The Efficiency-Equity Tradeoff of the Corporate Income Tax: Evidence from the Tax Cuts and Jobs Act

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Disclaimer

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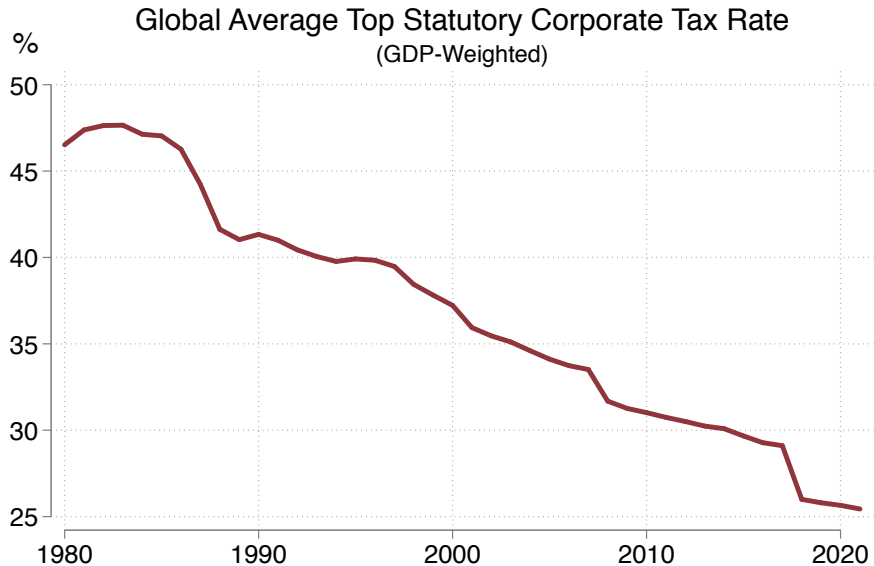

Global Average Top Statutory Corporate Tax Rate
(GDP-Weighted)
%
50
45
40
35
30
25
1980
1990
2000
2010
2020

% GDP

Research Questions

- Ongoing debate:

1. How large are the output distortions from the corporate tax?
2. What are the distributional effects?

- Advocates argue tax cuts increase growth, benefit workers

- Critics argue growth effects are negligible, benefit the wealthy

What Do We Know?

Unclear if existing evidence is generalizable to the federal corporate tax

- State/local corp tax: Moderate to large tax base elasticites
  Giroud & Rauh '19; S-Serrato & Zidar '16; Devereau et al. '14; Bachas & Soto '22

  $\Longrightarrow$ Differences in factor mobility?

  $\Longrightarrow$ Differences in magnitude of the tax burden?

- Investment response highly context-specific (dividend tax, bonus...)
  Link et al. '22; Zwick & Mahon '17; Yagan '15; Cummins et al. '94/'96

  $\Longrightarrow$ Theory implies corp tax has different effects

- Mixed findings on incidence
  Gale & Thrope '22; Risch '22; Dobridge et al. '21; Carbonnier et al '20; Fuest et al '18; S-Serrato & Zidar '16

Missing Evidence on the Federal Corporate Tax

Why is evidence scarce?

1. Federal tax reforms are rare events
2. Microdata previously unavailable to researchers
3. Difficult to find credible counterfactuals

This Paper

1. **Large Federal Tax Change + Rich Microdata + Within-Country Design**
   - Exploit variation from the 2017 Tax Cuts and Jobs Act (TCJA)
   - Rich employer-employee linked IRS microdata
   - DiD comparing firms of similar size, same industry

2. **Empirics**
   - Firm-level evidence: profits, sales, investment, shareholder payouts
   - Worker-level evidence: employment, earnings

3. **Stylized Model**
   - Illuminate mechanisms
   - Quantify output gains, incidence
   - Benchmark against alternate taxes

Results Preview

1. **Corporate tax cuts deliver substantial output gains**

   - Tax cuts $\Longrightarrow$ $\uparrow$ sales, profits, investment, payroll
   - Results *not* primarily driven by superficial income shifting
   - Model-based estimates:
     - Marginal \$1 tax cut generates $\approx$ \$0.41 in additional output
     - Gains $\approx$ 2x larger than personal income tax cuts; $\leq$ state corp taxes

Results Preview

2. **Corporate tax cuts are regressive**

- Tax cuts $\Longrightarrow$ $\uparrow$ within-firm earnings inequality, after-tax profits
- Large increases in executive pay; \$0 earnings gain for typical worker
- $\approx$ 80% of benefits flow to top 10% of distribution ($\approx$ personal inc tax)

Related Literature

1. **Corporate ETI** Bachas and Soto '21; Giroud and Rauh '19; Hines '17; Suárez-Serrato and Zidar '16; Devereaux, Liu, Loretz '14; Gruber and Rauh '07; Feldstein 99

2. **Investment** Curtis, Garret, Ohrn, Roberts, Suárez-Seratto '22; Link, Menkhoff, Peichl, and Schüle '22; Edgerton et al '21; Chen, Jiang, Liu, Suárez-Seratto '19; Zwick and Mahon '17; Yagan '15; House and Shapiro '08; Caballero and Engel '99; Cummins, Hassett, and Hubbard '94/96; Auerbach '83; Hall and Jorgenson '67

3. **Incidence** Gale and Thorpe '22; Risch '22; Ohrn '21; Dobridge, Landefeld, Mortenson '21; Carbonnier, Malgouyres, Py, Urvoy '20; Baker, Sun, Yannelis '20; Fuest, Peichl, Siegloch '18; Suárez-Serrato and Zidar '16; Clausing '13; Auerbach '06; Kotlikoff and Summers '87; Harberger '62

4. **TCJA** Chodorow-Reich, Smith, Zidar, and Zwick '23; Jansky, Zucman '22; Garcia-Bernardo, Jansky, Zucman '22; Kennedy and Wheeler '22; Gale and Haldeman '21; Goodman, Lim, Sacerdote, Whitten '21; Dowd, Giosa, Wilmingham '20; Clausing '20; Gale, Gelfond, Krupkin, Mazur, Toder '19; Barro and Furman '18

Roadmap

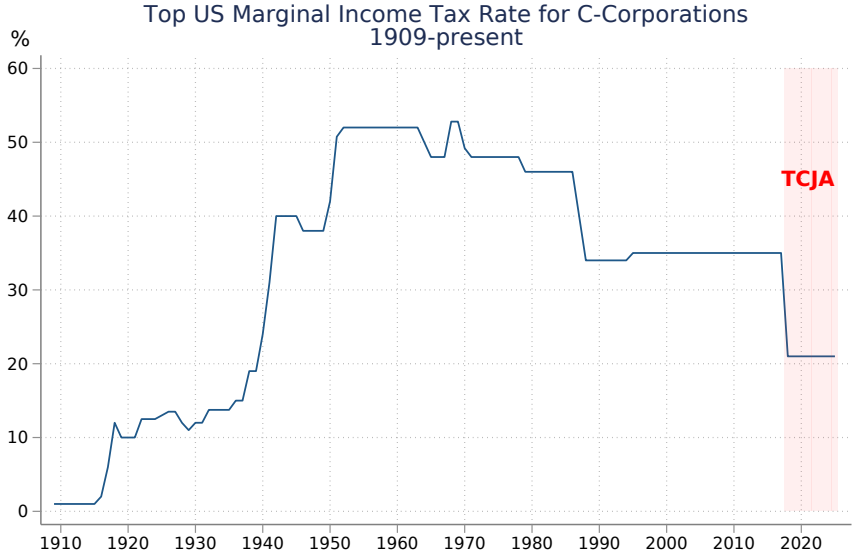
1. Setting
2. Data
3. Empirical Strategy and Results
4. Mechanisms
5. Distributional Analysis

Setting

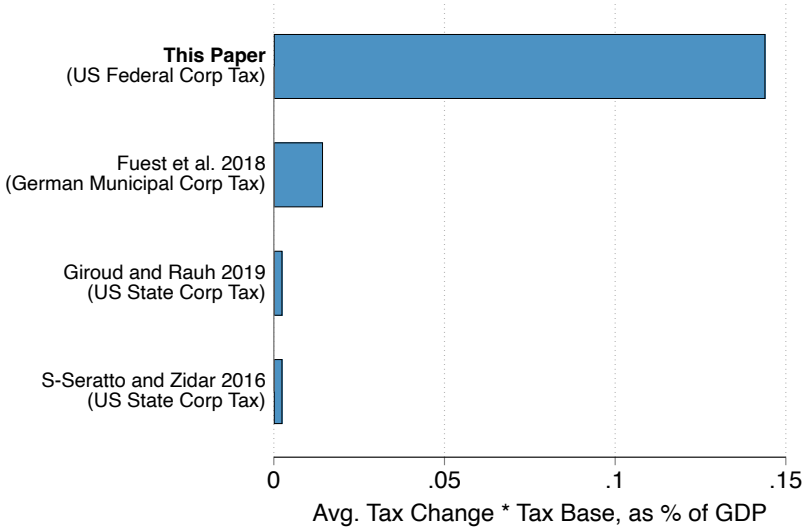
Congress passed the Tax Cuts and Jobs Act in 2017

- One of the largest corporate tax reforms in US history
- Top corporate tax rate cut from 35% to 21%
- ≈\$100B (≈0.5% GDP) decline in corp tax revenue from 2017-18 OMB '21

Historically Large Reform



Large Relative to Recent Studies



Empirical Design: C vs. S Corps

DiD comparing two legal entity types:

Yagan 2015; Giroud and Rauh 2019

	C Corps	S Corps
Legal Differences		
Taxes	Pay corp, dividend taxes on profits	Owners pay personal taxes on profits
Shareholders	No restrictions	<=100 owners; must be individual US citizens
TCJA Changes		
Top Rate Cut	$35\% \rightarrow 21\%$	$39.6\% \rightarrow 37\%$; 20% QBI deduction

qbi

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IRS Microdata

Sample: Employer-employee linked federal tax records, 2013-2019

Business Tax Returns (SOI 1120, 1120s)

- Stratified random sample, rolling panel
- Age, industry, location, multinational
- Sales, profits, investment, taxes paid

Individual Tax Returns

- Employment and annual earnings (W2)
- Business income from S-Corps (K1)
- Age, gender, location (1040; SSA; info returns)

Sample Restrictions

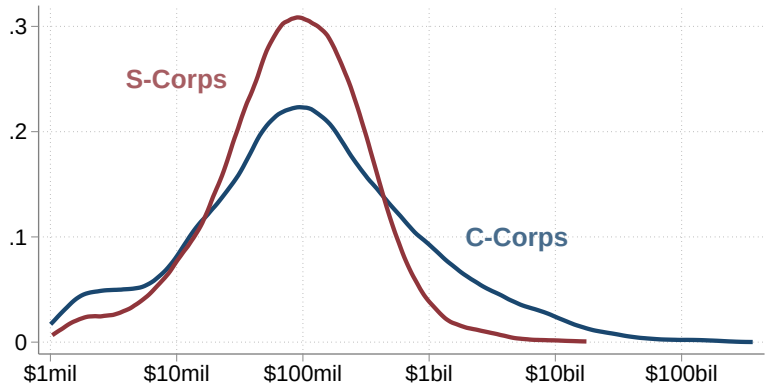
- At least 50 employees and $1 mil in annual pre-period revenues
  - 90% of corporate sales
  - 70% of corporate business taxes
  - 67% of corporate employment
- Drop C↔S "switchers" (switching is rare) ▸ switching
- Balanced panel (results robust to unbalanced panel)

Measurement

1. **Marginal Tax Rate (MTR) of S-Corporations**
   - Weighted average of shareholder MTR's ▸ details
2. **Scale outcomes to account for values ≤ 0**
   - Scale firm variables by baseline 2016 sales
   - Take logs of labor market outcomes (earnings, employment)

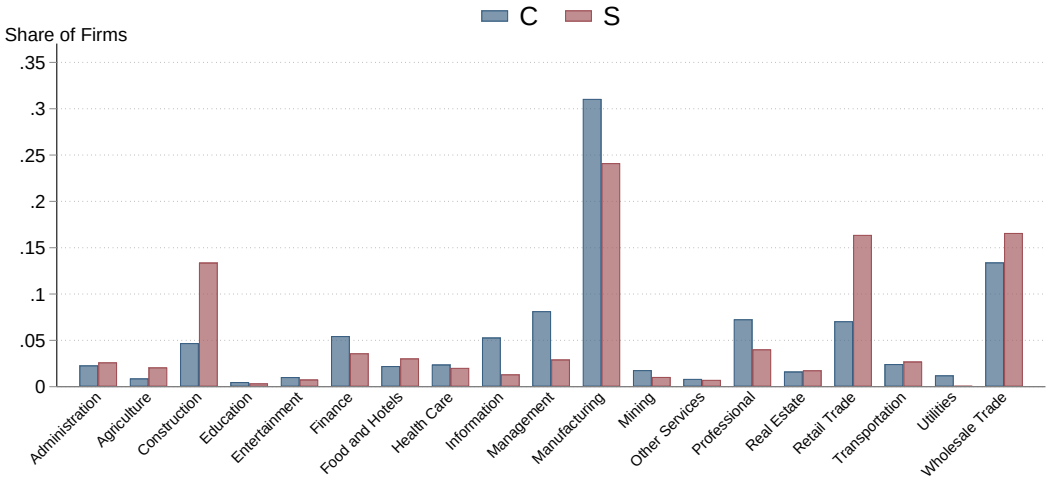
▸ more details

2016 Sales



employment

Industry Composition



Summary Statistics

	2016 Mean Outcomes		
	All Corps	C-Corps	S-Corps
Sales (mil)	783	1,128	201
Employment	2,382	3,368	722
Mean Annual Earnings (thous)	65.0	69.3	57.6
Federal Tax Per Worker	6,236	6,551	5,706
Firm Age	34	32	37
N Firms	15,777	9,897	5,880

▸ more summary statistics

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Empirical Strategy

Estimate:

$$y_{ft} = \sum_{t \neq 2016} \beta_t C_f * \mathbf{1}(year = t) + \gamma_f + \alpha_{is(f),t} + \epsilon_{ft}$$

- y_{ft} is an outcome for firm f in year t
- C_f is an indicator = 1 if firm f is a C-corp
- γ_f is a firm fixed effect
- $\alpha_{is(f),t}$ is an industry$\times$size-bin$\times$year fixed effect
- Cluster standard errors by firm

Identification and Interpretation

$$y_{ft} = \sum_{t \neq 2016} \beta_t C_f * \mathbf{1}(year = t) + \gamma_f + \alpha_{is(f),t} + \epsilon_{ft}$$

Identification

- Key assumption is parallel trends in counterfactual with no MTR shocks
- Defending parallel trends:
  - TCJA was unexpected prior to 2016 elections
  - Compare C vs S outcomes in narrow industry-size-year bins
  - Examine pre-trends to assess plausibility

Interpretation

- β_t captures differential trend of C-Corps relative to S-Corps
- Also report elasticities WRT to the net-of-tax rate, $(1 - \tau_f)$

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4. **Mechanisms**
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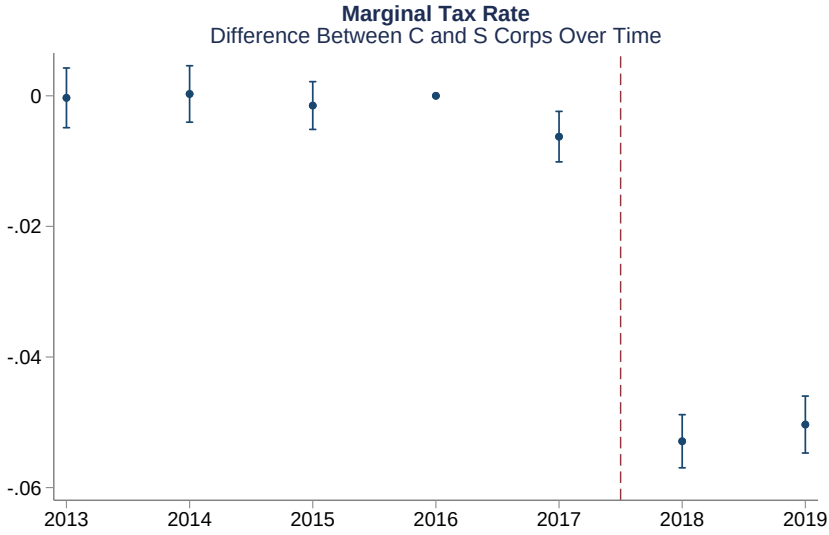
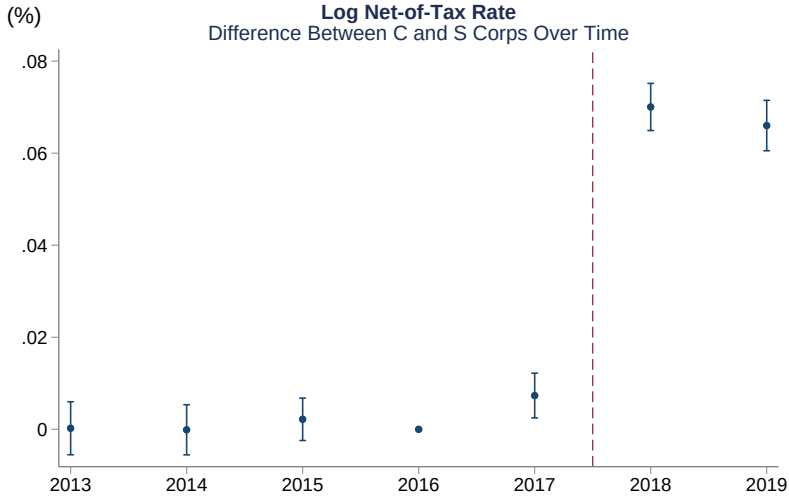
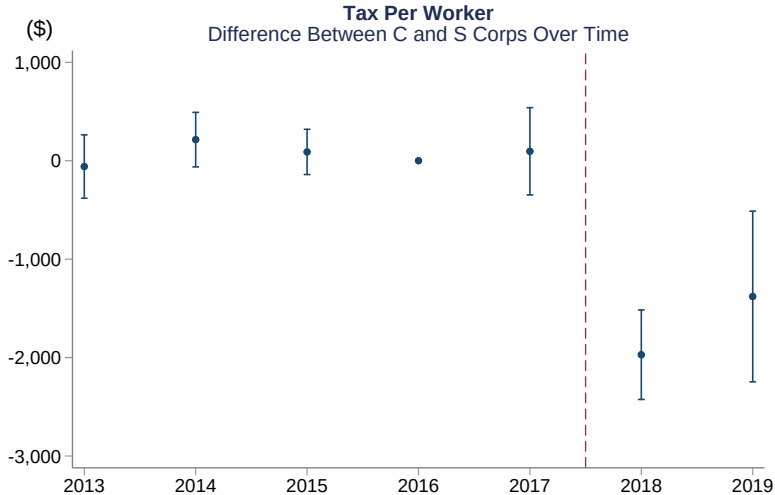
Marginal Tax Rate Wedge τ_f



Log Net-of-Tax Rate $(1 - \tau_f)$

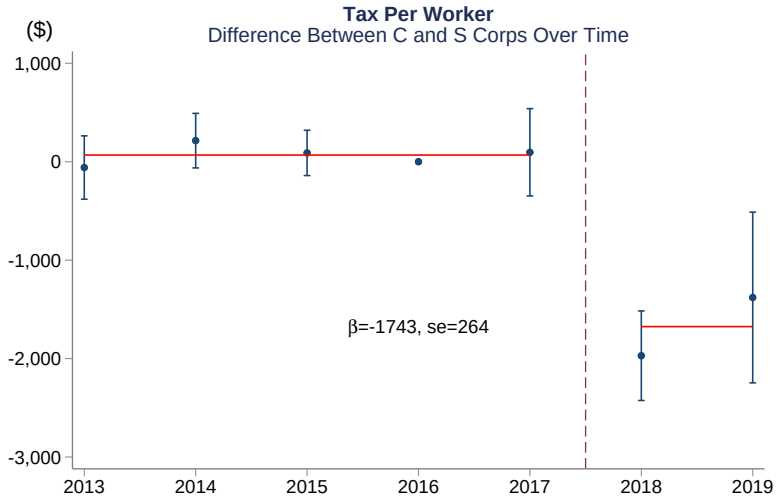


Taxes Per Worker



details

Taxes Per Worker



details

First Stage

	(1) τ_f^{MTR}	(2) $\ln(1-\tau_f^{MTR})$	(3) Tax Per Worker
C × Post	-0.050***	0.066***	-1743***
	(0.002)	(0.002)	(264)
2016 Outcome Mean	0.25	-0.31	6,236
Firm FE	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes
R2	0.73	0.73	0.60
N	110,439	110,439	110,439
N Firms	15,777	15,777	15,777

- Strong first-stage: clear differential impact on C vs. S firms

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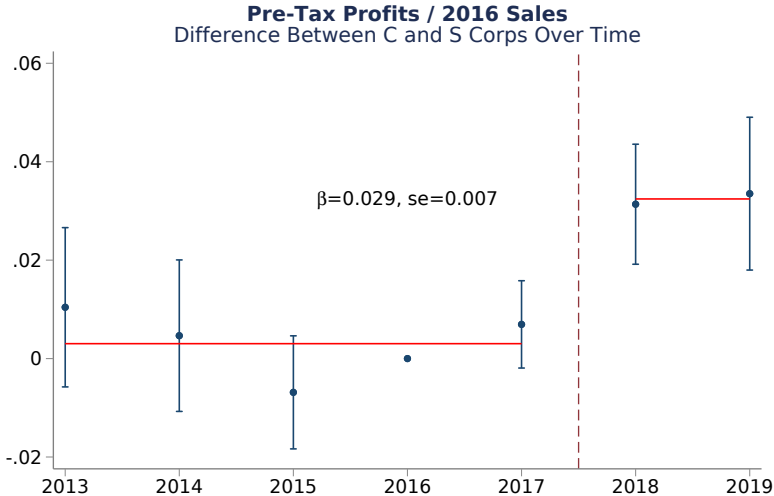
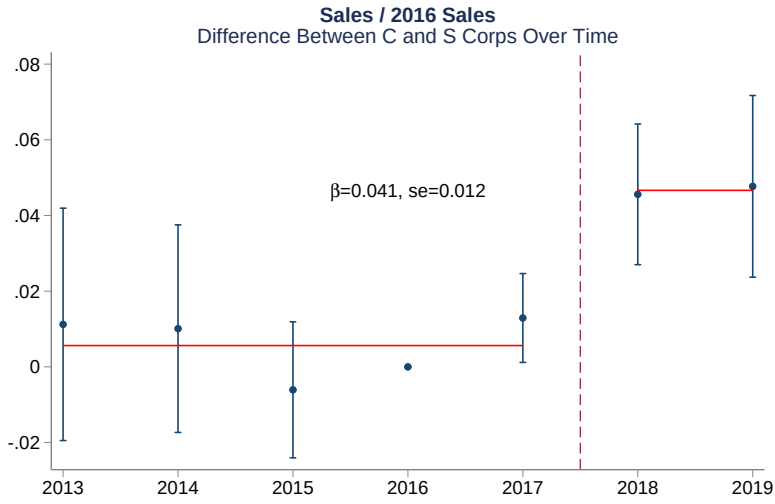
Pre-Tax Profits

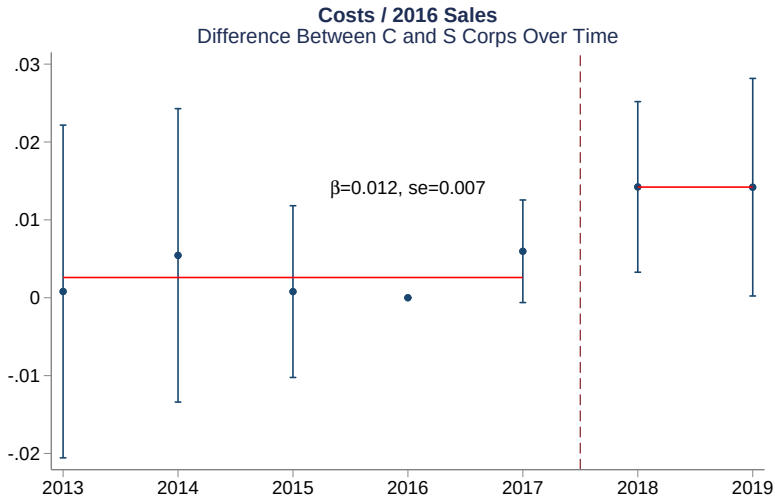


more

Sales


Sales / 2016 Sales
Difference Between C and S Corps Over Time
β=0.041, se=0.012
.08
.06
.04
.02
0
-.02
2013
2014
2015
2016
2017
2018
2019

Costs


Costs / 2016 Sales
Difference Between C and S Corps Over Time
β=0.012, se=0.007
.03
.02
.01
0
-.01
-.02
2013
2014
2015
2016
2017
2018
2019

Elasticity of Taxable Income (ETI)

Estimate via 2SLS:

	(1) $\ln(1-\tau_f^{MTR})$	(2) Pre-tax π	(3) Pre-tax π
C $\times$ Post	0.066***	0.029***	
	(0.002)	(0.007)	
$\Delta \ln(1-\tau_f)\times$ Post			0.445***
			(0.108)
First-Stage F			559.1
Firm FE	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes
R2	0.73	0.61	n.a.
N	110,439	110,439	110,439
N Firms	15,777	15,777	15,777

- Elasticity of Taxable Income (ETI): 0.45, s.e.= 0.11
- Larger elasticity $\Longrightarrow$ larger distortion $\Longrightarrow$ larger potential gains from tax cuts

2sls robust table unbal

Is the ETI Driven By Income Shifting or Evasion?

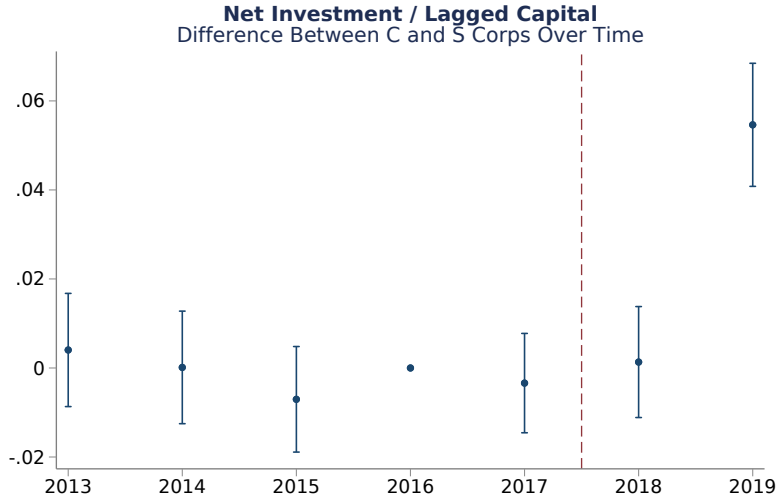
Evidence suggests no:

- Shifting income between corporate and individual sectors?
  - Switching from C↔S status is rare, economically negligble ▸ results
- Shifting of foreign and domestic income?
  - ETI robust to excluding multinational firms Clausing '20; Jansky et al. '22 ▸ results
- Intertemporal shifting?
  - ETI similar when excluding 2017/18 ▸ results
- Different C vs. S evasion incentives after TCJA?
  - ETI does not vary with probability of audit, proxied by firm size ▸ results

Summary So Far

- After TCJA, C-corps...
  - Pay substantially less tax than S-corps
  - Increase sales and pre-tax profits
- Next: What are the effects on investment?
  - Theory predicts that the corporate tax distorts capital demand
  - Capital investment may affect long-run efficiency and productivity

Net Investment / Lagged Capital



sales

Investment Estimates

	(1) $I_t > 0$	(2) I_t/K_{t-1}	(3) I_t/K_{t-1}
C × Post	0.016**	0.029***	
	(0.008)	(0.004)	
$\Delta \ln(1-\tau_f)\times$ Post			0.443***
			(0.070)
2016 Outcome Mean	0.50	0.06	0.06
Firm FE	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes
R2	0.28	0.21	n.a.
N	110,439	110,439	110,439
N Firms	15,777	15,777	15,777
First-Stage F			559.1

- Implied elasticity WRT net-of-tax rate: $\varepsilon^I_{1-\tau} = 0.44$, s.e.= 0.07

▸ lit comparison ▸ robustness ▸ 4562

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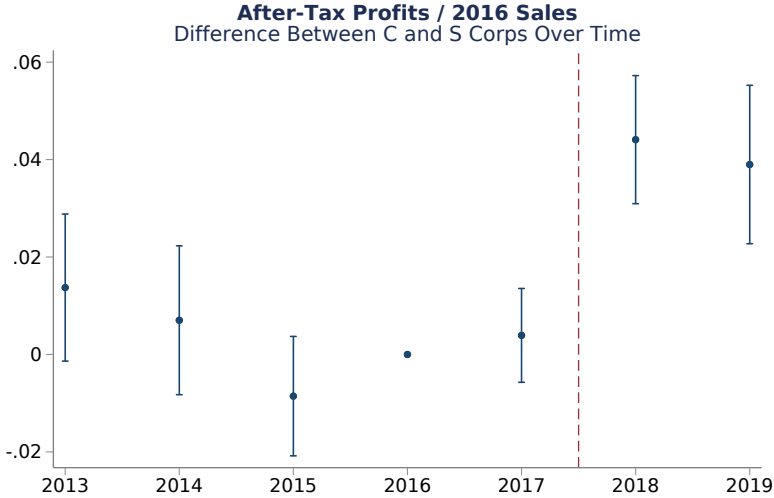
Distributional Effects

Consider several groups:

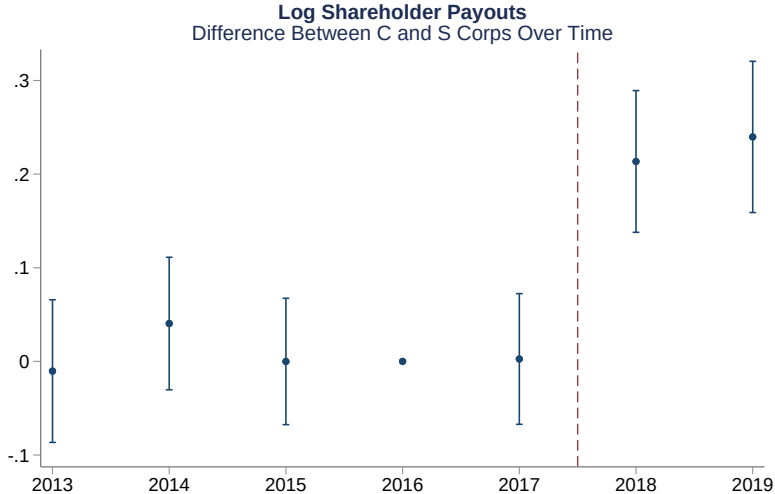
- Firm owners (shareholders)
- Workers (low-paid, high-paid, executives)

1. Changes in τ may induce changes in $K, L, w, \pi \implies$ distributional effects
2. Non-classical channels, such as rent-sharing, may also matter Card '22

After-Tax Profits



Shareholder Payouts



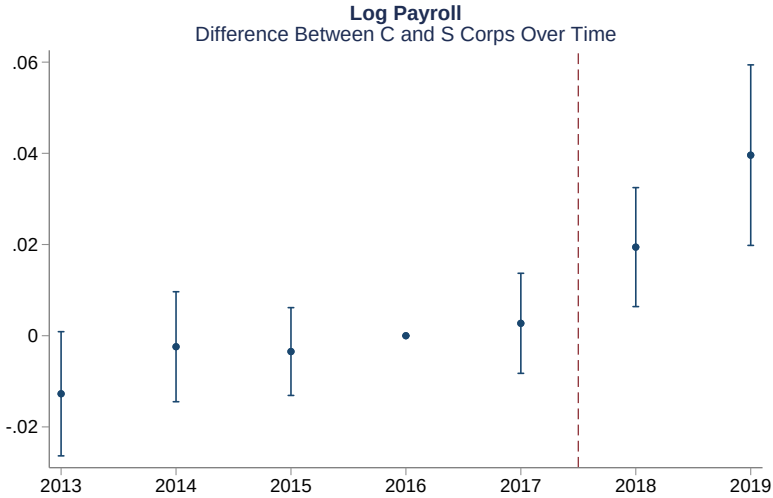
▸ extensive margin

After-Tax Profit and Payout Elasticities

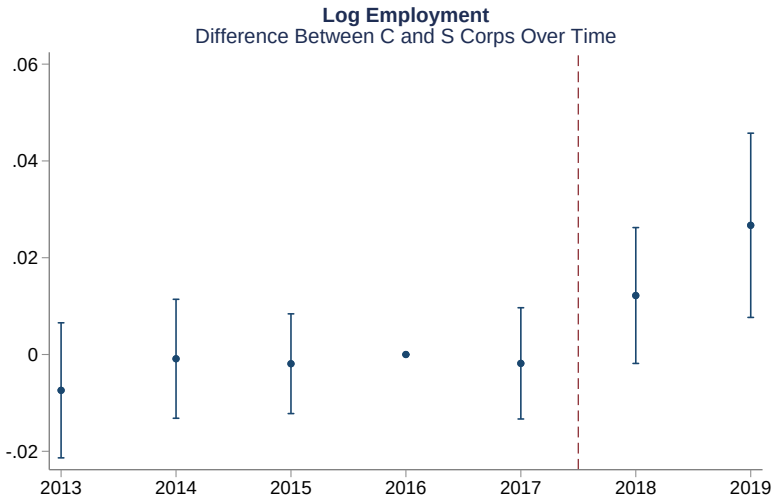
	(1) Post-Tax π	(2) Log Payouts	(3) Post-Tax π
C $\times$ Post	0.038***	0.220***	
	(0.007)	(0.029)	
$\Delta \ln(1-\tau_f)\times$ Post			0.581***
			(0.110)
2016 Outcome Mean	0.41	1.14	0.41
Firm FE	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes
R2	0.62	0.86	n.a.
N	110,439	58,071	110,439
N Firms	15,777	9,997	15,777
First-Stage F			559.1

- Sharp increase in post-tax profits implies shareholders bear significant share of incidence

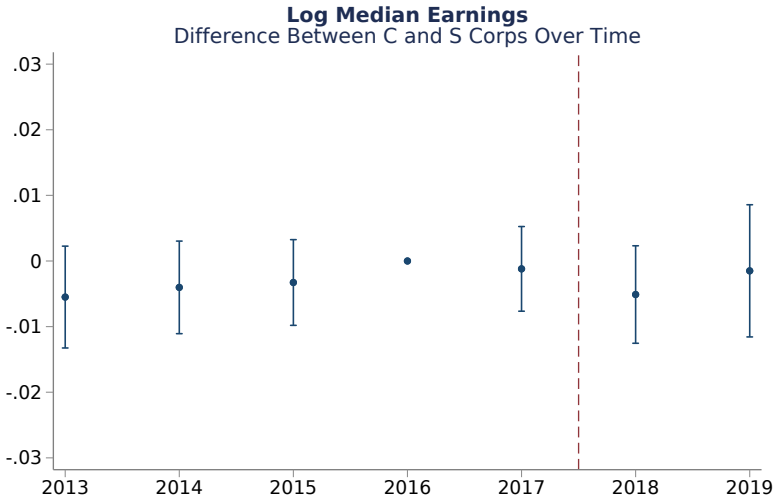
Labor Demand: Log Payroll



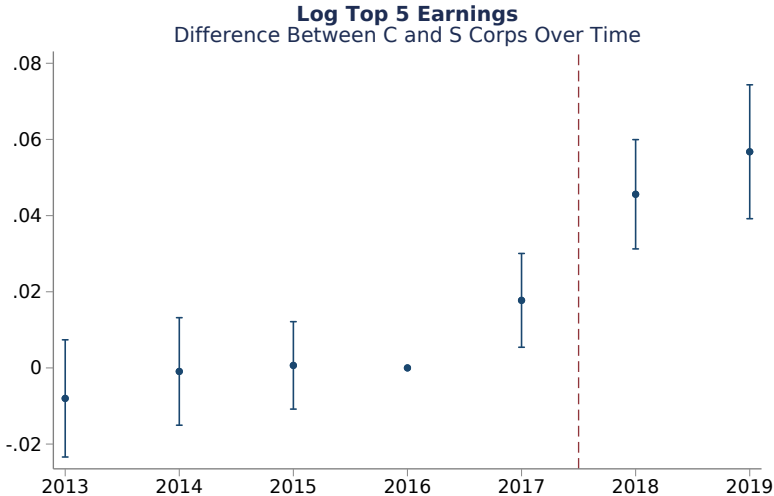
Employment


Log Employment
Difference Between C and S Corps Over Time
.06
.04
.02
0
-.02
2013
2014
2015
2016
2017
2018
2019

No Change in Median Earnings

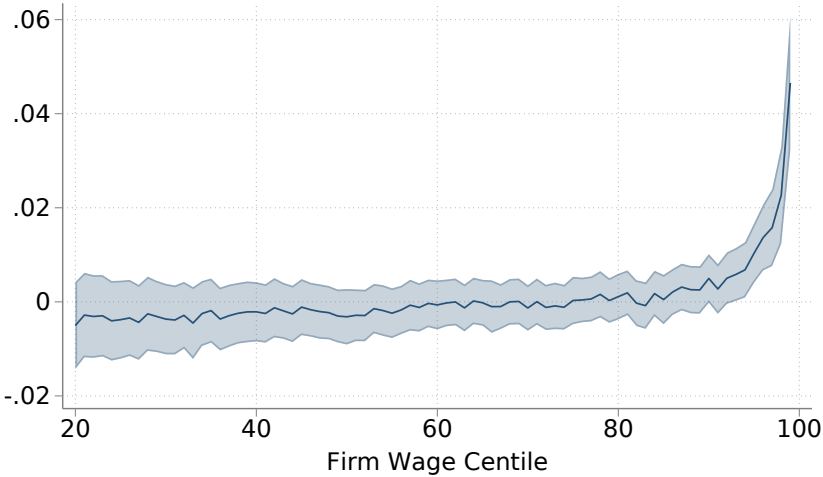


But Big Increases at the Top



executives

Impacts on Firm Wage Quantiles



Worker Earnings Elasticities

	(1) Payroll	(2) Emp	(3) p50	(4) p95	(5) Executives
C × Post	0.033***	0.022***	-0.001	0.013***	0.048***
	(0.008)	(0.008)	(0.004)	(0.004)	(0.010)
2016 Outcome Mean	133	2,382	47,973	176,373	5,080,718
ε^{NTR}	0.50	0.33	-0.01	0.20	0.68
s.e.	0.12	0.12	0.06	0.06	0.14
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes	Yes	Yes
R2	0.97	0.96	0.94	0.93	0.92
N	110,439	110,439	110,439	110,439	97,440
N Firms	15,777	15,777	15,777	15,777	14,394

- Stark increase in within-firm earnings inequality

General Equilibrium Effects?

- DiD design identifies partial equilibrium, firm-level elasticities
- Ex ante, market-level elasticities plausibly larger or smaller than firm-level
  - **Larger**
    - Perfect comp. models predict market-level (not firm-specific) increases in wages
    - But w/ DiD, market-level effects absorbed in time fixed effects
  - **Smaller**
    - Do C-corps gain market share at the expense of S-corps?

Market-Level Analysis

- Aggregate outcomes by industry, commuting zone, or entity type
- Instrument tax wedge with sales-weighted market share of C-corps ▸ details
- Market-level ETI estimates are similar:
  - Firm: 0.45
  - Industry: 0.35
  - Entity type: 0.41
- No clear evidence of market-level wage adjustments
- Caveat: wide confidence intervals

▸ Industry ▸ CZ ▸ Macro ▸ ts

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Mechanisms

Summary so far: Relative to S-corps, C-corps...

- Receive larger tax cuts
- Increase sales, profits, investment, wages for high-paid workers

Explore three mechanisms:

1. Other TCJA provisions
2. Liquidity effects
3. Cost of capital channel

1. Other TCJA Provisions

Are effects driven by MTR cuts or other TCJA provisions?

Evidence points to MTR cuts:

- Most other TCJA changes applied to both C and S firms
- MTR provision had largest effect on firms' tax liabilities JCT '17
- Results robust to exclusion of firms most exposed to other policy changes

Tests for Other TCJA Provisions

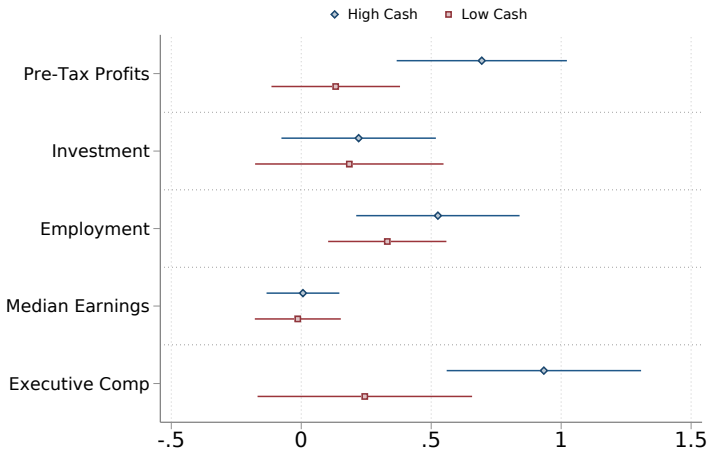
Results robust to several sample restrictions, where I exclude:

1. Manufacturing industries (DPAD)
2. Industries with commonly negative profits (NOLs)
3. Industries with highest bonus take-up (expensing)
4. Industries with large interest deductions before TCJA (163j)
5. C-corps subject to AMT before TCJA (AMT)
6. Multinational firms (international provisions)

▸ ETI ▸ Investment ▸ Earnings

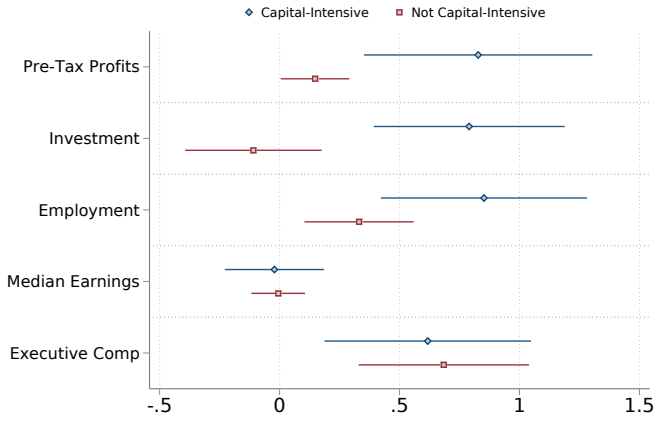
2. Are Effects Driven by Liquidity Constraints?

- Response from relatively illiquid firms is weaker, not stronger



3. Are Effects Driven by Changes in the Cost of Capital?

- Suggestive: Larger effects in capital-intensive industries



Is Theory Consistent With Effects Driven By τ?

- Firms maximize after-tax profits:

$$\max \pi = \underbrace{F(K,L)(1-\tau)}_{\substack{net-of-tax \\ revenues}} - \underbrace{wL(1-\tau)}_{\substack{fully\ deductible \\ labor\ costs}} - \underbrace{rK(1-\theta\tau)}_{\substack{partly\ deductible \\ capital\ costs}}$$

- τ is the corporate income tax rate, $\theta \in [0,1]$ is an expensing parameter

FOC:

$$\underbrace{\frac{\partial F}{\partial K}}_{MPK} = \underbrace{\frac{(1-\tau)}{1-\theta\tau} r}_{cost\ of\ capital} \equiv \phi$$

- If $\theta = 1$, ϕ not a function of τ
- TCJA increased θ to 1 for some assets ("full expensing")
- Which policy lever drives the results?

A Richer Model

Based on Auerbach and Hassett (1992)

Includes salient features of TCJA and firm behavior:

- Empirically, expensing take-up is incomplete Kitchen and Knittle '16; JCT '21
- Expensing provisions are formally temporary
- Firms are forward-looking, may face adjustment costs when investing

Model gives predictions consistent with evidence:

- Elasticities WRT model-implied marginal tax rates similar to benchmark
- Consistent with cost of capital reduction driven by τ in this research design

details

Roadmap

1. **Setting**
2. **Data**
3. **Empirical Strategy and Results**
4. **Mechanisms**
5. **Distributional Analysis**
   - Estimate Δoutput, Δrevenue, incidence
   - Benchmark efficiency-equity of corp tax against other tax instruments

Output Gains

Define "welfare":

$$W = Y + T$$

- Y is the sum of (after-tax) profits and labor earnings; T is tax revenues

By the envelope theorem, the change in W is given by:

$$dW = \underbrace{\pi \varepsilon^K d(1-\tau)}_{\Delta\text{Shareholder Income}} + \underbrace{\sum^j w^j L^j \varepsilon^{L_j} d(1-\tau)}_{\Delta\text{Labor Income}} \underbrace{- B d(1-\tau)\left[1 - \frac{\tau \varepsilon^B}{1-\tau}\right]}_{\Delta\text{Tax Revenue}}$$

- Elasticities estimated empirically from the event studies
- Other key moments observable in the tax data

Revenue, Income, and Excess Burden

	bil	% GDP	%
Panel A: Tax Revenues			
Mechanical, dM	-101.7	-0.48	
Total, dT	-86.4	-0.40	
Panel B: After-Tax Private Income			
Total Income, dY	122.0	0.57	
Capital Income, $d\pi^K$	60.3	0.28	
Labor Income, $d\pi^L$	61.7	0.29	
Panel C: Welfare and Excess Burden			
Welfare, dW	35.6	0.17	
Marginal Excess Burden, dW/dT			41.2

- Broader implication: cutting corp tax by \$1 generates ≈\$0.41 in additional output
- GDP estimate similar to structural estimates by Barro and Furman (2018)

Factor Incidence

- Compute incidence as shares of total income changes

  Suarez-Serrato and Zidar '16; Fuest et al. '18

$$I^{w^j} = \frac{w^j L^j \varepsilon^{w(j)}}{\pi \varepsilon^K + \sum_j w^j L^j \varepsilon^{w(j)}}$$

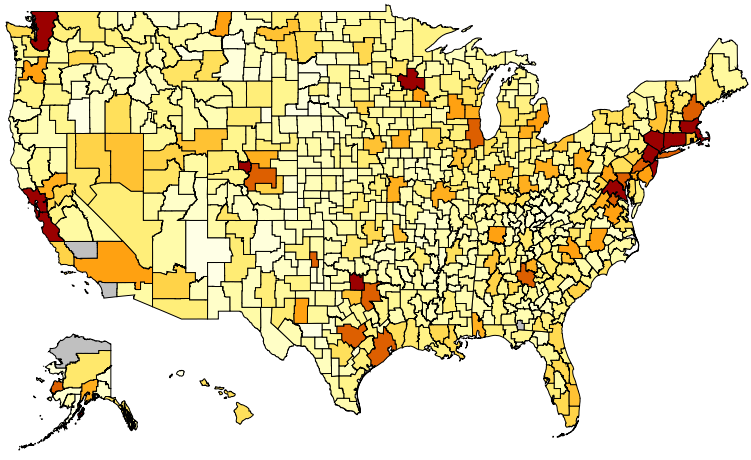
- Estimate these parameters empirically from the event studies

Distributional Effects

	USD	% Incidence
Panel A: Factors		
Firm Owners	60.3	49
Executives	13.2	11
High-Paid Workers	48.6	40
Low-Paid Workers	0.0	0
Panel B: Distribution		
Top 1%	29.4	24
91-99th%	69.1	57
Bottom 90%	23.5	19

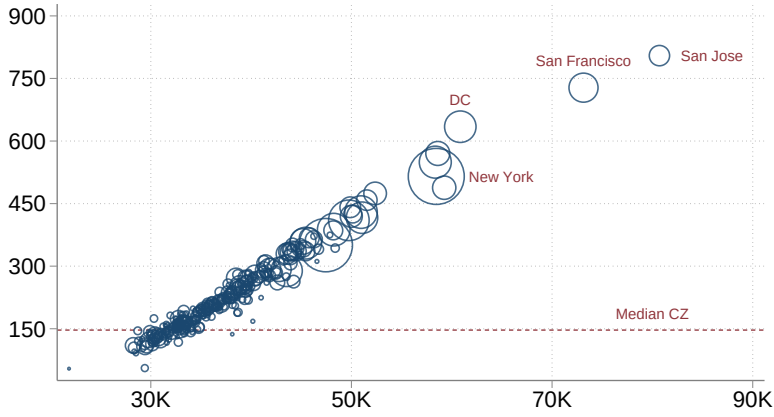
- Distributional incidence estimated using K ownership data from Fed SCF (2018)
- $\approx$ 81% of benefits flow to top 10% of distribution

Income Gains Are Highly Spatially Concentrated



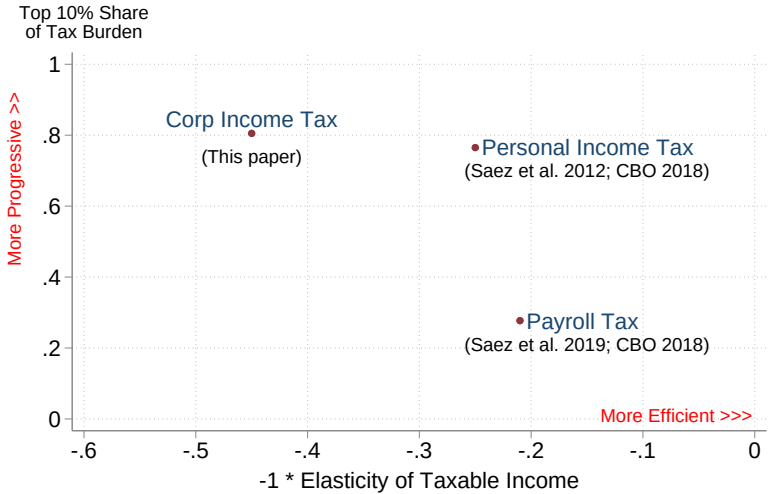
- San Francisco Bay Area: $\approx$ \$750 per capita
- Median Commuting Zone: $\approx$ \$150 per capita

Per Capita Income Change vs. Mean Baseline Income



Note: Bubble size is proportional to CZ population.

Corporate Tax Cut Vs. Alternate Tax Cuts



top 1%

Conclusion

Take-Aways:

- Corp tax cuts generate modest output gains as % of GDP
- But large gains relative to other tax cuts, per dollar of foregone revenue
- Gains mostly flow to high-income individuals

Silver Lining:

- Benchmarking suggests personal income tax less distortive and similarly progressive

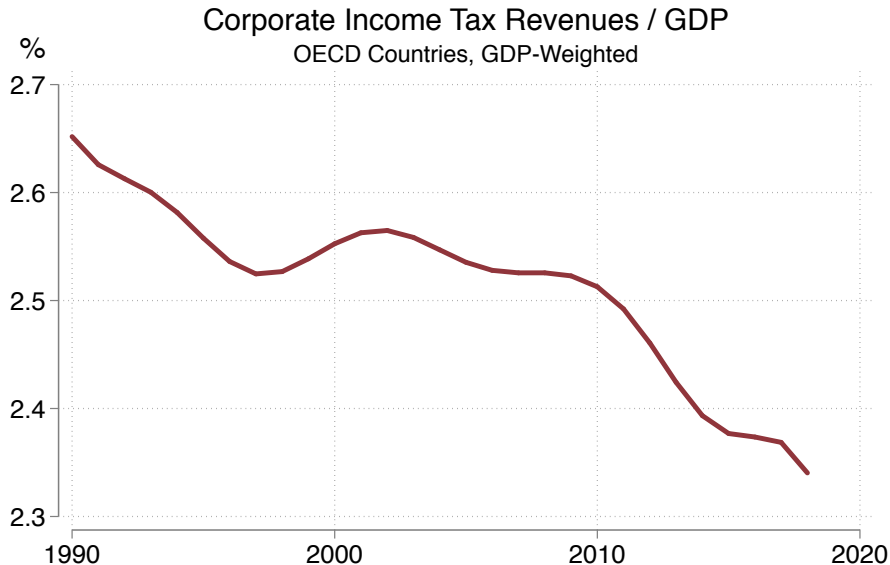
Caveats:

- Long-run impacts?
- Consumer prices, entrepreneurship, international tax competition, public good provision, redistribution, debt dynamics, social externalities, political economy...

Thank you

patrick.kennedy@berkeley.edu

Appendix Materials



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Data: OECD Tax Database (2022)

MTR Brackets Before and After TCJA

Income Bracket	Upper Income Threshold ($)	Pre-TCJA MTR	Post-TCJA MTR	Firm Share	Emp Share	Sales Share	Tax Share
0	0	0	0	0.916	0.659	0.477	0.004
1	50,000	0.15	0.21	0.061	0.026	0.012	0.003
2	75,000	0.25	0.21	0.006	0.006	0.004	0.001
3	100,000	0.34	0.21	0.003	0.004	0.002	0.001
4	335,000	0.39	0.21	0.007	0.013	0.010	0.008
5	10,000,000	0.34	0.21	0.005	0.043	0.047	0.063
6	15,000,000	0.35	0.21	0.000	0.008	0.009	0.014
7	18,000,000	0.38	0.21	0.000	0.003	0.005	0.007
8	>18,000,000	0.35	0.21	0.001	0.240	0.433	0.898

Shares computed in tax year 2016 using representative SOI firm sample.

QBI Deduction Details

Deduction amount is the minimum of:

- 20% of taxable income minus net capital gain, or
- The sum of both:
  - 20% of aggregate qualified REIT dividends and partnership income
  - Deductible amounts from qualified trades or businesses

Income limitation:

- \$321k for married; \$161k for single (2019)
- If income limited then two additional tests:
  - Qualified income must be from a "non-service" industry
  - Deduction $\leq$ 50% of allocated W-2s wages

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MTR Measurement

MTR=F(Revenue, Deductions, Credits)

- **C-Corps:** MTR directly inferrable from taxable income reported to IRS
- **S-Corps**: Compute weighted average of shareholder MTRs:

$$\tau_{ft} = \sum_i \omega_{i(ft)} \tau_{i(ft)}$$

  - $w_{i(ft)}$ is the ownership share of investor i in firm f year t
  - $\tau_{i(ft)}$ is the individual-level MTR of investor i in firm f year t

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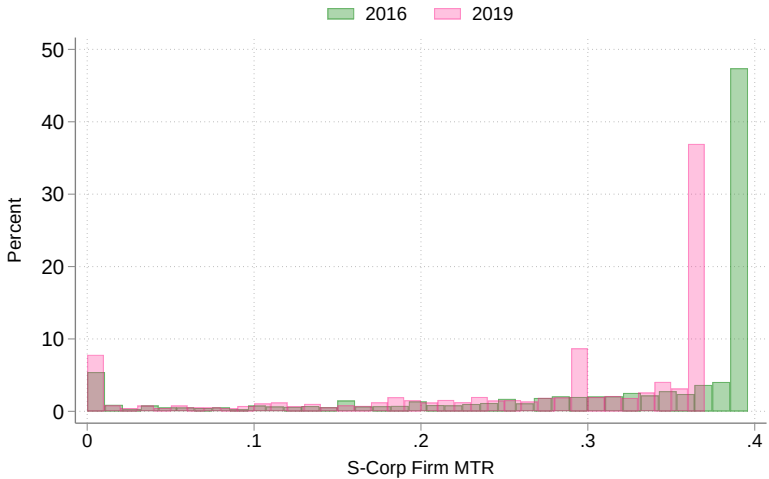
S-Corp MTRs



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Measuring Taxes for S Corps

1. Match S-corp owners to their 1040s
2. Use 1040s to compute each owner's average tax rate (ATR) and total taxes paid on pass-through income
   - 2.1 Calculate ATR for a tax unit: ATR = Taxes Paid / Taxable Income
   - 2.2 Record net ordinary busines income: NET_OBI = Line 32 from 1040 (from schedule E)
   - 2.3 Compute taxes paid on business income: BIZ_TAX_PAID = min(max{ATR*(NET_OBI),0},total tax paid on 1040)
   - 2.4 Save table unique by TIN-year
3. Compute total non-negative pass-through income from 1120s and 1065s by owner
   - 3.1 Append all K1s and from 1120s and 1065s with positive OBI (drop K1s with OBI<$0)
   - 3.2 Sum up OBI by TIN-year; call the sum OBI_SUM
   - 3.3 Save table unique by TIN-year
4. Merge table 2 and 3 by TIN-year
5. Compute the OBI share of each pass-through business in the owner's portfolio
   - 5.1 Append all K1s from 1120s with positive OBI
   - 5.2 Match m:1 by TIN with table 4; new table is unique by TIN-K1-year
   - 5.3 Compute share of each K1 in total OBI, call it W = OBI / OBI_SUM
   - 5.4 Allocate tax_paid in proportion to the shares: S_TAX = W*BIZ_TAX_PAID
   - 5.5 Sum up s_tax by firm-year, final table is unique by EIN-year

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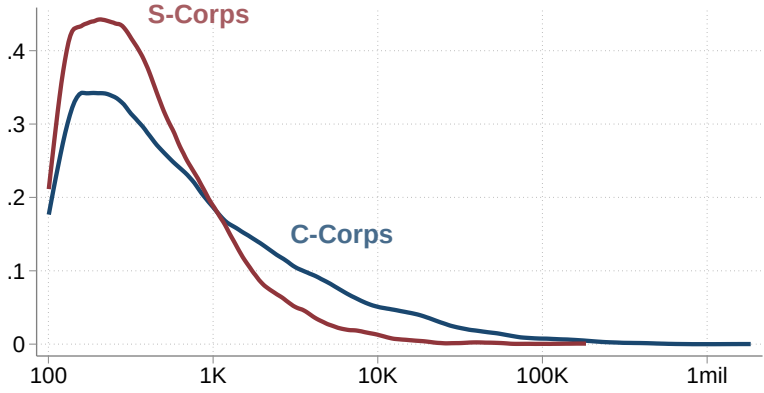
2016 Employment



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Detailed Summary Statistics

	All Firms		C Corps		S Corps	
	Mean	SD	Mean	SD	Mean	SD
Marginal Tax Rate	0.249	0.160	0.213	0.168	0.311	0.121
Federal Tax (mil)	13.7	142.8	20.4	178.1	2.4	33.4
Federal Tax Per Worker	6,236	12,176	6,551	13,036	5,706	10,551
Sales (mil)	783.2	4,622.3	1,128.9	5,792.4	201.3	562.7
Pre-Tax Profit (mil)	294.3	1,625.9	435.0	2,034.8	57.4	188.2
Shareholder Payouts (mil)	41.2	613.3	60.4	773.3	8.8	35.3
Net Investment (mil)	12.9	368.9	19.9	465.6	1.1	13.1
New Investment (mil)	50.6	1,418.7	77.5	1,790.5	5.2	30.9
Employment	2,382	19,851	3,368	24,825	722	3,950
Mean Annual Earnings (thous)	65.0	52.6	69.3	49.9	57.6	56.0
Firm Age	34	22	32	23	37	21
N Firms	15,777		9,897		5,880	

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Elasticity Estimation

Estimate via dynamic 2SLS

First stage instruments the log net-of-tax rate with C or S status:

$$\ln(1-\tau_f) * \mathbf{1}(year \geq 2018) = \beta C_f * \mathbf{1}(year \geq 2018) + \gamma_f + \alpha_{is(f),t} + \epsilon_{ft}$$

Second stage estimates the elasticity of the outcome WRT $1-\tau_f$

$$y_{ft} = \varepsilon \ln(1-\tau_f) * \mathbf{1}(year \geq 2018) + \gamma_f + \alpha_{is(f),t} + \epsilon_{ft}$$

where y_{ft} is either a logged outcome or an outcome scaled by 2016 baseline sales

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ETI in Context

Elasticity of Taxable Income (ETI): 0.45, s.e.= 0.11

Compared to small open economies:

- 4.07 for establishment growth in US states S-Serrato and Zidar '16
- 3.72 ETI for small firms in Costa Rica Bachas and Soto '21
- 0.53 ETI for small firms in the UK Devereaux et al. '18
- 0.52 for establishment growth in US states Giroud and Rauh '19

$$\Longrightarrow \text{ Federal corporate ETI} \leq \text{small open economy ETI}$$

Compared to other tax instruments:

- 0.25 ETI WRT personal income tax Saez et al. '12
- 0.21 employment WRT payroll tax Saez et al. '19

$$\Longrightarrow \text{ Federal corporate ETI} > \text{personal and payroll tax}$$

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Entity Switching Considerations

Not obvious whether firms should prefer C or S status in post-TCJA regime

Reasons to prefer C-status:

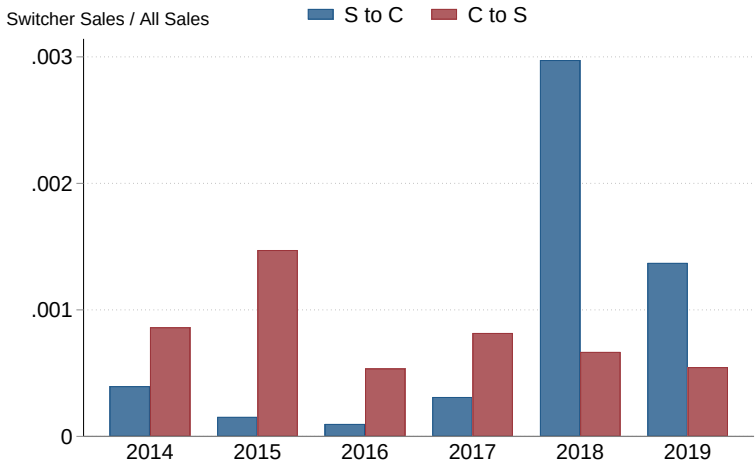
- Flat 21% rate lower than ~29% or 37% rate for S-corps
- QBI deduction set to expire in 2025

Reasons to prefer S-status

- Double taxation of C-Corps on dividends
- Business losses deducted from personal income tax liability
- State and local taxes: some states have high corp tax, low personal tax
- How permanent will low C-corp rates be in practice?

back

Switchers Are Rare and Economically Small



sample

shifting

Switching Predictors

	(1) S to C	(2) C to S
Log Lagged Sales × Post	0.003***	0.000
	(0.001)	(0.000)
Firm Age × Post	-0.000	-0.000
	(0.000)	(0.000)
Multinational (0/1) × Post	0.018***	0.001
	(0.007)	(0.001)
SSTB Industry × Post	-0.002	0.001
	(0.004)	(0.002)
R2	0.01	0.00
N Firms	39,870	65,731

back

Sales and Profits

	(1) Sales	(2) Costs	(3) Pre-tax π	(4) EBITDA
C $\times$ Post	0.041***	0.012	0.029***	0.083***
	(0.012)	(0.007)	(0.007)	(0.010)
2016 Outcome Mean	1.00	0.53	0.47	0.30
Firm FE	Yes	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes	Yes
R2	0.39	0.63	0.61	0.84
N	110,439	110,439	110,439	110,439
N Firms	15,777	15,777	15,777	15,777

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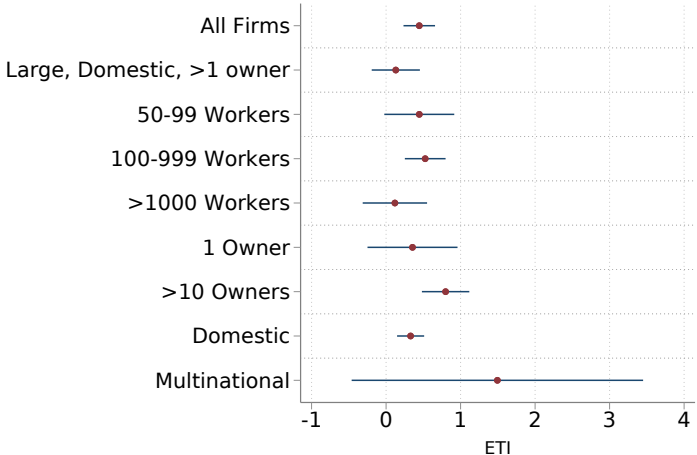
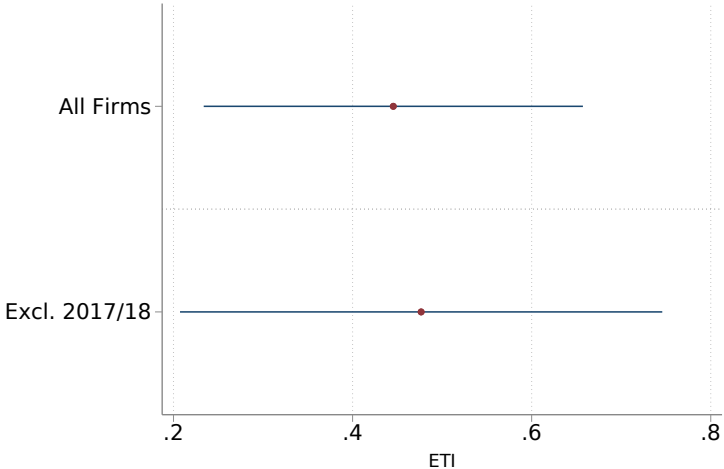
Heterogeneity in the ETI



- Shifting implies larger ETI's for: multinationals; small firms; single-owner firms
- Some supporting evidence for MNEs, but overall results not mainly driven by shifting

back

ETI excl. 2017/18



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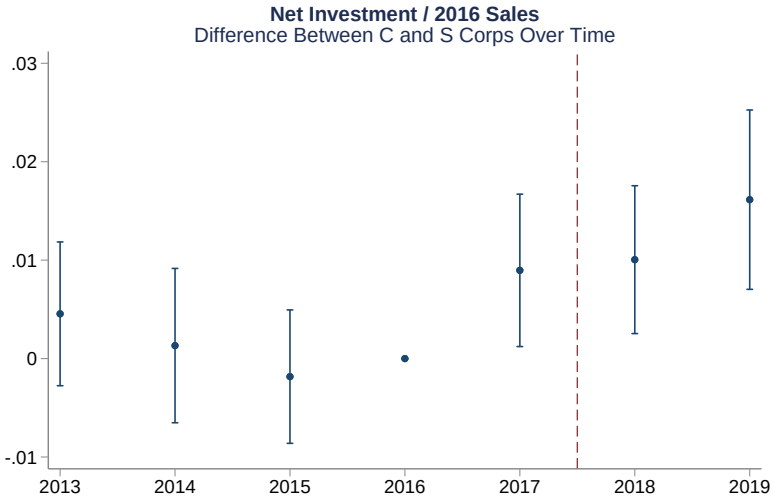
Net Investment / 2016 Sales



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Investment Results in Context

- Net-of-tax investment elasticity: $\varepsilon^I_{1-\tau} = 0.44$, s.e.$= 0.07$
- Chodorow-Reich et al. (2023) TCJA study: $\varepsilon^I = 0.49$
- Compare to other policies:
  - 7.20 (s.e.=2.00) for temporary bonus during recessions Zwick and Mahon '17
  - 0.00 (s.e.=0.08) for dividend tax cut Yagan '15

Implications:

- Widely heterogeneous effects across policy instruments and settings
- Consistent w/ theory: different types of taxes have different effects!

back

New Investment

	(1) Total	(2) Short-Life	(3) Long-Life	(4) Structures
C × Post	0.005**	0.004***	0.000	0.001
	(0.002)	(0.001)	(0.000)	(0.001)
2016 Outcome Mean	0.06	0.04	0.01	0.01
Firm FE	Yes	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes	Yes
R2	0.58	0.62	0.49	0.36
N	110,439	110,439	110,439	110,439
N Firms	15,777	15,777	15,777	15,777

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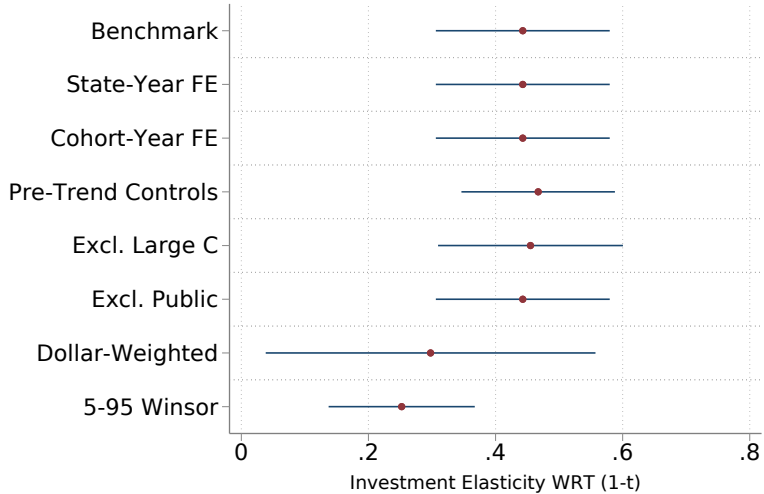
Investment Specification Checks



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Executive Earnings Specification Checks

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Executive Earnings: Heterogeneity by Firm Size

	(1) 5-99 Emp	(2) 100-199 Emp	(3) 200-499 Emp	(4) 500-999 Emp	(5) 1000+ Emp
C × Post	0.058***	0.080***	0.039**	0.052*	-0.001
	(0.021)	(0.020)	(0.018)	(0.027)	(0.028)
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes
R2	0.90	0.88	0.88	0.87	0.91
N	16,537	21,503	25,762	13,117	20,521

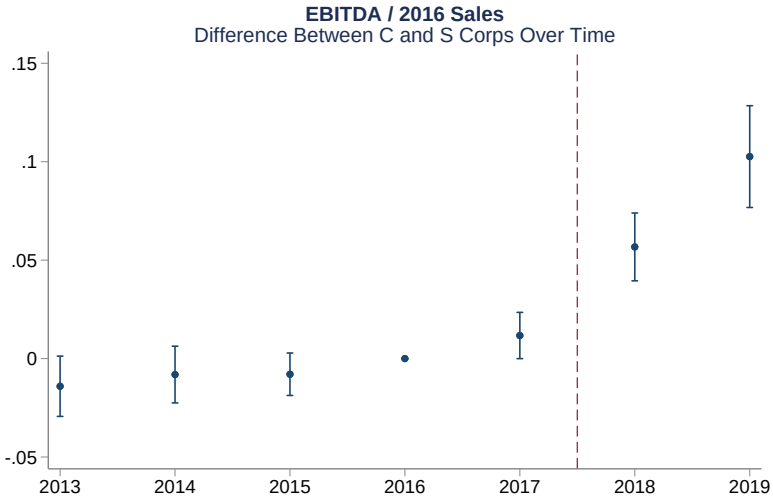
- Executive pay bump is sharpest for small- to medium-sized firms

back

Labor Results in Context

- Some studies find that corporate taxes are progressive:
  - This paper (federal corp tax cut in the US)
  - Carbonnier et al. '20 (federal tax credit in France)
- Others find incidence borne by low-income workers:
  - Fuest et al. '19 (tax increases in German cities)
- Possible reconciliation:
  - Asymmetry of tax cuts and tax hikes?

EBITDA


EBITDA / 2016 Sales
Difference Between C and S Corps Over Time
.15
.1
.05
0
-.05
2013
2014
2015
2016
2017
2018
2019

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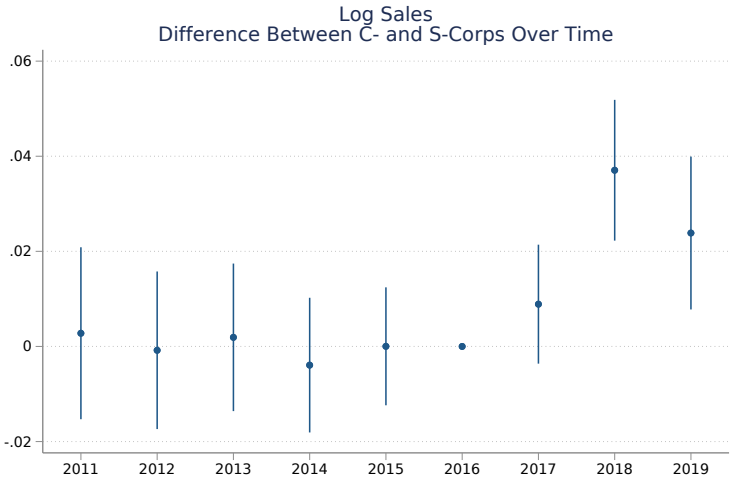
Unbalanced Panel: Sales



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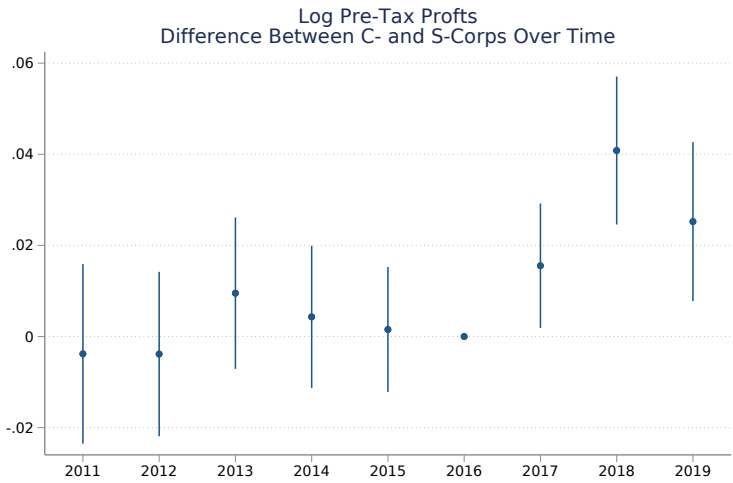
Unbalanced Panel: Pre-Tax Profit



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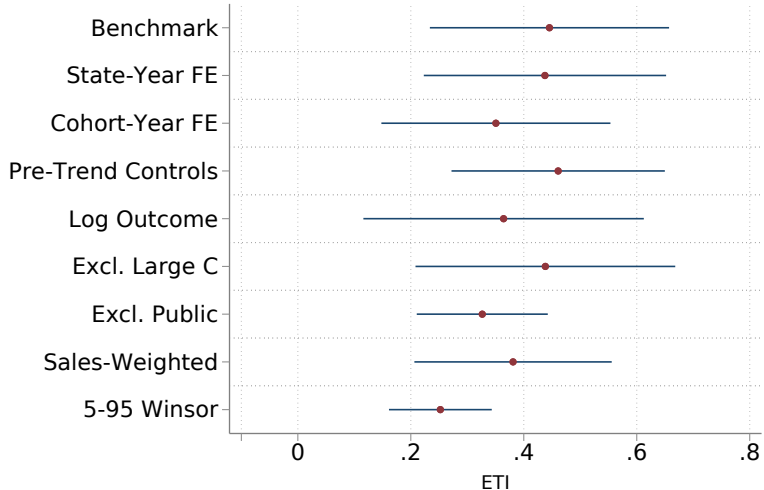
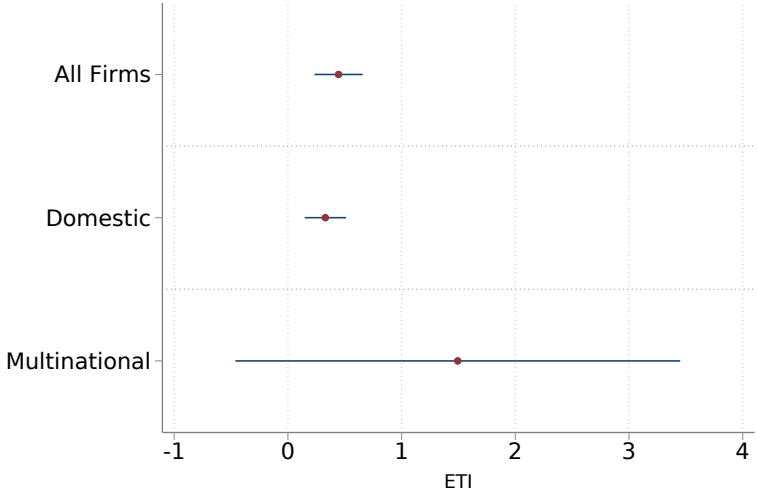
ETI Specification Checks



eti shifting

ETI for Domestic and Multinational Firms



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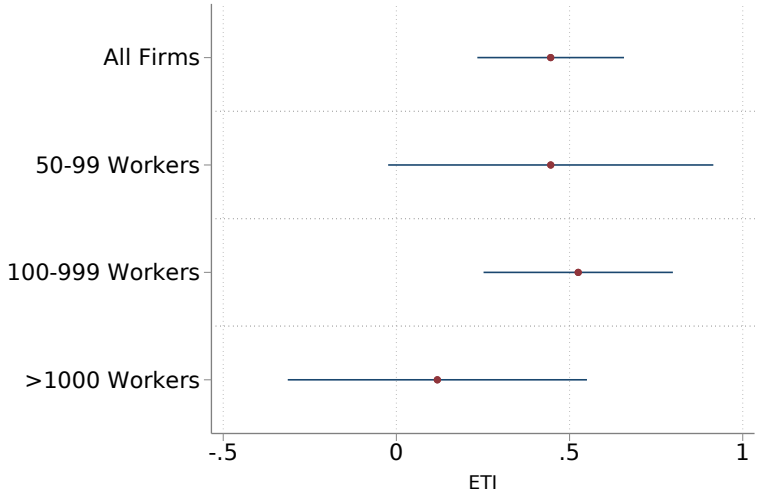
ETI by Firm Size



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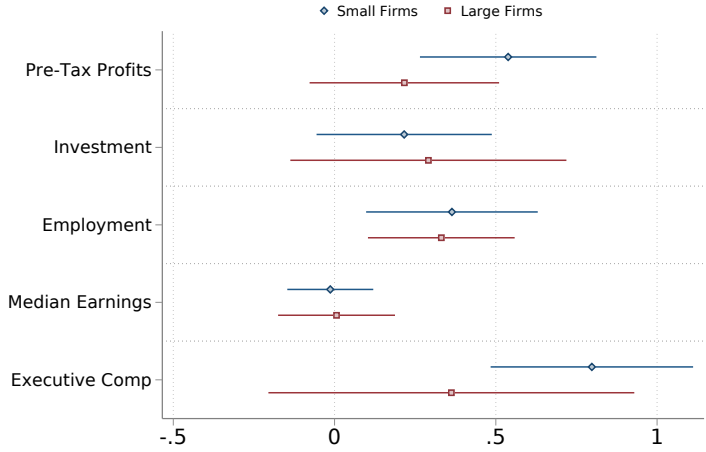
Heterogeneity by Firm Size



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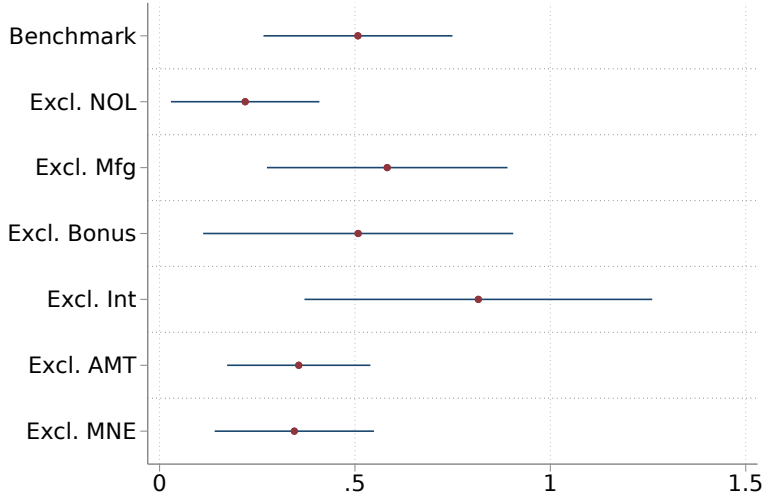
Other TCJA Changes

1. **Net-Operating Losses (NOL):** limited to 80% of taxable income; carrybacks eliminated; carryforwards indefinite
   - Exclude industries where losses are most common
2. **Defense Production Activities Deduction (DPAD):** Repealed
   - Exclude manufacturing industries
3. **Interest Deductions:** Cannot exceed 30% of adjusted taxable income
   - Exclude firms above this threshold in the pre-period
4. **Alternative Minimum Tax (AMT):** Repealed
   - Exclude C-corps subject to AMT in the pre-period
5. **Foreign Provisions:** Eliminated dividend repatriation tax, among other changes
   - Exclude foreign firms

ETI in Alternate Samples



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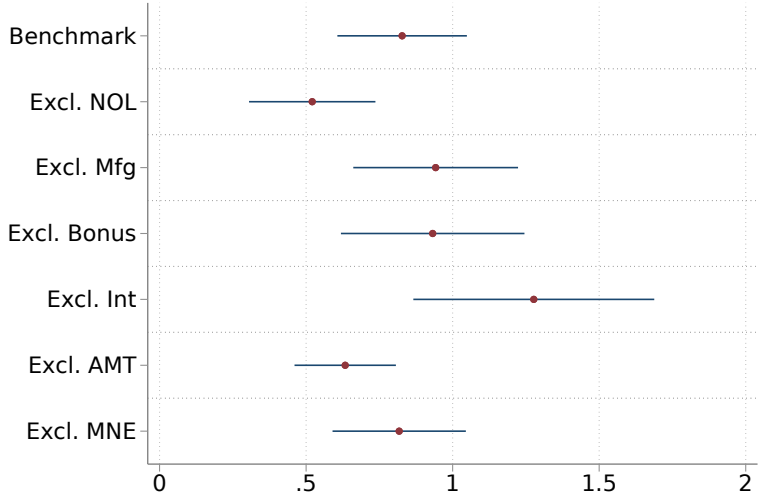
Investment in Alternate Samples



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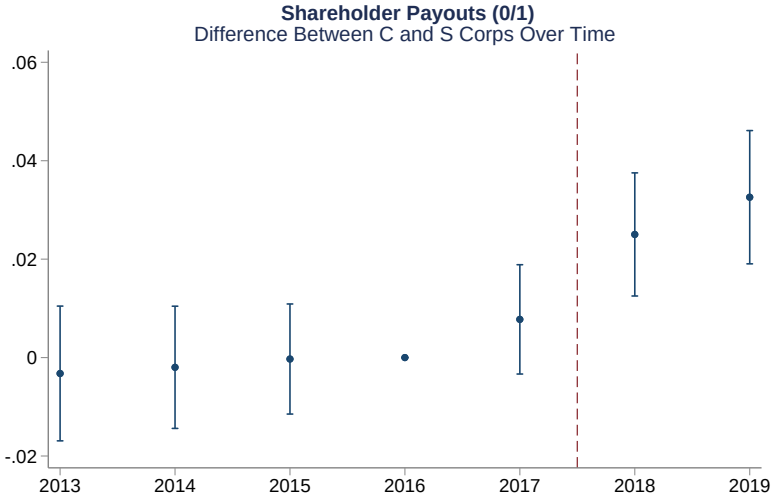
Shareholder Payouts (Extensive Margin)



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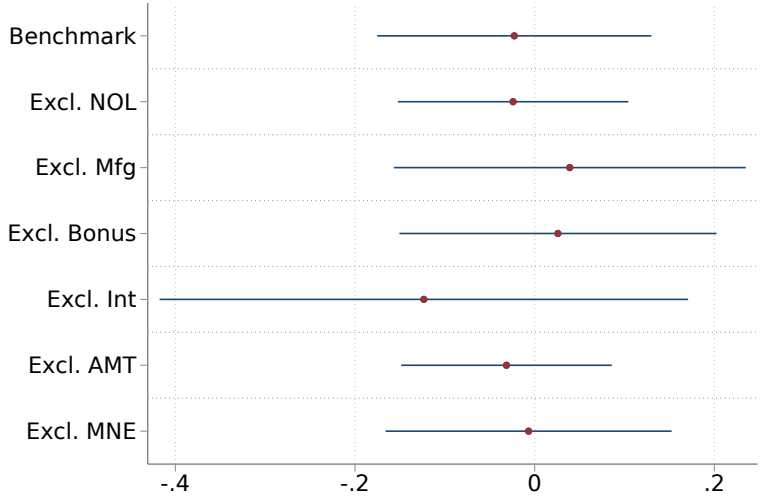
Mechanism Checks: Log Median Earnings



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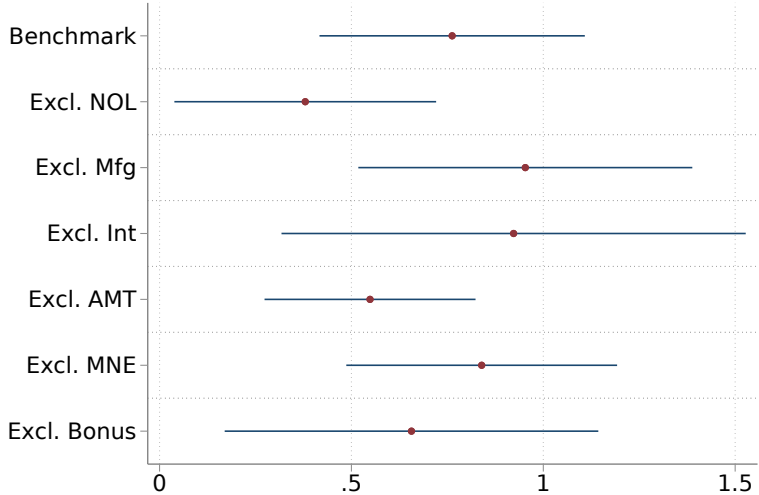
Mechanism Checks: Log Executive Pay



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Revenue Impacts

The tax base is:

$$B = F(K, L) - \sum_j w^j L^j - \theta r K$$

Tax revenue:

$$T = \tau B$$

Mechanical change in revenue is given by:

$$dM = -B d(1 - \tau)$$

By the envelope theorem:

$$dT = dM \left[1 - \frac{\tau \varepsilon^{\pi}}{1 - \tau} \right]$$

where ε^{π} is the corporate ETI

$\Longrightarrow$ Revenue losses are offset by an expanding tax base, $\propto \varepsilon^{\pi}$

Distributional Incidence

- Estimate distributional incidence:

$$I^g = \frac{w^g L^g \epsilon^{w(g)} + \omega^g (rK\epsilon^r + \epsilon^\pi \pi)}{\sum_g w^g L^g \epsilon^{g(k)} + rK\epsilon^r + \epsilon^\pi \pi}$$

- g is a slice of the earnings distribution (top 1%, 91-99%, bottom 90%)
- ω^g is their share of capital ownership according to Federal Reserve SCF (2018)

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Market-Level Analysis

Industry or Commuting Zone Level

- Aggregate outcomes by i, either a NAICS-3 industry or CZ
- Compute shock Z_i = share of C vs. S-corps in i in 2016

Estimate:

$$y_{it} = \sum_{t \neq 2016} \beta_t Z_i * \mathbf{1}(year = t) + \gamma_i + \alpha_t + \epsilon_{it}$$

where y_{it} is an outcome in industry or CZ i, year t; γ_i is an industry or CZ fixed effect; and α_t is a year fixed effect. Cluster standard errors by i.

Entity-Type Level

- Aggregate annual outcomes for all firms by C or S status
- Event study with two panel units (no standard errors)

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Industry Elasticities

	(1) Ln $(1-\tau)$	(2) Pre-Tax π	(3) I_t/K_{t-1}	(4) LnW_{p50}	(5) LnW_{p99}	(6) Ln Emp
$Z_i \times 2019$	0.246**	0.058	0.316	-0.070	0.177	0.165
	(0.100)	(0.213)	(0.327)	(0.126)	(0.251)	(0.263)
ϵ^{NTR}		0.238	1.333	-0.288	0.776	0.722
s.e.		0.861	1.513	0.467	1.154	1.151
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.85	0.95	0.28	0.99	0.98	0.99
N	609	609	609	609	609	609

macro

CZ-Level Elasticities

	(1) Ln $(1-\tau)$	(2) Ln Wage	(3) p50	(4) p99	(5) Ln Emp
$Z_{cz} \times$ 2019	0.064***	-0.000	0.056	-0.051	0.086
	(0.017)	(0.046)	(0.073)	(0.096)	(0.085)
ϵ^{NTR}		-0.002	0.872	-0.805	1.349
s.e.		0.715	1.130	1.574	1.395
CZ FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
R2	0.90	0.95	0.91	0.94	1.00
N	4,963	4,963	4,963	4,963	4,963

▸ macro ▸ labor

Aggregate C/S Elasticities

	(1) Ln $(1-\tau)$	(2) Pre-Tax π	(3) I_t/K_{t-1}	(4) LnW_{p50}	(5) LnW_{p99}	(6) Ln Emp
$Z_e \times 2019$	0.074	0.038	0.051	0.025	0.110	0.036
	(.)	(.)	(.)	(.)	(.)	(.)
ϵ^{NTR}	1.000	0.511	0.693	0.338	1.486	0.481
N	14	14	14	14	14	14

▸ macro ▸ labor

A Rich Model

Firms optimize PDV of after-tax profits as in Auerbach and Hasset (1992):

$$\max \mathbb{E}\left\{ \sum_{s=t}^{\infty}(1+\rho)^{-(s-t)}\left[\frac{F_s(K_s, L_s))(1-\tau_s)}{(1-r)} - w_s L_s(1-\tau_s) - C_s(I_s)I_s(1-\Gamma_s)\right] + A_t \right\}$$

- $\mathbb{E}$ is the expectations operator
- ρ is the discount rate
- r is the risk-free rate
- τ is the tax rate (varies for C- and S-corps)
- $C(I)$ is an adjustment cost function
- $\Gamma_s = k_s + A_s$, k is an investment tax credit
- $A_s = \sum_{z=s}^{\infty}(1+r)^{-s(z-s)}\tau_s D_{z-s}$, PDV of real depreciation allowances
- D is real depreciation allowances (D) per dollar of investment

▸ model ▸ reconciliation

Cost of Capital and EMTR

FOC yields the cost of capital expression:

$$\phi_s = \left(\frac{1-\Gamma_s}{1-\tau_s}\right)\left(\rho + \delta + \frac{\Gamma_{s+t} - \Gamma_s}{1-\Gamma_s}\right) \tag{1}$$

AH show optimal investment is a function of the weighted average of current and future ϕ:

$$\phi_t = \sum_{s \geq t} w_{s-t}\phi_s \tag{2}$$

Parameterize (1) and (2) as in Foertsch (2018), who computes 10-year effective marginal tax rates under both the pre- and post-TCJA regime separately for C- and S-corps:

$$\tau_t^{EMTR} = \frac{\phi_t - r'_t}{\phi_t} \tag{3}$$

where r' is a weighted average of the return on equity and debt

back

Elasticities WRT Effective Marginal Tax Rates

- Ω is a vector of weights that sum to 1 capturing adjustment frictions
- E.g., if $\Omega = 0.5$ each successive year's ϕ is half as important as the previous year

Specification	(1) ε^B π	(2) ε^π $\pi(1-\tau)$	(3) $\varepsilon^{w_{p50}}$ p50 w	(4) $\varepsilon^{w_{p50}}$ p95 w	(5) $\varepsilon^{w_{exec}}$ Exec w	(6) ε^I I_t/K_{t-1}
Benchmark	0.445	0.581	-0.008	0.203	0.678	0.443
	(0.108)	(0.110)	(0.055)	(0.063)	(0.141)	(0.070)
$\Omega = 0.5$	0.409	0.533	-0.007	0.186	0.667	0.407
	(0.097)	(0.098)	(0.051)	(0.057)	(0.135)	(0.062)
$\Omega = 0.3$	0.511	0.665	-0.009	0.232	0.832	0.508
	(0.121)	(0.122)	(0.063)	(0.071)	(0.168)	(0.077)
$\Omega = 0.7$	0.325	0.423	-0.006	0.148	0.529	0.323
	(0.077)	(0.078)	(0.040)	(0.045)	(0.107)	(0.049)
N	110,439	110,439	110,439	110,439	110,439	110,439

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Cost of Capital Elasticities

	(1) π	(2) $\pi(1-\tau)$	(3) w_{p50}	(4) w_{p95}	(5) w_{exec}	(6) I_t/K_{t-1}
ε^{ϕ_f}	-0.441***	-0.574***	0.008	-0.200***	-0.739***	-0.438***
	(0.105)	(0.107)	(0.055)	(0.061)	(0.102)	(0.068)
2016 Outcome Mean	0.47	0.41	47,973	176,373	989,387	0.06
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Size-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	110,439	110,439	110,439	110,439	110,439	110,439
N Firms	15,777	15,777	15,777	15,777	15,777	15,777

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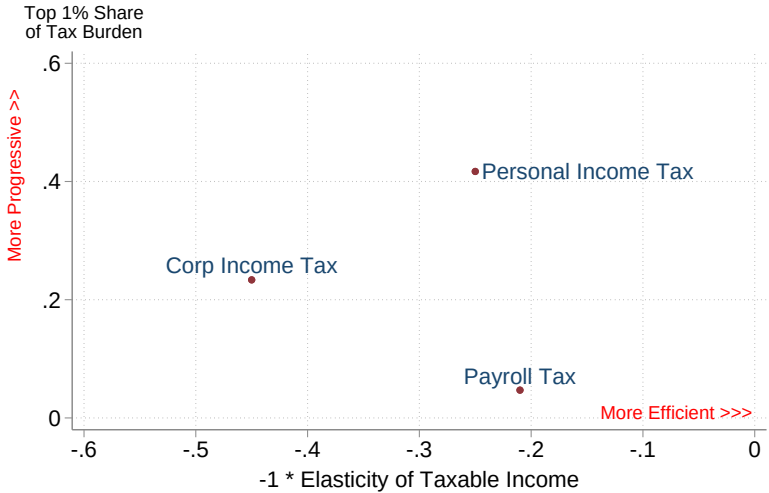
Corporate Tax Vs. Alternatives



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