

# Social Inflation

Sangmin S. Oh

The University of Chicago, Booth School of Business

## Abstract

Social inflation refers to steeply rising insurance rates due to social factors such as large jury awards and broader definitions of liability. This paper is the first to study the risk of social inflation and its economic consequences. Using a novel dataset that spans jury verdicts, financial statements, and rate filings for commercial auto liability insurance, I find that the number of verdicts and settlements exceeding \$50 million has increased almost threefold from 2011 to 2019. To highlight the role of these developments in insurance pricing, I build a model of social inflation and show that social inflation risk has a “double kick” effect on insurance price through increased effective marginal cost and interaction with the capital requirement. I then estimate the causal impact of social inflation risk on insurance rates through a triple-difference framework. Ultimately, I uncover an important new source of aggregate risk that affects the stability of the insurance sector and the economic activities that depend on it.

## Introduction

According to the insurance companies in the U.S., a specter is haunting the insurance sector – the specter of “social inflation.” First coined by Warren Buffet in his 1975 letter to shareholders and used extensively in the insurance industry, the term “social inflation” refers to steeply rising insurance rates due to social factors such as large jury awards and broader definitions of liability. Its risk is saliently different and novel from the traditional risks in insurance and influences multiple lines of businesses.

From the insurer’s perspective, the risk of social inflation poses a fundamental challenge to the supply of insurance. Specifically, it introduces sizable uncertainty to the underwriting process in two key dimensions.

1. The recent prevalence of “nuclear awards” – defined as jury awards and settlements exceeding \$10 million – increases the probability of an event becoming a tail event.
2. Broader definitions of liability and retroactive modification of existing policies challenges the very definition of an event.

In this paper, I focus on the first dimension that is nuclear awards – which represent one particular manifestation of social inflation risk – but the findings and conclusions of the paper well apply to the second.

Despite the influence that social inflation exerts on the core businesses of the insurance sector, little or no academic research exists on the phenomenon.

- The reason, perhaps, is that social inflation has traditionally been limited to medical malpractice in the 1970s.
- Another possibility is that the role of interest rates and market power have played a central role in the past, while their impact has waned over the past decade.

Ultimately, the role of social inflation risk in driving insurance premiums and insurer exits is an empirical question, to which no rigorous study is currently available.

## Research Question

How prevalent is social inflation, and what is the causal effect of large jury verdicts and settlements on rising insurance prices?

## Data

I collect detailed information on settlements and verdicts involving commercial auto liability from VerdictSearch, restricting to those with awards greater than \$10 million. From SNL Financial, I obtain the annual financial statements for fiscal years 1996 to 2019 for insurance companies that sell commercial auto liability policies. I also obtain the historical rate filings for calendar years 2001 to 2019 through SNL Financial.

## How Pervasive is Social Inflation?

The number of nuclear awards has stayed relatively stable, but the median award size has increased substantially in the past few years.

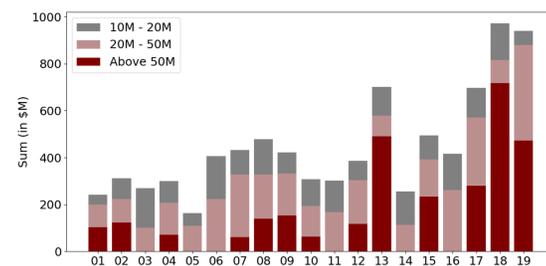


Figure 1: Nuclear Awards in Commercial Auto Liability Cases

Accordingly, the average rate for commercial auto liability grew substantially in the early 2010s, reaching and even exceeding 5% this past year. The increases also correspond to famous cases, highlighted in the figure.

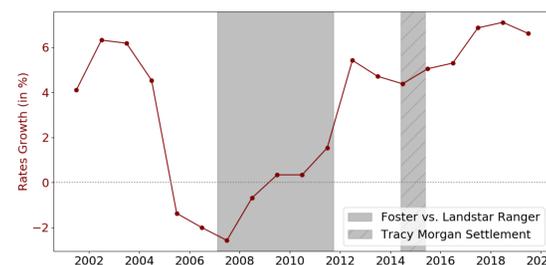


Figure 2: Average Rate Growth in Commercial Auto Liability Insurance

## A Model of Social Inflation

I build a stylized model of social inflation to illustrate its impact on insurance prices.

**Setup** An insurance company makes a pricing decision at the beginning of the period but is subject to the reserve requirements at the end of the period.

The price of a policy therefore depends on the firm’s estimate of social inflation risk throughout the period, which is modeled as increased tail risk in the loss distribution of a given policy.

## Contact Information:

Phone: +1 (267) 969 2102

Email: oh@chicagobooth.edu

**Key Frictions** The model features two key frictions.

1. Financial friction, captured by the leverage constraint on statutory capital (value of assets relative to reserves)
2. Uncertainty in the loss distribution

**Main Result** Social inflation risk, modeled as increased tail risk in the loss distribution, has a “double kick” to insurance prices.

1. It increases the effective marginal cost of the insurer since the policy has a higher probability of becoming “nuclear.”
2. It increases the amount of statutory reserves required to satisfy the risk-based capital requirement.

## Effect of Social Inflation Risk on the Insurance Sector

I identify and estimate the impact of social inflation risk on insurance prices. In doing so, I measure the exposure to social inflation risk as the realized incidence of nuclear awards.

## Empirical Design

The identification strategy is to compare commercial and personal auto lines before and after the famous Tracy Morgan settlement in 2015, while also comparing states more exposed to nuclear awards and those less so. In essence, the empirical strategy amounts to a triple-difference estimator.

- Identification assumption: parallel trends, i.e. the difference in price growth between commercial and personal auto lines should have evolved similarly over time for high exposure versus low exposure state in absence of treatment.

## Implementation

Given the skewed distribution of rate filings across states and therefore to reduce measurement error, I classify each state into three groups that become my unit of observation: no-award states, low-award states, and high-award states.

In the baseline result, I exclude the low-award states and compare the high-award (high exposure) states versus the no-award (low exposure) states.

$$\begin{aligned} \Delta P_{ist} = & \beta_0 + \beta_1 HighExposure_s + \beta_2 IsComm_i \\ & + \beta_3 HighExposure_s \times IsComm_i \\ & + \delta_0 Post_t + \delta_1 HighExposure_s \times Post_t + \delta_2 IsComm_i \times Post_t \\ & + \delta_3 HighExposure_s \times IsComm_i \times Post_t + \gamma_1 GDPGrowth_t \\ & + \gamma_2 IsComm_i \times GDPGrowth_t + \epsilon_{ist} \end{aligned}$$

where  $i$  denotes the insurer,  $s$  denotes the state’s classification into either low-exposure or high-exposure states, and  $t$  indicates the quarter in which the rate change was filed. In this particular specification, the high-exposure states are the high-award states and the low-exposure states are the no-award states.

## Results

The magnitude of the main coefficient  $\delta_3$  is 2.049, which is positive and statistically significant across all specifications.

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- The estimate indicates that the change in commercial auto insurance rate was on average around 2% higher than the change in personal auto insurance rate in states with high number of verdicts.

To check that the differential impact on rates across states and insurers is not driven by differential trends among these groups, I graph the time-series coefficients of the following regression:

$$\begin{aligned} \Delta P_{ist} = & \lambda_i + \eta_t + \sum_{\tau \neq t_0} \beta_{1\tau} HighExposure_s \mathbf{1}_{(\tau=t)} + \sum_{\tau \neq t_0} \beta_{2\tau} IsComm_i \mathbf{1}_{(\tau=t)} \\ & + \sum_{\tau \neq t_0} \beta_{3\tau} HighExposure_s \times IsComm_i \mathbf{1}_{(\tau=t)} + \epsilon_{it} \end{aligned}$$

where  $\mathbf{1}_{(\tau=t)}$  is a dummy variable equal to one for year  $t$ .

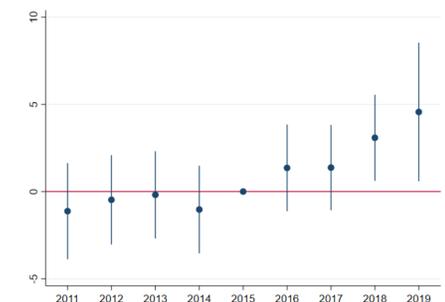


Figure 3: Pre- and Post-Trends: Yearly Coefficients on Interaction Term

## Tracing the Origins of Social Inflation

I also provide some insights into the origins of social inflation. Existing empirical evidence suggests that the sentiment towards big business and insurance companies may have become particularly negative in recent years.

The changing legal climate also seems to have amplified this phenomenon.

- One notable development is the rise in third-party litigation financing, in which a litigation is financed upfront in exchange for a percentage of future awards and settlements.
- Furthermore, the limited success of tort reforms seems to have contributed to the rise in the share of non-economic damages in jury awards, and the increased availability of attorney and litigation tactics may also have been responsible.

## Conclusion

Social inflation risk is an aggregate risk that affects multiple lines of insurance businesses. Importantly, it plausibly explains the rapid increase in insurance rates over the past decade and the recent exits of major insurance providers, posing a new, major source of risk for the real economy as well.

One policy implication is that insurance regulators should be aware of social inflation in designing reserve requirements. Understanding its trend, geographical heterogeneity and economic consequences will therefore be key to ensuring a stable insurance sector and the economic activities that depend on it.