Discussion on:

Mandatory Data Breach Disclosure and Insider Trading

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"Most of the servants would like to know why you cashed out of the company stock."

Comments and Thoughts

- **Well Written Paper**
  - Easy to understand what is done in the paper
  - Central Idea: Mandatory notification laws about data breaches caused insiders to obtain higher trading profits
- **Role of Discussant**
  - Hold Hands and praise the paper or
  - Critical Analysis
    - Identify and Explain main points in the paper
    - Provide One's Own argument about the analysis
  - Analysis Well Done – I'll mostly discuss conceptual idea and emphasis
  - I'll try to provide some minor suggestions

Findings in Paper

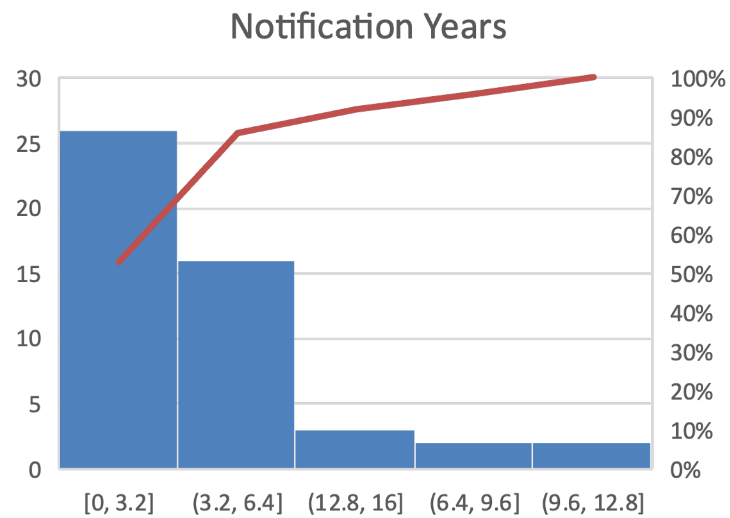
- Results
  - States that implement data breach notification laws earlier
    - More insider trading profits than those that implement later
    - States with stronger breach notification laws - more insider trading profits
  - Multivariate Results
    - Breach notification rule related to insider trading profits
    - Reported cyber investments increase in states with stricter breach notification laws
    - Firms without reported cyber investments stronger results
- Interpretation in the paper
  - Breach notification laws – unintended consequence is greater insider trading profits
  - Weak legal designs exacerbate insider trading profits

How Increase Insider Trading Profits?

- Papers Central Idea: Mandatory notification law increased insider trading profits
- How does this work? My interpretation
  - *Scenario 1*: *Treated State* - Firm has a breach and now must notify affected parties
    - 1: Insiders sell their shares before public announcement make profits
  - *Scenario 2: Treated State* - Firm has no data breaches
    - 2: Unclear how notification law increases insider trading profits
  - *Scenario 3: :Untreated State* - Firm has a data breach and does not notify
    - 3A: Insiders assume no harm to firm and do not sell their shares
    - 3B: Insiders assume there is harm to firm and sell their shares
  - *Scenario 4: Untreated State* - Firm has a data breach but voluntarily notifies
    - 4: Insider sells their shares before public announcement
  - *Scenario 5: Untreated State* - Firms has no data breaches
    - 5: No insider trading profits from data breaches
- Motivation for greater insider trading profits
  - Arguments and Test: Compare scenarios 1+2 versus 3+4+5
  - Why expect increase in insider trading profits scenario 2?
    - Unclear why 5 is part of appropriate non-treatment group
    - My assumption: Results driven by groups 2 and 5 since they are largest
  - Suggestion: Formal hypotheses would help – why increase in scenario 2?
- Conceptually: Seems like it should be scenario 1 versus 3A/3B
- Alternative Approach: Specific insiders trading profits before breach notifications

State Passage of Laws

- Ideal Natural Experiment
  - Groups A and B: Observable characteristics similar except the one of interest
  - Shock: See how effects firms in group and A and B
  - Which State Comparisons Drive the results?
- State Changes in Notification Laws
  - Red states lag blue by 30%
    - Not random adoption dates
    - Causal inference not viable (Athey and Imbens, 2021)
  - Heterogenous Treatment Effects
    - Strict and Weak Notifications Laws
    - Treatment effect heterogeneity in DiD creates biased estimates (Baker, Larker, and Wang, 2021)



	Years till Passed Regulation											
States	0	2	3	4	5	6	8	9	11	14	15	Grand Total
Blue	1	4	11	5	2			1		1		25
Red		4	6	3	3	4	1		2		2	25
Grand Total	1	8	17	8	5	4	1	1	2	1	2	50

Where Insider Trading Opportunities?

- Relevance Analysis (Table 4): ID firms more impacted by notification laws
  - Current: Firms with IT Officer listed in top management team in Execucomp
  - To me this seems to measure whether they are a tech firm
  - Alternative Interpretation:
    - Insider trading in tech firms is changing during this time period
    - High tech firms affected by this law earlier (CA, Wash, NY early adopters)
    - Firm-fixed-effects don't solve
  - Could you use firms with and without data breaches?
- Corporate Executives
  - Lots of Private Information and negative disclosures
  - Idea: Notification law increases managers ability to profit from insider trading
    - How much? Conceptually small or large increase in expected insider trading?
    - My prior: Small increase expected insider trading profits because data breaches rare
- Materiality: If data breaches material/prevalent, lots of voluntary disclosures
  - Does the law increase the number of data breach disclosures?
  - Could this be a paper about mandatory vs voluntary disclosure? Scenario 1 vs 4
  - Suggestion:
    - Treated States: How many data breaches? Pre and Post
    - Untreated States: How many data breaches? Pre and Post
    - Graph showing pre-and post-breach numbers for treated and untreated states

Additional Results in Paper

- Strict Post vs Weak Post
  - How states decide between strict and weak notification laws? High tech states?
  - Why is R&D negatively related to announcements about investments in cyber security? This is a surprising and fascinating result.
- Breach Risk Analysis in the paper
  - 1st Step: ID firms that have been breached
  - 2nd Step: Classify their competitors as having higher breach risk in future
  - Counterintuitive to me
    - Expect less breach risk in competitors after their peer is breached
    - Breach becomes more salient
  - Do breaches by competitor predicts breach in peer or vice versa?
  - Do peer breaches lead to announcements about investments in cyber security?
    - Do peer breaches change materiality of cyber investments?

Nuances

- Is notification to affected parties the same as disclosure to investors?
  - Implicit assumption: For consumer data breaches this seems reasonable
  - How does this work for business-to-business breaches (supplier breaches)?
- If I understand correctly
  - Breach occurs – must notify affected parties
    - Source firm could make public disclosure about the breach
    - Affected parties could make the disclosure public
  - Do all notifications lead to public disclosures?
  - Potential Test: B-to-C vs B-to-B firms
- Table 6 – Laws increase reported cyber investments
  - Cool results: Recommend expanding this part of the paper
  - More cyber investments or more reports: Did law change materiality decision?
  - How does reliance on voluntary disclosure impact the interpretation?
  - Which specific people have insider trading profits from data breach notifications?
- Intended Consequences
  - Invest in data security (Table 6)
  - Reduce costs of data breaches to outside parties (?)
  - Both issues seem quite important – Suggestion: impact on cost to outside parties

Overall

- Very Interesting Paper
- Data Breach Notifications and Insider Trading
- Tests Well Explained
- Fascinating evidence that call for more research
- Paper might benefit from focusing on specific instances of insider trading profits from mandatory breach notifications
- Thanks For Opportunity to Discuss