



Workers' Compensation Financial Incentives

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Financial incentives- benefit elasticity

- This paper estimates benefit elasticity for workers' compensation in the U.S. We do not have a direct test of experience rating, but our results and implications are closely relevant.
- The simplest theory suggests that the benefit elasticity for cash benefits should be 1.0: if statutory benefits increase by 10%, one would expect actual benefit payments to increase by 10%.
- However, more sophisticated economic theories suggest that changes in statutory benefits affect workers' and employers' behaviors and thus also affect the benefit, frequency, and duration elasticities.

Employees' responses

- **True injury effect:** workers may be less concerned about job safety and more willing to accept risk, which results in an increase in injury frequency and injury severity.
- **Reporting effect:** the increase in statutory benefits may induce workers to submit claims for losses they otherwise would not have bothered to report.
- **Duration effect:** An increase in statutory benefits may also cause workers to extend the periods for which they claim benefits.

Employers' Responses

- **Safety effect:** the employer may be encouraged to keep the workplace safer when benefits for injured workers are increased in order to reduce the costs of the program.
- **Monitoring effect:** An increase in statutory benefits may also encourage employers and carriers to deny claims.
- **Return-to-work effect:** employers and insurance carriers may strengthen their claim management practices by reducing the duration of benefit payments.
- In the US, experience rating is used in all states. Most workers are employed by firms that are experience rated (although most firms are too small to be experience rated). Experience rating presumably strengthens the three employers' responses.

Literature review

- Previous studies mostly focus on employees' responses and found an benefit elasticity greater than 1.0 (Krueger 1990; Butler and Worrall 1991; Ruser 1991; Butler 1994).
- When statutory benefits are increased 10%, the payments of incurred benefits is higher than 10%, due to more claims or longer duration.

Issues with previous studies

- Generally used data up to the early 1980s, and thus did not capture several important developments in workers' compensation programs in the late 1980s and the 1990s.
- Most previous studies used temporary total disability (TTD) benefits to represent the generosity of workers' compensation, and thus did capture the cost of more expensive types of benefits such as permanent partial disability (PPD) and permanent total disability (PTD).

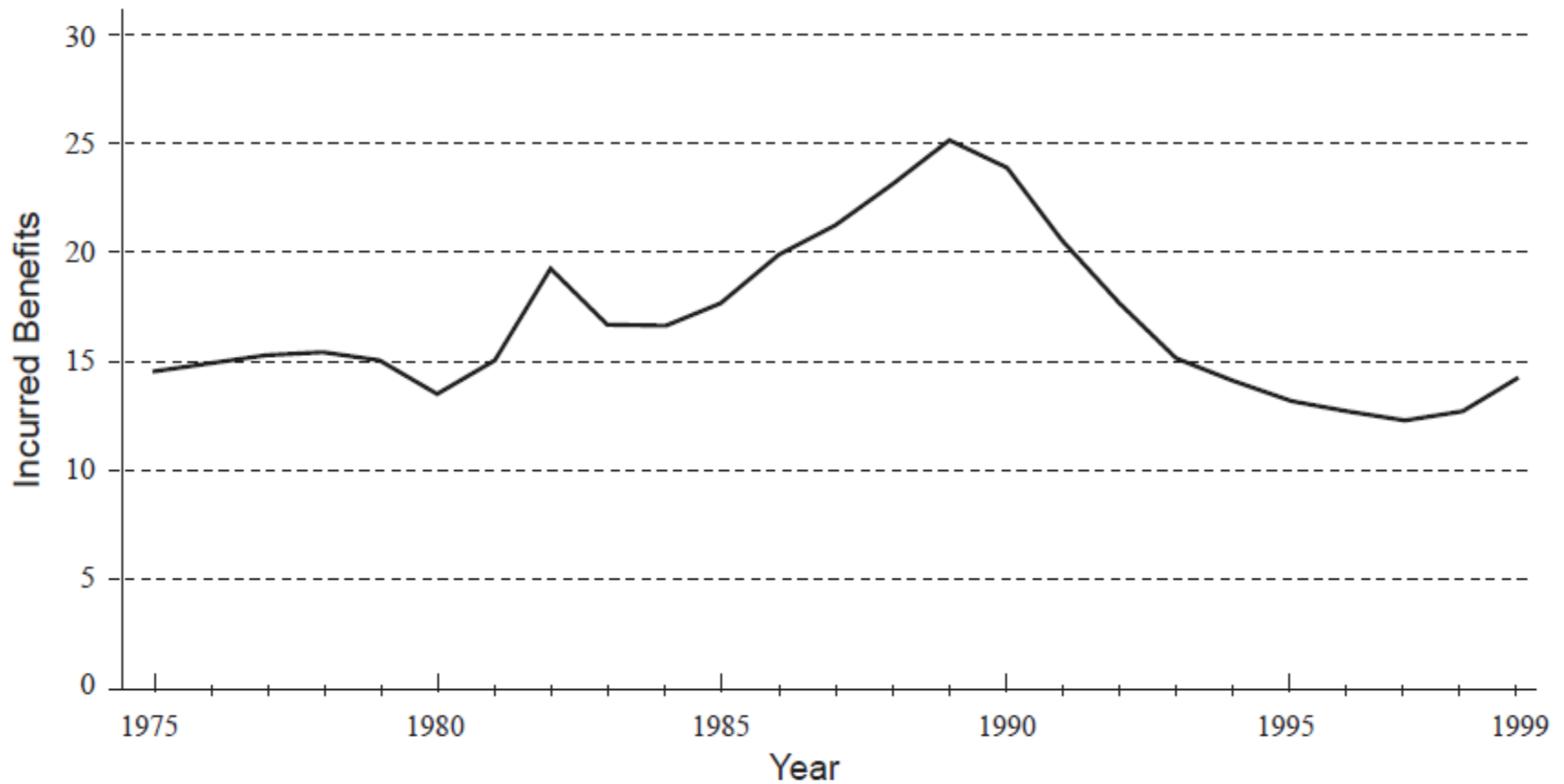
Dependent variables

- **BLS injury rate** is the frequency of occupational injury and illness cases per 100 workers that result in days away from work.
- **Incurred benefits** are incurred workers' compensation cash benefits per 100,000 workers. Incurred benefits are the insurance carrier's estimate of the benefits that will ultimately be paid for injuries that occurred in a particular policy period.

Key independent variables

- **Expected benefits** reflects the amount of expected cash benefits per claim prescribed by the state workers' compensation statute. We used a complicated actuarial procedure to calculate the expected payments for four types of benefits: TTD, PPD, PTD, and fatal benefit (Krueger and Burton 1990; Thomason, Schmidle, and Burton 2001; Guo and Burton 2010).
- **Compensability rules** were developed by Burton and Thomason (2001) and updated by Guo and Burton (2010) to capture changes in state compensability rules for workers' compensation benefits.
- **Benefit allowance stringency (BAS)** is the share of injuries reported to BLS in a state that did not receive workers' compensation benefits.
- **PPD share** is the number of permanent partial disability cases as a proportion of cases paying any type of cash benefit

*Figure 1. National Average Incurred Benefits per 100,000 Workers.
('82-'84 \$ million)*



Source: Blum and Burton (2007).

Figure 2. Changes from Rules and Administration.

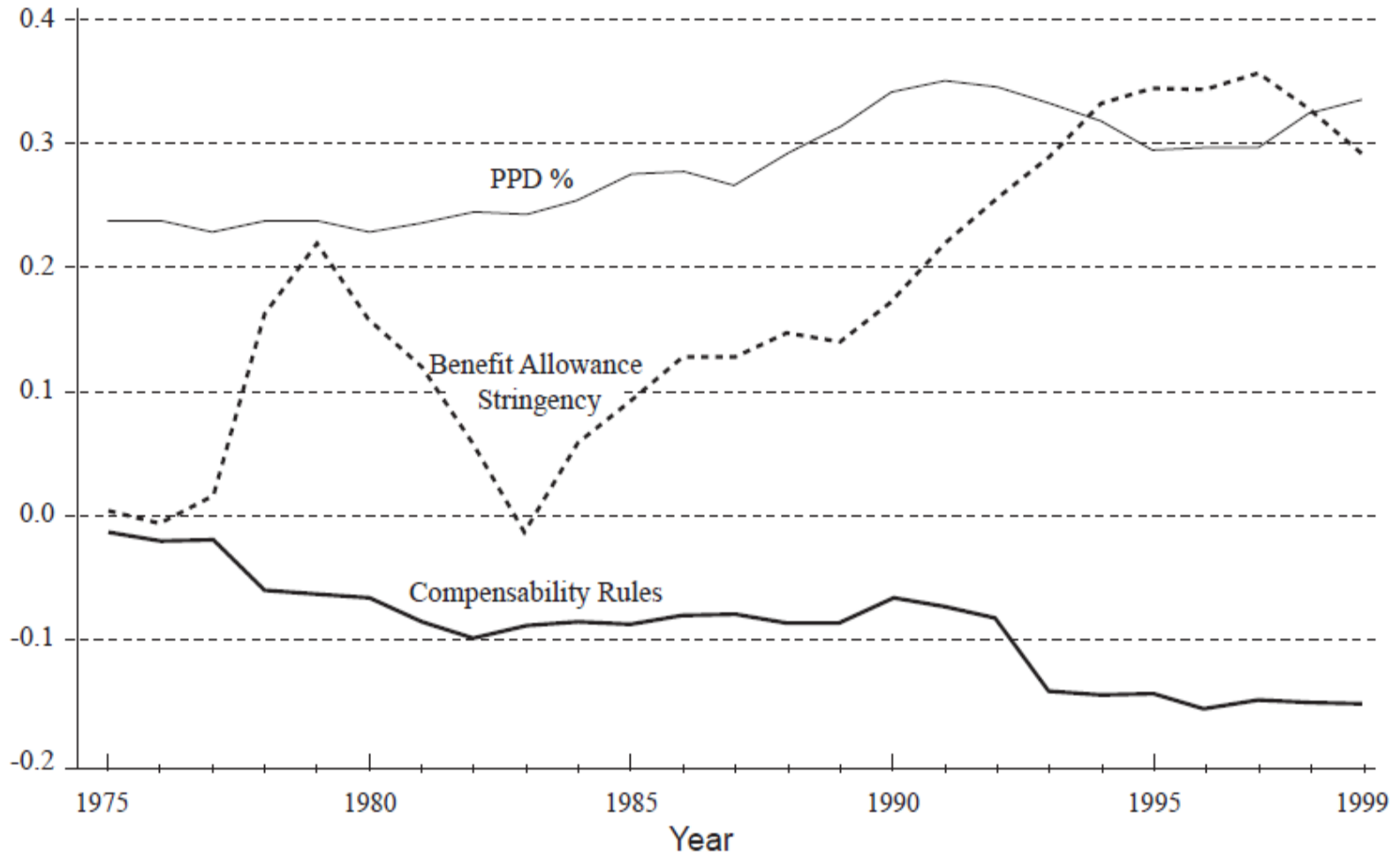


Table 1. Variables Descriptive Data.

<i>Variables</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Incurred Benefits ^a	1.65E+07	1.14E+07	3.24E+06	8.52E+07
BLS Injury Rate	0.039	0.009	0.020	0.074
Expected Benefits ^b	6,519	4,288	2,194	37,156
Compensability Rules	-0.121	0.267	-0.921	0.890
BAS (benefits allowance stringency) ^c	0.212	0.181	-0.643	0.640
PPD Share (permanent partial disability)	0.250	0.096	0.069	0.615
State Fund Share	0.074	0.147	0.000	0.660
Self-Insured Share	0.203	0.099	0.000	0.569
Heavy Industry Share	0.135	0.043	0.072	0.408
Unemployment	0.062	0.020	0.023	0.155
Union Density	0.163	0.072	0.033	0.387
Employment in Large Establishments	0.189	0.046	0.015	0.324

^aIncurred Benefits are incurred cash benefits per 100,000 workers in 1982–84 dollars. The data in current dollars are from Blum and Burton (2007). The consumer price index for all items less medical care using 1982–84 as 100 is from Table B-62 in the Economic Report of the President (2007).

^bExpected Benefits are the expected cash benefits per claim in 1982–84 dollars. The data in current dollars are from Table D.1 in Thomason, Schmidle, and Burton (2001).

^cWhen the injury rate from BLS is less than the compensable claim rate from Blum and Burton (2007), BAS become negative. It is a measurement difference, which will not affect the regression results.

Table 2. Regression Results for the BLS Injury Rate.

<i>Independent Variables</i>	<i>1975–1989 (Period I)</i>		<i>1990–1999 (Period II)</i>	
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 1</i>	<i>Model 2</i>
Log (Expected benefits)	0.007 (0.047)	0.021 (0.044)	0.046 (0.082)	0.015 (0.08)
Compensability Rules		0.025 (0.061)		-0.059** (0.029)
PPD Share		-0.235 (0.258)		-0.079 (0.132)
State Fund Share	-0.116 (0.519)	-0.127 (0.512)	0.032 (0.144)	0.03 (0.138)
Self-Insured Share	-0.283* (0.151)	-0.285* (0.161)	0.101 (0.069)	0.93 (0.067)
Heavy Industry Share	2.051** (0.838)	2.058** (0.805)	1.572 (1.358)	1.915 (1.378)
Unemployment	-2.404*** (0.61)	-2.201*** (0.502)	-2.38*** (1.019)	-2.339** (1.059)
Union Density	0.349 (0.365)	0.385 (0.362)	-0.672 (0.589)	-0.677 (0.61)
Large Establishments	-0.349 (0.365)	-0.29 (0.369)	-0.794* (0.469)	-0.843* (0.497)
Intercept	0.928** (0.348)	0.825** (0.331)	1.107 (0.71)	1.45** (0.722)
Number of Observations	478	478	355	355
R-square	0.908	0.909	0.948	0.949

Notes: The dependent variable is log (BLS injury rate). All regressions are fixed-effect models with state dummies and year dummies. State employments serve as weights in all models to correct for heteroskedasticity. Cluster robust standard errors are reported in brackets.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level.

Table 3. Regression Results for Incurred Benefits.

Independent Variables	1975–1989 (Period I)			1990–1999 (Period II)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Log (expected benefits)	0.577*** (0.197)	0.605*** (0.198)	0.587*** (0.187)	0.346 (0.264)	0.549*** (0.137)	0.55*** (0.14)
Compensability Rules		0.122 (0.241)	0.088 (0.215)		0.281** (0.105)	0.299*** (0.11)
Benefit Allowance Stringency		-0.841*** (0.15)	-0.966*** (0.17)		-0.748** (0.294)	-0.791** (0.345)
PPD Share		1.037** (0.502)	1.204*** (0.37)		1.794*** (0.506)	1.817*** (0.477)
Log(injury rate)			0.797** (0.297)			0.243 (0.382)
State Fund Share	-1.643*** (0.516)	-1.237* (0.698)	-1.102** (0.448)	-0.061 (0.62)	-0.214 (0.625)	-0.227 (0.627)
Self-Insured Share	1.232** (0.507)	1.103* (0.649)	1.299* (0.68)	-0.272 (0.198)	-0.181 (0.193)	-0.202 (0.18)
Heavy Industry Share	2.393 (1.613)	1.522 (1.71)	-0.138 (1.659)	2.125 (3.396)	-0.618 (3.346)	-1.007 (3.027)
Unemployment	-0.862 (1.153)	-2.768** (1.157)	-1.15 (1.218)	3.363 (4.185)	0.513 (3.107)	1.012 (2.94)
Union density	0.941 (0.979)	0.272 (0.754)	-0.062 (0.656)	1.713 (1.8)	1.664 (1.365)	1.834 (1.314)
Large Establishments	1.822 (1.153)	1.06 (1)	1.241 (1.008)	-2.916 (1.922)	-3.536 (2.255)	-3.364 (2.272)
Intercept	10.302*** (1.483)	10.486*** (1.404)	9.9884*** (1.313)	13.508*** (2.315)	11.885*** (1.395)	11.495*** (1.537)
Number of Observations	478	478	478	355	355	355
R-square	0.917	0.934	0.94	0.901	0.928	0.929

Notes: The dependent variable is log (incurred benefits). All regressions are fixed-effect models with state dummies and year dummies. State employments serve as weights in all models to correct for heteroskedasticity. Cluster robust standard errors are reported in brackets.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level.

Conclusions

- The frequency elasticity was not significantly greater than 0 in Period I (1975–1989) or in Period II (1990–1999). One interpretation of these results is that the true injury effect is offset by the safety effect.
- The benefit elasticity was significantly less than 1.0 in both our study periods. One interpretation of these results is that the monitoring and return-to-work effects from employers are stronger than the reporting and duration effects for workers.

Implications

- The true injury effect of higher benefits had not been considered in many studies of experience rating, which focus just on employer behavior, and that our results suggest (but do not prove) that if it were not for experience rating in the US, higher benefits would have resulted in more injuries because of the true injury effect. One can argue that this is a desirable effect of experience rating.
- Experience rating may have increased the employer responses to higher benefits. But we cannot tell from our results if this enhanced employer response is desirable or not, because we cannot distinguish between the monitoring effect (which presumably is undesirable if legitimate claims are being denied) and the return-to-work effect (which presumably is desirable).

Limitations

- The difference between incurred benefits and the expected benefits
- Omitted variables such as litigation
- Measurement errors and instrument variables

Future studies

- Employers' responses to experience rating
- Benefit elasticity for PPD claims
- Impacts of statutory benefits changes in 2000s
- Financial incentives in other countries

Reference

Guo, Xuguang and John F. Burton, Jr., 2010. “Workers’ Compensation: Recent Developments in Moral Hazard and Benefit Payments,” *Industrial and Labor Relation Review*, 63(2): 340-55.