

Taxes, Private Equity, and Evolution of Income Inequality in the United States¹

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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.

Fact 1: Change in composition of pre-tax top income shares since 1980

	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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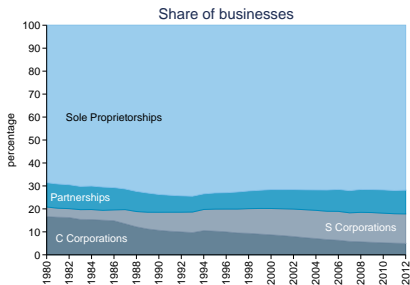
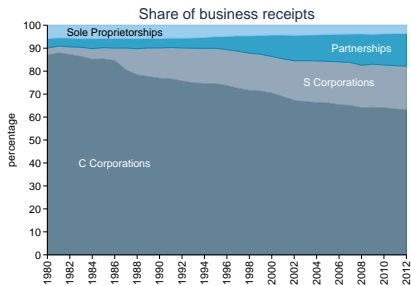
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Fact 2: Rise of the pass-throughs since 1980

	Liability Protection	Ownership	Taxation of Profits
Sole Proprietorship	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

Key trade-off: tax and organizational simplicity versus flexibility to raise outside equity

Fact 2: 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).

This paper: measuring the economic significance of the shift in business organization

1. Establishes **the empirical link** between trend in the distribution of legal forms of organization and income inequality dynamics (SCF data).
2. Provides **new evidence** on the flows between the legal forms of organization of firms and documents that conversion induces changes in employment dynamics (US Census LBD).
3. Proposes a theory of **endogenous choice of legal form and risk diversification** consistent with these empirical findings and quantify the effects of the tax reforms.

Preview of the results

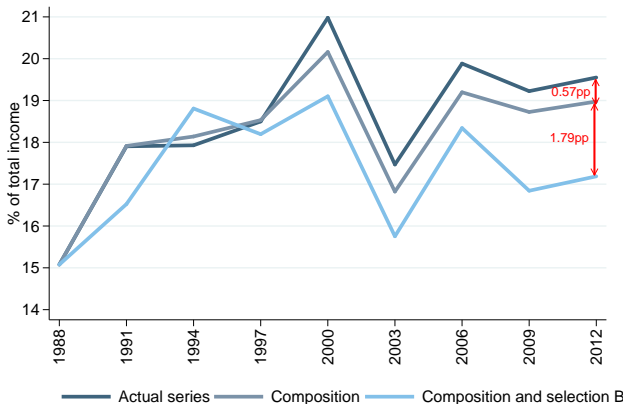
1. Rise of the pass-through entities accounts for **52.8%** of the increase in the pre-tax top income shares since the mid of 80s.
2. Conversions to pass-through entities are concentrated around **major tax reforms** and imply employment-growth **slowdown** at the firm level.
3. A **5 pps** reduction in personal income tax leads to **1.3 to 4.2 pps** percent increase in pre-tax top income shares and **7.1 pps** increase in the fraction of pass-throughs in the economy.

LINKING LEGAL FORMS AND INEQUALITY CHANGES IN SCF

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.

Reduced-form effects of pass throughs on top 1% share



Source: Own calculations from 1988 – 2012 SCF data

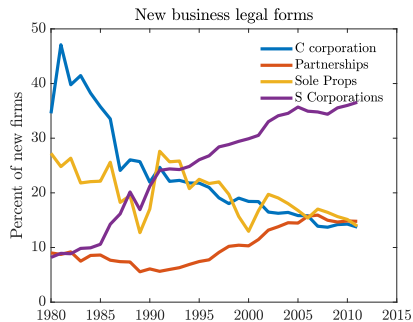
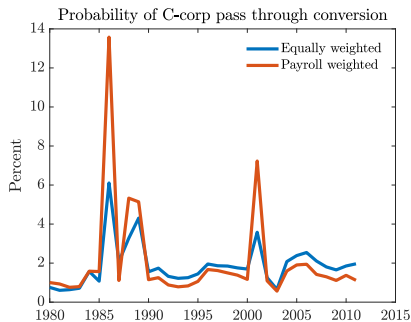
- Composition: **13.0%** of the increase
- Composition and selection: **52.8%** of the increase

FIRM-LEVEL EVIDENCE ON CONVERSIONS

LBD - 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 and aggregated to firms
 - Linkages robust to changes in ownership and LFO
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.

Increases in pass throughs around major tax reforms



Source: Census LBD and Business Register

- Conversions surge around major tax reforms: Tax Reform Act of 1986, Economic Growth and Tax Relief Reconciliation 2001.
- Both reduce top personal income tax rates.

Top rates

Average marginal rates

Extracting the real (employment) 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

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Triple difference - interpretation of γ_τ

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

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

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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* (0.0040)	0.00915** (0.0041)	0.0345*** (0.0084)	0.0286*** (0.0086)
γ_{1986}	-0.0186*** (0.0050)	-0.0367*** (0.0052)	-0.0183* (0.0101)	-0.0312*** (0.0107)
γ_{1987}	-0.00206 (0.0041)	-0.0198*** (0.0048)	-0.0165* (0.0089)	-0.0315*** (0.0103)
γ_{1988}	-0.0170*** (0.0041)	-0.0230*** (0.0050)	-0.0378*** (0.0087)	-0.0288*** (0.0108)
γ_{1989}	-0.0159*** (0.0041)	-0.00669 (0.0074)	-0.0389*** (0.0086)	-0.00185 (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

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Post TRA 1986: **Growth rate declines with conversion**

EQUILIBRIUM MODEL WITH ENDOGENOUS CHOICE OF LEGAL FORM

Environment

- Unit measure of infinitely-lived households:
 - Fraction μ are workers.
 - Fraction $1 - \mu$ are entrepreneurs (Active Business Owners).
- Workers are subject to idiosyncratic labor productivity risk. Entrepreneurs are subject to idiosyncratic productivity risk. No aggregate risk.
- Incomplete markets with respect to idiosyncratic shocks.
- Entrepreneurs make endogenous choice of the legal form of organization.

Workers

Standard income fluctuation problem (IFP):

$$V^W(a, \varepsilon) = \max_{c, h, a'} u(c, 1 - h) + \beta \mathbb{E} [V^W(a', \varepsilon') | \varepsilon]$$

subject to

$$c + a' = a + y - T_y(wh\varepsilon) - \tau_d ra$$

$$y = ra + wh\varepsilon$$

$$a' \geq \underline{a}$$

a : savings

ε : stochastic labor productivity

$T_y(\cdot)$: income tax schedule

τ_k : dividend income tax

Stylized tradeoff between legal forms

C corporation:

Pro	Con
<ul style="list-style-type: none">• Access to (perfectly elastic) supply of external equity• Completely diversified investment risk	<ul style="list-style-type: none">• Profits subject to both corporate income and distribution taxes• Substantial overhead costs

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Pass through:

Pro	Con
<ul style="list-style-type: none">• Profits taxed once at personal income tax• Simple organization with no overhead costs	<ul style="list-style-type: none">• Capital financed only through own equity• Undiversified investment risk

Entrepreneurs: technology and diversification

- DRS technology $f(k, n; z)$ homogeneous in k , n and z
- Gross profits:

$$\pi(z', k) = \max_n \{f(k, n; z') - wn\} = f_k k + f_z z'$$

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C-corporation entrepreneur is fully diversified:

- Mutual fund chose capital k^* given z to equate

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

- Entrepreneur receives preferred dividend

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

where τ_c is the corporate income tax.

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Pass-through entrepreneur makes an investment decision and bears the idiosyncratic risk.

Entrepreneurs: C corporation

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

$$\begin{aligned} V^C(a, k^*, z) &= \max_{s, c} u(c, 1 - \bar{h}) + \beta W^C(s, z) \\ &\text{subject to} \\ c + s &= a + y - \tau_d(ra + D(z, k^*)) \\ y &= ra + D(z, k^*) \\ s &\geq \underline{a} \end{aligned}$$

Dividend and risk free investment return taxed at τ_d

IFP from stochastic preferred dividend $D(z, k^*)$

Entrepreneurs: pass-through

IFP with conversion option in continuation W^P

$$\begin{aligned} V^P(a, e, z) &= \max_{s, c} u(c, 1 - \bar{h}) + \beta W^P(s, z) \\ &\text{subject to} \\ c + s &= y + a + e - T_y(\pi - \delta e) - \tau_d r a \\ y &= r a + \pi(e, z) - \delta e \\ s &\geq \underline{a} \end{aligned}$$

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Homogeneity of technology in z , k and n implies:

$$\pi(e, z) = f_k e + f_z z$$

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Homogeneity of technology in z , k and n implies:

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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:

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

Continuation value of the C-corp entrepreneur:

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

With no switching cost, symmetric continuation values:

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

Aggregation and market clearings

- 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

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

and market clearing for the capital stock requires

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

Portfolio choice: private equity expected return

Pass through allocates savings s to solve

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

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

$$\mathbb{E} [(1 - T'_y) (f_k - \delta) | z] = (1 - \tau_k) r - \frac{\text{Cov} [u_c, (1 - T'_y) f_k | z]}{\mathbb{E} [u_c | z]} + \frac{\xi}{\beta \mathbb{E} [u_c | z]}$$

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

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Decompose private equity return:

- Return on savings (mutual fund) $(1 - \tau_k)r$
- Risk premium $-\frac{\text{Cov}[u_c, (1 - T'_y)f_k | z]}{\mathbb{E}[u_c | z]}$
- Cost of external finance constraint $\frac{\xi}{\beta \mathbb{E}[u_c | z]}$

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** $-\frac{\text{Cov}[u_c, (1 - T'_y)f_k | z]}{\mathbb{E}[u_c | z]}$
- 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

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

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

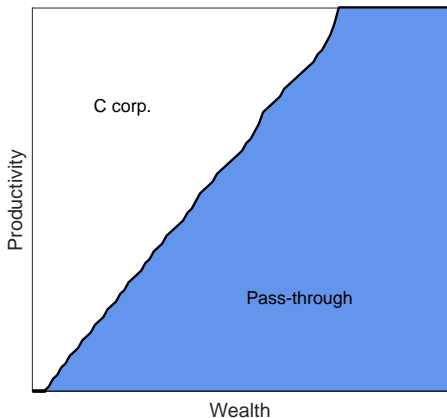
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Selection into the LFOs in the model



- Fraction of pass-throughs \uparrow in wealth and \downarrow in productivity z

Selection into the LFOs in the SCF

	Net worth quintiles				
	1	2	3	4	5
<i>Pass-through relative log sales (percentiles)</i>					
10th	0	0.31	0.60	1.01	3.67
25th	1.16	1.52	1.70	1.21	4.93
50th	2.39	2.74	3.04	3.60	6.46
75th	3.49	3.60	4.00	4.51	7.91
90th	4.29	4.16	4.74	5.43	8.56
<i>C corporation relative log sales (percentiles)</i>					
10th	3.13	3.00	2.31	2.21	4.52
25th	3.13	4.65	3.28	3.31	5.83
50th	4.11	5.43	4.16	4.70	8.87
75th	5.35	5.43	5.21	5.46	9.43
90th	5.61	5.61	6.76	6.59	11.12

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:

Selection into the LFOs in the SCF

	Net worth quintiles				
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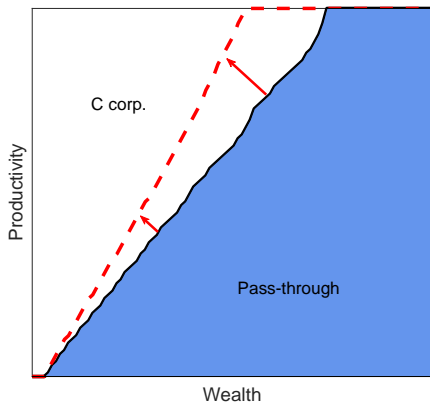
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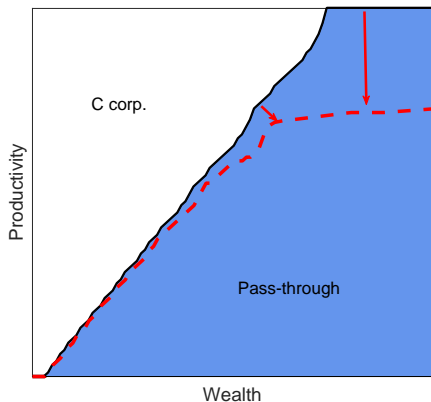
Relative to Q1 NW and P10 sales pass through

- Sales (proxy for productivity) increase with net worth
- **For every quintile of wealth C corporations are larger:**

Effects of a tax reform: change in selection



↓ income tax rate



↓ corporate tax rate

Effects of a pass through conversion

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

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

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

- Introduce financing constraint on investment
 - $\implies e' < k^*(z) \downarrow$ investment and \uparrow expected return

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

QUANTITATIVE ANALYSIS

Quantitative experiment

Goal:

- Examine through the lens of the model transitional dynamics of macro variables and inequality in response to 1986, 2001 and 2017 tax reforms.

Today:

- A numerical experiment to examine the long-run effects on equilibrium macro variables and inequality
- Reduce the average income tax by 5 percentage points. Following 1986 reform the average marginal tax rate went down by 4.7 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	Bhandari, McGratten (2018)	0.33
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	0.927
Mean of labor prod.	μ_ϵ	% of ABOs income in Top 10	1.337
Std. dev. of labor prod.	σ_ϵ	Std dev. of log labor earnings	0.294
Disutility of labor	ψ	Avg. labor supply	8.702
Fixed cost for C corp.	c_f	% of C corp.	0.137
Std. dev. of ent. prod.	σ_z	σ_ϵ	0.294
Borrowing constraint	\underline{a}	% of HHs with negative assets SCF	-0.231

Model Performance vs. Targets

	Target	Benchmark
Wealth/Output	3.0	3.0
% of ABOs in Top10	0.32	0.38
Std dev. of log labor earnings	0.80	0.79
Avg. labor supply	0.40	0.40
% of C corp.	23.2	22.5
% of HHs with negative assets	15.6	15.1

Macro effects of the tax reform

Benchmark

Prices

Wage	0.466
Interest rate	0.04

Allocations

Employment C ent.	0.332
Employment P ent.	0.317
Capital C ent.	0.374
Capital P ent.	0.236
Labor supply	0.376
Output	0.473

% of P ent. in ABOs	77.5
Avg Emp. C/Avg Emp. Ben.	2.274
Avg Emp P/Avg Emp. Ben.	0.630

Macro effects of the tax reform

	Benchmark	Tax reform: Decision rules
Prices		
Wage	0.466	0.466
Interest rate	0.04	0.04
Allocations		
Employment C ent.	0.332	0.245
Employment P ent.	0.317	0.373
Capital C ent.	0.374	0.276
Capital P ent.	0.236	0.295
Labor supply	0.376	0.389
Output	0.473	0.464
% of P ent. in ABOs	77.5	84.8
Avg Emp. C/Avg Emp. Ben.	2.274	2.489
Avg Emp P/Avg Emp. Ben.	0.630	0.713

Macro effects of the tax reform

	Benchmark	Tax reform: Decision rules	Tax reform: Decision rules+ Selection
Prices			
Wage	0.466	0.466	0.466
Interest rate	0.04	0.04	0.04
Allocations			
Employment C ent.	0.332	0.245	0.240
Employment P ent.	0.317	0.373	0.398
Capital C ent.	0.374	0.276	0.270
Capital P ent.	0.236	0.295	0.305
Labor supply	0.376	0.389	0.389
Output	0.473	0.464	0.462
% of P ent. in ABOs	77.5	84.8	85.1
Avg Emp. C/Avg Emp. Ben.	2.274	2.489	2.482
Avg Emp P/Avg Emp. Ben.	0.630	0.713	0.721

Macro effects of the tax reform

	Benchmark	Tax reform: Decision rules	Tax reform: Decision rules+ Selection	Tax reform: Decision rules+ Selection+GE
Prices				
Wage	0.466	0.466	0.466	0.457
Interest rate	0.04	0.04	0.04	0.04
Allocations				
Employment C ent.	0.332	0.245	0.240	0.249
Employment P ent.	0.317	0.373	0.398	0.404
Capital C ent.	0.374	0.276	0.270	0.278
Capital P ent.	0.236	0.295	0.305	0.309
Labor supply	0.376	0.389	0.389	0.383
Output	0.473	0.464	0.462	0.469
% of P ent. in ABOs	77.5	84.8	85.1	84.6
Avg Emp. C/Avg Emp. Ben.	2.274	2.489	2.482	2.538
Avg Emp P/Avg Emp. Ben.	0.630	0.713	0.721	0.732

Inequality statistics

Benchmark

Top 1%	5.7
Top 5%	19.5
Top 10%	31.5
Top 15%	41.3
Coeff. Var Pop	0.92
Coeff. Var P ent.	0.16
Coeff. Var C ent.	0.09
% of P ent. in ABOs	77.5
% of P ent. in Top 10	65.3

Inequality statistics

	Benchmark	Tax reform: Decision rules
Top 1%	5.7	6.6
Top 5%	19.5	21.8
Top 10%	31.5	34.7
Top 15%	41.3	43.9
Coeff. Var Pop	0.92	1.03
Coeff. Var P ent.	0.16	0.20
Coeff. Var C ent.	0.09	0.03
% of P ent. in ABOs	77.5	84.8
% of P ent. in Top 10	65.3	77.0

Inequality statistics

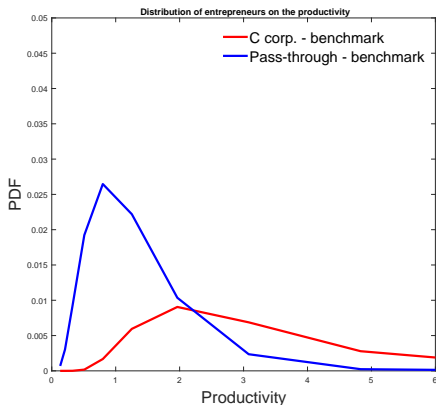
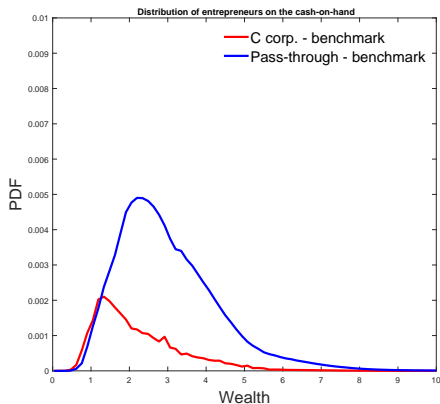
	Benchmark	Tax reform: Decision rules	Tax reform: Decision rules+ Selection
Top 1%	5.7	6.6	6.7
Top 5%	19.5	21.8	22.0
Top 10%	31.5	34.7	34.8
Top 15%	41.3	43.9	44.0
Coeff. Var Pop	0.92	1.03	1.04
Coeff. Var P ent.	0.16	0.20	0.21
Coeff. Var C ent.	0.09	0.03	0.02
% of P ent. in ABOs	77.5	84.8	85.1
% of P ent. in Top 10	65.3	77.0	77.6

Inequality statistics

	Benchmark	Tax reform: Decision rules	Tax reform: Decision rules+ Selection	Tax reform: Decision rules+ Selection+GE
Top 1%	5.7	6.6	6.7	7.0
Top 5%	19.5	21.8	22.0	22.6
Top 10%	31.5	34.7	34.8	35.7
Top 15%	41.3	43.9	44.0	44.7
Coeff. Var Pop	0.92	1.03	1.04	1.07
Coeff. Var P ent.	0.16	0.20	0.21	0.21
Coeff. Var C ent.	0.09	0.03	0.02	0.02
% of P ent. in ABOs	77.5	84.8	85.1	84.6
% of P ent. in Top 10	65.3	77.0	77.6	78.1

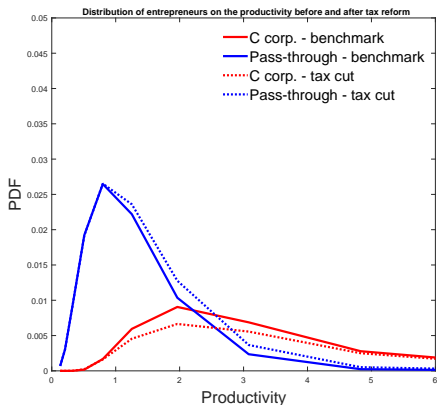
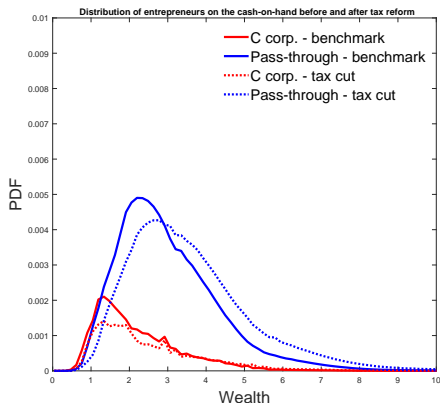
- Following the **5 pps** reduction of personal income tax, the top income shares increase between **1.3 to 4.2 pps** and fraction of pass-through increases by **7.1 pps**.
- GE effects amplify the initial impact (wage falls).

Marginal distributions: Benchmark



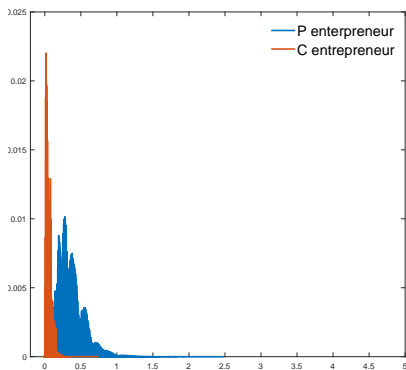
- Wealthier entrepreneurs are pass-throughs, more productive are C corp. owners.

Marginal distributions: Post Reform

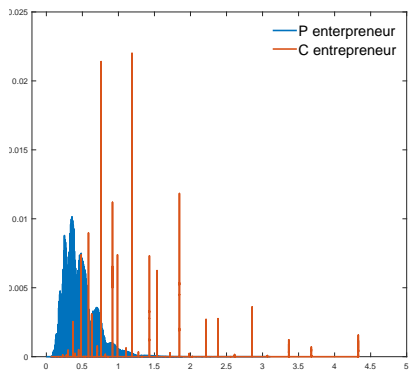


- Reform shifts the wealth distribution to the right and induces more productive C corp. owners to switch.

Income distribution: Benchmark

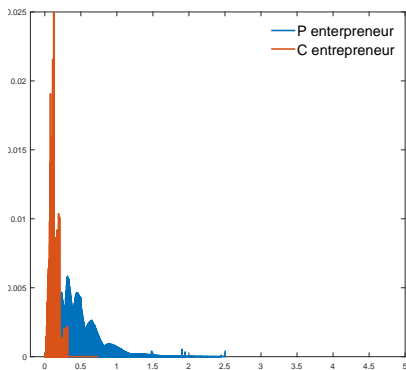


C ent. capital income: ra
P ent. capital income: $ra + f_k e$

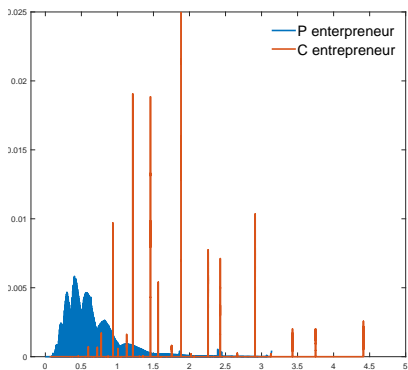


C ent. managerial income: $D(z)$
P ent. managerial income: $f_z z$

Income distribution: Post Reform



C ent. capital income: ra
P ent. capital income: $ra + f_k e$

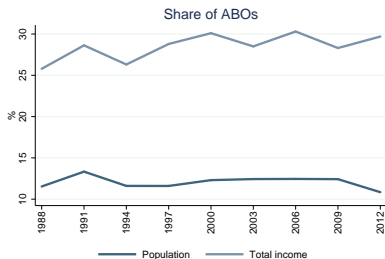


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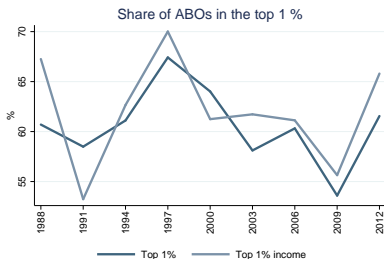
Conclusions

- 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.
- **General point:** capital income taxation depends on the legal form of business organization. LFO margin is potentially important for the optimal tax analysis.

Business owners over time



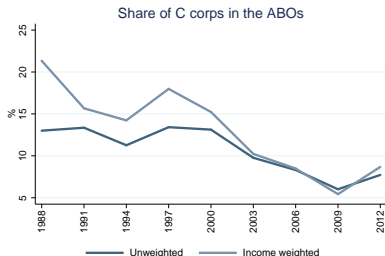
Source: Own calculations from 1988 – 2012 SCF



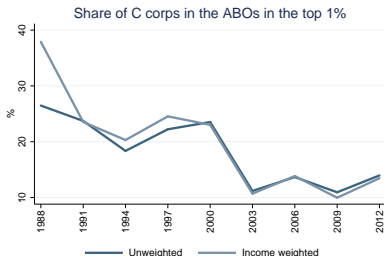
Source: Own calculations from 1988 – 2012 SCF

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

Shift towards the pass-through entities among ABOs



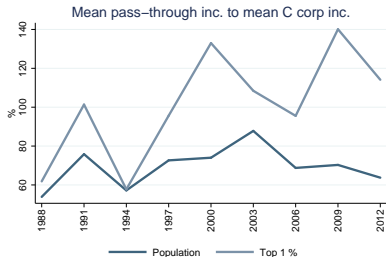
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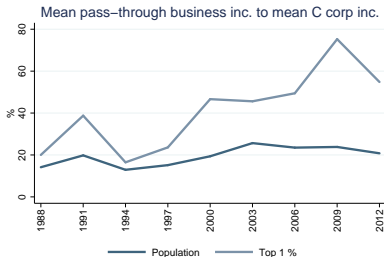
Source: Own calculations from 1988 – 2012 SCF

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

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%

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

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

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

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

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

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

Quantifying the impact of shift in the legal forms

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

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

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

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

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

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

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

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

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

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

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*** (0.0033)	0.0210*** (0.0036)	0.0230*** (0.0068)	0.0184** (0.0072)
γ_{2000}	-0.0207*** (0.0037)	-0.0160*** (0.0044)	-0.00926 (0.0071)	-0.00836 (0.0087)
γ_{2001}	-0.0301*** (0.0035)	-0.0264*** (0.0042)	-0.0340*** (0.0067)	-0.0385*** (0.0136)
γ_{2002}	-0.0315*** (0.0034)	-0.0215*** (0.0058)	-0.0226*** (0.0073)	-0.0127 (0.0199)
γ_{2003}	-0.0293*** (0.0034)	0.0134 (0.0133)	-0.0296*** (0.0080)	0.0167 (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

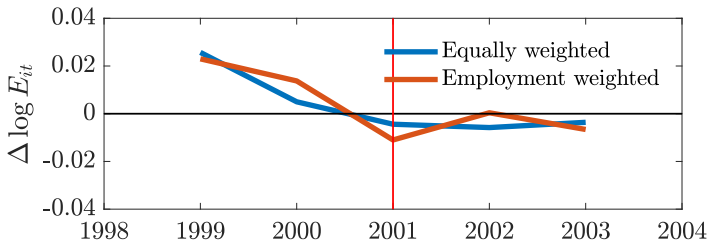
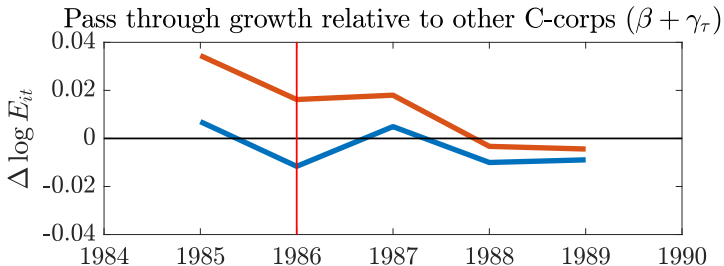
Post TRRA 2001: Growth rate declines with conversion (in relative and absolute terms)

Conversions and Tax Reform Act of 2001

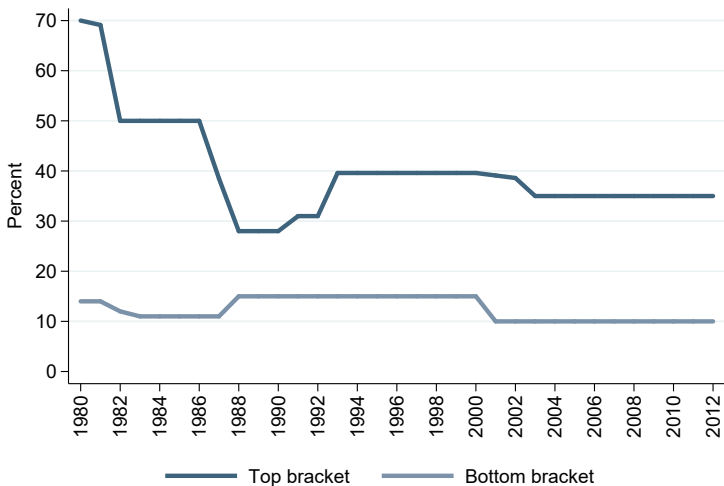
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γ_{2002}	-0.0315*** (0.0034)	-0.0215*** (0.0058)	-0.0226*** (0.0073)	-0.0127 (0.0199)
γ_{2003}	-0.0293*** (0.0034)	0.0134 (0.0133)	-0.0296*** (0.0080)	0.0167 (0.0250)
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Post TRRA 2001: Growth rate declines with conversion (in relative and absolute terms)

Cumulated effect on growth

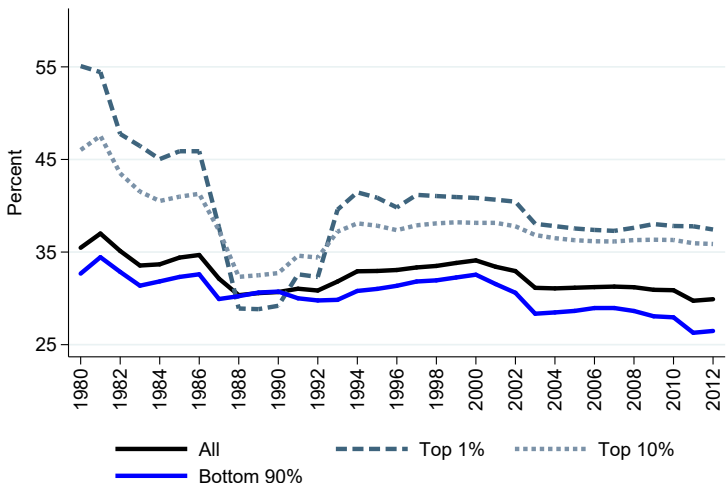


Marginal income tax rates



Source: U.S. Department of the Treasury. Internal Revenue Service

Average marginal personal income tax rates



Source: Data from Mertens, Olea (2018)

Equilibrium

A recursive stationary competitive equilibrium consists of

1. prices r_f and w
2. optimal worker savings $a'(a, \epsilon)$
3. optimal corporate entrepreneur savings $s_c(a, z)$
4. optimal pass through entrepreneur savings $s_c(a, z)$
5. optimal pass through entrepreneur equity $e(a, z)$
6. optimal choice of legal form $D(a, z)$
7. stationary distribution consistent with these policies

such that

1. worker labor supply equals corporate plus pass through labor demand
2. worker, corporate, and pass through savings (less equity) equals corporate capital demand

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).

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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LBD Summary Statistics

	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009
<i>Average size (employees)</i>						
C corporations	23.12	18.25	19.62	19.68	19.83	19.06
S corporations	10.67	13.94	13.91	13.17	12.63	11.99
Partnerships	8.44	9.33	11.34	12.53	17.14	18.35
Sole proprietors	3.94	4.07	4.14	4.37	4.89	5.46
<i>Exit rate (percent)</i>						
C corporations	11.11	9.97	8.68	8.56	9.03	9.27
S corporations	14.51	10.83	8.71	8.67	8.57	9.42
Partnerships	22.20	19.67	16.18	15.99	14.35	14.23
Sole proprietors	20.22	17.26	15.55	16.35	16.10	17.44
<i>Share of employers (percent)</i>						
C corporations	55.59	50.05	39.52	34.83	29.27	24.15
S corporations	9.27	15.77	26.35	33.35	39.80	45.44
Partnerships	7.78	7.90	6.70	6.91	9.61	12.64
Sole proprietors	27.36	26.27	27.42	24.91	21.32	17.78
