Taxes and Pay without Performance: Evidence from Executives

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Motivation

- Executives disproportionately benefit from shocks to firm performance outside of their control
  - Ohrn (2022) and Kennedy et al. (2022) find that executive compensation increases strongly in response to corporate tax reduction
  - Cho and Krueger (2022) find that executive compensation increases by 0.25 log points in response to oil price shocks while compensation of average worker increases by 0.06 log points
  - Keller and Olney (2021) find large response of executive compensation to export shocks

- Bebchuk and Fried (2006) claim that the large increase in executive compensation has been attributed to an increase in the ability to benefit from such exogenous profit shocks

  $\rightarrow$ Piketty et al. (2014) argue that higher taxes reduce the incentive for rent-capture

This Paper

RQ: Do taxes affect the pass-through of exogenous profit shocks to executive compensation?

- Study whether the pass-through of export shocks to executive compensation changes following a change in the tax rate
- Exploit variation in federal and state personal income tax rates in the US
- I find that higher **state** taxes increase the pass-through of industry-wide shocks to executive compensation
  - This response is stronger for mobile executives
  - **State** taxes do not affect pass-through of firm-specific shocks
- I find a negative but small(er) effect of **federal** taxes on the pass-through of industry-wide shocks to executive compensation

Related Literature

1. **Literature on executive rent-extraction**
   - Bertrand and Mullainathan (2001), Ohrn (2022), Kennedy et al. (2022), Cho and Krueger (2022), Keller and Olney (2021)
2. **Literature on rent-sharing**
   - Risch (2023), Kline et al. (2019), Garin and Silvério (2023), Hermo (2023)
3. **Literature on taxing top-income earners**
   - Rent-Seeking: Piketty et al. (2014), Rothschild and Scheuer (2016); Mobility: Agrawal and Foremny (2019), Kleven et al. (2020), Moretti and Wilson (2017), Muñoz (2021), Schmidheiny and Slotwinski (2018)

Conceptual Framework: Nash Bargaining Model I

Setup in the spirit of (Garin and Silvério, 2023)

1. Firms generate profits $R(\theta_f, \theta_i)$ which depend on industry-specific shocks θ_i and firm-specific shocks θ_f, they pay their executive a wage w
2. Payoff for the firm: $(R(\theta_f, \theta_i) - w)$
3. Executives also receive outside offers $w_{oo}(\theta_i)$ from other firms which depend on the profits of the competing firms and thus θ_i
4. Payoff for the executive: $(w - w_{oo}(\theta_i))$
5. Executives and firms engage in Nash bargaining - executives have bargaining power γ which depends on the bargaining effort they exert

Conceptual Framework: Nash Bargaining Model II

Nash Bargaining Model without taxes

$$(R(\theta_f, \theta_i) - w)^{1-\gamma}(w - w_{oo}(\theta_i))^{\gamma}$$

Solution for the optimal executive wage without taxes

$$w^* = \gamma R(\theta_f, \theta_i) + w_{oo}(\theta_i)$$

Conceptual Framework: Nash Bargaining Model II

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Solution for the optimal executive wage without taxes

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Nash bargaining model with **taxes**

$$(R(\theta_f, \theta_i) - (1+t)w)^{1-\gamma(t)}(w - w_{oo}(\theta_i))^{\gamma(t)}$$

Solution for the optimal executive (gross) wage with **taxes**

$$(1+t)w^* = \gamma(t)R(\theta_f, \theta_i) + (1+t)w_{oo}(\theta_i)$$

Identifying Source of Variation

- Use variation in state personal income tax rates in the US
  - The relevant tax rate for executives is the tax rate in the state of employment
  - Forms of compensation such as stock options or stock awards are also subject to the personal income tax rate
  - Estimate this in a stacked regression to avoid heterogeneous treatment effect problem

- Use a change in the top federal income tax rate through the ATRA in 2013

- Profits may be influenced by other responses to taxes such as executive effort
  - Measure profit shocks as shocks to world export demand (Keller and Olney, 2021; Acemoglu et al., 2022; Garin and Silvério, 2023)

▸ Variation

Identification Strategy

1. Analyzing the effect of state tax increases: Triple Diff-in-Diff
   1. Difference between high-profit and low-profit firms
   2. Difference between "treated" and "untreated" states

2. Analyzing the effect of the federal tax increase: Diff-in-Diff

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Identification Assumption:

- Absent the reform the difference between the compensation of executives in high and low profit firms should have followed the same trend as the difference between compensation of executives in high and low profit firms in untreated states

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2. Analyzing the effect of the federal tax increase: Diff-in-Diff

Identification Assumption:

- Absent the reform the difference between the compensation of executives in high and low profit firms should have followed the same trend as the difference between compensation of executives in high and low profit firms in untreated states
- The effort response to taxes should be the same in high profit and low profit firms

Data

Data Sources

- Executive Compensation from ExecuComp
  - Contains detailed information on executive compensation
  - Sample consists of five highest paid executives in listed companies each year
- Firm financial statement data from Compustat
- Information on executive contracts from SEC filings as in Shi (2023)
- Data on exports from UN Comtrade
- State tax rates for top-income earners from NBER TaxSIM

Final Sample

- 25 years: 1992-2017
- 49.559 executives
- 3.714 different firms

Empirical Strategy: State Taxes

Triple Diff-in-Diff:

$$ln(Y_{i,t}) = \beta_0 + \sum_{l=-4,4} \beta_{1,l} D_l \times \Delta^{\tau}_{f,t} \times Treat_{f,t} + \beta_2 \Delta^{\tau}_{f,t} + \beta_3 Post_t \times Treat_{i,f}$$
$$+\beta_4 Post_t \times \Delta^{\tau}_{f,t} + \beta_5 Treat_{i,f} \times \Delta^{\tau}_{f,t} + \gamma X_{f,i,t} + \alpha_t + \delta_{fi} + \epsilon_{f,i,t}$$

- $y_{i,t}$: granted executive compensation
- D_s: takes on the value one if there was a tax change s periods before or after the current period
- $\Delta^{\tau}_{f,t}$: time-varying measure of profit change
- $X_{f,t}$: control variables for size, firm performance and share of stock compensation
- δ_t: time fixed effect
- $\delta_{i,f}$: executive-firm fixed effect

Empirical Strategy: Federal Taxes

Diff-in-Diff:

$$ln(Y_{i,t}) = \alpha + \gamma_1 \Delta^{\tau}_{f,t} + \sum_{l=-4,4} \beta_l D_l \times \Delta^{\tau}_{f,t} + \gamma_2 X_{f,i,t} + \alpha_t + \delta_{fi} + \epsilon_{f,i,t}$$

- $y_{i,t}$: granted executive compensation
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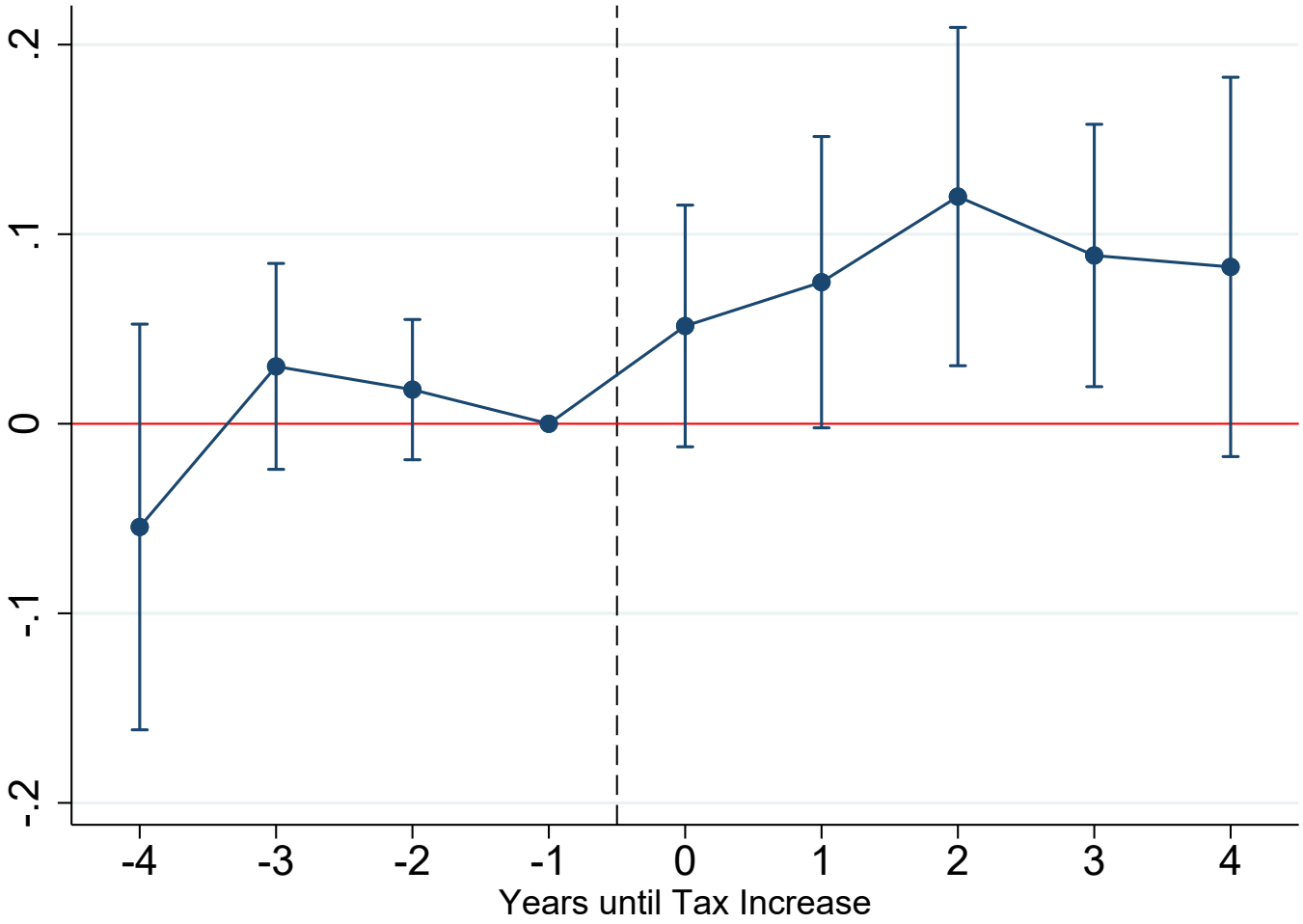
Main Result: State Tax Increases

Figure: The effect of export shocks before and after the tax reform



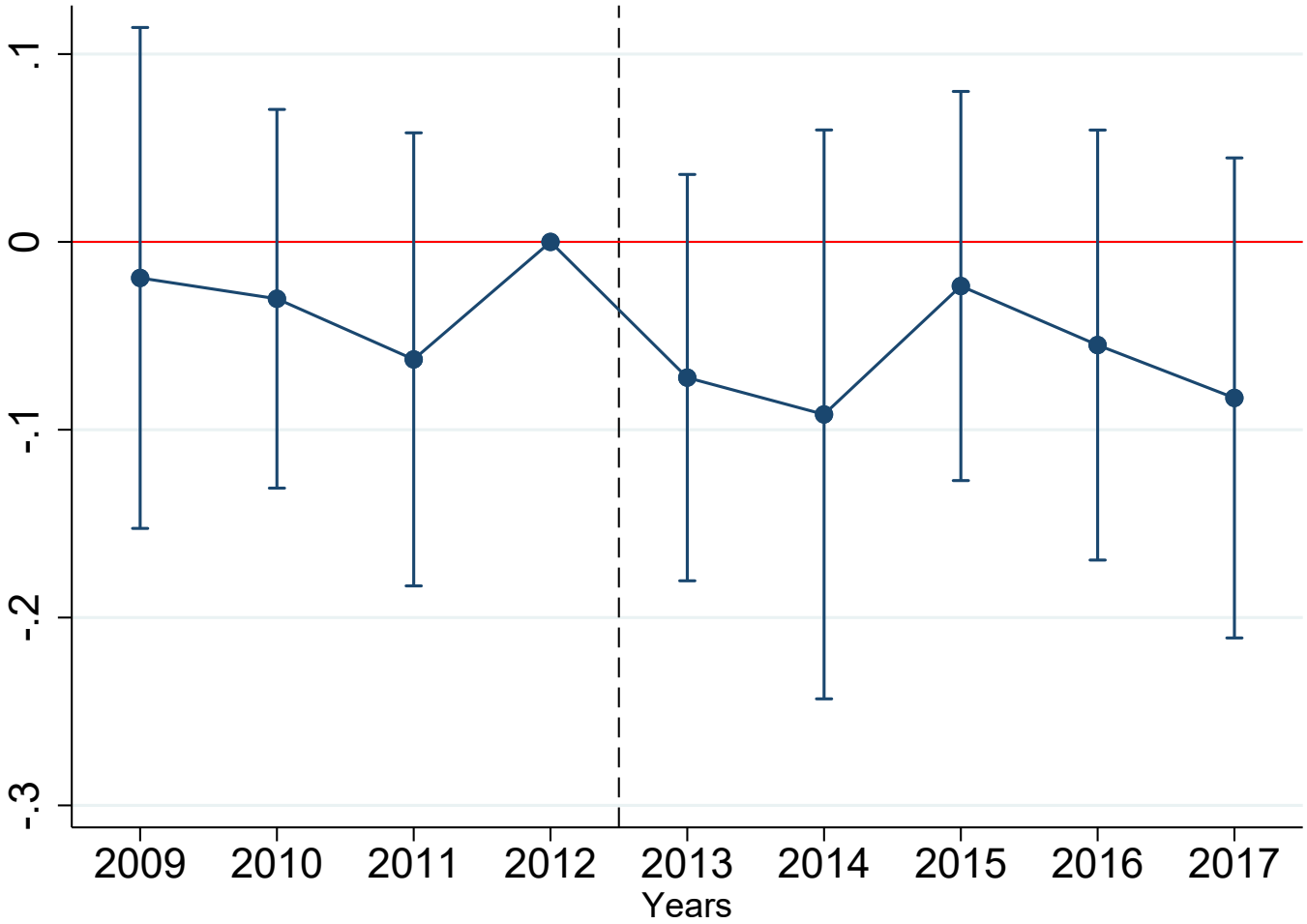
State Tax: IV Regression Results

Table: IV Regression: State Change

	(1)	(2)	(3)
Export Shocks			
	0.023**	0.023**	0.023**
	(0.012)	(0.012)	(0.011)
F - Stats:	3.66	33.71	31.33
Observations:	62678	62677	61368
Year-Fixed Effects	Yes	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes	Yes
Performance Controls	No	Yes	Yes
Size Controls	No	Yes	Yes
Share Stocks	No	No	Yes

Main Result: Federal Tax Increases

Figure: The effect of export shocks before and after the tax reform



Federal Tax: IV Regression

Table: IV Regression: Federal Change

	(1)	(2)	(3)
Export Shocks			
	-0.006	-0.009*	-0.008
	(0.006)	(0.005)	(0.005)
F - Stats:	3.36	71.38	58.22
Observations:	79256	79225	78388
Year-Fixed Effects	Yes	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes	Yes
Performance Controls	No	Yes	Yes
Size Controls	No	Yes	Yes
Share Stocks	No	No	Yes

State Tax Increases: The Role of Outside Options

Table: State Tax Increases: Mobility

	Non-Compete		No Non-Compete	
Triple Diff-in-Diff				
Baseline	0.074*		0.098**	
	(0.044)		(0.047)	
Pos. Export Shock		0.076		0.181**
		(0.051)		(0.075)
Neg. Export Shock		0.083		-0.057
		(0.071)		(0.065)
Observations:	26330	25036	15270	14698
Year-Fixed Effects	Yes	Yes	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes	Yes	Yes
Performance Controls	Yes	Yes	Yes	Yes
Size Controls	Yes	Yes	Yes	Yes
Share Stocks	Yes	Yes	Yes	Yes

Additional Results and Robustness Checks

Additional Results

- Find no differential pass-through of firm-specific shocks ▸ Firm-specific shocks
  - Measure firm-specific shocks using change in market capitalization around patent grants
- Find that higher taxes also affect the pass-through of a one-time shock in the form of bonus depreciation ▸ One-Time Shocks

Robustness Checks

- Similar results using a simple diff-in-diff strategy for state tax increases ▸ Within-State
- No differential response of outcome variables such as market capitalization and sales following the tax reform ▸ Effort Response
  - Suggests there is no differential effort response
- Export demand changes have positive effects on compensation, market capitalization and sales ▸ Validity Check

Conclusion

- Find that the pass-through of industry profit shocks to executive compensation increases following a change in the state tax rate
  - Find that the increase is stronger for executives with more available outside options
- Find a negative effect of an increase in the federal tax rate on the pass-through of profit shocks
  - However, I find no effect of state taxes on the pass-through of firm-level profit shocks

1. Limited evidence that higher taxes reduce the pass-through of profit shocks by causing a reduction in bargaining effort
2. Higher taxes increase the pass-through of profit shocks by increasing the (gross) value of the outside option

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Proxying Mobility: Non-Compete Contracts

- In the US employees can be covered by non-compete contracts
- Non-compete contracts prohibit employees from taking up a job in a competing industry typically for a duration of two years
  - Non-compete contracts are prohibited in some states but can be nonetheless enforced in the destination state
- I observe that around 60 % of all executives are covered by a non-compete contract

Example Non-Compete Contract

Figure: Example Non-Compete Contract

2. NON-COMPETITION AND NON-SOLICITATION

(a) The Employee will not, while an employee of the Company, and for a period of one year following the termination of his or her employment (the "Restriction Period" as further defined below), directly or indirectly, without the prior written consent of the Company:

(i) (A) engage in any of the same or substantially similar activities, duties, or responsibilities in the line of business or relating to the line of business that the Employee had responsibility for or knowledge of while an employee of the Company, for any other company that competes with such line of business of the Company, including any of the following companies or their successors: (I) Expedia, Hotels.com, Hotwire and Venere; (II) Sabre Group and Travelocity; (III) Lastminute.com plc; (IV) Travelport, including, without limitation, Orbitz, CheapTickets, Lodging.com, the Neat Group and Galileo; (V) the following on-line travel aggregators: Mobissimo, Inc. (owner and operator of the website Mobissimo.com), Cheapflights Limited (owner and operator of the website Cheapflights.com), Farechase, Kayak.com, Trivago, Tripadvisor, or any substantially similar on-line travel search business; (VI) C-trip; (VII) Wotif; (VIII) HRS; and (IX) Roomkey; and (X) the on-line travel search businesses of Yahoo!, MSN, AOL or Google;

Mobility Patterns of Executives

Figure: Likelihood of moving

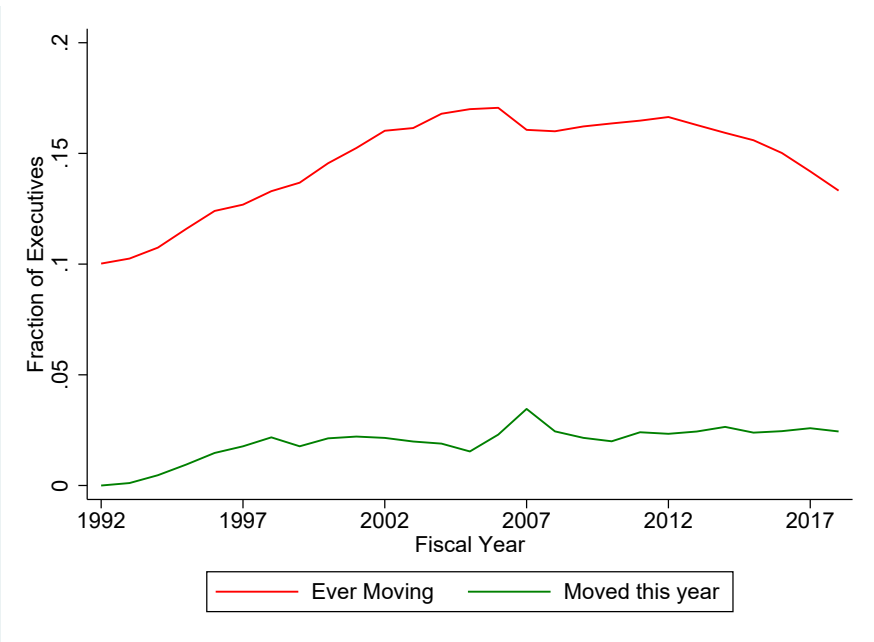
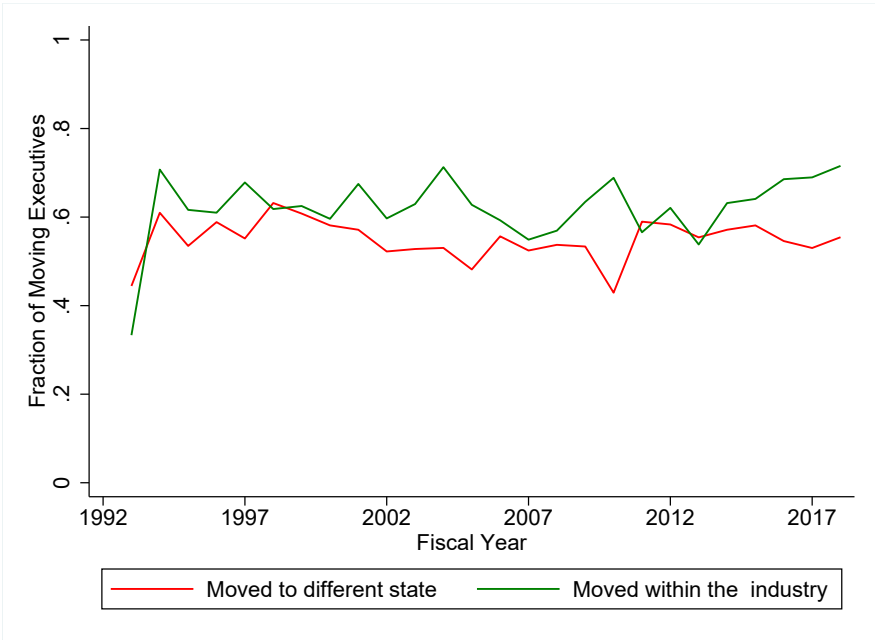


Figure: Direction of Move



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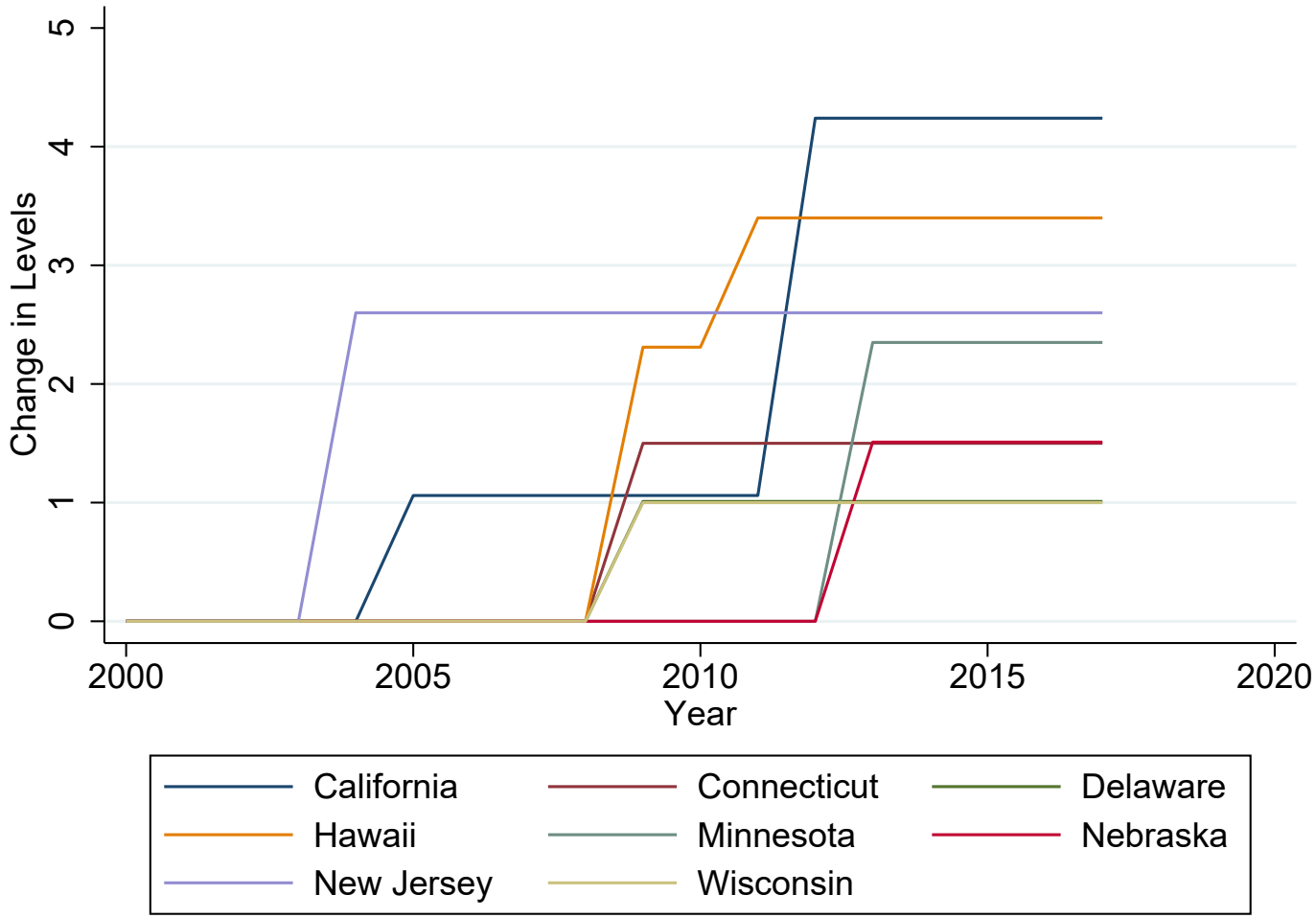
Tax Changes in Stacked Regression

Figure: Increases



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Sharing of Firm-Specific Productivity Shocks

	(1)	(2)	(3)
Triple Diff-in-Diff			
	0.022	0.022	0.022
	(0.034)	(0.034)	(0.034)
Observations:	49956	49956	49956
Year-Fixed Effects	Yes	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes	Yes
Performance Controls	No	Yes	Yes
Size Controls	No	Yes	Yes
Share Stocks	No	No	Yes

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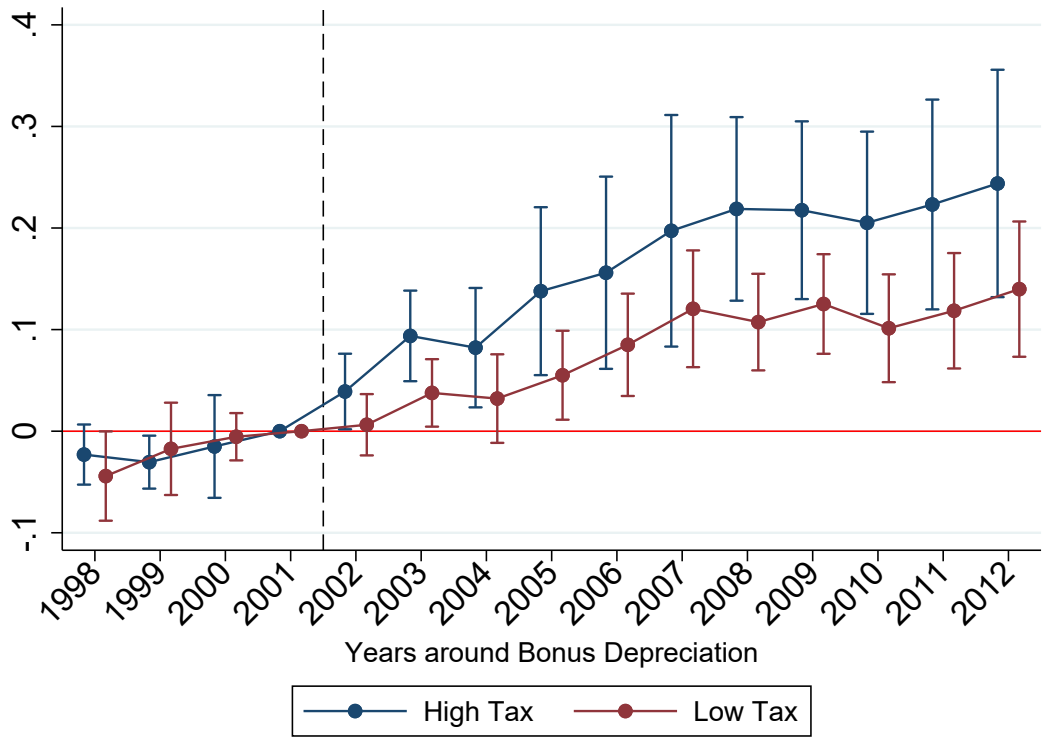
One-Time Shocks

Figure: The differential effect of bonus depreciation



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Robustness Check: Within State Analysis

Table: Robustness Check: Within State

	(1)	(2)	(3)	(4)
Triple Diff-in-Diff				
Baseline	0.099***	0.083***	0.082***	
	(0.027)	(0.025)	(0.024)	
Pos. Export Shock				0.111***
				(0.034)
Neg. Export Shock				0.030
				(0.043)
Observations:	19145	19140	18798	17528
Year-Fixed Effects	Yes	Yes	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes	Yes	Yes
Performance Controls	No	Yes	Yes	Yes
Size Controls	No	Yes	Yes	Yes
Share Stocks	No	No	Yes	Yes

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Robustness Check: Differential Effort Response

Table: Robustness Check: Differential Effort

	Log Sales	Log Market Cap
Panel A: Triple Diff-in-Diff		
	-0.004	-0.005
	(0.014)	(0.027)
Observations:	89226	87996
Panel B: Within - State		
	-0.016	0.012
	(0.013)	(0.028)
Observations:	18787	18542
Year-Fixed Effects	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes
Performance Controls	Yes	Yes
Size Controls	Yes	Yes
Share Stocks	Yes	Yes

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Robustness Check: Effect on Firm Outcomes

Table: Validity Check: Exports

	Compensation	Sales
Export Shock		
	0.021***	0.030***
	(0.007)	(0.005)
Observations:	89344	89226
Year-Fixed Effects	Yes	Yes
Executive-Firm Fixed Effects	Yes	Yes
Performance Controls	Yes	Yes
Size Controls	Yes	Yes
Share Stocks	Yes	Yes

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