# Internet Appendix

## (Not Intended for Publication)

## Appendix: Regulatory Environment

The regulation of insurers can be broadly classified into two main areas: solvency regulation and market regulation. Solvency regulations mainly focus on capital adequacy requirements. Every state has its own statutory minimum capital requirement. For example, the common application used to apply for a certificate to sell insurance in another state, indicates that in Delaware the statutory minimum paid-in capital is $300,000 capital plus $150,000 surplus, while in Washington DC it is $300,000 capital plus $30,000 surplus.[1] Note that the capital requirement for each state is set at a very low level relatively, and does not serve as a binding constraint for insurers seeking to expand across states. Risk-based capital (RBC) requirements, which went into effect in the U.S. P-C insurance industry in 1994, mandate intervention by (state) regulators when the risk-based capital ratio (i.e., total adjusted capital divided by the risk-based capital) falls below 2.

Market regulations are concerned with insurer licensing, policy provisions, pricing, market conduct and consumer complaints. Insurance companies must be licensed in each of the states in which they operate. Standards in each state differ in regard to price regulation (Grace and Leverty, 2010). While many states adopted competitive rating (CR) laws that allow insurers substantial pricing freedom in most lines of business, many others stringently regulate pricing. The two most stringent systems require insurers to use rates either approved by or determined by the state's regulatory authorities. Other regulated pricing requirements provide insurers with some degree of flexibility in setting and using their own rates (Harrington, 2002). Although each insurer must obtain a license and meet the capital and policy pricing requirements of each state wherein it operates, regulators typically concentrate their supervisory efforts on the locally domiciled insurers (and rely on other states to

[1]Source: http://www.naic.org/documents/industry_ucaa_chart_min_capital_surplus.pdf

monitor the out-of-state insurers) to avoid duplication of regulatory endeavor across states (Grace and Phillips, 2008).

Ultimately, there is virtually no difference in capital requirements between stock and mutual insurers (Joskow, 1973)[2] and regulations governing policy rates do not differentiate between the two types of insurer either. Neither can we find documentation indicating differences in other market regulations between stock and mutual insurers. In other words, stock and mutual insurers not only provide similar products but they also face the same regulatory scrutiny.

[2] In the early 1990s, mutuals had relatively lower capital requirements than stocks in some states. However, this differential has been eliminated since the mid-1990s (Zanjani, 2007).

## Table A1. Natural Disasters as Negative Profitability Shocks: First Stage

This table reports the results of complaint response in states hit by natural disaster events. We obtained natural disaster events in the U.S. from SHELDUS and focused on six events, corresponding to the states (WI, CA, IA, OK, TX, and TN) that had a single local disaster with over $500 million loss in a year during the period from 2006-2010. Insurers underwriting in one or multiple of these states are defined as exposed insurers, and exposed insurers which underwrite more than 5% of their total policy premium in these six states in the disaster year are defined as heavily exposed. Column 1 includes all insurers, who are either exposed or unaffected (i.e., those who do not underwrite in any of the hit states). Column 2 includes all exposed insurers, and column 3 and 4 include the heavily exposed insurers. *Pre hit* is a dummy variable equal to one for any of the six states mentioned above in the year prior to the disaster event. *Hit* is a dummy variable equal to one for any of the six states mentioned above in the disaster event year. The dependent variable is the natural logarithm of one plus the number of consumer complaints for a given insurer in a particular state in year $t$+1, and the independent variables are measured in year $t$. In other words, given a natural disaster event in year $t$, we study the consumer complaints in those six states in year $t$+1. For other variable definitions and details of their construction, see Appendix A. All regressions include insurer, state, as well as year fixed effects. Standard errors are clustered at the insurer level. Robust t-statistics are reported in brackets. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% level, respectively.

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | Log state-level consumer complaints | | | |
| Sample | All insurers | Exposed insurers | Heavily exposed insurers | Heavily exposed insurers |
| Pre hit | -0.012 | -0.001 | 0.002 | 0.001 |
| | (-0.71) | (-0.05) | (0.05) | (0.03) |
| Hit | 0.040** | 0.048*** | 0.087** | 0.100** |
| | (2.43) | (2.90) | (2.55) | (2.00) |
| Hit x Stock | | | | -0.019 |
| | | | | (-0.39) |
| Log assets | 0.016 | 0.003 | -0.106*** | -0.106*** |
| | (0.68) | (0.13) | (-4.37) | (-4.36) |
| ROA | -0.048 | -0.045 | -0.012 | -0.012 |
| | (-0.76) | (-0.75) | (-0.30) | (-0.30) |
| Underwriting profitability | -0.001 | -0.001 | -0.001 | -0.001 |
| | (-0.41) | (-0.42) | (-0.42) | (-0.41) |
| State profitability | 0.000*** | 0.000*** | -0.000 | -0.000 |
| | (3.76) | (3.10) | (-1.59) | (-1.59) |
| Log state policy premium | 0.028*** | 0.027*** | 0.026*** | 0.026*** |
| | (13.56) | (11.61) | (7.90) | (7.90) |
| Log no. states | -0.096*** | -0.088*** | -0.062*** | -0.062*** |
| | (-5.76) | (-5.28) | (-4.68) | (-4.65) |
| Constant | -0.246 | -0.013 | 2.046*** | 2.046*** |
| | (-0.54) | (-0.03) | (4.30) | (4.29) |
| State FE | Y | Y | Y | Y |
| Year FE | Y | Y | Y | Y |
| Insurer FE | Y | Y | Y | Y |
| Observations | 39,943 | 34,450 | 12,224 | 12,224 |
| R-squared | 0.541 | 0.510 | 0.528 | 0.528 |