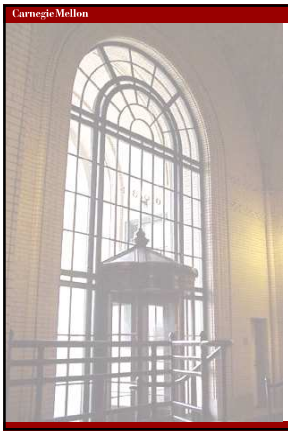


Do Data Breach Disclosure Laws Reduce Identity Theft?

Sasha Romanosky
Rahul Telang
Alessandro Acquisti

Ottawa, Canada
November 2008

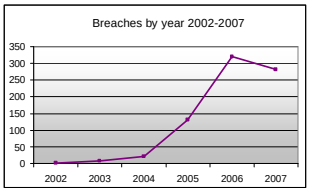
The problem: Identity theft

- FTC recorded over 250,000 idtheft consumer complaints (2007)
- Actual number of victims estimated to be around 8.1 M
- Total amount stolen is estimated at over $45B (Javelin, 2008)
- Impact includes costs to:

  Consumers: time repairing credit, lawyer fees, lost wages, etc

  Firms: lost revenue, civil law suits, govt fines, consumer redress
  - Choicepoint (162k records): $10m FCRA fine + $10m civil lawsuit + $6m other = $26m
  - TJ MAX (~95m records): $160m

The cause? Data breaches



About 800 known breaches between 2000-2007 (attrition.org)
~ 70% caused by hackers (stolen data)
~ 75% include SSN
~ 32% from businesses, 32% educational, 26% govt, 10% medical

The solution? Data breach disclosure laws

- Data breach disclosure laws require firms to notify consumers when their personal information is lost or stolen
- Many feel these laws will reduce idtheft
  - 4 US Congressional hearings in 2005
  - Many laws are titled, "identity theft prevention"
  - "among the most important advances that the [UK] could make in promoting personal internet security" (Science and Tech Committee, 2007)
- Significant precedent of disclosure (transparency) laws in the US: EPCRA, FDA, Nutrition labeling, Fuel Octane levels, FOIA

But why should they work?

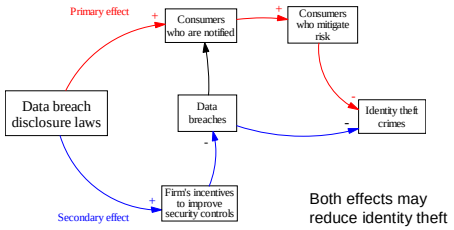
Sunlight as a disinfectant (Justice Brandeis, 1933)
- Highlighting a firm's poor security practices will encourage firms to improve (reducing the externality)
- "Drive performance through transparency and public oversight" (Mulligan, 2007)

Right to know (Magat & Viscusi, 1992; Solove, 2004)
- Consumers have the right to know when a firm is using, or *abusing* their information.
- By notifying consumers of breaches, they can mitigate the risks (close accounts, warn banks/CC firms, freeze credit, idtheft insurance)

…but not everyone agrees

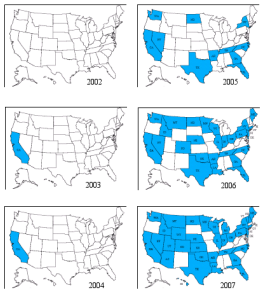
- Laws cause firms and consumers to incur unnecessary costs, leading to an overall worse outcome, esp. if the probability of idtheft from a breach is < 2% (idAnalytics, 2006; Ponemon, 2008)
- The externality is not nearly so grave: firms already bear ~90% of the cost of breaches (Javelin Research, 2003, 2005, 2006)
- Consumers could become desensitized to numerous breach notifications, ignoring all of them (GAO, 2007)
- Stifles ecommerce and R&D by discouraging firms to innovate (Rubin and Lenard, 2005)

Data Generating Process



Both effects may reduce identity theft

Adoption of state laws, 2002 - 2007

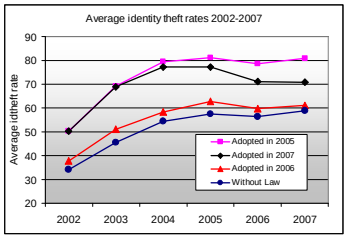


Year	# adopters
2002	0
2003	1 (+1)
2004	1
2005	11 (+10)
2006	28 (+17)
2007	38 (+10)

Identity theft data

- The FTC maintains a national database of consumer-reported identity theft complaints (1-877-ID-THEFT,www.ftc.gov)
- Uniform collection and management of data between states
- Mined by law enforcement to catch offenders
- Examples of idtheft (FTC, 2006):
  - Credit card charges (new, existing account, ~25%)
  - Loan, bank fraud (mortgage, car, etc, ~21%)
  - Phone and Utilities (unauthorized charges, new accounts, ~16%)
  - Government, medical benefits, etc (~10%)

Idtheft for states with / without law



Idtheft for states *with* and *without* law appear to follow same trend.

Idtheft rate: number of crimes per 100,000 people

Data Collection

- We acquired monthly data for 2002-2007, from FTC using Freedom Of Information Act
- Aggregated to semi-annual periods (smallest period over which we expect to see an effect of law)
- 12 periods * 50 states (+ D.C.) = 612 obs
- Reported data: frequently used (Blumstein et al, 1991) and represents the best we have on identity theft

Econometric Model

- $idtheft_{st} = \beta_0 + \beta_1 hasLaw_{st} + \beta_2 breaches_{st} + \sum \rho_{st} Related_{st} + \sum \delta_{st} Economic_{st} + \sum \alpha_{st} Crime_{st} + \theta_s + \lambda_t + \varepsilon_{st}$
- A familiar approach to analyzing such policy issues
- Identification comes from variation across *state and time*
- $Related_{st}$: credit freeze laws, FACTA, data breaches
- $Economic_{st}$: population, state GDP, income, unemployment
- $Crime_{st}$: fraud, murder, robbery, burglary, motor-vehicle theft
- $cor(\varepsilon_{s,t}, \varepsilon_{s,t+1}) \neq 0$, SE are cluster-corrected by state

Results

Dep Var: idtheft rate	(1) Basic	(2) Lagged Law	(3) Weighted
Has Law	-1.28*		-0.73**
	(0.70)		(0.35)
6 months old		-0.03	
		(0.67)	
12 months old		-1.09	
		(0.85)	
18 months old		-0.43	
		(0.98)	
R-squared	0.79	0.79	0.66

N=612, all regressions run with state cluster-corrected SE

Standard errors In parentheses, *** significant at 1% level, **5%, *10%

Results in context

- To place in context, for 2005, this corresponds to:
  - ~2% reduction in idtheft rate, or
  - $1 billion savings to firms and consumers

Research	Treatment	Outcome measure (Result)
Donohue (2004)	Right-to-Carry laws	Violent crime rate: -3% to +4% Murder rate: -8% to +3% MV theft rate: -7% to +15% Property crime rate: 0% to +10%
Epple and Visscher (1984)	Coast guard monitoring	Oil spill frequency: +2.1% Oil spill volume: - 3.1%
Cohen (1987)	Coast guard monitoring	Oil spill frequency: -2% Oil spill volume: -1.7%
Hamilton (1995)	Disclosure of toxic release (TRI)	Stock price: -0.3%
Acquisti, Telang, Friedman (2006)	Disclosure of security breach	Stock price: -0.6%

Policy Recommendations

- Most people claim to be concerned about identity theft, yet they don't respond to breach notifications (Ponemon, 2008)
- Why the disconnect? Consumer decision errors: optimism bias, rational ignorance, status quo bias
- R1: Craft consistent notifications that provide actionable information to consumers
- R2: Establish an authoritative source for all breaches (useful to consumers, researchers, policy makers)

Conclusions

- We reveal only a marginal effect. A lack of stronger influence may be due to the following:
  - Our regression analysis may be too blunt an instrument with which to measure it
  - The reported data may be a poor source, but it's the best we have
- Effectiveness of the law is maximized when both firms and consumers take appropriate actions
- There may be other benefits of the laws
  - Early notification reduces consumer loss (FTC 2007, Javelin 2007)
  - Improves firm practices (Choicepoint; Hannaford, VA)

Questions?