
Moral Hazard, Adverse Selection, and Tort Liability

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Abstract: This article analyzes how moral hazard and adverse selection problems that arise from the imposition of strict liability in the area of products liability law affect consumer welfare in product markets. The article concludes with a brief overview of some important contributing factors behind the expansion of the U.S. tort system, and analyzes the economics of a popular tort reform proposal known as the "Loser Pays" rule. *Journal of Economic Literature* Classification Numbers: K13, D82. [Keywords: moral hazard, adverse selection, tort liability, tort reform]

INTRODUCTION

Since legal rules such as privity, contributory and comparative negligence, and strict liability imply different types of risk sharing arrangements between potential victims and injurers, the tort liability system provides an interesting laboratory setting for studying the economic consequences of moral hazard and adverse selection in real life. In this article, we will analyze how moral hazard and adverse selection problems that arise from the imposition of strict liability in the area of products liability law affect consumer welfare in product markets.

Furthermore, there is an ongoing debate concerning the economics of tort reform. Some of the important issues being debated include topics such as (1) the effects that the U.S. legal system has upon the growth and global

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competitiveness of the U.S. economy, and (2) economic consequences of tort reform proposals such as the “Loser Pays” rule. The paper concludes with a brief overview of these topics as well.

HISTORICAL PERSPECTIVE ON PRODUCTS LIABILITY

During the course of the past century, there has been a dramatic shift in terms of how risks are shared between firms and consumers. At the beginning of the 20th century, the prevailing product liability doctrine was that of privity, which stipulates that damages may be recovered only from a party with whom a contract exists. In the area of products liability, this limitation essentially acted as a firewall between the consumer and the manufacturer of the product. If you suffered economic damages from using a defective product, you could recover damages from the firm that sold you the product, but you did not have any recourse with the manufacturer.

The *MacPherson v. Buick* case, which was decided in the Court of Appeals of the State of New York in 1916, represents a seminal court case in the evolution of products liability law.¹ Under *MacPherson v. Buick*, Buick was held liable for damages suffered by plaintiff MacPherson due to its apparent failure to include reasonable safety features. This case represents a change in legal thinking to imposing liability on manufacturers under the theory that they possess an *informational comparative advantage* in designing safety into their products. Thus, if the plaintiff could demonstrate that the proximate cause of her damages was negligence on the part of the manufacturer, the plaintiff was allowed to pierce the privity firewall and recover damages directly from the manufacturer.

The next important court case in the evolution of products liability law was *Escola v. Coca-Cola Bottling Co.*, which was decided by the California Supreme Court in 1944.² *Escola v. Coca-Cola Bottling Co.* is significant because it introduced the legal theory that the manufacturer has a comparative advantage in *insuring* as well as managing product risks. In this case, a waitress was severely injured by an exploding Coke bottle. Justice Traynor ruled that while Coca-Cola was not negligent, it was nevertheless liable for the damages suffered by Escola. Consider the following quotes from Justice Traynor’s legal opinion (see *Escola v. Coca-Cola Bottling Co.*, 24 Cal.2d 453):

“I believe the manufacturer’s negligence should no longer be singled out as the basis of a plaintiff’s right to recover in cases like the present one. In my opinion it should now be recognized that a manufacturer incurs an absolute liability when an article that he has placed on the

market, knowing that it is to be used without inspection, proves to have a defect that causes injury to human beings....

Even if there is no negligence, however, public policy demands that responsibility be fixed wherever it will most effectively reduce the hazards to life and health inherent in defective products that reach the market. It is evident that the manufacturer can anticipate some hazards and guard against the recurrence of others, as the public cannot. Those who suffer injury from defective products are unprepared to meet its consequences. The cost of an injury and the loss of time or health may be an overwhelming misfortune to the person injured, and a needless one, for the risk of injury can be insured by the manufacturer and distributed among the public as a cost of doing business....

Against such a risk there should be general and constant protection and the manufacturer is best situated to afford such protection...."

With this case, strict liability became the prevailing products liability doctrine in the state of California, and within the next couple of decades it became the prevailing liability products doctrine throughout the United States.^{3,4}

TORT LIABILITY FROM AN INSURANCE PERSPECTIVE

The move from privity limitations to negligence rules to strict liability represents a significant shift in terms of how risks are shared *ex ante* between consumers and manufacturers. Specifically, the products liability system initially imposed the financial consequences of product risks primarily upon consumers, and over time has shifted these risks over to manufacturers. It is conceptually helpful to think of this shift in risk bearing as a form of insurance that we will call "tort insurance." Under strict liability, manufacturers are essentially compelled to bundle (full) insurance with their product. In order to purchase the product, consumers must purchase this insurance; i.e., the legal system precludes the possibility for consumers to voluntarily "opt out" of the coverage.⁵ Another important difference between private insurance and tort insurance is that under the former mechanism, the scope of coverage is determined *ex ante* as the result of a negotiation between the policyholder and the insurance company. However, in the case of tort insurance, the scope of coverage is determined *ex post* by the legal system.

Consider next the social welfare implications of tort insurance. Like private insurance, tort insurance compensates for unexpected losses. Tort

insurance differs from private insurance in the sense that the premium is bundled into the prices for goods and services; i.e., there is no separate private market for tort compensation.⁶ Suppose we lived in a world where it was possible to privately negotiate *ex ante* for an “optimal” level of *ex post* tort compensation. If this were possible, the amount of tort insurance coverage that people would voluntarily purchase prior to being involved in the accident would depend upon the extent to which they were informed about the risk, as well as the extent to which the price of tort insurance reflects the direct and indirect costs (legal fees, moral hazard, and adverse selection costs) associated with acquiring insurance coverage via the tort system.⁷

Economic Consequences of Compensation for Non-Economic Losses and Moral Hazard

The effect of compensation for non-economic losses and moral hazard is to introduce a premium loading into the price of tort insurance; i.e., the insurance is “actuarially unfair” in the sense that the premium charged exceeds the expected value of loss. We know from insurance economics theory that whenever insurance is actuarially unfair, arbitrarily risk-averse consumers will prefer to partially rather than fully insure risk.⁸ We can infer that non-economic losses in the form of utility losses from pain and suffering act as a premium loading by virtue of the fact that there is no private market for pain and suffering insurance. Because of moral hazard, the premium loading for pain and suffering insurance would have to be too high.⁹ Furthermore, since the assumption of risk and product misuse defenses have been significantly weakened in recent years in the U.S. tort liability system, it stands to reason that tort insurance “premiums” must also implicitly incorporate such costs. Consequently, by compelling consumers to fully insure at actuarially unfair prices, strict liability would appear to reduce consumer welfare. Because tort insurance is actuarially unfair, a better case can be made for comparative negligence, which in the present context corresponds to partial insurance—specifically, coinsurance.

Economic Consequences of Biases in the *Ex Post* Determination of the Scope of Coverage

As we noted earlier, tort insurance differs from private insurance because in the case of tort insurance, the scope of coverage is determined *ex post* by the legal system. This has important implications for the optimal risk management strategy of the injuring firm. Specifically, if the court system makes biased assessments of the scope of coverage, then this implies that firms will optimally underinvest in safety for products which

Table 1. Estimated Costs of Federal Safety Regulation

Regulation	Year passed	Federal agency	<i>Cost per life saved (in millions of \$1984)</i>
Unvented space heaters	1980	CPSC	\$0.10
Passive restraints/belts	1984	NHTSA	\$0.30
Crane-suspended personnel platform	1988	OSHA	\$1.20
Grain dust	1987	OSHA	\$5.30
Uranium mill tailings (inactive)	1983	EPA	\$27.60
Asbestos	1989	EPA	\$104.20
Arsenic/low-arsenic copper	1986	EPA	\$764
Formaldehyde	1987	OSHA	\$72,000

Source: Viscusi (1992).

have limited *ex post* coverage, and overinvest in safety for products which have excessive *ex post* coverage.

What is the *ex post* scope of coverage in the area of products liability? Although (to the author's knowledge) there is no publicly available database that summarizes this information on a product-by-product basis, one way to gain some insight on this issue is to look at a proxy variable that is likely to be highly correlated with the liability costs actually generated by the tort system. Of course, this raises the obvious question: what is an appropriate proxy variable? It would seem reasonable to assume that regulators typically have incentives to codify existing business and legal practices, which would imply that the costs of safety regulation are likely to be highly correlated with actual tort-related costs.¹⁰ Thus Table 1 provides a summary of such costs for various commodities and products that are regulated by federal agencies.

The regulatory safety cost data shown above are intended as proxies for the manner in which the U.S. tort system values human life. As one can readily see from this table, estimates of the value of human life range widely, from \$100,000 to \$72 billion (in 1984 dollars). Since an average U.S. human life value of \$1,000,000 to \$1.2 million (in 1984 dollars) seems plausible,¹¹ these data would appear to suggest that formaldehyde accident victims are probably overcompensated, whereas unvented space heater

accident victims are probably undercompensated. The risk management incentives for manufacturers are obvious; corporations that produce space heaters will likely underinvest in product safety, whereas formaldehyde producers will overinvest, or perhaps even exit the market.

Economic Consequences of Adverse Selection

By compelling firms to insure as well as manage product risks, the tort insurance premium that is reflected in the prices of goods and services essentially represents a “pooled” premium. Consumers are heterogeneous with respect to a number of important characteristics, such as level of wealth and income, preferences, and propensity toward getting into accidents. Therefore, we need to be concerned that strict liability creates adverse selection problems in product markets. Specifically, we will find that tort insurance subsidizes rich consumers at the expense of poor consumers, and accident-prone consumers at the expense of “safe” consumers. To see this, consider the following set of numerical examples, the assumptions for which are:

- (1) Assume one period economy in which consumers are alike in all ways except for initial wealth and accident propensity.
- (2) The tort system assesses only compensatory damages; i.e., punitive damages are not allowed, and there is strict liability for product defects.
- (3) A firm exists that sells motorcycle helmets. All costs (other than liability) are \$100 per helmet.

Since there is strict liability, the cost of which is reflected as a “pooled premium” in the product price, the firm must consider the potential economic losses associated with insuring product-related accidents.

Economic Consequences of Adverse Selection: Wealth Heterogeneity

Suppose that there are equal numbers of two types of consumers, rich and poor. Compensatory damages for injured rich people are \$150, and for injured poor people they are \$50. Although loss severity is different for rich and poor people, all have the same (50%) probability of a product-related injury. Therefore, the expected liability cost per helmet for injured rich people is $.5(\$150) = \75 ; the expected liability cost per helmet for injured poor people is $.5(\$50) = \25 . Consequently, the total helmet price is $\$100 + \text{average expected liability cost} = \$100 + .5(\$75 + \$25) = \$150$. Obviously tort insurance is underpriced in the amount of \$25 for rich people and overpriced in the amount of \$25 for poor people.

Economic Consequences of Adverse Selection: Accident Propensity Heterogeneity

Now suppose that all consumers have the same initial wealth, but differ with respect to accident propensity. We will assume that compensatory damages for injured consumers are \$100. Half of all consumers are accident prone, with a 75% probability of a product-related injury, whereas the other half are safer, with only a 25% probability of a product-related injury. Therefore, the expected liability cost per helmet for injured high-risk consumers is $.5(\$100) = \75 , and the expected liability cost per helmet for injured low-risk consumers is $.25(\$100) = \25 . Consequently, the total helmet price is $\$100 + \text{average expected liability cost} = \$100 + .5(\$75 + \$25) = \$150$. In this case, the more accident prone consumers receive a cross-subsidy of \$25 per helmet from the less accident prone consumers.

Economic Consequences of Adverse Selection: Potential Solutions

As we have seen in the above analysis, an important shortcoming of the tort insurance market is that it promotes adverse selection in product markets. This raises an obvious question for firms: given strict liability, what kinds of business strategies can help to mitigate this problem? Since the adverse selection problem derives from consumer heterogeneity, a potential solution involves determining ways that the firm can limit consumer heterogeneity, thus reducing the magnitude and extent of cross-subsidies in tort insurance. Thus, in addition to providing firms with risk management strategies for managing uninsurable business risks such as loss of competitive position, product substitution, and obsolescence, the marketing discipline can also help in the management of this problem. Product branding and differentiation strategies enable firms to encourage consumers with different accident propensity and socioeconomic characteristics to self-select. For example, an automobile marketer may attract high-risk drivers by offering a sports car and low-risk drivers by offering a minivan. Similarly, by offering different brands, an automobile marketer encourages drivers with different socioeconomic characteristics to self-select.¹²

THE ECONOMICS OF TORT REFORM

The United States is internationally scorned as an overly litigious society. This perception is corroborated by evidence cited in the 2004 edition of the *Economic Report of the President*, in which an entire chapter is devoted to the issue of tort reform. The report notes (among other things)

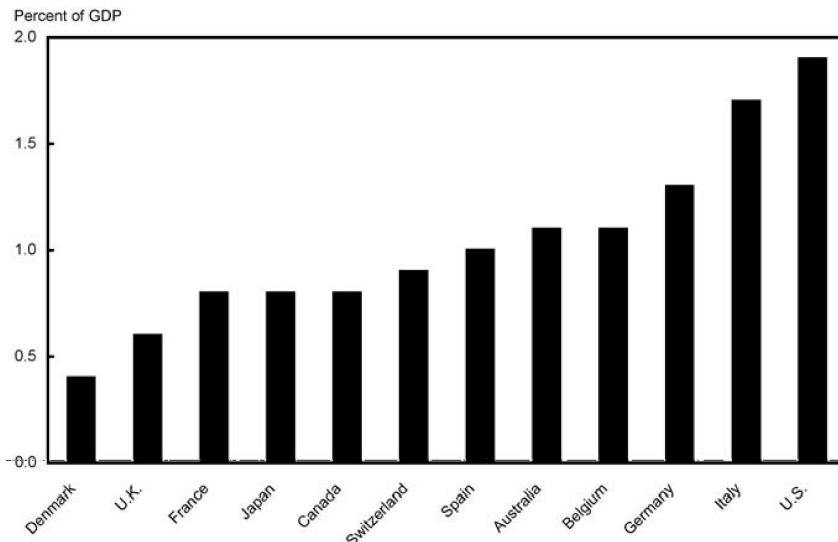


Fig. 1. Tort expenditures as a percentage GDP. Source: *Economic Report of the President*, page 216.

that annual U.S. tort costs account for nearly 2 percent of GDP.¹³ As shown in Figure 1, U.S. tort costs (as a percent of GDP) are more than 3 times greater than tort costs in the United Kingdom, and are also significantly higher than tort costs in most other industrialized countries.

Much research has been done concerning the contributing factors behind the expansion of the U.S. tort system. Magee, Brock, and Young (1989) argue that one problem may be that the U.S. has too many lawyers.¹⁴ Their theory is based upon the notion that lawyers do both positive and negative things for the economy. Examples of positive economic contributions include activities such as making property rights clearer, protecting individuals from harm-doers, and facilitating transactions. Examples of negative economic contributions include predatory redistributive conflict, excessive litigation, and the diversion of talent out of productive activity. Thus it seems plausible that there is such a thing as an "optimal" number of lawyers for an economy. Figure 2 provides a conceptual framework for thinking about this problem.

In Figure 2 we are interested in maximizing the economy's growth prospects. The *y* axis represents the rate of economic growth, and the *x* axis represents lawyer density, which is proxied by the ratio of the number of lawyers for every 1,000 white-collar workers. The rising part of the curve represents the effects of the positive economic contributions of the legal

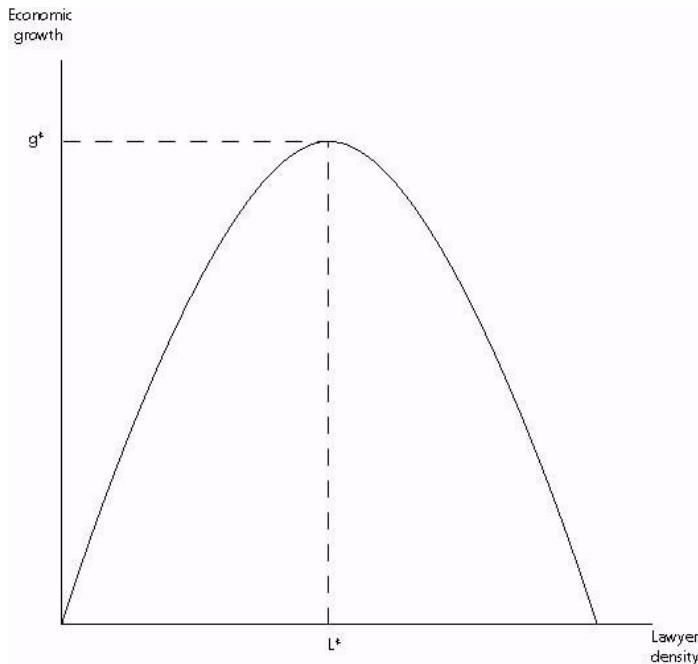


Fig. 2. The relationship between economic growth and “lawyer density.”

system, whereas the declining part of the curve captures the negative effects. The point represented by (g^*, L^*) shows how economic growth is maximized when there exists an optimal number of lawyers.

Magee, Brock, and Young estimate regression equations from 54 countries over the course of 25 years and find that the optimal value for L^* is 23 lawyers for every 1,000 white-collar workers (2.3%). Since the U.S. has more like 38 lawyers for every 1,000 such workers, it would appear that the U.S. has 40% too many lawyers. Furthermore, the economic consequences of having too many lawyers are not “rounding errors.” Magee, Brock, and Young’s equations suggest that these excess lawyers reduce GDP by approximately 10 percent every year. Since 2003 GDP was \$11,252.30 trillion, this would imply a 2003 “lawyer tax” on the U.S. economy of \$1.125 trillion. On a per-lawyer basis, this comes to \$986,842 of forgone GDP.^{15,16}

It is widely believed that the U.S. tort system needs to be reformed in order to ensure that the U.S. remains globally competitive. Of course, this belief raises an obvious policy question: what kinds of reforms are likely to be most effective without significantly compromising beneficial aspects of the tort system?¹⁷ One reform proposal that has been debated for quite

some time involves requiring that the loser reimburse the winner's legal fees.¹⁸ The rationale for "Loser Pays" is that it would likely have the effect of reducing the number of cases brought to court (along with the associated legal expenditures). Other legal systems (such as exist in the U.K. and throughout most of Europe) typically require losers to compensate winners for a portion of their legal costs, and the evidence appears to suggest that such rules do in fact reduce the frequency of litigation and related expenses.

The economics of "Loser Pays" compared with "Loser Doesn't Pay" would appear to be fairly straightforward. Under the "Loser Doesn't Pay" system as it is actually practiced in the U.S., the payoff from litigation resembles a call option. From the plaintiff's perspective, downside risk is limited to the option premium, which consists of the legal costs (if any) that are directly borne by the plaintiff. Although the plaintiff will typically share upside risk (in the form of contingency fees), his or her payoff is not bounded from above. Since the plaintiff does not fully internalize the cost of litigation, this creates an apparent moral hazard. By linearizing the payoffs from litigation so that the plaintiff bears significant downside as well as upside risk, one would expect "Loser Pays" to significantly reduce the frequency of litigation; specifically, it ought to reduce the number of so-called "frivolous" lawsuits.

SUMMARY AND CONCLUSIONS

This article demonstrates how insurance economics theory can be employed to analyze the economic consequences of tort insurance and also to address the incentive effects of tort reform proposals such as "Loser Pays." Two apparent economic consequences of tort insurance are moral hazard and adverse selection. Since moral hazard introduces a premium loading into the price of tort insurance, insurance economics suggests that consumers would prefer partial tort insurance (e.g., in the form of alternative liability rules such as comparative negligence). Consequently, since strict liability precludes the possibility of partial insurance, it would appear that the imposition of such a rule may diminish rather than enhance consumer welfare.

We also showed that strict liability creates adverse selection in product markets. Since product prices reflect liability costs as well as the costs of manufacturing and distribution, firms have no choice but to pass liability-related costs on to consumers in the form of a "pooled premium." Consequently, strict liability redistributes wealth and income from poor people to rich people, and from safe people to accident prone people. Product branding and differentiation strategies may enhance consumer welfare by

encouraging consumers with different socioeconomic and risk profiles to sort themselves into more homogenous risk pools.

The paper concludes with a discussion of tort reform by summarizing empirical evidence provided by Magee, Brock, and Young (1990) concerning the optimal number of lawyers in an economy, and briefly analyzing the economics of the “Loser Pays” proposal in an option pricing framework. Although it has yet to be enacted into law, the “Loser Pays” proposal has been around since the early 1990s and was recently reintroduced as a legislative proposal in the U.S. Congress. By linearizing the payoffs from litigation so that the plaintiff bears downside as well as upside risk, such a rule would likely reduce the frequency and expense of litigation, a result that is corroborated by Baye, Kovenock, and de Vries (2004) in an auction-theoretic framework.

NOTES

¹See *MacPherson, Respondent, v. Buick Motor Company*, Appellant, 217 N.Y. 382 (1916).

²See *Escola v. Coca Cola Bottling Co.*, 24 Cal.2d 453 (1944).

³The initial defenses against strict liability included the assumption of risk and product misuse defenses. These defenses are important because they provide protections against moral hazard. See Huber (1990) for an interesting discussion concerning how these defenses have been significantly weakened in recent years in the U.S. tort liability system.

⁴Technically, strict liability is typically applied for those products that are “unreasonably” dangerous due to design defects or manufacturing flaws. Negligence is still the dominant principle for adjudicating claims related to problems such as failure to warn, inadequate product labeling, etc.

⁵For example, suppose I am willing to contractually forgo my right to sue an airline company in the event of an accident in exchange for a lower ticket price. Even if it were possible to arrange such a contract *ex ante*, it would be completely unenforceable *ex post*.

⁶The lack of a separate private market for tort compensation implies that a consumer cannot separate her consumption decision from her insurance decision; i.e., the two decisions must be jointly considered.

⁷See Priest (1987).

⁸The notion that that an arbitrarily risk-averse consumer will prefer partial coverage when insurance is actuarially unfair follows as a corollary of the Bernoulli principle, which is arguably one of the most important theorems in insurance economics theory (see Mossin, 1968, and Smith, 1968; see also the second chapter of Doherty, 2000).

⁹Calfee, Winston, and Viscusi (1993) note that the presence of pain and suffering and its severity are difficult for the insurer to monitor, thus creating problems of moral hazard. Therefore, it is not surprising that one does not observe actively traded markets for pain and suffering insurance in the real world.

¹⁰Mayers and Smith (1981) make similar conjectures concerning the nature of insurance regulation. The extent to which this assumption is valid is obviously an empirical issue.

¹¹Since per capita income in the U.S. in the year 2003 was approximately \$37,500, the capitalized value of a human life (assuming a 5% long-term interest rate) results in an estimate of \$750,000. Depending upon the level of compensation for pain and suffering and loss of consortium that we want to attach to this base number, a reasonable estimate of the average U.S.

human life value in 2003 is \$1.5 million to \$1.875 million. Since Viscusi's data are reported in 1984 dollars, we can apply the GDP deflator to obtain an average 1984 U.S. human life value of \$1,000,000 to \$1.2 million. (Note: per capita income and GDP deflator data were obtained from the Bureau of Economic Analysis website, located at www.bea.gov).

¹² For example, consider GM's offering of the Buick, Cadillac, Chevrolet, GMC, Hummer, Oldsmobile, Pontiac, Saab, and Saturn brands, Volkswagen's offering of Audi and Volkswagen brands, Toyota's offering of Lexus and Toyota, etc.

¹³ Putting this in perspective, this implies that Americans collectively spend more than twice as much on tort costs than they spend on new automobiles.

¹⁴ Admittedly, there may be an endogeneity problem here. Perhaps there are too many lawyers in the U.S. economy because of excess returns to employing human capital in the legal profession compared with other professional occupations.

¹⁵ Although Magee, Brock, and Young's empirical results suggest that the U.S. has too many lawyers, other countries may have too few lawyers, and would grow faster with more; e.g., France ($L_{France} = .7\%$), Hong Kong ($L_{Hong Kong} = .7\%$) and the U.K. ($L_{UK} = 1.2\%$). Japan ($L_{Japan} = 2.0\%$) and Germany ($L_{Germany} = 2.7\%$) are the closest to having the optimal number of lawyers among major world economic powers. At the other extreme, the United States, Spain ($L_{Spain} = 3.3\%$), India ($L_{India} = 3.4\%$), and Chile ($L_{Chile} = 4.7\%$) have too many lawyers, and would therefore experience faster economic growth if they had fewer lawyers.

¹⁶ Grace (2004) has estimated Magee-like regression equations that relate economic growth to lawyer density on a state-by-state basis. He finds that there are two types of relationships among the states. The first type shows relatively no sensitivity between GSP (gross state product) growth and lawyer density. This result obtains for states such as Massachusetts, New York, Illinois, California, Florida, and Georgia. On the other hand, an inverse relationship between GSP growth and lawyer density exists for states such as New Hampshire, Vermont, North Dakota, Hawaii, Montana, and Rhode Island.

¹⁷ Probably we should not follow the advice offered by Dick the Butcher in *Henry VI Part 2*, Act iv, Scene ii: "The first thing we do, let's kill all the lawyers." (I will leave it to the reader to read Shakespeare in order to obtain an appropriate context to this often quoted and humorous line from *Henry VI*.)

¹⁸ As early as 1991, the President's Council on Competitiveness (chaired at that time by Vice President Dan Quayle) proposed such a reform. In May 2004, Congressman Chocola of Indiana and Senator Graham of South Carolina introduced tort reform legislation that (if passed) would implement the "Loser Pays" concept.

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