Taxes, Private Equity,and Evolution of Income Inequality in the US[1]

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Heterogeneity in Macroeconomics a Decade after the Crisis
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[1] Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed.

Motivation

Facts for 1980-2012 period in the US:

1. Increase of the top income groups shares in total income (pre-tax) and change of their composition: **growth of the entrepreneurial income**.

2. **Shift in the composition** of the organizational forms of the US businesses from C corporations (subject to corporate income tax code) to S corporations and partnerships (subject to personal income tax code).

3. Changes in the corporate, dividend and personal **income taxes and regulations** on corporations.

This paper: conversion is more than accounting

1. Establishes **the empirical link** between trend in the distribution of legal forms of organization and income inequality dynamics using data from the Survey Consumer Finances (SCF).

2. Using firm-level administrative data (US Census LBD) provides **new evidence** on the flows between the legal forms of organization of firms and documents that conversion induces changes in employment dynamics.

3. Proposes a theory of **endogenous choice of legal form and risk diversification** consistent with these empirical findings and quantify the contribution of tax reform to income inequality increase.

Related literature

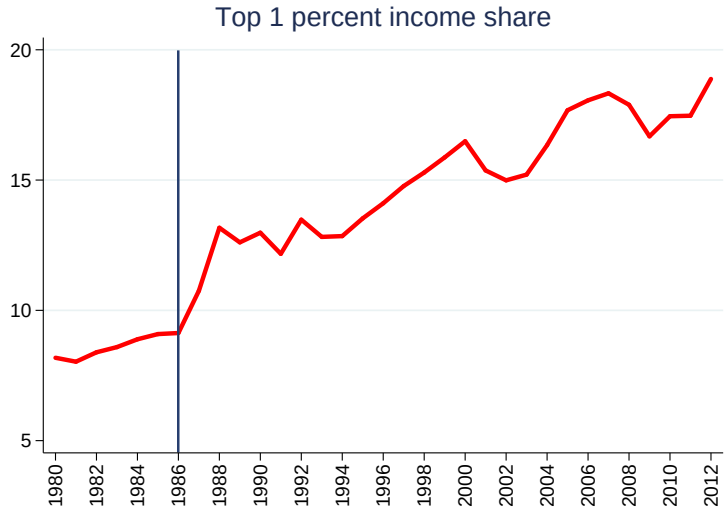
- **Income inequality dynamics and taxes**: Piketty and Saez (2003, 2013), Atkinson, Piketty and Saez (2011), Alvaredo, Atkinson, Piketty and Saez (2013), Bricker, Henriques, Krimmel and Sabelhaus (2016), Piketty, Saez and Zucman (2016), Smith, Yagan, Zidar and Zwick (2017)

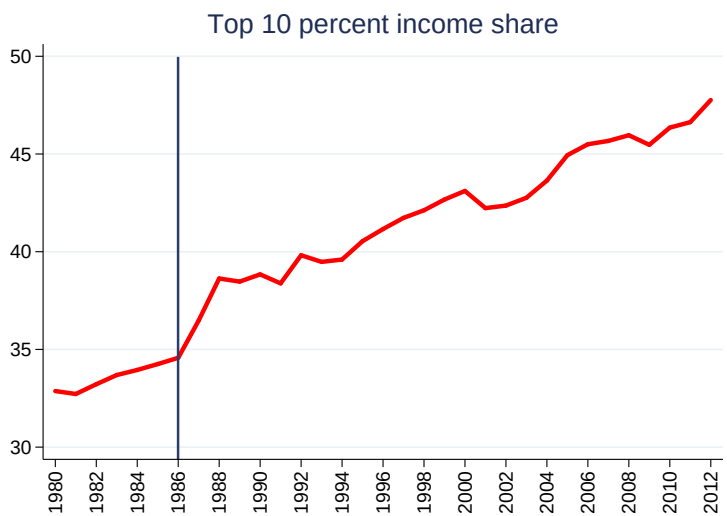
- **Macroeconomic effects of entrepreneurship**: Quadrini (2003), Cagetti and De Nardi (2009), Buera, Kaboski and Shin (2015), Buera and Shin (2011), Chen, Qi and Schlagenhauf (2014)

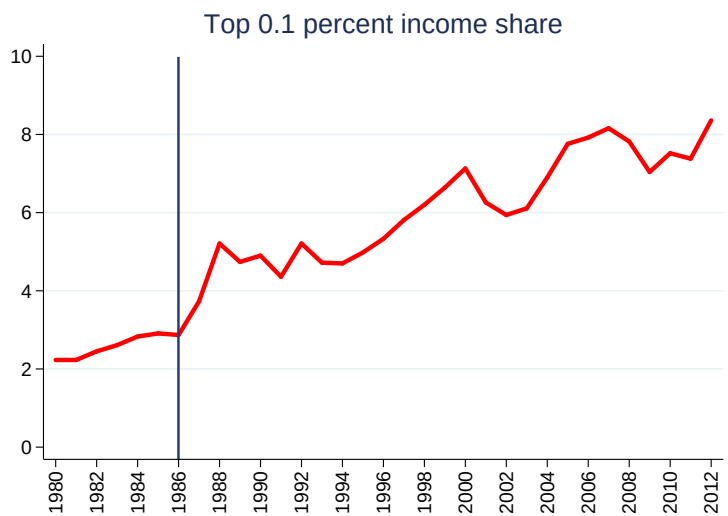
- **Uninsured investment risk**: Moskowitz and Vissing-Jørgenson (2002); Angeletos (2007); Panousi and Papanikolaou (2012)

- **Firm dynamics**: Haltiwanger, Jarmin and Miranda (2013), Fort, Haltiwanger, Jarmin and Miranda (2015), Chari, Christiano and Kehoe (2008), Moscarini and Postel Vinay (2012)

Pre-tax top income shares have risen since 1980 ...







Source: World Inequality Database

... and their composition has changed

	1980				2012			
	Share	Composition			Share	Composition		
		Labor	Entr.	Other		Labor	Entr.	Other
Top 10%	**32.9**	78.1	8.3	13.6	**47.8**	74.3	17.1	8.6
Top 1%	**8.2**	60.5	13.3	26.2	**18.9**	54.9	30.0	15.2
Top 0.1%	**2.2**	49.1	8.4	40.5	**8.4**	41.6	35.4	23.0

Source: World Inequality Database

- Labor: wages, salaries, pensions, stock-option exercised and annuities
- Entrepreneurial: sole proprietorships, partnerships and S corporations
- Other: dividends, interest and rents

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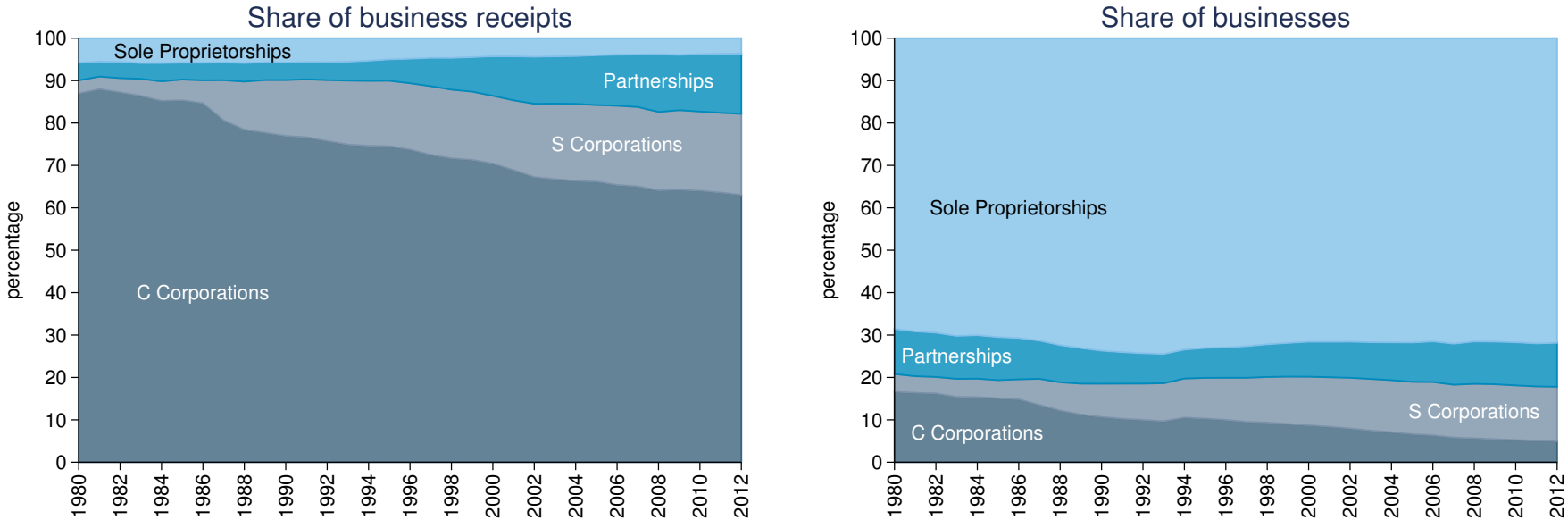
Legal forms of organization in the US

	Liability Protection	Ownership	Taxation of Profits
Sole Properietorship	No	individual or family	Pass-through
General Partnership	No	general partners	Pass-through
Limited Partnership	No for partners Yes for limited part.	general and limited partners	Pass-through
Limited liability company	Yes	single or multiple members	Pass-through
S Corporation	Yes	one class of 1-100 domestic shareholders	Pass-through
C Corporation	Yes	no limit on number and type	Entity level

- Pass through legal forms trade off tax and organizational simplicity versus flexibility to raise outside equity
- Choice of legal form may have real effect on firm behavior

WSJ KKR quote

Rise of the pass-throughs since 1980



Notes: Business receipts are the revenues businesses receive from their sales of goods and services.
Source: IRS Integrated Business Data

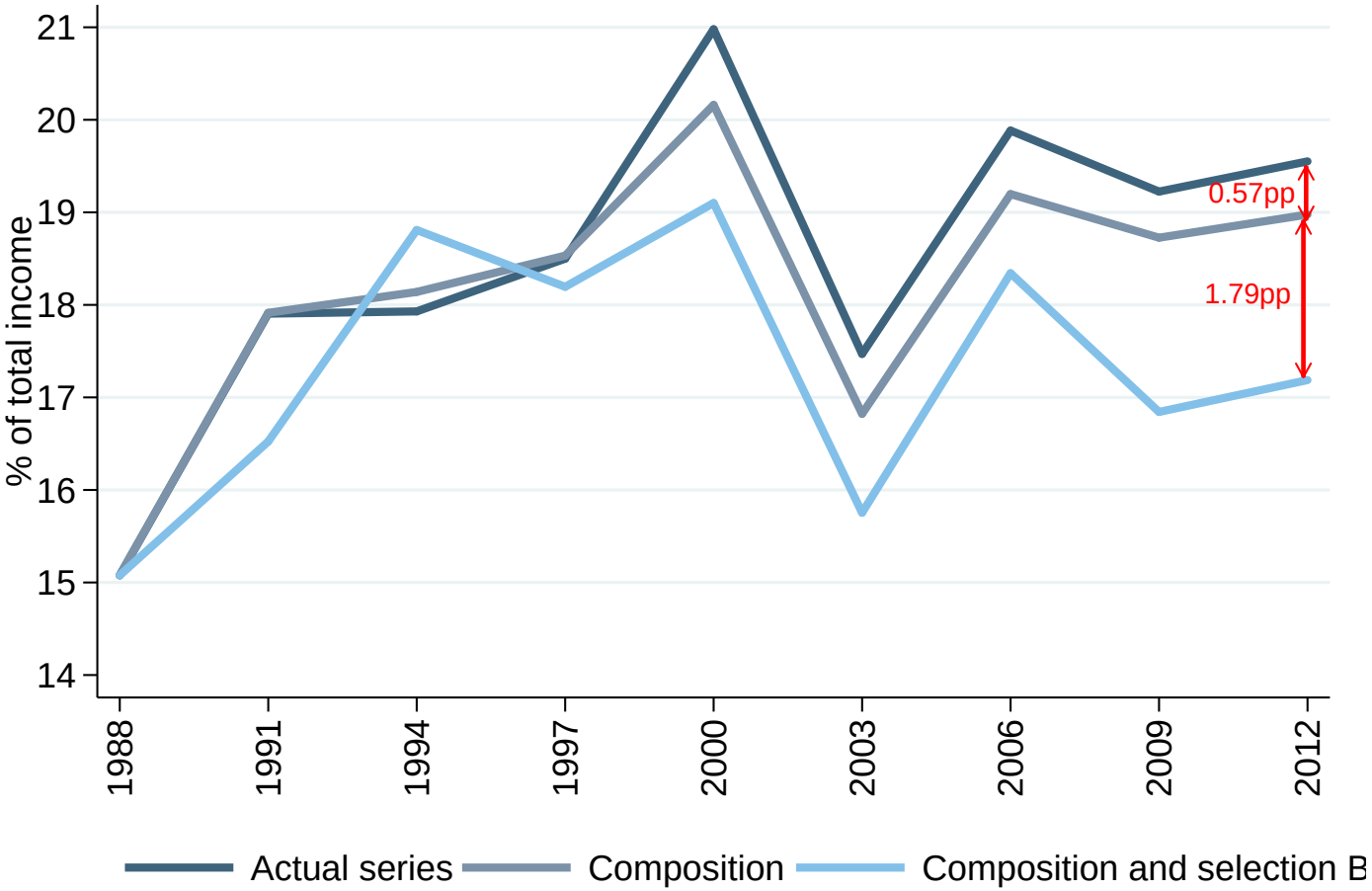
- Share of business receipts of pass-through entities in total receipts increased from **12.5%** in 1980 to **37.0%** in 2012 (left panel).
- Share of C Corporations in total entities dropped from **16.6%** in 1980 to **4.9%** (right panel).

Linking legal forms to income inequality dynamics

1. Split the SCF population into workers and Active Business Owners (ABO) i.e. households who own a business and have active management role in it.
2. Attach the legal form of organization to each ABO: (i) C corp. owner (ii) pass-through owner.
3. Use SCF waves (1988 to 2012) and "shift share" decomposition to construct two counterfactual top income series:
   (A) **Composition effect**: fix the fraction of HHs who own the pass-through business at the 1988 level.
   (B) **Selection effect**: fix the ratio of mean income of C corporation owners to the business income of pass-through owners.

Details decomposition | Details effects | Shift towards pass-throughs | Relative incomes

Counterfactuals: top 1 percent income share evolution

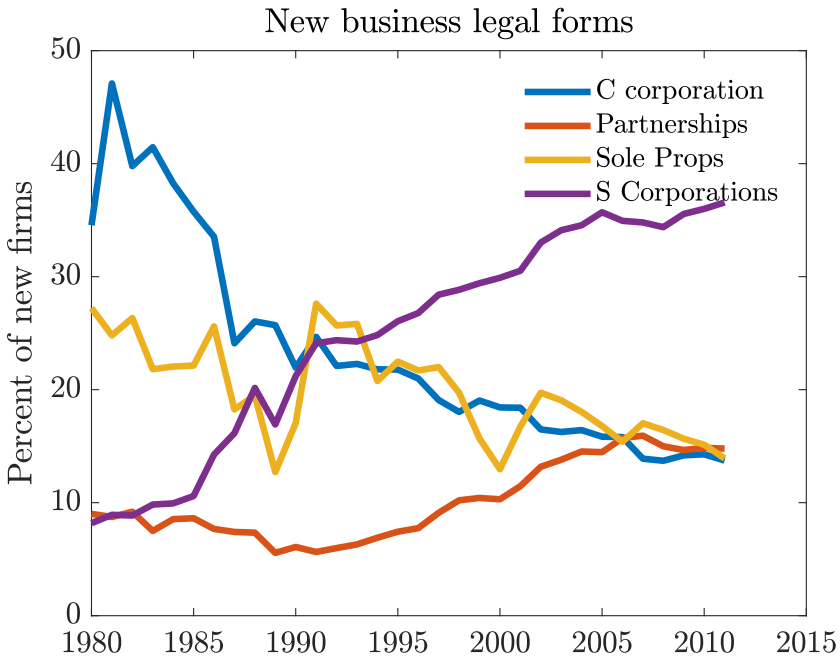


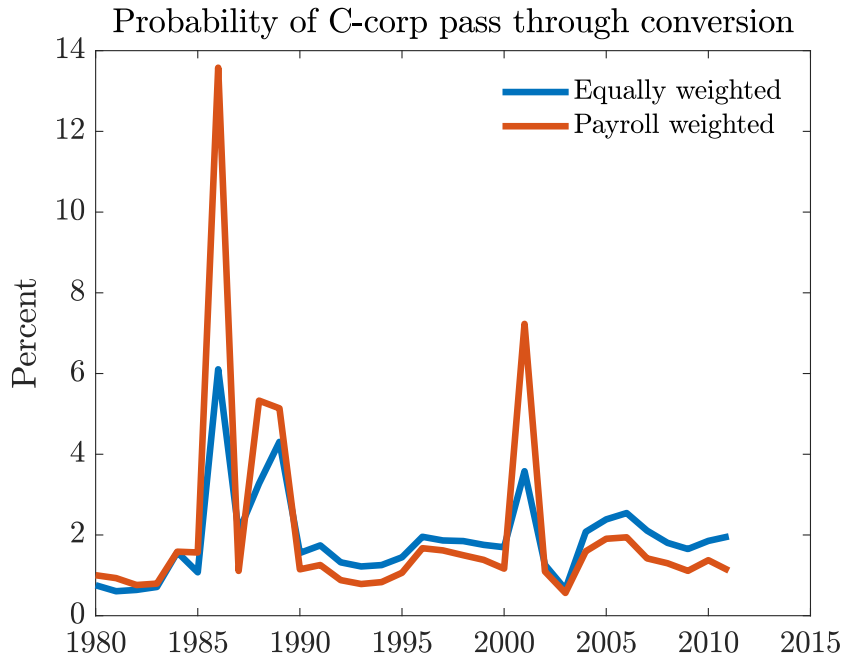
Source: Own calculations from 1988 − 2012 SCF data

- Composition: **13.0%** of the increase
- Composition and selection: **52.8%** of the increase

EVIDENCE ON CONVERSIONS

Conversions around periods of major tax reforms





Source: Census LBD and Business Register

- Conversions around periods of major tax reforms: Tax Act Reform of 1986, Economic Growth and Tax Relief Reconciliation 2001. Both reduced personal income tax especially at the top.

LBD Details | Top rates | Average rates

Extracting the real effects of conversion

- Construct 6 year window around 1986 tax reform episode
- Restrict to 1984 C corporations
- Estimate effects γ of tax-induced pass through conversion

$$\Delta \log E_{it} = \alpha_i + \sum_{\tau \neq 1985} \lambda_\tau D_{it}^\tau + \beta D_{it}^P + \sum_{\tau \geq 1986} \gamma_\tau D_{it}^P \times D_{it}^\tau + \varepsilon_{it}$$

where

- α_i - firm's fixed effect
- D_{it}^τ, D_{it}^P - a time and pass-through dummies
- β - the elasticity of employment growth to a pass through conversion in 1985
- γ_τ compares (within-firm) change in employment growth of converters versus non converters post-tax reform $\tau \geq 1986$ with pre-reform 1985 γ interpretation

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Conversion changes employment dynamics: TRA 1986

	$\Delta \log E_{it}$ (1)	$\Delta \log E_{it}$ (2)	$\Delta \log E_{it}$ (3)	$\Delta \log E_{it}$ (4)
β	0.00699*	0.00915**	0.0345***	0.0286***
	(0.0040)	(0.0041)	(0.0084)	(0.0086)
γ_{1986}	-0.0186***	-0.0367***	-0.0183*	-0.0312***
	(0.0050)	(0.0052)	(0.0101)	(0.0107)
γ_{1987}	-0.00206	-0.0198***	-0.0165*	-0.0315***
	(0.0041)	(0.0048)	(0.0089)	(0.0103)
γ_{1988}	-0.0170***	-0.0230***	-0.0378***	-0.0288***
	(0.0041)	(0.0050)	(0.0087)	(0.0108)
γ_{1989}	-0.0159***	-0.00669	-0.0389***	-0.00185
	(0.0041)	(0.0074)	(0.0086)	(0.0306)
Observations	3000000	500000	3000000	500000
R-squared	0.149	0.125	0.302	0.275
Business FE	Yes	Yes	Yes	Yes
Years	1984-1989	1984-1989	1984-1989	1984-1989
Weight	Equal	Equal	Employment	Employment
Sample	All	Converters	All	Converters

Pre TRA 1986: Growth rate increases with conversion

Post TRA 1986: Growth rate declines with conversion

2001 Results

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MODEL

Environment

- Unit measure of infinitely-lived households:
  - Fraction μ are workers.
  - Fraction $1-\mu$ are entrepreneurs (active business owners).
- Households have standard preferences over consumption c and leisure $1-h$ ordered by:

$$\mathbb{E}_0\left[\sum_{t=0}^{\infty}\beta^t u(c_t, 1-h_t)\right].$$

- Expectation is over idiosyncratic productivity. There is no aggregate uncertainty.
- Entrepreneurs operate DRS technology with endogenous choice of the legal form of organization.

Stylized tradeoff between legal forms

Pass through:

Pro	Con
• Profits taxed once at personal income tax • Simple organization with no overhead costs	• Capital financed only through own equity • Undiversified investment risk

Stylized tradeoff between legal forms

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• Profits taxed once at personal income tax • Simple organization with no overhead costs	• Capital financed only through own equity • Undiversified investment risk

C corporation:

Pro	Con
• Access to (perfectly elastic) supply of external equity • Completely diversified investment risk	• Profits subject to both corporate income and distribution taxes • Substantial overhead costs

Workers

Standard income fluctuation problem (IFP):

$$
\begin{aligned}
V^W(a,\varepsilon) \quad = \quad & \max_{c,h,a'} u(c,1-h) + \beta \mathbb{E}\left[V^W\left(a',\varepsilon'\right)|\varepsilon\right] \\
& \text{subject to} \\
& c + a' = a + y - T_y(whs) - \tau_k r a \\
& y = ra + whs \\
& a' \geq \underline{a}
\end{aligned}
$$

$$
\begin{aligned}
a: &\quad \text{savings} \\
\varepsilon: &\quad \text{stochastic labor productivity} \\
T_y(\cdot): &\quad \text{income tax schedule} \\
\tau_k: &\quad \text{flat capital income tax}
\end{aligned}
$$

Entrepreneurs: C corporation

Entrepreneurs $z'|z$ manage DRS technology in k and n

$$f(k, n; z') = z'^{1-\nu}(k^{\alpha} n^{1-\alpha})^{\nu} \quad \nu < 1.$$

Note: homogeneous in k, n, *and* z'.

Capital $k^*(z)$ supplied by mutual fund before $z'|z$ observed

- Mutual fund absorbs all investment risk.
- Perfectly elastic supply of capital at risk free rate.

Labor n hired at wage w.

Taxation and other costs:

- C-corp overhead cost c_f
- Corporate profits taxed at rate τ_c

Entrepreneurs: C corporation

Static profit maximization for labor

$$\pi(z', k^*) = \max_n \left\{ f(k^*, n; z') - wn - c_f \right\}$$

Entrepreneurs: C corporation

Static profit maximization for labor

$$\begin{aligned}\pi(z', k^*) &= \max_n \left\{ f(k^*, n; z') - wn - c_f \right\} \\ &= f_k(k^*, n^*; z')k^* + f_z(k^*, n^*; z')z' - c_f\end{aligned}$$

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Mutual fund chooses $k^*(z)$ to solve intertemporal investment problem

- Requires after tax expected return equal to risk free rate

$$\mathbb{E}[(1 - \tau_c)(f_k(k^*; n^*; z') - \delta)|z] = r$$

Mutual fund details Homogeneity

Entrepreneurs: C corporation

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- Paid actual (ex-post) return

$$(1 - \tau_c)(f_k(k^*; n^*; z') - \delta)$$

Manager paid the preferred dividend

$$D(z') = (1 - \tau_c)(f_z(k^*; n^*; z')z' - c_f)$$

Mutual fund details Homogeneity

Entrepreneurs: C corporation

IFP with pass through conversion option in continuation W^C:

$$\begin{aligned} V^C(a,z) &= \max_{s,c} u\left(c, 1-\overline{h}\right) + \beta W^C(s,z) \\ &\quad \text{subject to} \\ &\quad c + s = a + y - \tau_k(ra + D(z)) \\ &\quad y = ra + D(z) \\ &\quad a' \geq \underline{a} \end{aligned}$$

Dividend and risk free investment return taxed at τ_k

IFP from stochastic preferred dividend $D(z)$

Recall: Dividend $D(z)$ is Ricardian rent $f_z(k^*)z$ minus overhead c_f

$$D(z) = (1-\tau_c)(f_z(k^*)z - c_f)$$

Entrepreneurs: pass-through

IFP with conversion option in continuation W^P

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& c + s = y + a + (1-\delta)\, e - T_y\left(\pi - \delta e\right) - \tau_k r a \\
& y = ra + \pi(e, z) \\
& s \geq \underline{a}
\end{aligned}
$$

$$
\pi(e, z) = \max_n \left\{ z^{1-\nu} \left(e^{\alpha} n^{1-\alpha}\right)^{\nu} - wn \right\} : \quad \text{gross profit}
$$

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Homogeneity of technology in z, k and n implies:

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\pi(e, z) = f_k e + f_z z
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IFP from rents $f_z z$ *and* undiversified return on business equity $f_k e$

Continuation values: conversion and portfolio choice

Continuation value of the pass-through entrepreneur:

$$W^P(s,z) = \max\left\{\mathbb{E}\left[\,V^C\left(s,z'\right)\middle|\,z\right],\ \max_{e'\leq s-\bar{a}}\left\{\mathbb{E}\left[\,V^P\left(s-e',e',z'\right)\middle|\,z\right]\right\}\right\}.$$

Continuation value of the C-corp entrepreneur:

$$W^C(s,z) = \max\left\{\mathbb{E}\left[\,V^C(s,z')\middle|\right],\ \max_{e'\leq s-\bar{a}}\left\{\mathbb{E}\left[\,V^P\left(s-e',e',z'\right)\middle|\right]\right\}\right\}.$$

With no switching cost, symmetric continuation values:

$$W^C = W^P.$$

Aggregation Details

Portfolio choice: private equity expected return

Pass through allocates savings s to solve

$$\max_{e' \leq s - \bar{a}} \left\{ \mathbb{E} \left[V^P \left(s - e', e', z' \right) \middle| \right] \right\}$$

Portfolio choice: private equity expected return

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$$\max_{e' \leq s - \bar{a}} \left\{ \mathbb{E} \left[V^P \left(s - e', e', z' \right) \middle| \right] \right\}$$

Choose e' so after-tax net expected return on private equity

$$\mathbb{E} \left[\left(1 - T_y' \right) \left(f_k - \delta \right) \middle| z \right] = \left(1 - \tau_k \right) r - \frac{\text{Cov} \left[u_c, \left(1 - T_y' \right) f_k | z \right]}{\mathbb{E} \left[u_c | z \right]} + \frac{\xi}{\beta \mathbb{E} \left[u_c | z \right]}$$

Multiplier ξ on capital constraint $\xi(s - \bar{a} - e') = 0$

Portfolio choice: private equity expected return

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Multiplier ξ on capital constraint $\xi(s - \bar{a} - e') = 0$

Decompose private equity return:

- Return on savings (mutual fund) $(1 - \tau_k) r$
- Risk premium $-\frac{\mathrm{Cov}\left[u_c, \left(1 - T_y'\right) f_k | z\right]}{\mathbb{E}[u_c | z]}$
- Cost of external finance constraint $\frac{\xi}{\beta \mathbb{E}[u_c | z]}$

Portfolio choice: private equity expected return

Pass through allocates savings s to solve

$$\max_{e' \leq s - \bar{a}} \left\{ \mathbb{E} \left[V^P \left(s - e', e', z' \right) \middle| \right] \right\}$$

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$$\max_{e' \leq s - \bar{a}} \left\{ \mathbb{E} \left[V^P \left(s - e', e', z' \right) \middle| \right] \right\}$$

Choose e' so after-tax net expected return on private equity

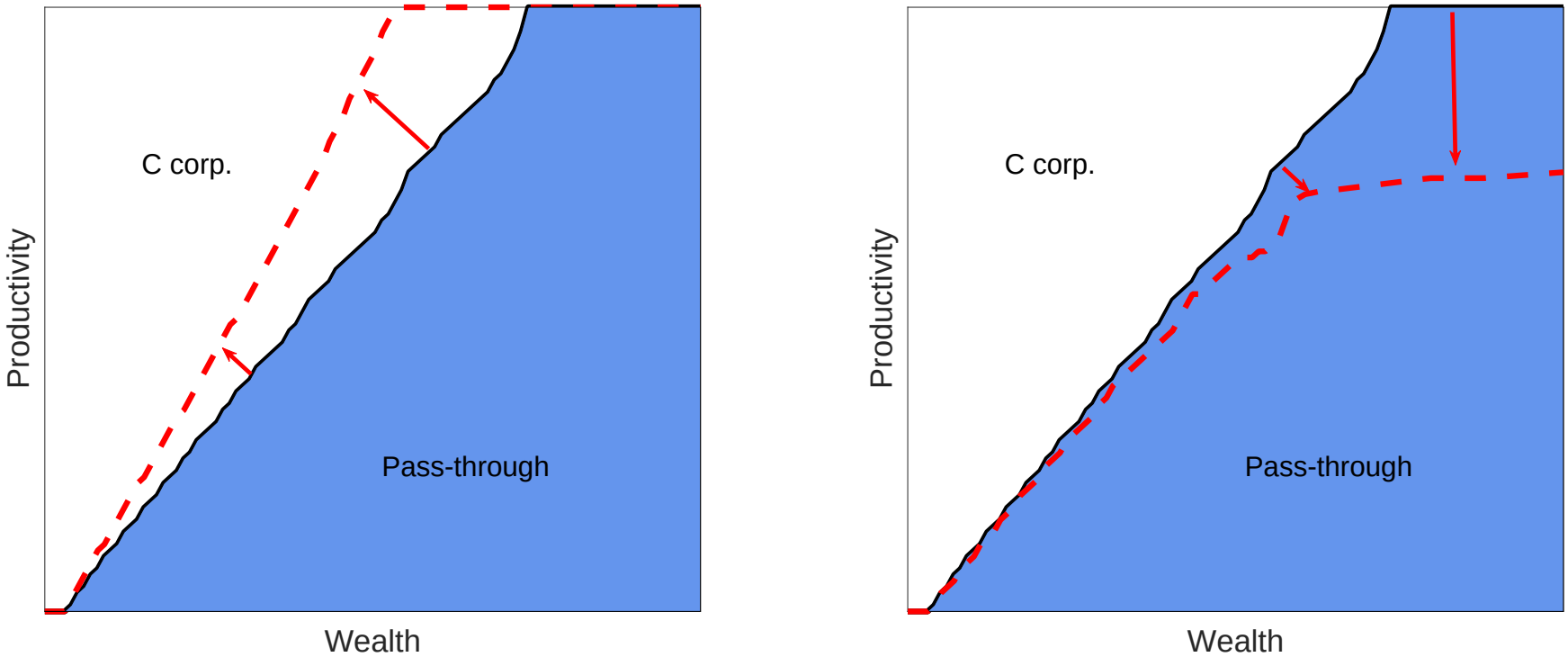
$$\mathbb{E}\left[\left(1 - T_y'\right) \left(f_k - \delta\right) \middle| z \right] = \left(1 - \tau_k\right) r - \frac{\mathrm{Cov}\left[u_c, \left(1 - T_y'\right) f_k | z\right]}{\mathbb{E}\left[u_c | z\right]} + \frac{\xi}{\beta \mathbb{E}\left[u_c | z\right]}$$

Multiplier ξ on capital constraint $\xi(s - \bar{a} - e') = 0$

Decompose private equity return:

- Return on savings (mutual fund) $(1 - \tau_k) r$
- Risk premium $- \frac{\mathrm{Cov}\left[u_c, \left(1 - T_y'\right) f_k | z\right]}{\mathbb{E}[u_c | z]}$
- Cost of external finance constraint $\frac{\xi}{\beta \mathbb{E}[u_c | z]}$

Selection into the LFOs in the model



- Fraction of pass-throughs increases in wealth and decreases in z
- Personal tax reduction (left panel) and corporate income tax reduction (right panel)

Selection in SCF

Effects of pass through conversion

1. Eliminate overhead cost
   - $\uparrow$ pre-tax profits/income
2. Replace financing with own equity
   - Introduce investment risk (risk premium):

$$Cov\left(u_c\left(c(a', e', z')\right), \left(z'^{\frac{1-\nu}{1-(1-\alpha)\nu}}\right)\right) < 0$$

$$\implies \; e' < k^*(z) \downarrow \text{ investment and } \uparrow \text{ expected return}$$

   - Introduce financing constraint on investment

$$\implies \; e' < k^*(z) \downarrow \text{ investment and } \uparrow \text{ expected return}$$

Investment risk + financing constraint, $\uparrow$ dispersion of expected and realized return on equity and amplify increase in inequality.

Quantitative experiment

Goal:

- Use model to quantitatively assess importance of each channel in increasing equilibrium inequality
- Examine transitional dynamics of inequality in response to 1986, 2001 (and 2017) tax reforms

Today:

- A numerical experiment to examine the long-run effects on equilibrium inequality
- Reduce the average income tax by 5 percentage points

Model Parametrization

Parameters Calibrated Outside of the Model

Parameter		Source	Value
Curvature of utility function	σ	-	2.0
Frisch elasticity of labor supply	ν	Chetty (2011) et. al.	1.0
Depreciation rate	δ	NIPA	0.05
Span of control	ν	-	0.80
Corporate income tax	τ_c	NIPA	0.30
Personal income tax	τ_i	McDaniel (2007)	0.224
Dividend income tax	τ_d	Bhandari, McGratten (2018)	0.14
Persistence of labor and ent prod.	ρ_ε, ρ_z	-	0.90
Elasticity of capital	α	Labor income share	0.20
Fraction of ABOs in population	μ	SCF data	0.87

Parameters Calibrated Jointly in Equilibrium

Parameter		Target	Value
Discount factor	β	Wealth/Output	0.932
Mean of labor prod.	μ_ϵ	% of ABOs income in Top 1	1.146
Std. dev. of labor prod.	σ_ϵ	Std dev. of log labor earnings	0.192
Disutility of labor	ψ	Avg. labor supply	8.012
Fixed cost for C corp.	c_f	% of C corp. in ABOs	0.011
Std. dev. of ent. prod.	σ_z	σ_ϵ	0.192

Model Performance Targets | Functional forms | Model Performance Non-targeted

Top income shares following tax reform

	Economy 1 $T_I = 0.22$, GE	**Economy 2** $T_I = 0.17$, PE	**Economy 3** $T_I = 0.17$, GE
Top 1%	7.6	8.2	8.0
Top 5%	23.7	25.3	24.7
Top 10%	36.9	40.7	39.7
Top 15%	46.5	52.2	50.1

Notes: GE - general equilibrium, PE - partial equilibrium.

- Following the **5** percentage points reduction of personal income tax, the top income shares increase between **0.4 to 3.6 percentage points**.
- GE effects counter the initial impact (wage increases)

Prices and Aggregates X Z

Composition of agents across income distribution

	Economy 1 $T_I = 0.22$, GE			**Economy 2** $T_I = 0.17$, PE			**Economy 3** $T_I = 0.17$, GE		
	Work.	C ent.	P ent.	Work.	C ent.	P ent.	Work.	C ent.	P ent.
Population	**87.9**	**1.8**	**10.3**	**87.9**	**1.2**	**11.0**	**87.9**	**1.3**	**10.9**
Top 1%	27.3	0.0	72.7	24.3	0.0	75.7	25.1	0	74.9
Top 5%	38.6	1.1	60.3	38.2	0.3	61.5	38.3	0.4	61.3
Top 10%	49.3	1.4	49.3	48.8	0.6	50.6	48.9	0.8	50.3

- Shift in top income shares induced by the increase of the number of owners in total population and total income.
- Pass-through business owners over-represented at the top of the income distribution.

Conclusions

- Changes in the income inequality in the US coincide in time with the shift in the distribution of legal forms of organizations and tax reforms.

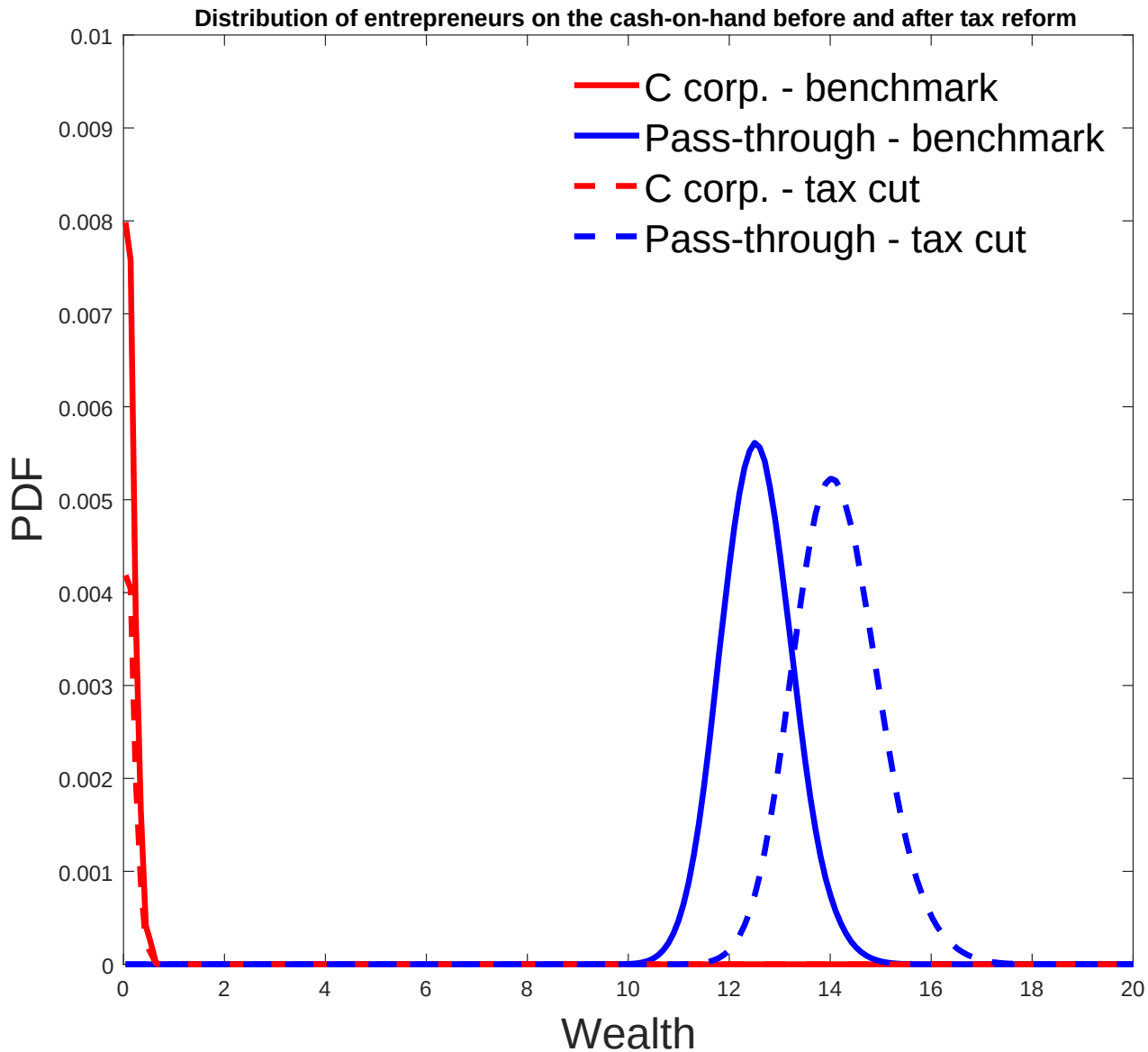
- We use the SCF to establish the empirical relationship between the first two trends and document using US Census LBD that conversion to pass-through affects employment dynamics.

- We propose a quantitative theory to illustrate the link between the taxation of businesses, legal forms of organization and income inequality.

NUMERICAL EXPERIMENT: MARGINAL DISTRIBUTIONS

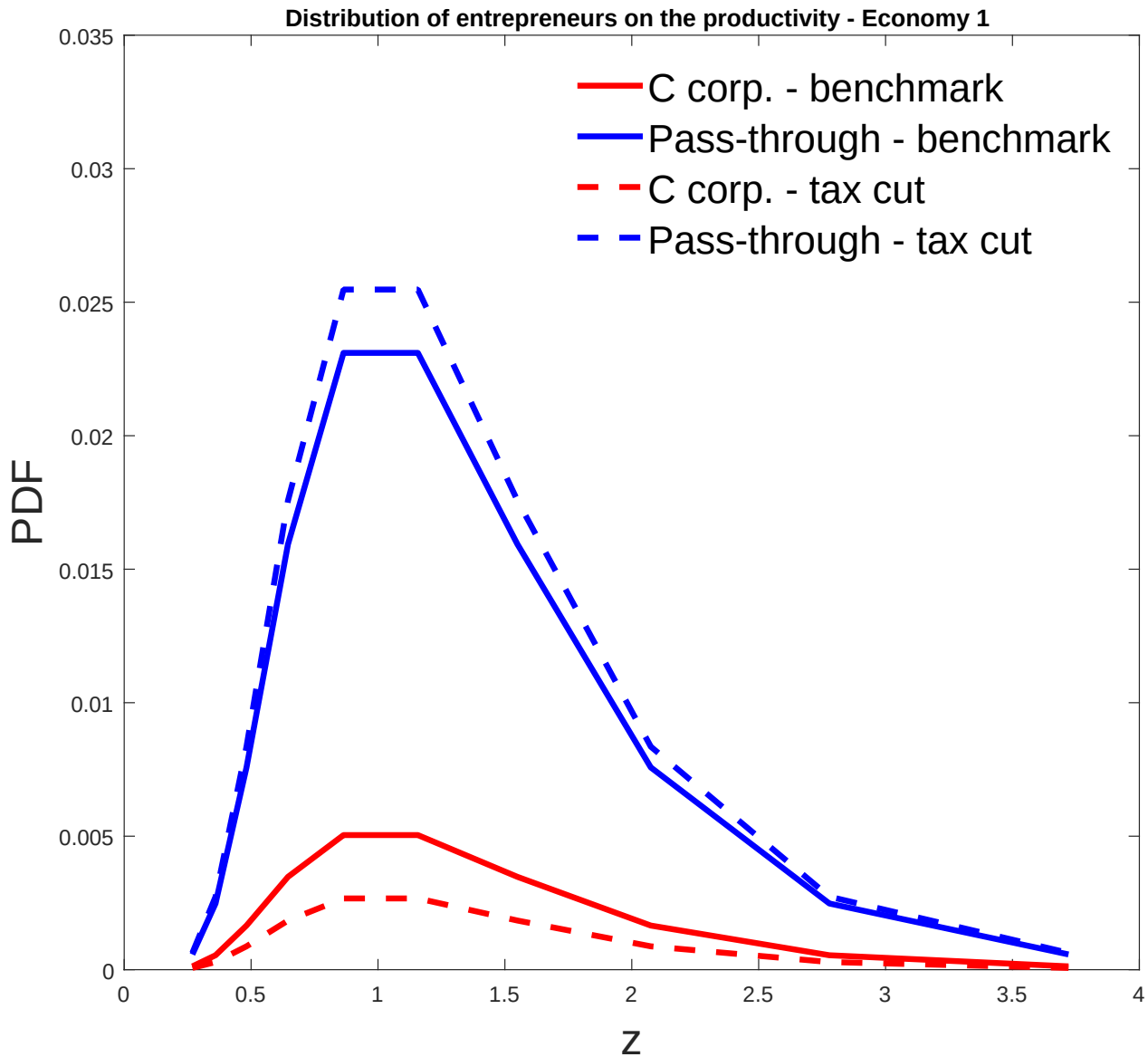
Tax cut: distribution of cash on hand by LFO

Back



Tax cut: distribution of productivity by LFO

Back



General equilibrium effects

Table: Labor and Capital Market Prices and Allocations

	Economy 1 $\tau_i = 0.22$, GE	**Economy 2** $\tau_i = 0.17$, PE	**Economy 3** $\tau_i = 0.17$, GE
Prices			
Wage	0.497	0.497	0.514
Interest rate	0.04	0.04	0.04
Allocations			
Labor demand C ent.	0.101	0.053	0.048
Labor demand P ent.	0.495	0.549	0.526
Capital demand C ent.	0.126	0.087	0.081
Asset supply	0.551	0.766	0.750
Labor supply	0.598	0.582	0.578

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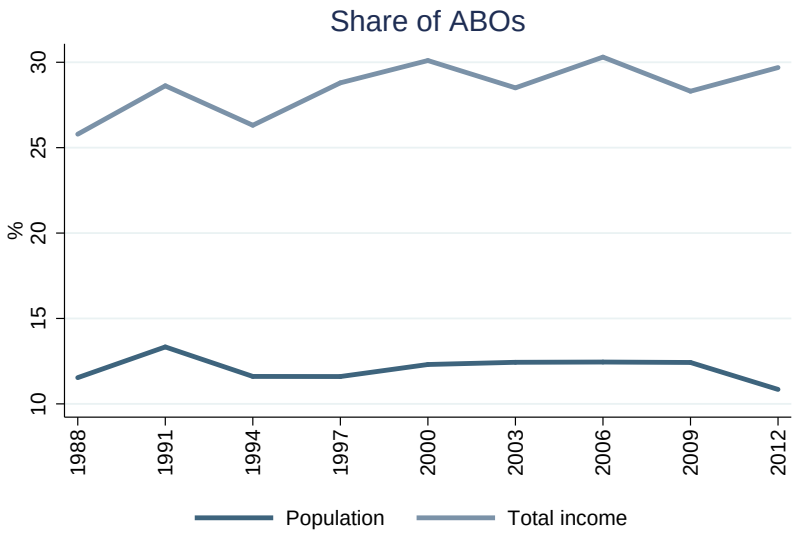
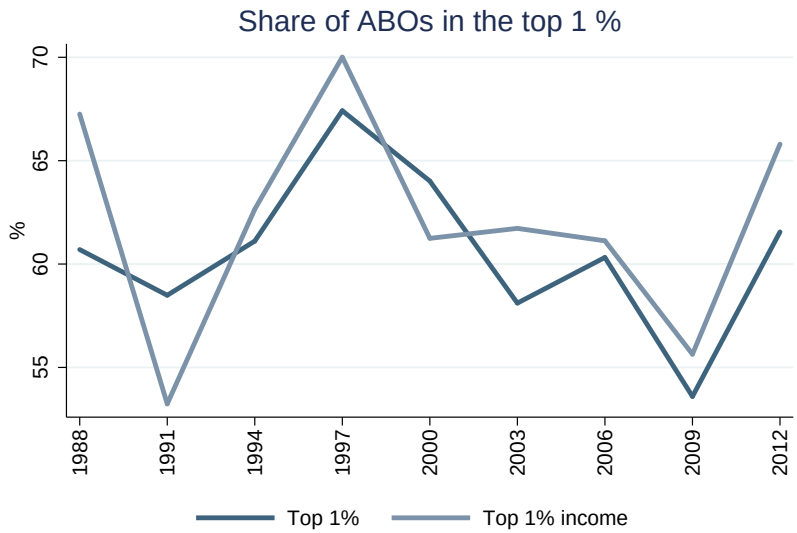
Business owners over time



Source: Own calculations from 1988 − 2012 SCF



Source: Own calculations from 1988 − 2012 SCF

- Slight decline in share of total population between 1988 and 2012, business income remains concentrated in the top 1 percent income group

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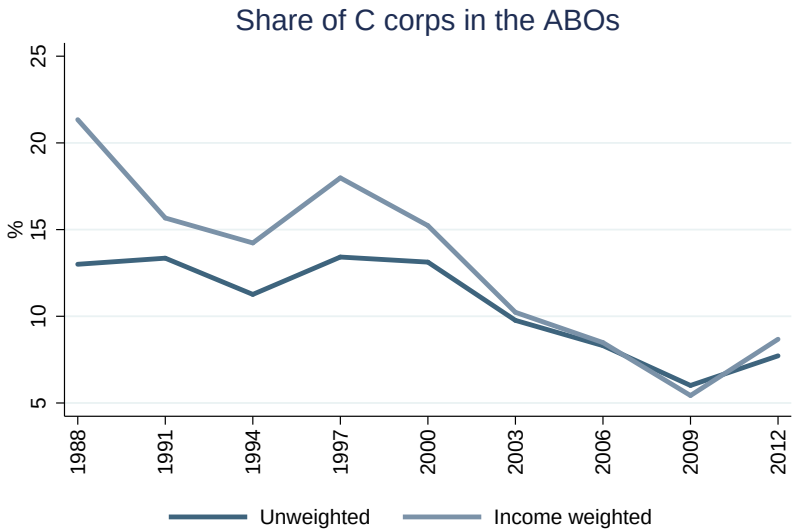
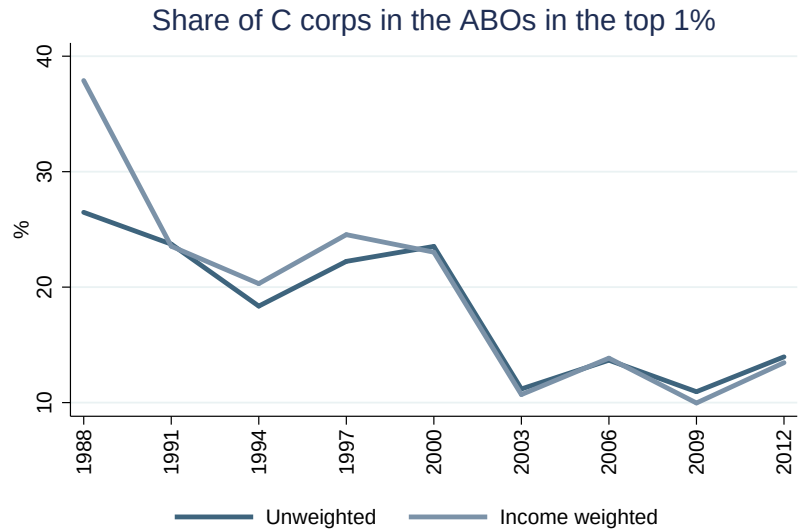
Shift towards the pass-through entities among ABOs



Source: Own calculations from 1988 − 2012 SCF



Source: Own calculations from 1988 − 2012 SCF

- Similar decline in the role of the C corps as observed in the IRS and LBD data

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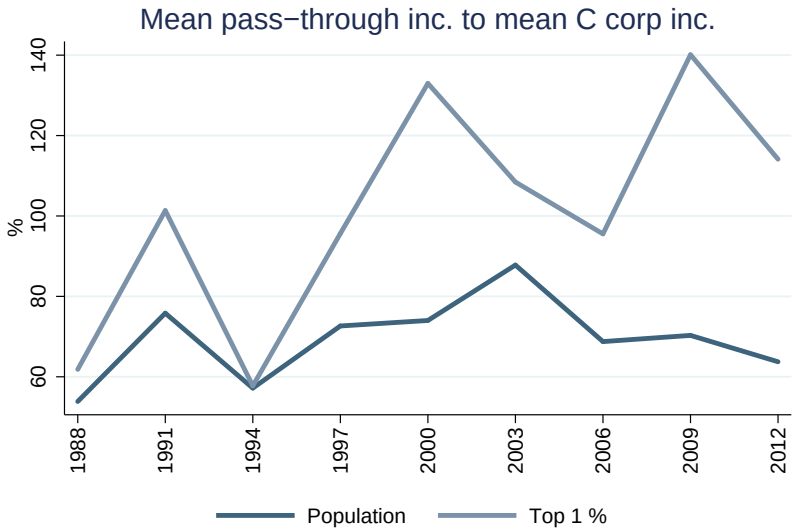
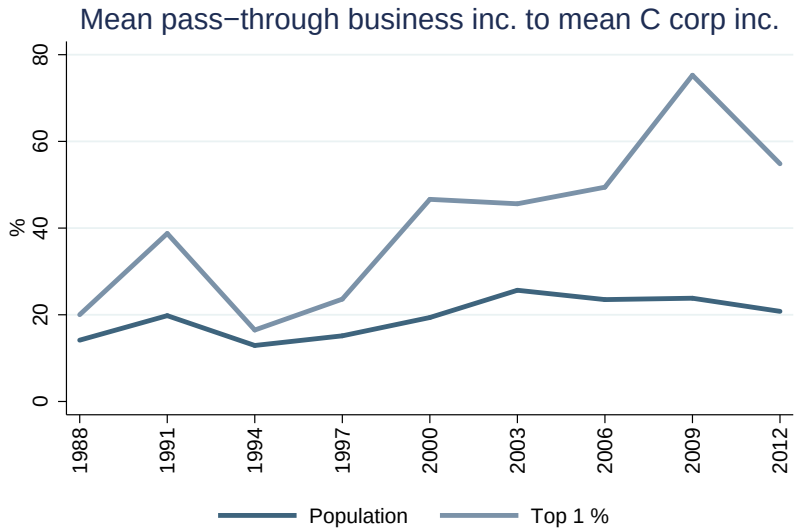
Relative income of pass-throughs rises sharply at the top



Source: Own calculations from 1988 − 2012 SCF



Source: Own calculations from 1988 − 2012 SCF

- The ratio of mean incomes rises by 18.2% in the population and by 84.6% in the top 1%
- The ratio of business income to C corp income rises by 47.5% in the population and by 174.2% in the top 1%

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Simple income decomposition

- Let x_t be the share of ABOs in the overall SCF population and p_t be the share of pass-through owners among ABOs. Then the mean income i_t is

$$i_t = x_t \left[p_t (i_t^{PB} + i_t^{PNB}) + (1 - p_t)\, i_t^C \right] + (1 - x_t)\, i_t^W$$

  where i_t^{PB}, i_t^{PNB}, i_t^C and i_t^W are the mean incomes of respectively pass-through owners (business, non-business), C corporation owners and workers.

- Similarly, the mean income within the top 1 percent is

$$i_t^1 = x_t^1 \left[p_t^1 (i_t^{1,PB} + i_t^{1,PNB}) + \left(1 - p_t^1\right) i_t^{1,C} \right] + \left(1 - x_t^1\right) i_t^{1,W}$$

  where variables with superscript 1 denote proper shares and means within the top 1 percent.

- The top 1 percent income share is $s_t^1 = \frac{N^1 \times i_t^1}{N \times i_t}$

Back

Quantifying the impact of shift in the legal forms

- **Composition effect:** hold the shares p constant at the 1988 level

$$i_{t,c1} = x_t \left[p_{88} (i_t^{PB} + i_t^{PNB}) + (1 - p_{88})\, i_t^C \right] + (1 - x_t)\, i_t^W$$

and analogously for the mean income of the top 1 percent.

- **Composition and selection effect A:** hold the shares p constant AND the ratio of the mean incomes

$$\omega_{c2A} = \frac{i_{88}^{PB} + i_{88}^{PNB}}{i_{88}^C}$$

and define counterfactual series

$$i_{t,c2A} = x_t \left[p_{88} \omega_{2A}\, i_t^C + (1 - p_{88})\, i_t^C \right] + (1 - x_t)\, i_t^W$$

and analogously for the mean income of the top 1 percent.

Back

Quantifying the impact of shift in the legal forms

- **Composition and selection effect B:** the ratio of the mean pass through component of income

$$\omega_{c2B} = \frac{i_{88}^{PB}}{i_{88}^{C}}$$

and define the counterfactual series

$$i_{t,c2B} = x_t \left[p_{88}(\omega_{c2B} i_t^C + i_t^{PNB}) + (1 - p_{88}) i_t^C \right] + (1 - x_t) i_t^W$$

and analogously for the mean income of the top 1 percent.

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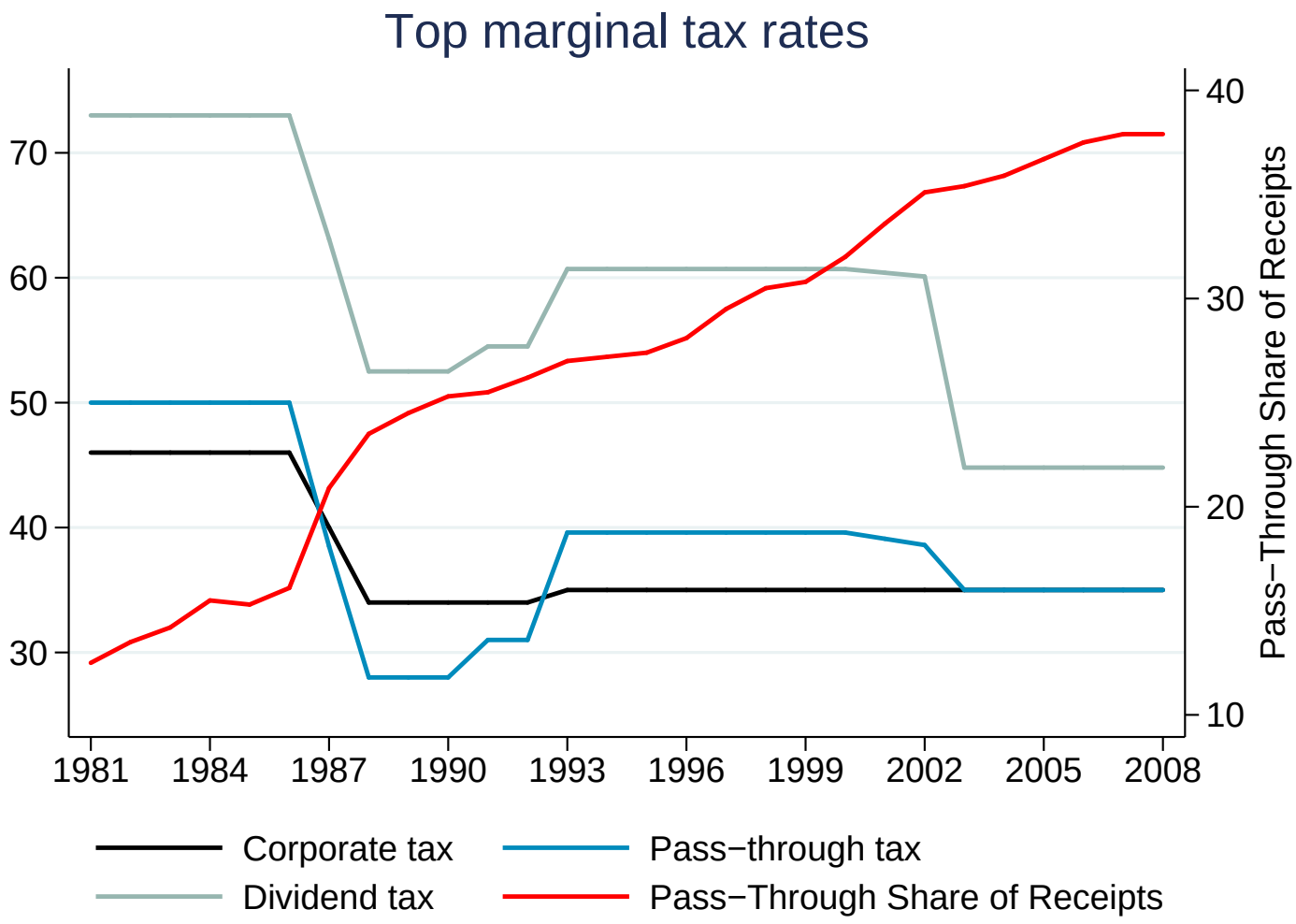
SCF Income definitions

- C corp owner: Wage/Salary + Dividends + Interest/Rents + Other Market Income
- Pass-through owner:
  1. Business: Business Income in excess of Wage/Salary
  2. Non Business: Wage/Salary + Dividends + Interest/Rents + Other Market Income

Back

Changes in tax policy and regulations



Source: Congressional Budget Office and IRS

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The number of pass-through owners p is determined by

$$p = \mu \left(\int_{A \times E \times Z} d_P(a, e, z)\, d\lambda_P(a, e, z) + \int_{A \times Z} (1 - d_C(a, z))\, d\lambda_C(a, z) \right)$$

and then the fraction of the C corporation owners is $(1 - \mu)(1 - p)$

Market clearing for labor requires

$$\begin{aligned} \int_A \int_\epsilon h(a, \varepsilon)\, d\lambda_w(a, \varepsilon) &= \int_{A \times Z} n^*(z)\, d\lambda_C(a, z) \\ &+ \int_{A \times E \times Z} n(a, e, z)\, d\lambda_P(a, e, z) \end{aligned}$$

and market clearing for the capital stock requires

$$\int_{A \times Z} k^*(z)\, d\lambda_C(a, z) = \int_{A \times \epsilon} a'(a, \varepsilon)\ d\lambda_w(a, \varepsilon) + \int_{A \times Z} a'(a, z)\ d\lambda_C$$
$$+ \int^{A \times E \times Z} a'(a, e, z)\ d\lambda_P(a, e, z)$$

SCF income distribution averaged 1989-2016

	Percent of income
Top 15%	57.58
Top 10%	49.03
Top 5%	37.44
Top 1%	19.88

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Composition of top income shares averaged 1989-2016

	Percent		
	worker	pass-through	C corporation
Overall	87.94	10.77	1.29
Top 15%	67.28	27.74	4.98
Top 10%	61.75	31.95	6.31
Top 5%	51.89	39.47	8.64
Top 1%	37.13	51.31	11.56

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Selection into the LFOs in the SCF

	Net worth quintiles				
	1	2	3	4	5
Pass-through relative log sales (percentiles)					
10th	0	0.31	0.60	1.01	9.21
25th	1.16	1.52	1.70	1.21	10.57
50th	2.39	2.74	3.04	3.60	11.98
75th	3.49	3.60	4.00	4.51	6.46
90th	4.29	4.16	4.74	5.43	7.91
C corporation relative log sales (percentiles)					
10th	3.13	3.00	2.31	2.21	3.67
25th	3.13	4.65	3.28	3.31	4.93
50th	4.11	5.43	4.16	4.70	6.46
75th	5.35	5.43	5.21	5.46	7.91
90th	5.61	5.61	6.76	6.59	9.12

- Relative to Q1 NW and P10 sales pass through
- Sales (proxy for productivity) increase with net worth
- For every quintile of wealth C corporations are larger:

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Conversions and Tax Reform Act of 2001

	$\Delta \log E_{it}$ (1)	$\Delta \log E_{it}$ (2)	$\Delta \log E_{it}$ (3)	$\Delta \log E_{it}$ (4)
β	0.0257***	0.0210***	0.0230***	0.0184**
	(0.0033)	(0.0036)	(0.0068)	(0.0072)
γ_{2000}	-0.0207***	-0.0160***	-0.00926	-0.00836
	(0.0037)	(0.0044)	(0.0071)	(0.0087)
γ_{2001}	-0.0301***	-0.0264***	-0.0340***	-0.0385***
	(0.0035)	(0.0042)	(0.0067)	(0.0136)
γ_{2002}	-0.0315***	-0.0215***	-0.0226***	-0.0127
	(0.0034)	(0.0058)	(0.0073)	(0.0199)
γ_{2003}	-0.0293***	0.0134	-0.0296***	0.0167
	(0.0034)	(0.0133)	(0.0080)	(0.0250)
Observations	3900000	300000	3900000	300000
R-squared	0.134	0.119	0.25	0.234
Business FE	Yes	Yes	Yes	Yes
Years	1998-2003	1998-2003	1998-2003	1998-2003
Weight	Equal	Equal	Employment	Employment
Sample	All	Converters	All	Converters

Post TRRA 2001: Growth rate declines with conversion (in relative and absolute terms)

Back

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Post TRRA 2001: Growth rate declines with conversion (in relative and absolute terms)

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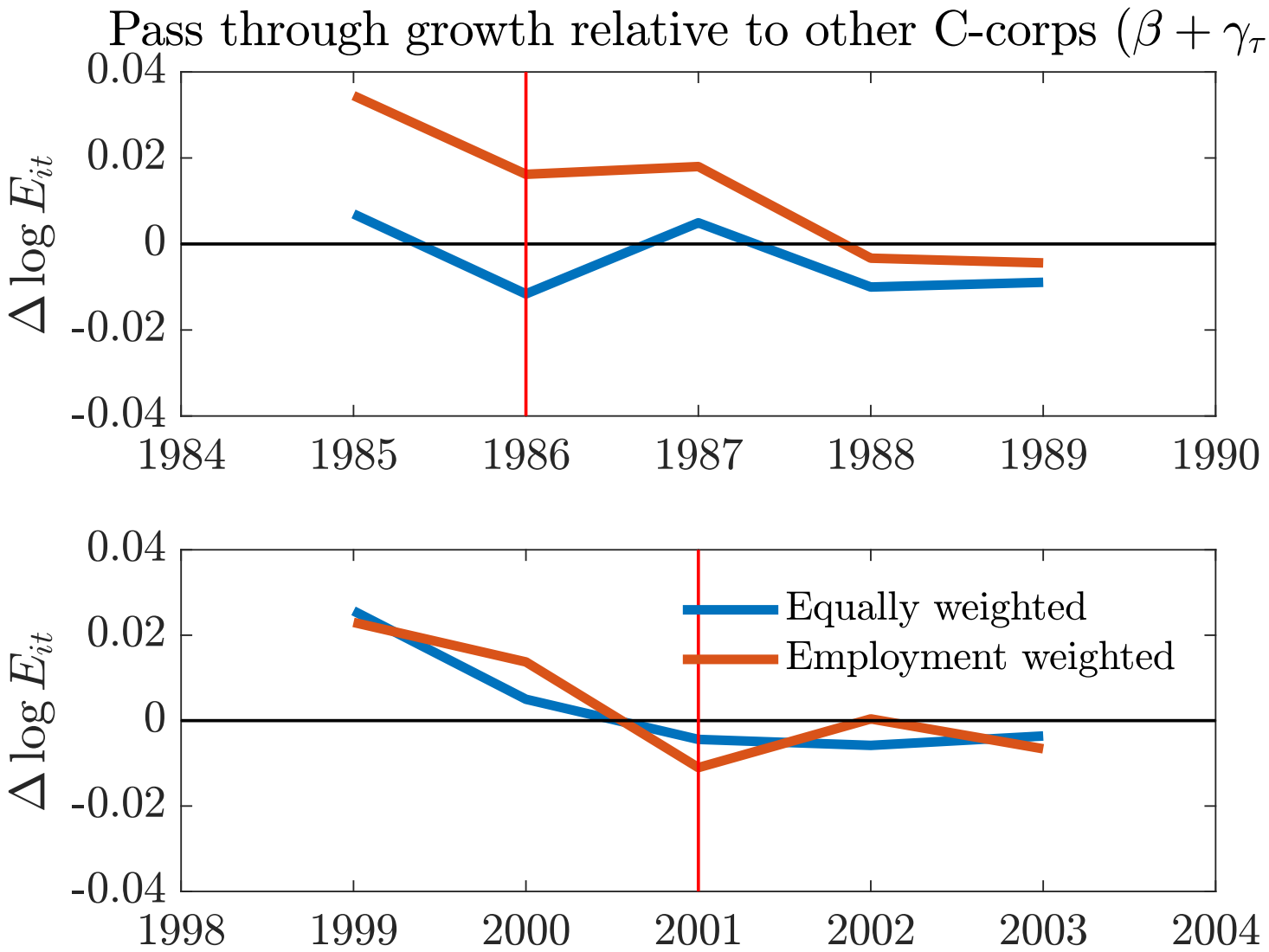
Cumulated effect on growth



Average tax rates

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Estimating firm level transitions

1. US Census Bureau Longitudinal Business Database (LBD) and linked Business Register (BR)
   - Near universal coverage of the nonfarm private sector
   - Longitudinally linked at the establishment level
   - Linkages robust to changes in ownership and LFO
   - Establishments further aggregated to firms
   - Linked BR records how firms are organized for tax filings

2. Using LBD and linked BR record 4 possible legal forms: **C corporation**, **Partnerships** (General/LLC/LLP), **Sole Proprietors**, and **S corporation**.

3. Estimate transition matrix across these states plus an entry/exit state for the years 1980 to 2012 using empirical distribution.

Back

Mutual fund

- The owners of the C corporations in the model have access to the infinitely elastic supply of outside equity, through the mutual fund, at the risk free rate r

- Mutual fund makes investment decisions for C corporations, and by aggregating the idiosyncratic risks faced by their owners through the LLN it is able to fully diversify it.

- The capital stock of the C corporation $k^*(z)$ is determined by

$$\mathbb{E}[(1-\tau_d)(1-\tau_c)\left(\pi_k(k^*;z')-\delta\right)|z]+1=1+r$$

  where τ_c is the corporate income tax

Back

How would changes in LFOs lead to changes in inequality?

1. **Mechanical**: retained earnings from C corporations only recognized when distributed to shareholders (typically as capital gains); pass through income recognized immediately, even when retained in the business. See Feenberg and Poterba (1993).

2. **Economic**: change in retained earnings or pre-tax profitability due to endogenous response in investment, employment or costs.

SCF allows (contrary to the tax data) to disentangle the two effects:

- Provides information about the net profits of the businesses owned and shares in the business (Mechanical).
- Asks directly about the amount of business income received by the owner on the top of wages and salaries (Economic).

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Model Performance vs. Targets

	Data	Benchmark
Wealth/Output	3.0	3.13
% of ABOs in Top1 Income	62.9	72.7
Std dev. of log labor earnings	0.80	0.92
Avg. labor supply	0.40	0.43
% of C corp. income in ABOs	13.0	15.0

Back SCF top shares SCF top composition

A very recent example: WSJ May 3, 2018

"KKR to Ditch Partnership Structure and Become Corporation"

> *For decades, businesses have typically preferred to avoid becoming C corporations, which pay taxes on their profits and then face another layer of taxation when those profits are distributed to shareholders as dividends; partnerships, on the other hand, allow income to pass through directly to owners' tax returns and get taxed at individual rates. Under the old tax law, C corporation status mostly made sense for companies that wanted access to public capital markets.*

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Triple difference - interpretation of γ_k

γ_τ compares the post-tax reform year τ average change in firm employment growth in a pass through conversion (relative to the average change of corporations who did not convert) to the analogous difference in pre-tax reform 1985

$$\begin{aligned}\gamma_{86} = &\left[E\left[\Delta \log E_{it} | t = 86, D_{it}^P = 1\right] - E\left[\Delta \log E_{it} | t = 85, D_{it}^P = 0\right]\right. \\ &\left. - \left(E\left[\Delta \log E_{it} | t = 86, D_{it}^P = 0\right] - E\left[\Delta \log E_{it} |, t = 85, D_{it}^P = 0\right]\right)\right] \\ &- \left[E\left[\Delta \log E_{it} | t = 85, D_{it}^P = 1\right] - E\left[\Delta \log E_{it} | t = 84, D_{it}^P = 0\right]\right. \\ &\left. - \left(E\left[\Delta \log E_{it} | t = 85, D_{it}^P = 0\right] - E\left[\Delta \log E_{it} | t = 84, D_{it}^P = 0\right]\right)\right]\end{aligned}$$

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$$\begin{aligned}\gamma_{86} = &\left[E\left[\Delta \log E_{it} | t = 86, D_{it}^P = 1\right] - E\left[\Delta \log E_{it} | t = 85, D_{it}^P = 0\right]\right. \\ &\left. - \left(E\left[\Delta \log E_{it} | t = 86, D_{it}^P = 0\right] - E\left[\Delta \log E_{it} |, t = 85, D_{it}^P = 0\right]\right)\right] \\ &- \left[E\left[\Delta \log E_{it} | t = 85, D_{it}^P = 1\right] - E\left[\Delta \log E_{it} | t = 84, D_{it}^P = 0\right]\right. \\ &\left. - \left(E\left[\Delta \log E_{it} | t = 85, D_{it}^P = 0\right] - E\left[\Delta \log E_{it} | t = 84, D_{it}^P = 0\right]\right)\right]\end{aligned}$$

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