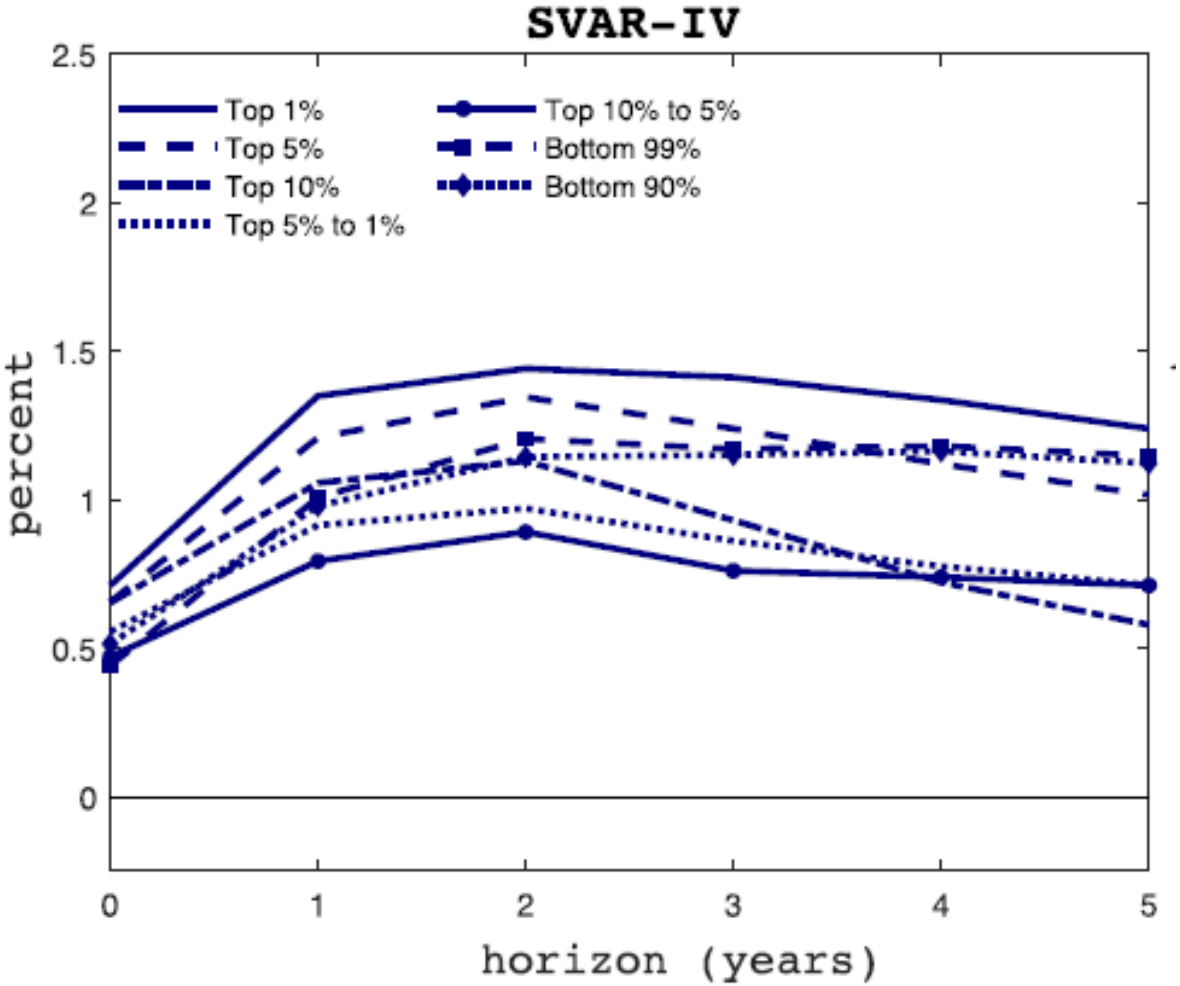

Figure: Mertens and Olea (2018)

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Empirical Evidence

- **Business income** is an important source of income at the top.

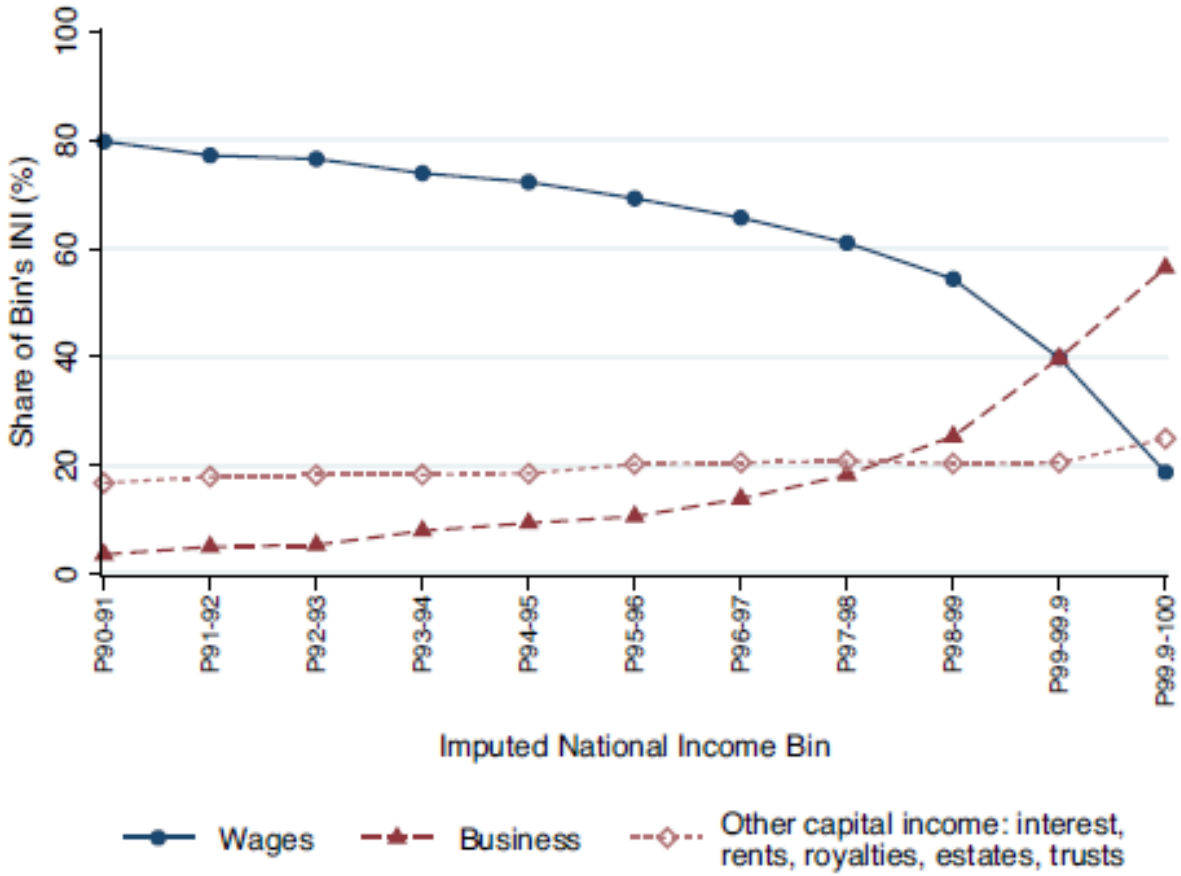

Figure: Share of Income by Source. Smith et al. (2019)

▸ fiscal income ▸ back

Share of Income by Source

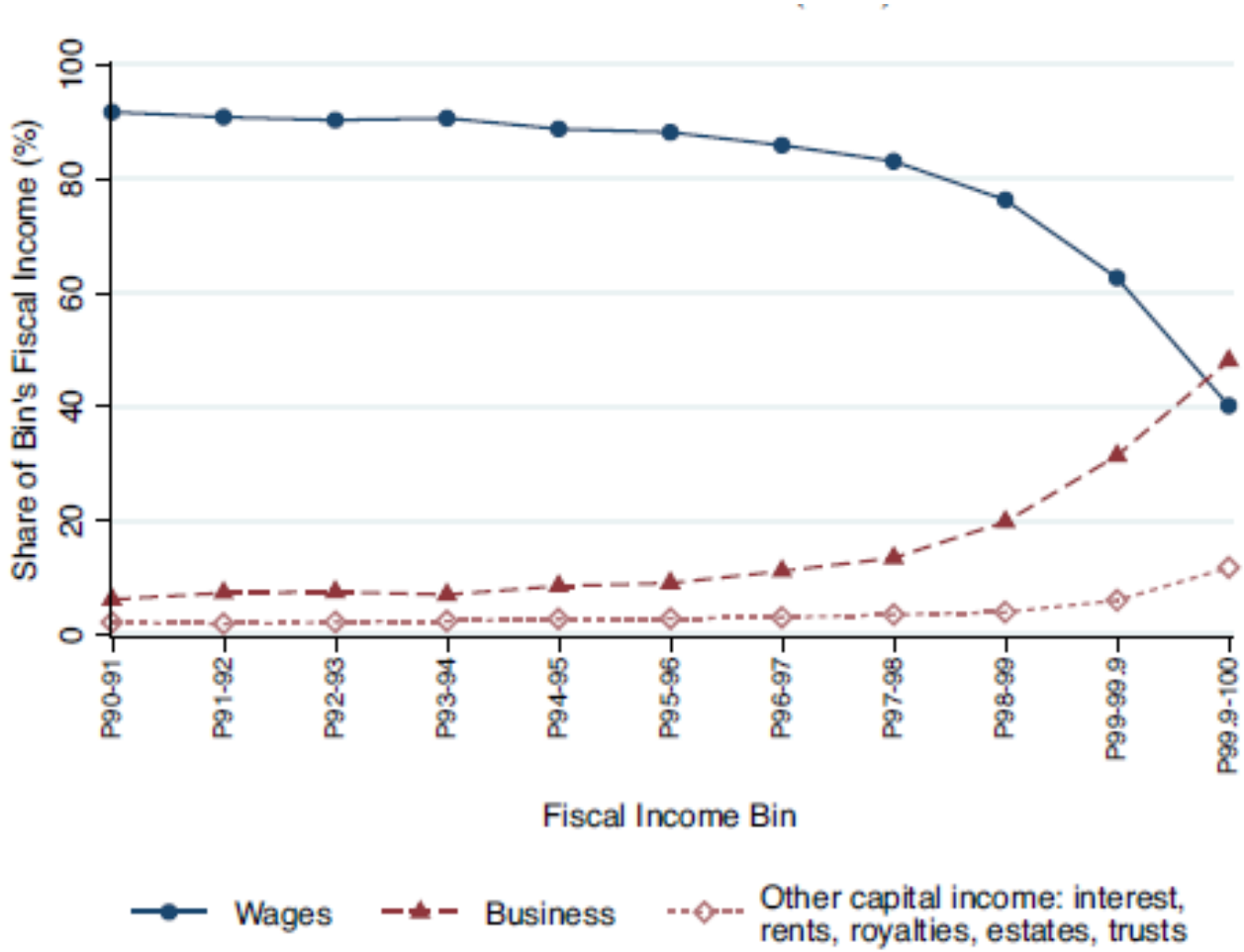

Figure: Share of Income by Source. Smith te al. (2019)

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Legal Form of Organization

- Two major types of formal businesses: **C-corps and Pass-through** businesses (S-corp and Partnerships).

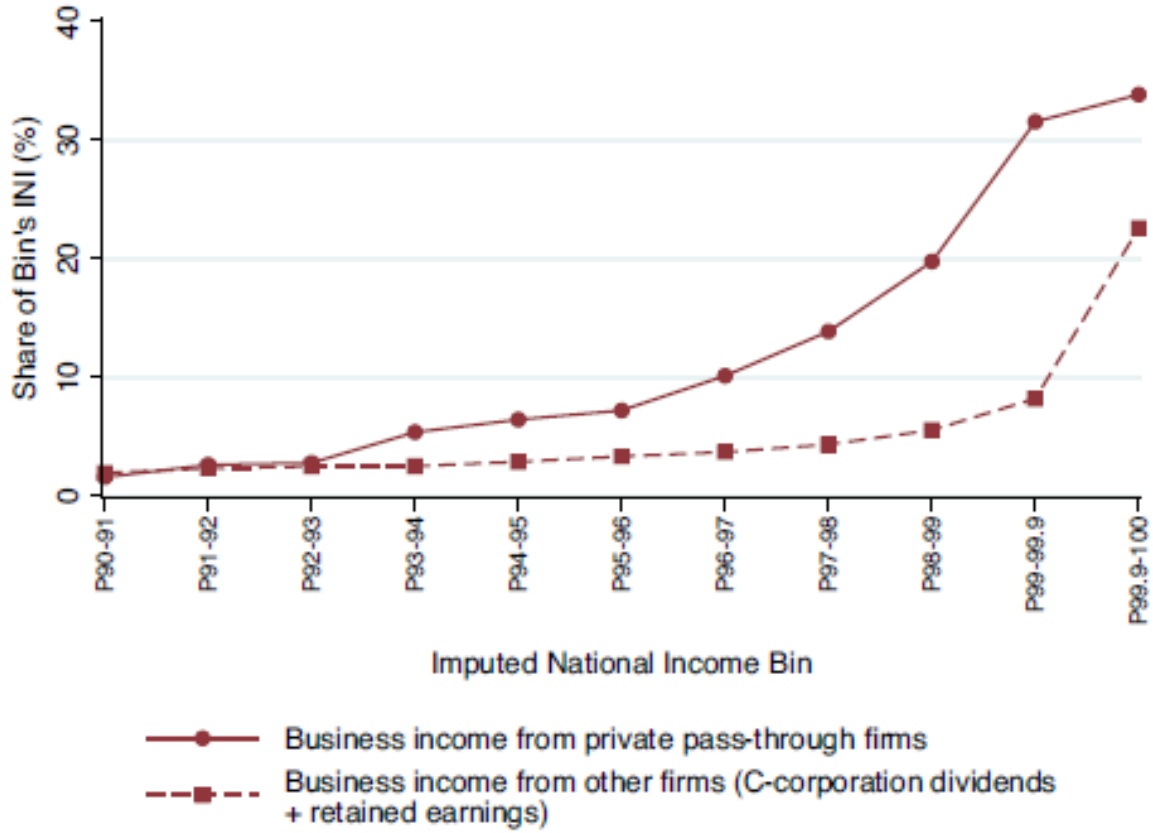

Figure: Share of Income by Business Income Source. Smith et al. (2019)

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Legal Form of Organization

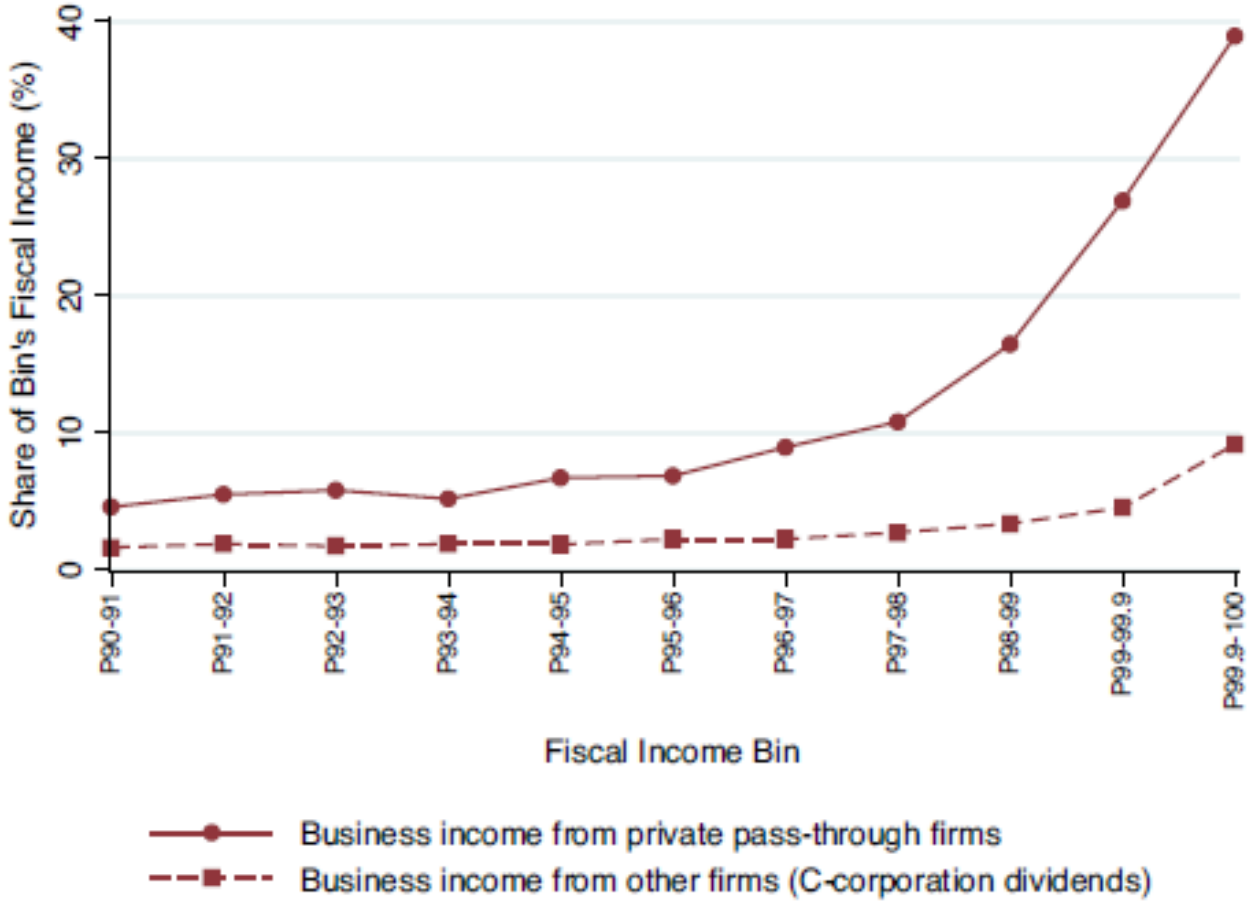

Figure: Share of Income by Business Income Source. Smith te al. (2019)

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Tax Avoidance: Choice of LFO

- LFO choice responds to tax change. Tax Reform Act 1986.

Figure: Dynamics of Sources of Top 1% Income. Smith et al. (2019)

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Table: Personal Income Tax Schedule $T^I(y)$, 2013

Taxable income (in thousands of USD)	**Taxable income** (relative to average income)	**Marginal income tax rate** (in %)
$[0, 17.85]$	$[0, 0.206)$	10
$[17.8501, 72.5]$	$[0.206, 0.837)$	15
$[72.501, 146.4]$	$[0.837, 1.690)$	25
$[146.401, 223.05]$	$[1.690, 2.575)$	28
$[223.051, 398.35]$	$[2.575, 4.599)$	33
$[398.351, 450.0]$	$[4.599, 5.195)$	35
$\geqslant 450.001$	$\geqslant 5.195$	39.6

Notes: Average household income in SCF 2013 is \$86,620.32. The standard deduction for married couples is \$12,200.

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Table: Basic Tax Parameters, 2013

Variable	Description	Value
τ_s	Social security tax on employees wages	$2\times 6.2\%$
	Social security tax on sole prop.	$2\times 6.2\%$
	Social security tax on wages S/C-corp	$2\times 6.2\%$
$\bar{y}_s$	Cap for social security tax	\$113,700 (1.313)
τ_m	Medicare tax on employees wages	$2\times 1.45\%$
	Medicare tax on sole prop.	$2\times 1.45\%$
	Medicare tax on wages S/C-corp	$2\times 1.45\%$
τ_A	Additional Medicare tax (ACA surcharge)	0.9%
$\underline{y}_m$	Threshold for the ACA surcharge	\$200,000 (2.309)
τ_c	Corporate tax rate	35%
τ_d	Dividend tax cap (simplified)	23.8%

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Sole-proprietor (Pass-though):

Pro	Con
▶ Profit taxed at the individual level (also subject to payroll taxes) ▶ Simplest business organization: No overhead costs	▶ No access to external finance (single owner) ▶ No income shifting b/w profit and wage income

S-corporation (Pass-though):

Pro	Con
▶ Profit taxed at the individual level ▶ Income shifting b/w profit and wage income	▶ No access to external finance (only borrowing) ▶ Substantial overhead costs

C-corporation:

Pro	Con
▶ Easier access to external finance ▶ Income shifting b/w profit and wage income	▶ Profit subject to both corporate income and dividend taxes ▶ Substantial overhead costs