# The Effect of Political Frictions on Long Term Care Insurance

## NBER Insurance Workshop

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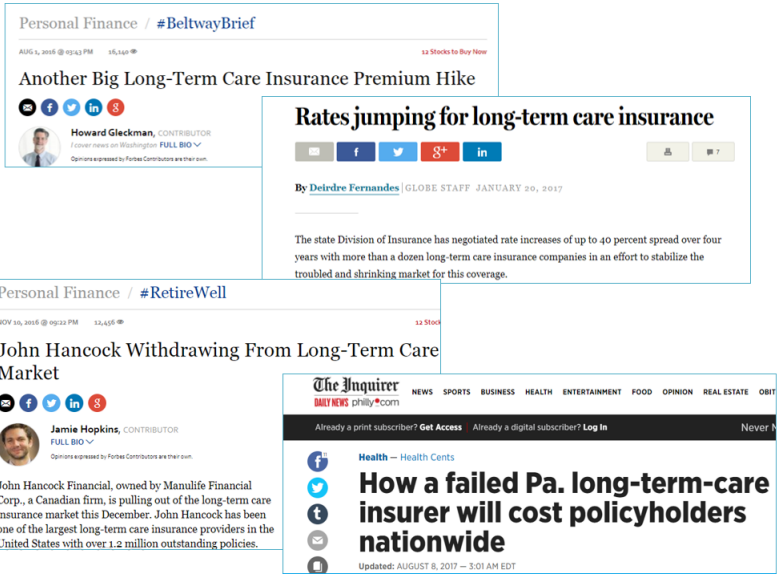
- Cost of LTC can be very high.
- Medicaid and Medicare only provide limited coverage under extreme financial or health conditions.
- Created in the 1980's, private long term care insurance (LTCI) provided a potential safety net for millions of Americans.

# Today, the Market is Unraveling



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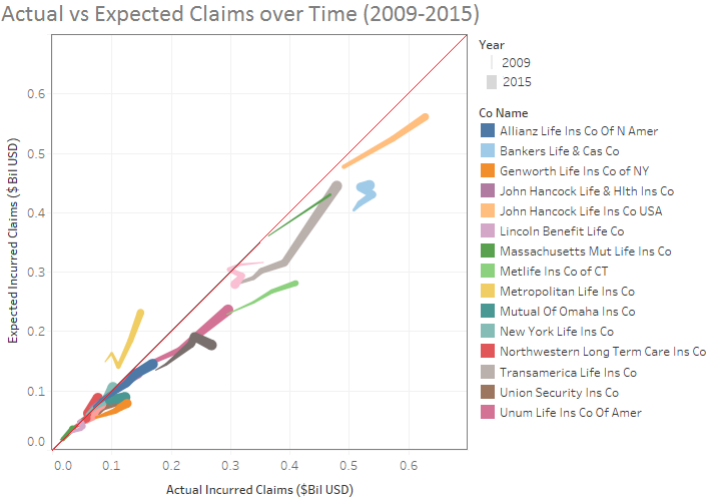

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  - Political considerations may lead regulators to disallow necessary rate increases, exacerbating profit loss and firm dropout.
  - We hypothesize that regulators are tougher on companies during election years, if he is a Democrat, and if he does not need to raise campaign funds.

# Overview

# Data

In addition to regulatory reports, we hand-collected novel data from state websites as well as individual PDF filings.

## PREMIUMS AND CLAIMS

- National Association of Insurance Commissioner (NAIC) Long Term Care Experience Reports
  - all Life Insurance Companies
  - sample from 1997-2015
  - state x company x year

## ELECTION CYCLES

- Insurance Commissioner office tenure dates, winning vote share, and financing
  - hand collected from state election websites
  - sample from 1997-2015
  - state x year

# Data

**APPROVAL RATES (2 sources)**

- California Long Term Care Rate and History Guide
  - displays rate history for all LTC policies sold by any company that wrote LTC policies in California in the past ten years
  - state x company x year
  - sample from 2007-2015
- NAIC System for Electronic Rate & Forms Filing (SERFF)
  - hand collected missing data based upon pdf filings
  - nationwide sample from 2007-2015
  - state x company x year

1. Data
2. Empirical Results on LTCI Prices
   - Election Cycles
   - Political Capital
   - Party Affiliation
   - Campaign Financing
3. Empirical Results on Insurer Profit and Supply
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- We examine how 4 dimensions of regulators' political climate affected LTCI price changes:

1. Election cycles
2. Political capital
3. Party affiliation
4. Campaign financing

# Part 1: Election Cycles

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- State insurance commissioners are either elected (12/50 states) or appointed.

- Typical elections cycles last 4 years, but some last 2 years.
- Election cycles are staggered across states.
- Since large premium increases generate negative press, regulators may either reject premium change requests or grant a smaller amount than requested.

# Part 1: Election Cycles

Regulators approve fewer rate applications and grant smaller rate increases closer to re-election.

| | (1) Size of Increase | (2) Prob of Approval, All | (3) Prob of Approval, New |
|---|---|---|---|
| Years Left in Term | 0.57*** | 1.84*** | 2.09** |
| | (0.19) | (0.62) | (0.90) |
| Mean Dependent Variable | 13.02 | 54.64 | 53.52 |
| State FE and Year FE | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes |
| Number of Observations | 9,043 | 9,043 | 6,108 |
| R-squared | 0.17 | 0.21 | 0.20 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

# Part 1: Election Cycles

Two follow up questions:

1. Do elected versus appointed regulators respond differentially to election cycles?
2. How do companies respond to regulators' election cycles?

# Part 1a: Elected vs Appointed Regulators

Elected regulators have a sharper response to election cycles than appointed regulators.

| | Commissioner Directly Elected | | Appointed Commissioner | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Prob of Approval | Size of Increase | Prob of Approval | Size of Increase |
| Years Left in Term | 1.86** | 0.68** | 1.51 | 0.38 |
| | (0.74) | (0.24) | (0.99) | (0.26) |
| Mean Dependent Variable | 58.03 | 11.95 | 52.52 | 13.15 |
| State FE and Year FE | Yes | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes | Yes |
| Number of Observations | 2,369 | 2,369 | 6,674 | 6,674 |
| R-squared | 0.23 | 0.16 | 0.21 | 0.17 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

# Part1b: Companies' Behavior during Election Cycles

Companies are not significantly more likely to apply or ask for a bigger increase closer to re-election.

| | (1) Size of Requested Increase | (2) Number of Requests |
|---|---|---|
| Years Left in Term | 0.03 | 0.04 |
| | (0.11) | (0.03) |
| Mean Dependent Variable | 10.03 | 1.70 |
| State FE and Year FE | Yes | Yes |
| Company FE | Yes | Yes |
| Number of Observations | 21,956 | 21,956 |
| R-squared | 0.11 | 0.20 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

# Part 2: Political Capital

Regulators with higher vote share are less sensitive to re-election.

| | Prob of Approval | | Size of Increase | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Years Left in Term | 2.39*** | 3.11** | 0.84*** | 1.89*** |
| | (0.57) | (1.00) | (0.19) | (0.57) |
| Winning Vote Margin | 0.04 | 0.13 | -0.04** | 0.09** |
| | (0.07) | (0.09) | (0.01) | (0.04) |
| Years Left in Term × Winning Vote Margin | | -0.03 | | -0.05** |
| | | (0.03) | | (0.02) |
| Mean Dependent Variable | 58.33 | 58.33 | 12.12 | 12.12 |
| State FE and Year FE | Yes | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes | Yes |
| Number of Observations | 2,291 | 2,291 | 2,291 | 2,291 |
| R-squared | 0.24 | 0.24 | 0.16 | 0.17 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

Tenure Length

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# Part 3: Party Affiliation

Democrats are more stringent, but similarly sensitive to re-election.

| | Prob of Approval | | Size of Increase | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Years Left in Term | 1.77*** | 1.40* | 0.54*** | 0.50* |
| | (0.61) | (0.83) | (0.18) | (0.26) |
| Democrat | -8.30*** | -10.27*** | -3.91*** | -4.14*** |
| | (2.32) | (3.49) | (0.85) | (1.27) |
| Years Left in Term x Democrat | | 0.79 | | 0.09 |
| | | (1.31) | | (0.43) |
| Mean Dependent Variable | 51.78 | 51.78 | 12.54 | 12.54 |
| State FE and Year FE | Yes | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes | Yes |
| Number of Observations | 9,043 | 9,043 | 9,043 | 9,043 |
| R-squared | 0.21 | 0.21 | 0.17 | 0.17 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

Firm's Response

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# Part 4: Campaign Financing

Regulators with more cash/fewer contributions are more stringent.

| | Prob of Approval | Size of Increase | Prob of Approval | Size of Increase |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Years Left in Term | 1.97* | 0.77** | 1.86* | 0.75** |
| | (0.92) | (0.24) | (0.84) | (0.24) |
| Cash on Hand | -0.32* | -0.17** | | |
| | (0.15) | (0.06) | | |
| Campaign Contributions | | | 0.20*** | 0.03*** |
| | | | (0.04) | (0.01) |
| Mean Dependent Variable | 57.54 | 11.88 | 57.43 | 11.85 |
| State FE and Year FE | Yes | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes | Yes |
| Number of Observations | 2,167 | 2,167 | 2,148 | 2,148 |
| R-squared | 0.25 | 0.17 | 0.26 | 0.17 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

Horserace

# Anecdotal Evidence

"Massachusetts lags behind virtually every other state in taking timely action in response to rate increase filings and in granting necessary rate increases."

- Genworth (2017 Statement)

"We have suspended sales in Hawaii, Massachusetts, New Hampshire, and Vermont, and will consider similar actions in other states where we are unable to make satisfactory rate increases..."

- Genworth (2017 10Q)

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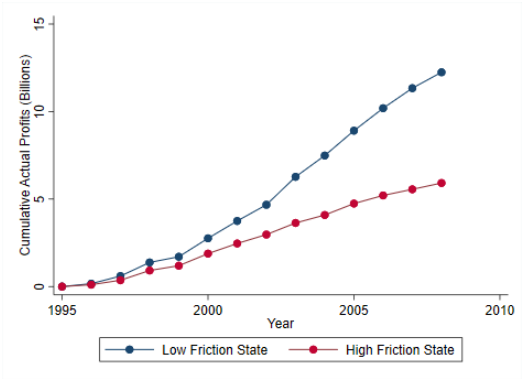
How did insurance regulators affect LTCI supply?

- We hypothesize that pricing frictions may cause profit loss, and thus, decreased supply.
- To test this, we examine:
  1. How profits accumulated over time depending on the state regulator
  2. How dropouts varied over time depending on the state regulator

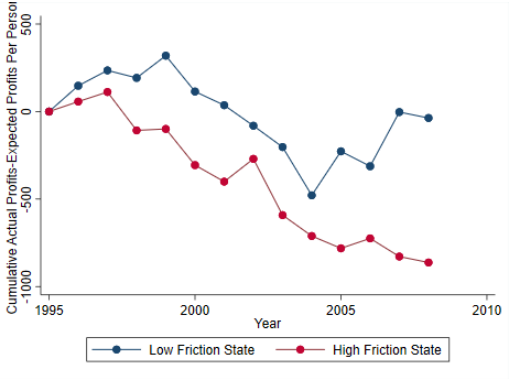
# Insurer Profits Over Time

States experiencing more election cycle frictions earn less profits.

(a) Actual Profits



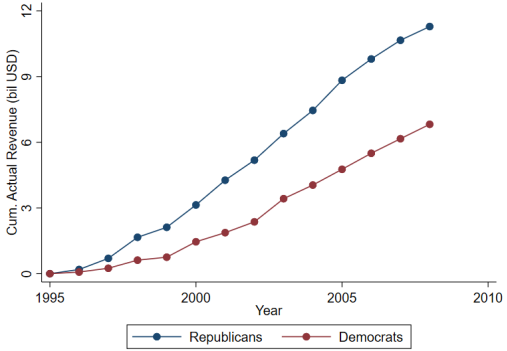

(b) Actual Minus Expected Profits



# Insurer Profits Over Time

States with more stringent regulators earn less profits.

(a) Actual Profits

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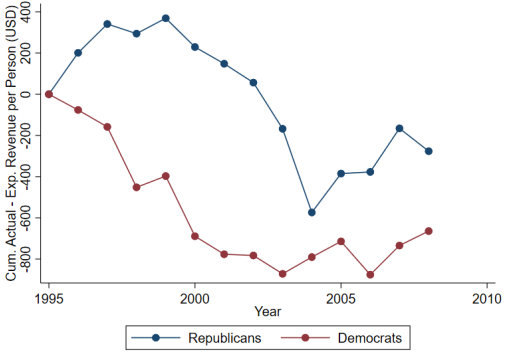
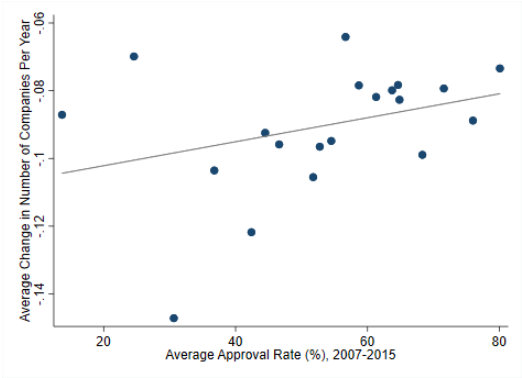


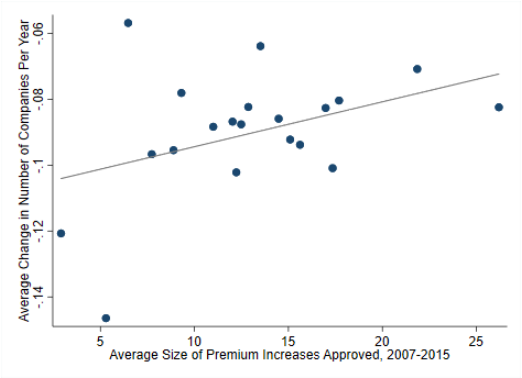
# Insurer Dropout

States with more stringent regulators experienced more dropouts.

(a) Number of Company Exits versus Probability of Approval




(b) Number of Company Exits versus Size of Approved Increase



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Using calibrated model, we find that when cost shocks are high, election cycle frictions can generate negative welfare loss.

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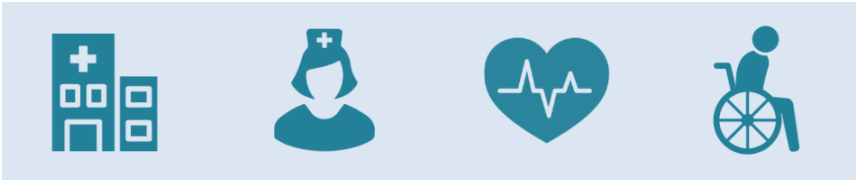
     - ⋆ 6% higher after re-election, 10% of uncond avg
  2. are not democrats
  3. have less stock of funding
- To attenuate election cycle frictions, states could introduce longer tenure lengths or a rotating committee of regulators.

# Thank You!

Email: we.liu@northeastern.edu



# Appendix

# Structural Model

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To estimate quilibrium outcomes and simulate counterfactual states of the world, we build an infinite-horizon structural model.

In each period,

- Both players observe a random cost shock $\theta$.
- The regulator chooses a maximum allowable per-person premium increase, $\hat{p}$.
- Knowing $\hat{p}$, the company decides whether to pay to obtain rate increase.
- The company drops out of the market if it expects negative profits.

# Model: Consumer Problem

There are a finite number of consumers in the LTCI market, $N$.

In each period, consumer i's utility from insurer j is

$$U_{ij} = \beta_j - \alpha p_j + \epsilon_{ij}$$

where

- $\epsilon_{ij}$ is i.i.d with mean 0 extreme value distribution.
- $\beta_j$ is an unobserved company fixed effect
- $p_j$ is the price of company j's LTCI policy.
- If consumers choose the outside option (not buy insurance), $j = 0$.

# Model: Insurer Problem

The per-period insurer payoff is given by:

$$u_j(apply_j, drop_j, p_j, t_j, y, \theta_j; \nu) = (p_j * (1 + \hat{p}_j * \mathbb{1}(apply_j = 1)) - t_j) * N_j - AppCost * \mathbb{1}(apply_j = 1) + ScrapValue$$

where $N_j = s_j * Q$ is total consumers, $p_j$ is unit price, $t_j$ is annualized cost, $y$ is years left in term , $AppCost$ is the application cost, $\hat{p}_j$ is the max allowable price increase, and $\theta_j$ is per-period cost shock.

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The dynamic problem is given by:

$$V_j(p_j, t_j, y; apply_j, drop_j, \nu) = \max\{0, u_j + \beta E[V_j(p_j', t_j', y'; apply_j, drop_j, \nu) | p_j, t_j, y, apply_j, drop_j, \nu]\}$$

where $p'$ is next period's premium level and $t'$ is next period's claims.

# Model: Regulator Problem

In each period, if the company is in business, the regulator chooses an allowed rate increase $\hat{p}$ to maximize:

$$V_r = \underbrace{E[CV(p, \hat{p}; \nu)]^{0.5} * E[V_j(p, t, y; apply_j, drop_j, \nu)]^{0.5}}_{\text{geometric mean of consumer surplus and profits}} + \underbrace{\gamma * E[CV(p, \hat{p}; \nu)]/y^{\kappa}}_{\text{re-election pressure}}$$

where $\gamma$ and $\kappa$ are parameters to be estimated, and

$E[CV(p_j, \hat{p}; \nu)] = \sum_{m=0}^{\infty} \beta^m E[(\beta_j - \alpha p_{jm}) * N_{jm} | p_{j0} = p_j; \beta_j, \alpha]$.

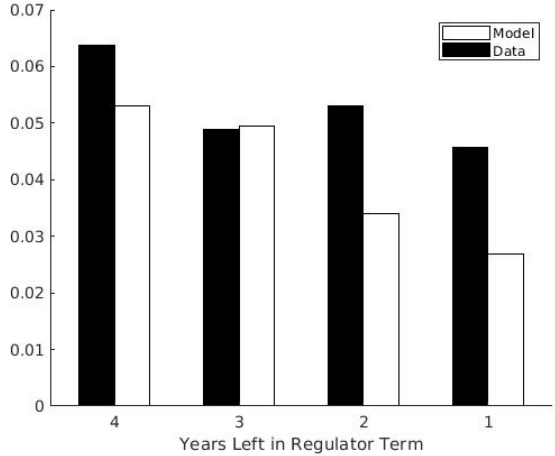
# Model Fit

We calibrate the model by estimating parameters $AppCost, \gamma, \kappa$, and $ScrapValue$ using a two-step procedure outlined in Bajari and Levin (2007).

Figure: Model Fit

| | Model Moments | Data Moments |
|---|---|---|
| Targeted Moments | | |
| Mean Premium Increase | 0.04 | 0.05 |
| Mean Dropout Probability | 0.12 | 0.14 |
| Mean Application Probability | 0.22 | 0.22 |
| Un-Targeted Moments | | |
| Std. Dev. Premium Increase | 0.14 | 0.14 |
| Std. Dev. Dropout Probability | 0.34 | 0.35 |
| Std. Dev. Application Probability | 0.43 | 0.44 |

# Model Fit for Conditional Price Moments

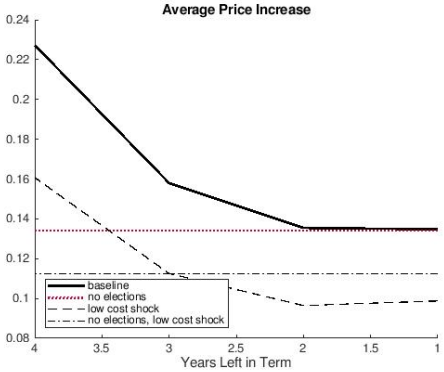



Model Fit Considerations

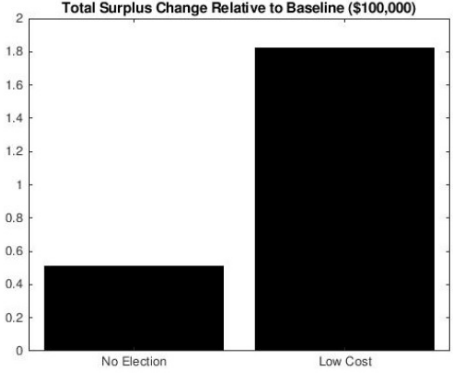
# Counterfactuals

Starting from calibration, we analyze how equilibrium would change if:

1. Election cycle pressure were removed
2. Cost shocks were decreased




(a) Optimal Price Increases Rates




(b) Welfare Gains

# Model Fit Considerations

Our model fit may not be ideal for several resons.

For tractability, we have:

- Focused upon pricing frictions and abstracted away from market structure considerations
- Modeled one representative cohort of consumers
- Chosen a reduced form equation for regulator utility

Return

# Part 2: Tenure Length as Political Capital

- Average tenure length of a commissioner is 4.3 years, and median (75th percentile) is 4 (7) years.

Return

# Part 2: Tenure Length as Political Capital

- Average tenure length of a commissioner is 4.3 years, and median (75th percentile) is 4 (7) years.
- A long tenure of 7 or more years alleviates re-election pressure.

| | Prob of Approval | | Size of Increase | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Years Left in Term | 1.84*** | 2.45*** | 0.56*** | 0.71*** |
| | (0.64) | (0.72) | (0.19) | (0.22) |
| Long Tenure | -0.01 | 7.19* | -0.42 | 1.39 |
| | (2.78) | (3.98) | (1.22) | (1.67) |
| Years Left in Term x Long Tenure | | -3.14* | | -0.79 |
| | | (1.63) | | (0.88) |
| Mean Dependent Variable | 51.78 | 51.78 | 12.54 | 12.54 |
| State FE and Year FE | Yes | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes | Yes |
| Number of Observations | 9,043 | 9,043 | 9,043 | 9,043 |
| R-squared | 0.21 | 0.21 | 0.17 | 0.17 |

Note: Levels of significance: * 10%, ** 5%, *** 1%. Return

# Horserace

| | (1) Prob of Approval | (2) Size of Increase |
|---|---|---|
| Years Left in Term | 0.78** | 1.91* |
| | (0.25) | (0.87) |
| Campaign Contributions | 0.02** | 0.19*** |
| | (0.01) | (0.04) |
| Cash on Hand | -0.15** | -0.20 |
| | (0.07) | (0.17) |
| Mean Dependent Variable | 11.85 | 11.85 |
| State FE and Year FE | Yes | Yes |
| Company FE | Yes | Yes |
| Number of Observations | 2,148 | 2,148 |
| R-squared | 0.17 | 0.26 |

# Firms' Response to Democrats

| | Num Policies Requested | | Size of Increase | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Years Left in Term | 0.04 | 0.06 | 0.03 | 0.13 |
| | (0.03) | (0.05) | (0.11) | (0.15) |
| Democrat | 0.15 | 0.25 | 0.61 | 1.20** |
| | (0.10) | (0.16) | (0.45) | (0.58) |
| Years Left in Term x Democrat | | -0.04 | | -0.23 |
| | | (0.06) | | (0.18) |
| Mean Dependent Variable | 51.78 | 51.78 | 12.54 | 12.54 |
| State FE and Year FE | Yes | Yes | Yes | Yes |
| Company FE | Yes | Yes | Yes | Yes |
| Number of Observations | 21,956 | 21,956 | 21,956 | 21,956 |
| R-squared | 0.20 | 0.20 | 0.11 | 0.11 |

Note: Levels of significance: * 10%, ** 5%, *** 1%.

Return