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The Rise of the Regulatory State

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1. *Introduction*

Before 1900, significant commercial disputes in the United States were generally resolved through private litigation. Courts ruled on corporate liability in industrial accidents, on anti-competitive practices such as railroad rebates, on safety of foods and medicines, and even on the constitutionality of income tax.[2] In the three decades between 1887, when Congress passed the Interstate Commerce Act, and 1917, when "participation in the war put an end to the progressive movement" (Richard Hofstadter 1955), this situation changed radically. Over thirty years, reformers eroded the nineteenth-century belief that private litigation was the sole appropriate response to social wrongs. During the Progressive Era, regulatory agencies at both the state and the federal level took over the social control of competition, anti-trust policy, railroad pricing, food and drug safety, and many other areas. At the same time, U.S. politics experienced other important changes, such as reform of the civil service, use of voter referendums to decide local issues, direct election of senators, recall of judges, and the growth of government more generally.

In this paper, we attempt to understand why these changes occurred in the United States between 1887 and 1917. To this end, we develop a theory of law enforcement in which private litigation, government regulation, a combination of the two, and doing nothing are considered as alternative institutional arrangements to secure property rights. In our theory, whatever law enforcement strategy the society chooses, private individuals will seek to subvert its workings to benefit themselves. The efficiency of alternative institutional arrangements depends in part on their vulnerability to such subversion. The theory leads to predictions as to what institutions are appropriate under what circumstances. We use this theory to explain at least some of the changes in law enforcement strategies in the Progressive Era but also to examine appropriate law enforcement institutions for transition economies and emerging markets.

Traditional economic theories of regulation do not explain the progressive movement. The standard public interest theory holds that regulation deals with market failures and externalities (Alfred Pigou 1938; Joseph Stiglitz 1989), but does not explain why neither contract nor tort law could

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[2] This is not to say that there was no regulation at all. William Novak (1996) gives examples of extensive regulation in the nineteenth-century United States, but virtually all the regulation he discusses is local, not dealing with commercial disputes, and not relying on regulatory agencies.

successfully address these problems in the first place (Ronald Coase 1960). Richard Posner (1998) and Steven Shavell (1984a) discuss this choice between litigation over damages and regulation from the efficiency perspective. Posner (1998) emphasizes the fixed cost of lawsuits as a potential argument for regulation, whereas Shavell (1984a) points to the limits on the violator's ability to pay as a drawback of litigation. These theories predict that as cases became larger and the defendants' pockets deeper during the Gilded Age, efficiency called for more litigation and less regulation. The reality, of course, was the opposite.

The most successful recent attempt to shed light on progressivism emerged from the "capture" or "special interest" theories of regulation. George Stigler (1971), Posner (1974), Sam Peltzman (1976), and Fred McChesney (1987) rejuvenated the theory of regulation by questioning the motives and the capabilities of regulators. Applied to the Progressive Era, these theories hold that government regulation was sought by firms in order to restrain competition, usually coming from technologically superior rivals. We compare the two approaches after presenting our ideas.

To discuss progressive reforms, we present a model of design of a law enforcement regime, which can include liability for accidents, regulation of precautions, a combination of the two, or doing nothing. In our model, the crucial difference between liability and regulation as alternative mechanisms of controlling market behavior is their vulnerability to subversion by the potential violator. By subversion we mean a number of both legal and illegal strategies. The legal ones include acquiring favorable legislation and regulation (even after an accident), lobbying for an appointment of friendly law enforcers (including both judges and regulators), hiring top lawyers, or using delay tactics in case of a suit. Illegal subversion strategies include intimidating and bribing judges, regulators, or juries. By expending sufficient resources on subversion of justice, the potential violator can avoid regulatory fines and liability payments.

Because pure liability regimes entail large payments with a small probability, such regimes are more vulnerable to ex post subversion than the regulation of inputs, especially in environments lacking law and order in the first place. In such circumstances, the regulation of inputs, or a combination of regulation and liability, is more efficient than a pure liability regime. This reason for the growth of regulation complements others relevant to progressive reform, such as the stronger incentives and greater specialization of regulators compared to judges (James Landis 1938; Glaeser, Simon Johnson, and Shleifer 2001).

The theoretical analysis points to a fundamental change that made it efficient for American society to increasingly rely on regulation. Commercialization and industrialization of the economy in the second half of the nineteenth century created firms with vast resources. As the scale of enterprise increased, the damage from industrial accidents rose proportionately, as did the incentives to avoid paying damages. The cost of influencing justice, however, did not rise as fast. As a consequence, individuals and small companies were unlikely to prevail against "robber barons" in accident, restraint of trade, or discriminatory tactic disputes. From this perspective, the regulation of markets was a response to the dissatisfaction with litigation as a mechanism of social control of business. Other political changes of this period, such as the civil service reform, increasing importance of direct elections, and judicial recalls, can also be understood from the perspective of controlling subversion.

Woodrow Wilson repeatedly complained about the failure of courts to stand up to large corporations because, he said, "the laws of this country do not prevent the strong from crushing the weak" (1913, p.

15). He articulated his vision of government regulation in his *New Freedom* program.

> It was no business of the law in the time of Jefferson to come into my house and to see how I kept house. But when my house, when my so-called private property, became a great mine, and men went along dark corridors amidst every kind of danger in order to dig out of the bowels of the earth things necessary for the industries of a whole nation, and when it came about that no individual owned these mines, that they were owned by great stock companies, then all the old analogies absolutely collapsed and it became the right of the government to go down into these mines to see whether human beings were properly treated in them or not; to see whether accidents were properly safeguarded against; to see whether modern economical methods of using these inestimable riches of the earth were followed or were not followed. If somebody puts a derrick improperly secured on top of a building or overtopping the street, then the government of the city has the right to see that that derrick is so secured that you and I can walk under it and not be afraid that heavens are going to fall on us. Likewise, in these great beehives where in every corridor swarm men of flesh and blood, it is the privilege of the government, whether of the State or of the United States, as the case may be, to see that human life is protected, that human lungs have something to breathe. (1913, pp. 23–24)

Writing during the New Deal, Landis (1938) likewise saw regulation as a political response to the failure of private litigation to keep up with the community ideas of justice. He thought that the advocacy of "leaving the problems of railroad charges and management to work themselves out in the courts as questions arise from time to time . . . indicates a singular unawareness of the fact that the chief drive for the resort to the administrative process in the field of railroad regulation arose from a recognition that the remedies that the courts could provide were insufficient to make effective the policies that were being demanded." In effect, our model provides an efficiency rationale for this rise of regulation.

In addition to interpreting a crucial period of U.S. economic theory, the model sheds light on the general problem of securing private property. Economists since Ronald Coase (1960) have been interested in the question of whether regulation or litigation is a better way to deal with tort problems. Coase argued generally that "transaction costs" should determine the answer, and the successor literature has identified a range of such costs (e.g. Shavell 1984a,b). But the literature has not focused on a central problem raised by Coase, namely the efficiency of alternative strategies of law enforcement. By focusing on subversion, we present a comparative analysis of such strategies. This approach helps us understand why Gary Becker's (1968) "boil them in oil" enforcement strategies, which entail very high penalties with a very small probability and hence minimize investigation costs, are rarely workable: they will be subverted ex post.

More generally, our framework provides one way of understanding which institutions are appropriate to secure property rights in different circumstances—a question that gained new pertinence as transition economies struggled to secure law and order. Although economists have generally agreed on the importance of securing property rights, the analysis of alternative institutional arrangements is still in its infancy. Some scholars prefer private, nongovernmental enforcement of good conduct (Marc Galanter 1981; Robert Ellickson 1991; Avner Greif 1989). Private enforcement sometimes works effectively when parties experience repeated interactions or can post large bonds. In the context of developing and transition economies, however, private enforcement often degenerates into a Hobbesian state of violence and disorder (Jonathan Hay and Shleifer 1998; Hay, Shleifer, and Robert Vishny 1996). Indeed, Adam Smith (1776) saw "a tolerable administration of justice" as one of the few proper functions of government, precisely because he felt that private justice is subverted to benefit the rich and the strong.

But what is the optimal form of *public* enforcement? Economists in the Coasian tradition typically focus on courts as enforcers of good conduct, but recent research demonstrates empirically that courts in developing countries are often unreliable and inefficient (Johnson, John McMillan, and Christopher Woodruff 2002; Simeon Djankov et al. 2003). Economists of the left argue, in contrast, that government regulation is needed to prevent harmful conduct, especially in developing countries (Stiglitz 1989). The evidence shows, however, that such regulation more often than not leads to corruption and insecurity of private property (Hernando De Soto 1989; Djankov et al. 2002).

The focus on subversion of justice allows for a tentative comparison of alternative institutional arrangements. In situations of extreme vulnerability to influence, corruption, or intimidation, appropriate institutions might involve no legal or regulatory restrictions at all, as the alternative is a socially costly regime in which law enforcement is simply subverted. This prediction contrasts with the standard "public interest" view, in which the less-developed countries, exhibiting relatively greater market failures, require the heaviest government intervention (Stiglitz 1989). Indeed, this prediction might account for the evidence on the pervasive failure of regulation in emerging markets and transition economies.

In the regimes of intermediate "law and order," some regulation, or a combination of regulation and litigation, may be efficient. Although not as efficient as private litigation *absent subversion*, regulation may be less vulnerable to subversion than litigation, and might be part of an efficient law enforcement regime. Finally, in the regimes where the system of justice is least vulnerable to subversion, a regulation-free litigation regime, with either a strict liability or a negligence standard, becomes optimal. In broad terms, the paper suggests that the appropriate institutions of law enforcement depend on how much order the country has in the first place.

In the next section, we sketch the U.S. regulatory situation in the second half of the nineteenth century, and the changes it underwent during the Progressive Era. In section 3 we present a model of the choice of a law enforcement strategy. In section 4 we apply the model to the U.S. experience with progressivism. In section 5, we compare our approach with the interest group analysis of the Progressive Era. In section 6 we examine implications of our approach for appropriate institutions for social control of business in transition and developing economies.

2. *Enforcement by Courts in the Nineteenth Century*

We start with three claims about the United States during the "Gilded Age" between the Civil War and the Progressive Era. First, until the end of the nineteenth century, the United States, especially at the federal level, followed the laissez-faire ideal in which private litigation was the principal way of dealing with socially harmful acts. Second, after the Civil War, wealth and power regularly subverted the workings of this mechanism. Third, this subversion of private litigation entailed outcomes radically different from those suggested by Coase's (1960) benign vision of common law. Traditional arguments for the failure of the Coase theorem, such as transaction costs (Shavell 1987), do not explain the limits of late nineteenth-century American justice. Instead, late nineteenth-century private litigation failed because money and power influenced the path of justice.

By the late nineteenth century, the development of tort law was greatly accelerated by the industrial revolution, especially the railroads. "Trains were also wild beasts; they roared through the countryside, killing livestock, setting fires on houses and crops, smashing wagons at grade crossings, mangling passengers and freight. Boilers exploded; trains hurtled off tracks; bridges collapsed;

locomotives collided in a grinding scream of steel. Railroad law and tort law grew up, then, together. In a sense, the two were the same" (Lawrence Friedman 1985, p. 468). In cases of both personal and social harm, individuals sought damages primarily in common law courts. Morton Horwitz (1992) describes how the maxim *sic utere*, "use your own so as not to injure others," was invoked by many common law judges. This maxim justified court action against a variety of perceived nuisances (saloons, gunpowder storage facilities, slaughterhouses) "which could be abated without any justification of the defendant."

In the development of tort law, the nineteenth century saw the great debate between strict liability (plaintiff just needs to show cause) and negligence (plaintiff needs to show fault or negligence) standards (Horwitz 1992). In the English case of *Rylands v. Fletcher* (1868), a court held a landowner strictly liable when a reservoir he built on his own property accidentally flooded the plaintiff's coal mine. In contrast, American jurists such as Oliver Wendell Holmes (1881) sought to make negligence a more common rule. "The contribution of nineteenth century law was the creation of independent law of torts, freed from common law procedural constraints and dominated by the negligence principle" (Andrew Kaufman 1998).[3]

During this period, tort law developed significantly to accommodate the changing economy. A greater reliance on the negligence standard was one such accommodation. Still, tort law was not developing fast enough, at least for the demands of popular politics. Courts regularly struck down nascent attempts at regulation by appeals to freedom of contract. In *Lochner v. New York* (1905), the New York and U.S. supreme courts ruled that maximum hours legislation was unconstitutional for bakeries because "there is no reasonable ground for interfering with the liberty of person or the right of free contract, by determining the hours of labor, in the occupation of a baker." In the Gilded Age, private litigation remained the dominant form of dealing with torts, and courts kept down the growth of regulation.

Despite the dominance of private litigation, many observers of the Gilded Age saw it as ineffective in achieving justice. Theda Skocpol (1992) complains about the probusiness attitudes of the courts. Horwitz (1992) argues that this era is replete with pro-business jurists, and associates the negligence principle with attempts by probusiness jurists to protect firms from lawsuits. Duane Lockard and Walter Murphy (1992) claim that judges supported corporations because of "a campaign to 'educate' judges about the sacredness of private property." According to Friedman (1985), "What they [the leading concepts of tort law] added up to was also crystal-clear. Enterprise was favored over workers, slightly less so over passengers and members of the public . . . The thrust of the rules, taken as a whole, approached the position that corporate enterprise should be flatly immune from actions for personal injury" (p. 475).

Judicial ideology was itself shaped by the selection of judges, and through their influence on the political machines, industrialists participated in choosing who sat on the bench. According to Woodrow Wilson (1913, p. 242), "The disease lies in the region where these men [judges] get their nominations; and if you can recover for the people the *selecting* of judges, you will not have to trouble about their recall. Selection is of more radical consequence than election." Alexander Callow (1966, p. 135) writes that "the appointment of the right men to key posts is the third step in making the law as much a matter of politics as of justice."

[3] Gary Schwartz (1981, 1989) argues that the movement from strict liability to negligence is not detectable prior to the Civil War. Our theory focuses on the post-Civil-War period, where the change is clearer.

In addition to influencing the selection of judges and prosecutors, nineteenth-century corporations projected substantial political influence, superior lawyers, and ready access to large legal war chests. Their lawyers produced briefs that exonerated their clients and slowed down the wheels of justice for years. They used the threat of being overruled on appeal to bring judges to their positions.

Nor were these perfectly legal forms of subversion the whole story. In the Gilded Age, corporations appear to have routinely bribed legislators, judges, and juries. Henry Lloyd (1894) describes how Standard Oil subverted the attempts of its opponents to secure damages in courts by intimidation and bribery of witnesses, payments and political pressures on judges and legislators, and theft and destruction of evidence. Ida Tarbell (1903) corroborates the outline of Lloyd's account. In "Robber Barons," Matthew Josephson (1934) relates the story of the battle for the Erie railroad between Commodore Vanderbilt and Jay Gould. The battling barons acquired a number of judges and legislators, who issued laws, rules, and injunctions preventing each party from exercising their powers over the railroad on request. The battle culminated in an open auction of policies by the New York legislature, which Gould won by paying higher bribes to more legislators.

Illegal subversion of justice is a pervasive theme of *The Muckrakers*. In "Tweed Days in St. Louis," Lincoln Steffens tells the story of a young circuit attorney, Mr. Folk, who was put on the Democratic ticket by mistake, and upon election began putting both Democratic and Republican officials behind bars for corruption. Having failed to persuade Mr. Folk to cease and desist, the local political machine decided to get rid of him. "At the meeting of corruptionists three courses were decided upon. Political leaders were to work on the Circuit Attorney by promise of future reward, or by threats. Detectives were to ferret out of the young lawyer's past anything that could be used against him. Witnesses would be sent out of town and provided with money to remain away until the adjournment of the grand jury." In Minneapolis, Steffens describes the coercion of the jury in the trial of the corrupt Mayor Ames. He points to the foreman of the jury, "to whom $28,000 was offered to quit, and for whose slaughter a slugger was hired to come from Chicago" (Steffens 1906).

Albert Cardozo—the father of Benjamin Cardozo—exemplifies a judge in league with a political machine. Appointed by William Marcy Tweed to the New York State Supreme Court, Albert Cardozo served Tweed ably. "He became a kind of escape hatch for criminals; through his good offices he pardoned or dismissed several hundred known criminals who were or might be useful to the [Tweed] Ring" (Callow 1966). At his own impeachment hearings, Cardozo was accused of crimes ranging from standard nepotism, to releasing convicted clients, to helping Fisk and Gould reduce the losses from their Gold Conspiracy through the legal system.

It is often argued that the distortion of justice through legal and illegal forms of influence decided many cases and had a broad influence on the nineteenth-century economy. Courts often failed to address the grievances of the parties damaged in the new economy—such as workers suffering from accidents, producers suffering from abusive tactics by the railroads, or consumers poisoned by bad food—and ruled in favor of large corporations. Tort claims against railroads, following large-scale accidents that often killed third parties, proved to be slow and often unsuccessful. In *Ryan v. New York Central Railroad* (1866), the New York court of appeals argued that even if a railroad caused a fire, its liability extended only to the immediately adjacent house and not to other homes destroyed by the fire. The court held that "to sustain such a claim . . . would subject [the railroad] to a liability against which no prudence could guard, and to meet which no private fortune could be adequate" (Friedman 1985, p. 469). More generally, the courts' view of such accidents was "nobody to blame" (Friedman 1985, p. 470).

Price Fishback and Shawn Kantor (2000) describe the extreme inequality between firms and employees in industrial accident claims. The legal strength of corporations meant that many injured families settled for relatively small amounts of money. Summarizing a number of studies, Fishback and Kantor estimate that families of workers killed in industrial accidents received an average of eight months' pay, and nothing in about 40 percent of the cases (p. 34). Under political (and perhaps more direct) pressure from manufacturers, courts adopted the position that the estate of an injured worker must prove negligence by the company, and that evidence of negligence by the worker himself, or by one of his coworkers, absolved the company of liability. According to Wilson, "it was practically impossible for workingmen in New Jersey to get justice from courts" (1913, p. 248).

Although both the historical accounts and the contemporary political rhetoric may be biased, the image of social control of business during the Gilded Age is consistent across a spectrum of sources. The system of private litigation, which emerged in agrarian America in the eighteenth and early nineteenth centuries, was not suited for the conditions of the late nineteenth century. One reason for this failure is that large corporations possessed economic resources far in excess of those at the disposal of their opponents—whether individuals or small firms—and used these resources to subvert justice. The problem of "inequality of weapons" became too extreme. The mechanisms of subversion ranged from superior legal talent to political pressure to outright bribery. For our purposes, the exact mechanism does not matter. What matters is that courts did not make the perpetrators pay for the social harm of their actions, at least to the satisfaction of the public. As a consequence, the system broke down.

The Regulatory Response. In response to the public dissatisfaction with the status quo, political actors sought a range of remedies against social harm. These remedies were not just to make courts less friendly to corporations, but rather to also change *the form* of social control of business. Starting with Charles Francis Adams and the Massachusetts Railroad Commission, regulatory agencies became a complement to judicial action. The reforms started with states and municipalities, but eventually moved to the federal level, in part because the increase in the scale of firms made state regulation too difficult. In 1887, the Interstate Commerce Act created the Interstate Commerce Commission, which—combined with subsequent legislation—had the power to stop railroad rebates and ultimately, under the Hepburn Act of 1906, to set rates. In 1890, Congress passed the Sherman Act, restricting the formation of trusts.

The real growth of regulatory activity occurred after the turn of the century, during the presidencies of Roosevelt and Wilson. In 1906, under muckraking pressures, Congress passed the Pure Food and Drug law to control the distribution of medicines, as well as a federal meat-inspection law. Under Wilson, the regulation of both banking under the Federal Reserve Act of 1913 and competition under the Clayton Act in 1914 intensified. Fishback and Kantor (2000) see the adoption of workers' compensation laws by several U.S. states around the turn of the century as a response to the failure of courts to address the problems of workers injured or killed in industrial accidents. The new laws replaced a negligence standard in courts with a combination of regulation and strict liability.

Although the growth of regulation slowed down, and arguably retreated, under the

Republican presidencies of the 1920s, it revived and accelerated under Franklin Roosevelt in the 1930s. Among the most notable measures of this period were the Securities Acts of 1933 and 1934, written in part by James Landis, which brought securities markets under federal regulation. When Landis wrote in 1938, he could confidently conclude that "the administrative" has replaced "the judiciary" as the principal form of social control of business.

There are three broad efficiency reasons why regulation might supplement or replace private litigation. First, as many champions of progressive reforms believed, regulators may have stronger incentives than do judges to pursue costly investigations necessary to establish—either to themselves or to a court—that a violation of a rule has occurred. Such stronger incentives might come from career concerns if regulators are rewarded for finding violations, or from the better specialization of regulators (Landis 1938; Glaeser, Johnson, and Shleifer 2001). A specialized regulator, for example, is in a better position to establish a manufacturer's negligence than a generalist judge. In the present paper, we abstract away from this issue.

Second, regulation may be more efficient than pure litigation because the regulator can either simplify private litigation or solve the free-rider problem among the private plaintiffs by representing their mutual interest. For example, a regulator can issue rules that lower the cost of private action by making it easier to prove damages, or even bring suit himself. (In the latter case, the effects of regulation are similar to those of class action lawsuits.) Raphael La Porta et al. (2002) examine securities regulation around the world from this perspective, and find that regulatory sanctions and rules organizing private litigation are beneficial for securities market development. This is not, however, what we focus on here.

Third, a crucial difference between litigation and regulation is that the former deals with damages after the harm is done, whereas the latter deals with ex-ante precautions. Because of this difference, regulation can be designed to make the identification of violations cheaper and more certain, especially when third parties can be involved—it is easier to ascertain whether a piece of safety equipment has been installed than whether the producer is negligent. Glaeser and Shleifer (2001) argue that this logic of cheap verification of violations explains the prevalence of quantity regulations. Here, we take this point further, and argue that the higher probability of detection of violations in the case of regulation assures compliance at lower levels of fines. As a consequence, regulation is less vulnerable to subversion than litigation. For this argument to hold, it does not matter that the regulator must ultimately litigate the matter in court: the point that justice involving lower fines is less likely to be subverted holds regardless of whether or not a court is ultimately involved. Moreover, this argument does not preclude the possibility that regulation supplements rather than replaces private litigation, as we show in the next section.

3. *The Model*

We present a model in the spirit of Posner (1972), in which the ultimate goal of social control of torts is to elicit the optimal level of precaution. Becker's (1968) and Posner's work initiated a large literature, recently surveyed by Mitchell Polinsky and Shavell (2000). An important contribution to this literature that addresses the problem of corruption, but does not focus on alternative law enforcement strategies, is Polinsky and Shavell (2001).

A firm can take a level of precaution, equal to Q_1 or Q_2, in order to avoid an accident. The high level of precaution, Q_2, requires a cost of $S \times C$, while the low level of precaution, Q_1, is free. The parameter C represents the cost of precaution per unit of production—the level of S represents the scale of the firm. There are two types of firms that might be responsible for the accident: α's and β's. For α types the probability of an accident is unaffected by precaution and equals P_α. This implies, importantly, that it is not efficient for type α firms to invest in a high level of precaution. Let π_α be a proportion of firms that are of type α. For type β firms the probability of an accident equals P_1 or P_2, with $P_1 > P_2$, depending on whether the level of precaution is Q_1 or Q_2, and we assume that $P_\alpha < P_1$.[4] The accident imposes a social cost of $S \times D$, where D refers to the social cost per unit of economic activity and S refers again to the scale of the firm. The assumption that damages scale up with the size of the firm corresponds most closely to massive calamities, such as train wrecks or factory fires. However, legal precedents raise the stakes for large firms even in accidents affecting individual workers.

For our purposes, it is not important whether D is concentrated (as in the case of a workplace accident) or widely shared (as in the case of pollution). When the damage is concentrated, simple ex ante contracts can sometimes deal with possible damages, even without a liability regime. For example, an employee working in a dangerous occupation would receive a higher wage, which compensates him for the risk of an accident. Even in such situations, however, it is generally efficient for the firm to provide the risk-averse employee with some accident insurance (Shavell 1987). As a consequence, the firm has an incentive to avoid paying after an accident occurs. To the extent that the dispute needs to be settled in court, as such issues often are (Fishback and Kantor 2000), our analysis remains pertinent. We make:

Assumption 1: $(P_1 - P_2)D > C$,

so that for the β types, unlike for the α types, the high level of precaution is socially valuable.

Finally, we assume that the regulator learns that the firm chose a low level of precaution with exogenous probability p.[5] To allow regulation to be a potentially efficient scheme in the presence of subversion, we make:

Assumption 2: $p > P_1$.

The idea behind this assumption is that some regulations can be designed so that detection of the failure to invest in precaution is relatively inexpensive and certain. This could involve mandating well-specified "bright line" rules, such as the installation of safety equipment in factories or on trains, use of fireproof materials and fire exits in buildings, the disclosure of potential conflicts of interest, or the use of warning labels. In addition, some regulations are designed to encourage third-party enforcement. For example, employees or customers themselves can occasionally cheaply identify violations and complain, as in the case of blue laws prohibiting liquor sales on Sundays (Glaeser and Shleifer 2001).

We initially consider a menu of three possible law enforcement schemes: (1) strict liability, (2) negligence, and (3) regulation of inputs.

1. Strict liability requires that, in case of an accident, the firm must pay a fine any time that damages occur.

2. Negligence means that a fine is charged whenever damages occur and when the firm undertakes the low level of precaution.

3. Regulation requires that the high level of precaution be taken and imposes a fine, F, whenever the firm is caught failing to do so. We assume that the regulator cannot distinguish between the two types of firms.

[4] One may ask why the α's don't drive the β's out of business. Presumably, there are some other parts of the cost structure where the former types have higher costs, so both types coexist in the market.

[5] We have also solved the case where p is endogenous. Since it yields qualitatively similar results, we focus here on the simpler scenario with exogenous p.

We assume that the firm produces a fixed output, and its objective is to minimize costs, given by the sum of the costs of precaution and the expected fine. We first compare the three pure regimes, and then consider the possibility of combining regulation with litigation.

3.1 *The Three Pure Law Enforcement Regimes*

With no problems of enforcement, strict liability can achieve the first best as long as the fine (denoted by F) is greater than $\frac{SC}{P_1 - P_2}$. Negligence can also achieve the first best whenever $\frac{SC}{P_1} < F < \frac{SC}{P_\alpha}$. Note that $\frac{SC}{P_1} < \frac{SC}{P_1 - P_2}$. Because strict liability uses less information, it requires a larger fine. At the same time, strict liability provides no incentives for the type α firms to invest in the (useless for them) high level of precaution, and therefore eliminates this source of inefficiency. Finally, regulation assures that both types of firms invest in precaution as long as $F > SC/p$. In the absence of subversion, pure regulation is never efficient in this model because it inefficiently forces α types to invest.

We turn next to optimal law enforcement in the presence of subversion. The firm still minimizes its costs, but we assume that it subverts justice when doing so is cheaper than paying fines. To model subversion, we assume that the firm can escape either the regulatory fine or the liability payment if it invests X in protection from the law, where X can include acquiring a legal team, a lobbying team, or political protection. X is interpreted as the maximum fine that can be enforced by either regulators or courts without subversion. We assume that X is paid after the firm is caught but before a fine is levied.[6] In our model, we do not distinguish between a judge and a regulator: it costs the same to subvert either. A reduction in X can be interpreted as an improvement in the technology to subvert justice available to the firm, so we think of regimes with a higher X—a higher maximum fine—as possessing higher levels of "law and order."

In this formulation, if X is lower than the fine, the firm would rather subvert justice than submit to the law. Recall that we have assumed (Assumption 2) that $\frac{C}{p} < \frac{C}{P_1} < \frac{C}{P_1 - P_2}$, where $\frac{C}{p}$, $\frac{C}{P_1}$ and $\frac{C}{P_1 - P_2}$ are minimal fines that overcome the subversion of justice in regulation, negligence, and strict liability schemes respectively. We can now formulate

Proposition 1. If $P_\alpha < P_1$, then:

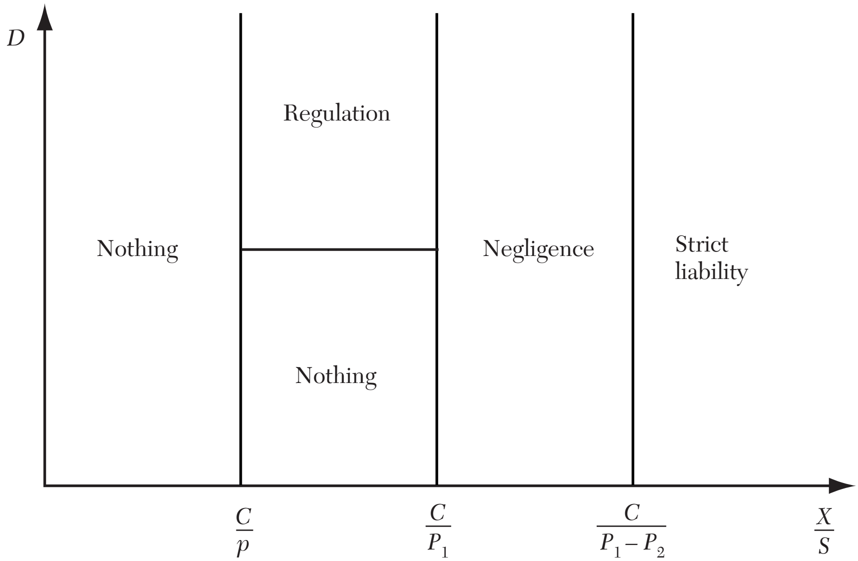
(a) for $\frac{X}{S} < \frac{C}{p}$ the only feasible option is laissez faire;

(b) for $\frac{C}{p} < \frac{X}{S} < \frac{C}{P_1}$ regulation dominates laissez faire if $D > \frac{C}{(1-\pi_\alpha)(P_1 - P_2)}$, and vice versa if this condition does not hold;

(c) for $\frac{C}{P_1} < \frac{X}{S} < \frac{C}{P_1 - P_2}$ negligence achieves first-best; and

(d) for $\frac{X}{S} > \frac{C}{P_1 - P_2}$ both negligence and strict liability achieve first-best.

[6] In general, some subversion costs are incurred ex ante (befriending regulators), some after the accident occurs (hiring a legal team), and some after liability is determined (bribes to reduce punishment). Our formulation avoids the credibility issues of many crime and punishment models, where the violator might not want to follow through with punishing the law enforcer (and vice versa). Our formulation also avoids the possibility of the firm bargaining with the law enforcer over the verdict and the bribe.



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If $P_\alpha > P_1$, then:

(a) for $\frac{X}{S} < \frac{C}{p}$ the only feasible option is laissez faire;

(b) for $\frac{C}{p} < \frac{X}{S} < \frac{C}{P_1 - P_2}$ regulation dominates laissez faire if $D > \frac{C}{(1-\pi_\alpha)(P_1 - P_2)}$ (negligence achieves the same social outcomes but requires larger fines), and vice versa if this condition does not hold;

(c) for $\frac{X}{S} > \frac{C}{P_1 - P_2}$ strict liability achieves the first best.

For $P_\alpha < P_1$, figure 1 illustrates the proposition graphically.

In sum, among the three pure law enforcement schemes, only negligence or strict liability can in principle achieve the first best. Strict liability, to be feasible, requires strong barriers to the subversion of justice (a high X), but has the advantage that it does not incentivize firms that do not benefit from precaution to invest in it. The negligence standard is less vulnerable to subversion, but can distort the incentives of the firms that do not benefit from it. Pure regulation works best at high levels of subversion, but is never fully efficient. Doing nothing is best when subversion is the highest.

3.2 *Combining Regulation and Litigation*

We have assumed so far that a firm never faces a double risk of both paying a fine if it does not invest in precaution and is caught by the regulator *and* being sued if an accident occurs. But of course, one can easily imagine a firm that does not invest in precaution facing double jeopardy: from a regulator who discovers the violation, and from the victim should an accident occur. We show in this subsection that such enforcement strategies often work better.

Assume for simplicity that the probabilities of being caught by a regulator and of an accident are independent. Assume also that the regulator simply collects a fine, denoted by R, when a firm is discovered with a low level of precaution. We denote the payment in litigation by F, and again consider strict liability and negligence, each combined with regulation, separately.

To fix ideas, consider the case of no subversion first. In this case, we can obtain first best from a combination of regulation and strict liability provided that:

$$pR + (P_1 - P_2)F > SC > pR. \quad (1)$$

Indeed, as we showed above, with no subversion we can get the first best even with $R = 0$, i.e., no regulation. Similarly, we can obtain first best from a combination of regulation and negligence provided that:

$$pR + P_1 F > SC > pR + P_\alpha F. \quad (2)$$

Again, with no subversion, we can get first best with no regulation, as we saw before.

Consider now what happens when courts or regulators can be subverted, so we must have both R and F less than or equal to X for law enforcement to work. We then have:

Proposition 2. If $P_\alpha < P_1$, then:

(a) A combination of negligence and regulation can achieve first best provided that

$$X(p + P_1) > SC.$$

(b) A combination of strict liability and regulation can achieve the first best provided that

$$X(p + (P_1 - P_2)) > SC.$$

Proposition 2 establishes that a combination of regulation and litigation can generally do better than regulation alone (it achieves first best). Also, the combination expands the set of circumstances where some law enforcement can work to all $X > SC/(p + P_1)$. This result is not surprising: since subversion puts an upper bound on feasible fines, having two instruments applied in moderation must do better than one. Importantly, Proposition 2 establishes that the introduction of regulation does not lead to abandonment of litigation: the two strategies of law enforcement are rather complementary. Proposition 2 also confirms the finding of Proposition 1 that, for high-enough levels of subversion, law enforcement cannot achieve the first best. Indeed, for high-enough levels of subversion, the optimal policy remains to do nothing.

So what is the bottom line of this analysis? Perhaps the principal message of our model is the tight relationship between the "law and order" already prevailing in a society, and the optimality of alternative law enforcement schemes. As figure 1 illustrates (and the analysis of Proposition 2 confirms), in the environment of weak law and order, doing nothing is superior to imposing legal and regulatory rules that are only going to be subverted at some social cost. In either case, harmful conduct is not punished, but with laissez-faire, corruption and other forms of subversion are avoided. In the regime of intermediate law and order, regulation—alone or more likely in combination with litigation—is efficient precisely because the fines it entails to achieve compliance are modest, and therefore will not be resisted. The efficiency of regulation comes precisely from the fact that the penalties associated with a pure liability regime are too high, and therefore in such a regime justice is subverted. Finally, after high levels of law and order are already achieved, society can attempt to resolve disputes purely through private litigation, using either a negligence or a strict liability standard. These schemes call for the imposition of high fines ex post, and are therefore only feasible when the liable parties can be compelled to pay these fines without subverting justice.

A more subtle message of the model is that economic inequality—which here is driven by the growth in the scale of enterprise—can undermine the functioning of institutions of law enforcement through subversion. Economic inequality exacerbates the problem of "inequality of weapons," which has been central to the discussions of legal design for several centuries (Glaeser, Jose Scheinkman, and Shleifer 2003). Inequality can make institutions that would function well in a more equal environment—such as private litigation in the nineteenth-century United States—fail to deal with new problems. Growth in inequality—of the sort seen in the United States after the Civil War or in Russia during the 1990s—would be accompanied by deterioration of existing institutions, and the political demand for the creation of new ones that restore law and order.

In Glaeser and Shleifer (2002), we also consider the problem of subversion of justice, but focus on the historical development of common and civil law. We argue that the civil law institutions of state-employed professional judges following clear legal rules under constant superior review developed in France as a response to high levels of disorder in the society. These institutions were a mechanism for protecting law enforcers from subversion by powerful litigants. In contrast, the common law institutions of adjudication by lay juries following broad principles of community justice with only perfunctory appeal were more appropriate for the relatively more orderly England, where subversion of justice by the powerful magnates was a less pervasive problem.

There are two important conceptual differences between this paper and Glaeser and Shleifer (2002). First, this paper highlights the use of the regulation of inputs—the expanding scope of government—as a tool for fighting the subversion of justice. Glaeser and Shleifer (2002), in contrast, focus on the use of royal judges—the expanding centralization of government—as a tool against the subversion of justice. Second, in Glaeser and Shleifer (2002), the cost of fighting private subversion of institutions is that the state extracts more surplus for itself. Here, in contrast, the cost of fighting subversion is somewhat inefficient regulation. In reality, regulation itself can become a tool of the state, so its true cost is regulatory abuse of citizenry by the government, as well as by private individuals influencing the government. This is the essence of the regulatory capture theories, to which we return in section 5.

4. *Implications of the Model for the Progressive Era*

We can use the model of the previous section to understand the rise of regulation in the United States at the end of the nineteenth and the beginning of the twentieth centuries. Our interpretation is that "S"—the scale of economic activity—rose dramatically over the nineteenth century. During the industrial revolution, firms grew sharply in size. The social costs of harm grew roughly proportionately, but the costs of subverting justice did not. As a result, a legal system that may have operated well during the agrarian period failed when faced with entities that had huge incentives to subvert it both legally and illegally. Because higher levels of S lead to subversion of both strict liability and negligence, adding regulation was the efficient response.

During the first half of the nineteenth century, the bulk of the economy was agricultural; 64 percent of workers in 1850 were in farm occupations. The manufacturing that did exist was concentrated in small firms. The McLane report, a large but incomplete survey of the economy, found only 106 manufacturing firms in 1832 with assets above \$100,000. Alfred Chandler (1977) saw production in the mid-nineteenth century as "being carried out by a large number of small units employing less than fifty workers . . . "

When a firm caused social harm in 1830, the judicial system could usually deal with it. Assessed damages would generally be small and the firm did not have a strong incentive to subvert justice. Moreover, the firm itself was small and did not have the resources to subvert the system. We take this to mean that many sectors in the United States in 1830 are best described by the right part of figure 1, where $X > \dfrac{SC}{P_1 - P_2}$ and strict liability yields the first best outcome.

This situation changed after the Civil War. The building of railroads, the growth of industrial enterprises and mines, and the creation of large financial firms introduced into the American economy disputes between parties of highly differentiated economic and political resources. America became far less agricultural; by 1900, only 37 percent of workers were in farm occupations. The manufacturing industry grew more than tenfold (measured by number of employees) over this time period. The new technologies often proved to be deadly. Thousands of passengers and third parties died in railroad accidents. By 1900, there were approximately 35,000 deaths and two million injuries annually in industrial accidents (Friedman 1985).

New technologies also raised the scale of both railroads and manufacturing firms, as national markets developed. Innovations in organizational form made larger firm size feasible. Chandler (1977) identifies 278 firms with more than $20 million in assets in 1917. "The Morgan interests at the peak of the financial systems held 341 directorships in 112 corporations . . . with aggregate resources or capitalization of $22,245,000,000" (Hofstadter 1955). This vast expansion in firm size in many sectors corresponds to an increase in the parameter S in the model.

The model corresponds most closely to situations where the industrial revolution raised both the precaution costs and the size of single accidents, e.g., train wrecks or factory fires (such as the Triangle Shirtwaist Fire, where 146 workers died). In other instances, such as industrial accidents involving individual workers, the cost of precaution and the number of accidents rise with enterprise size, but the size of each individual case remains small. If such cases are isolated, it might not pay a firm to subvert justice. In practice, however, the stakes in such cases are large for large firms, because of the power of legal precedents. When a steel mill or a railroad concedes liability in an industrial accident, it becomes vulnerable to claims in all future similar accidents. As a consequence, even in such situations, the assumption of the model that the willingness to subvert justice rises with the scale of the firm is appropriate. We must be clear, however, that we are not arguing that S rose in all sectors; and indeed the model predicts that those in which it did not should not have seen the rise of regulation.

The model treats S as exogenous, but also points to an incentive for firms to increase it. In the regimes of either strict liability or negligence, rising values of S make no difference to corporate profits when corporations actually pay the fines, as long as fines scale with S. However, when X is independent of S, when firms subvert justice, higher values of S lead to lower payments for social harm. The payment per unit of economic activity is X/S, so larger firms pay less.[7] Indeed, the advantage of scale in subverting the legal system was a competitive edge of the nineteenth-century corporation. Woodrow Wilson and the muckraking literature saw the largest firms as particularly effective in shaping legal outcomes.

The economic creations of the late nineteenth century, such as national railroad systems and trusts, may have been designed to gain political and not just economic

[7] This is not so when disputes are between two entities possessing comparable abilities to subvert justice, as in the battle for the Erie railroad. In this case, a judge or a legislator can just auction off a decision, with the result that X actually scales up with S. It has been said that commercial law in Russia in the 1990s was developing through the disputes between the so-called oligarchs, where each side had the capacity to bribe a judge, and so had to appeal to the law as well in order to win its case.

power. The entrepreneurs could use the economic and political resources that such combinations brought to buy both politics and justice. In a similar vein, and for similar reasons, financial-industrial groups were created in Russia in the 1990s with the basic goal of attaining political rather than economic influence (Mark Nagel 1999).[8]

The progressives cited the rise in the scale of enterprise as a primary reason for new government action. In 1888, Charles Eliot noted that a modestly sized Boston railroad had three times as many employees as the Commonwealth of Massachusetts. The first chapter of Wilson's manifesto *The New Freedom* states that "the employer is now generally a corporation or a huge company of some kind," and as a result "new rules must be devised. . . ." Wilson's progressive rival Theodore Roosevelt viewed Herbert Croly's (1965) *The Promise of American Life* as his intellectual sourcebook. Because of "the existing concentration of wealth and financial power in the hands of a few irresponsible men," Croly believes "efficient regulation there must be." Progressives saw the scale of industrial enterprise as the root of the republic's problems.

The model helps us understand Croly's call for regulation. As S rises, the society moves leftward across figure 1. First, negligence becomes optimal and should replace strict liability. We have already noted that, in the 1870s, negligence replaced strict liability as the standard in tort law. As S continues to rise, negligence itself fails to produce desirable results. When S is sufficiently high, and when D is also high, regulation with or without litigation provides the only reliable recourse against social harms. This is ultimately our explanation of why the progressives saw the need for regulation. Because input regulation is more consistently applied and involves smaller penalties, it provides a weaker incentive for the subversion of justice. If government action is at all responsive to efficiency, the model predicts exactly the course of the Progressive Era: increased government regulation of business following the increase in its scale.

The Progressives themselves saw the problems of the judiciary and advocated regulation. In *The New Freedom*, Wilson bitterly complains about the performance of courts:

> There have been courts in the United States which were controlled by the private interests. There have been supreme courts in our states before which plain men could not get justice. There have been corrupt judges; there have been controlled judges; there have been judges who acted as other men's servants and not as servants of the public. Ah, there are some shameful chapters in the story. The judicial process is the ultimate safeguard of the things that we must hold stable in this country. But suppose that that safeguard is corrupted; suppose that it does not guard my interests and yours, but guards merely the interests of a very small group of individuals; and whenever your interest clashes with theirs, yours will have to give way, though you represent ninety percent of the citizens, and they only ten percent. Then where is your safeguard? (1913, p. 240)

Wilson answers his own question by making the case for regulation: "We must see to it that there is no overcrowding, that there is no bad sanitation, that there is no unnecessary spread of avoidable diseases, that the purity of food is safeguarded, that there is every precaution against accident, that women are not driven to impossible tasks, nor children permitted to spend their energy before it is fit to be spent (p. 275, see also the quote in the introduction). Croly also casts

[8] In the first volume of the AER in 1887, Henry Adams wrote: "The policy of restricting public powers within the narrowest possible limits tends to render government weak and inefficient, and a weak government placed in the midst of a society controlled by the commercial spirit will quickly become a corrupt government; this in its turn reacts upon commercial society by encouraging private corporations to adopt bold measures for gaining control of government machinery. Thus the doctrine of laissez-faire overreaches itself; for the application of the rule which it lays down will surely destroy the harmony between public and private duties essential to the best results in either domain of action."

aspersions on judges and calls them "creatures of the political machine," and advocates his own more ambitious plan of government ownership. As Hofstadter (1955) writes: "the average American tended more and more to rely on government regulation, to seek in governmental actions a counterpoise to the power of private business."

4.1 *Understanding the Progressive Program*

The Progressive program was not merely a revolution in regulation. The law saw a switch from strict liability to negligence, which according to the model should follow an increase in scale. More generally, the model suggests that efficient reforms should aim to raise X or reduce S. Many progressive reforms can indeed be understood from this perspective.

One progressive innovation was the introduction of regulatory agencies to oversee specific areas of the economy and to punish socially harmful conduct. In part, the logic of such reforms was to raise the incentives of law enforcers to punish violations (since regulators are easier to politicize than judges), and thereby to increase X. In a similar vein, many progressives supported the "recall" of government officials, especially judges, who were corrupt or failed to perform as the public wanted. Because the fear of recall makes judges more resistant to subversion, we see this reform as another attempt to raise X.

Equally important to the progressives was the professionalization of bureaucracies, or civil service reform. Croly advocates a more widespread use of life tenure for judges, which would have a similar effect of reducing the political influence on them. The progressives' simultaneous support of increased democracy in the form of judicial recall and of reduced democracy in the form of civil service reform may seem puzzling. Both reforms, however, can be understood as attempts to increase X. While the recalls aimed to punish bad judges, civil service reform attempted to decrease the influence of the political machines in the administrative process. Since political machines were used by business to select and coopt judges, eliminating their influence raised the cost of subverting justice, X.

An alternative to using regulation or raising X was to reduce S directly. In his platform of the New Freedom, Woodrow Wilson opposed "the [Roosevelt] doctrine that monopoly is inevitable and that the only course open to the people of the United States is to submit to and regulate it." Instead, he advocated reducing firm size "to prevent private monopoly by law, to see to it that the methods by which monopolies have been built up are legally made impossible."

Indeed, the whole trust-busting program aimed at eliminating the power of trusts to coerce politics and justice as much as at reducing prices. Hofstadter (1955, p. 227) writes:

> The progressive case against business organization was not confined to economic considerations, nor even to the more intangible sphere of economic morals. Still more widely felt was a fear founded in political realities—the fear that the great business combinations, being the only centers of wealth and power, would be able to lord it over all other interests and thus put an end to traditional democracy.

Our model sheds light on such comments. Competitive prices may prevail in a duopoly with two very large firms, but the scale of these enterprises may enable them to subvert justice. Progressive trust-busting should be seen as a response to the subversion of justice, as well as a means of addressing standard problems of monopoly pricing.

Along similar lines, our model also helps explain the support for labor unions among many progressives. Traditionally, economists understand labor unions as a means of restricting labor supply and raising wages. Unions, however, can also become a political "countervailing power" to large firms by projecting comparable economic resources (John Kenneth Galbraith 1952). When large firms meet large unions in a political and economic marketplace, the efforts to subvert justice by one meet countervailing efforts by the other. The formation of labor unions parallels the creation of trusts and large industrial firms as a competitive reaction to subversion. Galbraith was not the first to appreciate this point. In *Veghelan v. Gunther*, Justice Holmes wrote: "Combination on the one side is potent and powerful. Combination on the other is the necessary and desirable counterpart, if the battle is to be carried out in a fair and equal way" (1881, p. 108).

A final reform proposed by many progressives is the complete control of industry by the government. If large firms subvert justice or corrupt politicians to extract rents, then government ownership may appear attractive. Because the nature of ownership changes a firm's objective function (as in Oliver Hart, Shleifer, and Vishny 1997), government-owned firms may be less likely to corrupt the system to extract rents (Glaeser 2001). Croly in particular favored this response to subversion of justice: "if the interest of a corporation is so essentially hostile to the public interest . . . the logical inference is not a system of semi-official and semi-private management, but a system of exclusively public management." This type of reform was unpopular in the United States, perhaps because the many problems of public ownership were appreciated, but European countries moved in that direction. In those countries weaker rule of law meant that less extreme measures could not be relied on to discipline large firms.

5. *Comparison with Interest Group Theory*

The traditional view of the Progressive Era, associated with the great historians such as Eric Goldman (1947) and Hofstadter (1955), saw the reformers as selflessly serving the public interest, and focused entirely on the benefits of reforms to consumers. In our analysis, we have generally followed this "public interest" approach, except we recognized the centrality of enforcement to the design of reform. This analysis is not intended as a suggestion that regulation is always, or even usually, efficient—some of our own empirical work indeed suggests the opposite. Even for the case of the Progressive Era, however, the economic analysis of regulation since the 1970s has been dominated by the "capture" or "interest group" theories, which see regulation as shaped primarily by producer or bureaucratic interests (Stigler 1971; Posner 1974; McChesney 1987). According to this view, producers either water down regulation to render it irrelevant, or else subvert it for their own benefit, such as raising prices. Bureaucrats, in turn, use regulation to enhance their budgets or bribes. Any discussion of the Progressive Era requires at least a brief overview of this research.[9]

The most dramatic evidence bearing on the capture theory deals with the lobbying efforts around the passage of Progressive Era legislation. For example, established firms often supported the passage of the Pure Food and Drug Act in 1906 as a way to raise the costs of new entrants and rivals (Michael Okun 1986; Donna Wood 1986; James Young 1989; Jack High 1991; Clayton Coppin and High 1988, 1999). Coppin and High (1988) show that Harvey Wiley, the chief chemist of the agriculture department and perhaps the most influential advocate of the 1906 act, was significantly influenced by traditional whiskey producers attempting to stop new technologies, as well as by a desire to grow his department. Gary Libecap (1992) sees the Meat Inspection Act of 1891 as an attempt by traditional slaughterhouses to

[9] The other—diametrically opposite—interpretation of the Progressive Era is that, following populism, reforms represented just a redistribution from the rich to the poor. This interpretation is inconsistent with the fact that many reforms were supported not just by the poor, but by urban elites and many firms, and championed by Republican presidential candidates Roosevelt and Taft.

stop the more efficient Chicago meatpackers through legislation. Werner Troesken (2002) studies the letters of Senator Sherman, and argues that he "intended to protect small and inefficient firms (especially oil refiners) from their larger competitors, regardless of the effect on consumer welfare." The list goes on, but the basic point remains: Progressive Era regulation was captured by industry, leaving consumer interests in the dustbin.

We do not regard this lobbying evidence as dispositive. Even in our model, firms themselves may prefer regulation to strict liability because they bear the costs of subverting justice, and regulation might lower these costs. In more general models, it is easy to have some firms benefiting, and others losing, from *socially efficient* regulation as compared to litigation, with the winners lobbying ex ante for reform. Put differently, neither the fact that Harvey Wiley was supported by the traditional whiskey producers, nor the fact that his bureau expanded following the 1906 act, is convincing evidence that the act did not serve the public interest.[10]

As we have already indicated, other evidence is consistent with the importance of consumer interest for progressive reforms. We have discussed statements of presidential candidates and others, as well as the muckraking literature. Moreover, "clean government" reforms, such as reforms of the civil service, direct election of senators, recall of judges, and so on, are difficult to reconcile with the pure industrial capture perspective.

Occupational trends are also consistent with the importance of consumer interest. By the end of the nineteenth century, a growing number of voters became involved in the commercial and industrial economy, and thus were affected by the subversion of justice. More and more people working for corporations and railroads were exposed to industrial accidents. Increasing numbers of people lived in the cities and suffered from the subversion of city administration. More and more farmers and small businessmen were expropriated by railroads with market power, or by larger competitors who made special deals with the railroads. "Politically, the rage of the victims counted for very little in 1840, not much in 1860; by 1890, it was a roaring force" (Friedman 1985, p. 476).

While this rage was the dominant factor behind the success of the progressives, at least three other forces mattered. First, in the middle of the nineteenth century, relations between the North and the South dominated politics. For years after the Civil War, venal Republican candidates could whip up public support by "waving the bloody shirt," and reminding voters of the North-South issue. The reforming Horace Greeley was soundly beaten at the polls by Ulysses S. Grant, whose corrupt administration symbolized Northern dominance. Second, changing technology in publishing facilitated the rise of popular muckraking journals. Free entry into this national industry made it possible for journals such as *McClure's Magazine* to thrive without the support of the local business community, and to flourish by attacking industry. Finally, a crucial development in U.S. politics was the ascent of Theodore Roosevelt, who ran both his first term and the election of 1904 on the platform of subversion of the judiciary and of restoration of justice through regulation.

Ultimately, however, we must look at the consequences of regulation to shed light on its reasons, and here the picture is muddy, even for the Progressive Era. Unquestionably, many outcomes were getting better during the relevant period. The use of child labor declined significantly, paralleling the introduction of child labor laws (Carolyn Moehling 1999). Between 1900 and 1915, railroad passenger fatalities per million passenger miles

[10] A modern analogy illustrates this point. It is surely the case that, in the period of post-Enron investigations, investment banks and accounting firms try to shape the changes in regulation. But we would not conclude that they sought these changes in the first place to benefit themselves.

declined from .0155 to .006, and employee fatalities from .159 to .066 (William Lerner 1975). This happened precisely in the period of railroad safety regulation. One can also look at energy prices as one indication of the effectiveness of the Sherman Act, one of whose main targets was the Standard Oil Company. Between 1900 and 1915, prices of fuel and lighting rose 12 percent, compared to 22 percent for the BLS price index. This is not merely an impact of progress: over the 1890s, the BLS index fell by 7.4 percent while fuel and lighting prices rose by 21.5 percent (Lerner 1975). Sara Wermiel (2000) describes the dramatic decline in catastrophic city fires in the United States around the turn of the century, which she attributes to technological progress and municipal regulation. Peter Temin (1980), whose analysis is significantly influenced by the capture theory, nonetheless recognizes some benefits of the 1906 Pure Food and Drug Act—such as elimination of some false claims on medicine bottles, and the reduction in alcohol content of patent medicines.

Such evidence of progress is not uncontroversial. Some studies argue that progress would have occurred anyway under the pressure of market forces, so regulation was irrelevant. Moehling (1999), for example, argues that industrial firms were reducing the use of child labor even without the constraint of the laws. Thomas Gilligan, William Marshall, and Barry Weingast (1989) is a particularly balanced study of the consequences of the Interstate Commerce Act of 1887. The authors recognize that many parties, including farmers, different kinds of railroads, and consumers, were influenced by and therefore tried to shape the Act. They show that the shipping rates on short hauls, where monopoly power was particularly pronounced, were reduced by the Act, but those on more competitive long hauls were increased. They argue that, at least to some extent, the Act helped sustain railroad cartels.

In the end, the evidence appears to point to significant social progress happening at least coincidentally with the Progressive Era reforms, as well as significant instances of regulatory capture by industry. Conceptually, we do not see our theory of institutional subversion and capture theory as hostile to each other. Capture theory easily allows a role for efficiency and consumer interest (Peltzman 1976, Gene Grossman and Elhanan Helpman 2001). And other versions of our institutional subversion theory allow, indeed emphasize, the abuse of law enforcement by the state, and the greater vulnerability of regulation than private litigation to such subversion (Johnson, Glaeser, and Shleifer 2001; Glaeser and Shleifer 2002). With respect to the Progressive Era, however, we find it difficult to deny that American capitalism of the 1920s was less corrupt and less abusive of workers and consumers than it was in 1900. In this episode, efficiency as a criterion for institutional choice goes a long way toward explaining the data.

6. *Appropriate Institutions*

As we argued in the introduction, the key goal of economic institutions is the same across times and places, namely to secure property rights and to make perpetrators of harmful acts accountable. But even though the goals are constant, which institutions are appropriate for achieving them varies. We argued in the introduction that empirical analysis reveals significant flaws in private dispute resolution, litigation, and regulation. Our model allows us to begin an analysis of appropriate institutions that recognizes their imperfections.

Figure 1 sheds light on the desirability of alternative modes of law enforcement in different countries and for different activities. We can think of X—the cost of subverting justice—as varying across countries and across activities. Some countries might have highly independent, disciplined and efficient judges and regulators, who are invulnerable to political pressure and bribes; this is the situation of a very high X. Other countries might have poor, politically vulnerable, and easily corruptible officials, who cannot stand up to the pressure from private parties they are supposed to regulate; this is a situation of low X. We can also think of X varying across activities: a country might have enough bureaucratic prowess to control violence, but not enough to administer securities or antitrust laws. Our framework allows us to consider the consequences of such variations. In this discussion, we take X to be exogenous, even though many progressive and other reforms aimed to increase X.

The first, and arguably most important, message of the model is that in situations of extremely low X, the optimal government policy is *to do nothing*. When the administrative capacity of the government is severely limited, and both its judges and regulators are vulnerable to pressure and corruption, it might be better to accept the existing market failures and externalities than to deal with them through either the administrative or the judicial process. For if a country does attempt to correct market failures, justice will be subverted, and resources will be wasted on subversion without successfully controlling market failures.

This implication of the model is of great significance. Some economists (e.g., Stiglitz 1989) see market failures as pervasive in the emerging and transition economies, and recommend heavier regulation of economic activity in such economies than in advanced welfare states. Our model, in contrast, implies that countries operating at low levels of law and order in the first place should institute fewer regulations of economic activity, because their officials cannot administer more without being subverted. In these countries, if the policy of laissez-faire is followed, significant torts and monopoly abuses would be common. But such evidence of market failure does not imply an error of the regulatory stance. Rather, the law and order resources necessary to secure private property may be so limited that a regime of heavier regulation would perform even worse. A number of examples illustrate this point.

In 1992, under pressure from Western donors, the government of the Russian Federation established an anti-monopoly commission to address the problems of industrial consolidation. It became immediately apparent that the new commission could not stand up to the political power of large enterprises, and it did not even try to regulate their activities. Instead, the commission started to compile lists of small firms, such as bakeries, taking the position that such firms had the potential of abusing their local market power. Small entrepreneurs had to register with the commission, and often to pay bribes just to get off the lists of potential monopolies. The commission did nothing about the real problems of market power, added a level of regulation of small firms, and provided lucrative opportunities for its own employees (Maxim Boycko, Shleifer, and Vishny 1995).

This phenomenon is more general. Most countries in the world, including the poorest ones, require many procedures for new firms to begin operating legally. Most of these procedures on paper have market failure justifications: officials check that the new entrepreneurs do not have criminal records, have professional qualifications and bank accounts, obey sanitary restrictions, and so on. These regulations, however, are often subverted through bribes or operations in the unofficial economy (De Soto 1989). In a cross-section, countries with more regulations of entry exhibit higher corruption and larger unofficial economies, but not superior social outcomes that regulation allegedly aims for (Djankov et al. 2002).

The model, then, helps us reconcile the apparent greater extent of market failures in emerging economies stressed by Stiglitz (1989), with the equally apparent failure of regulation. The problem is not that these countries do not have a need for dealing with social harm. Rather, the problem is that their governments cannot administer the solutions. When neither courts nor regulators can resist subversion, the optimal policy is to leave even imperfect markets alone and to count on private arrangements to support trade (Johnson, McMillan, and Woodruff 2002).

The second message of the model is that, with intermediate enforcement capacity, especially in cases of high social damage from market activities, regulation is desirable. When externalities cause large damages, fines necessary to ensure desirable conduct are very high, and therefore pure liability regimes are especially vulnerable to subversion. In such circumstances, court enforcement might fail to achieve efficiency, but regulation of inputs stands a better chance. This case is even stronger if, as Landis (1938) maintains, it is more expensive to subvert career regulators than judges. The United States in the early twentieth century may in fact have exhibited the conditions under which, for efficiency reasons, regulation was preferred to tort.

Glaeser, Johnson, and Shleifer (2001) offer another example of the same phenomenon by comparing the regulation of securities markets in Poland and the Czech Republic in the 1990s, at the time when their per capita incomes were roughly comparable to that of the United States during the Progressive Era. During this period, the Czech government adopted a laissez-faire approach to securities regulation, expecting the judicial system to fill the necessary gaps. Poland, in contrast, adopted strict regulations patterned after the U.S. Securities Acts, and created an independent regulatory commission to enforce them. The result has been the collapse of securities markets in the Czech Republic, as the existing system of law enforcement failed to deal with pervasive fraud in the market. In contrast, the Polish stock market developed rapidly, and there is some evidence that the Securities Commission actually managed to enforce the existing rules.

This analysis also sheds light on a well-known recommendation of Becker (1968) that an optimal penalty system in the world of costly law enforcement should exhibit low probabilities of detection and conviction with very high penalties or fines. Such a strategy combines desirable deterrence effects with cost-savings on enforcement. A large literature explains why we do not see such law enforcement schemes in reality (Louis Kaplow and Shavell 2000). Leading explanations of limited penalties include risk aversion or bankruptcy constraints of the violators (Polinsky and Shavell 1979) and considerations of fairness. We argue, alternatively, that the defendants are likely to spend enormous resources subverting a Beckerian scheme of high penalties, and may well succeed. Becker's solution of raising fines may have precisely the reverse effect: it only increases the incentives to subvert justice and diminishes the likelihood of good conduct.

Finally, the model implies that societies with the highest levels of law and order should rely on private litigation rather than regulation. The reason for this is that the liability system—as long as it is not subverted—can achieve first best efficiency, whereas regulation alone never can. Is this prediction realistic? Advanced economies appear to have both more litigation and more regulation, consistent with the logic of Proposition 2. At the same time, it is striking that, since the 1970s, the United States has followed the path of significant deregulation of many industries, such as gas transmission, trucking, financial services, and airlines. One interpretation of such deregulation is that many issues can now be effectively addressed through private litigation, and therefore regulation is relatively less efficient.

In concluding this section, we return to its general point. The law and order conditions in a country are in themselves a crucial determinant of its optimal strategies for social control of business. Institutions cannot be built without recognizing where the country is in the first place. The finesse with which courts resolve disputes is appropriate for a country that has high levels of law and order. In the extreme contrast, a country beginning with low levels of law and order should tread gingerly in giving officials more power to shape economic life.

7. *Conclusion*

In 1960, Ronald Coase posed a crucial problem for economics: what is the optimal strategy of securing property rights—also known as establishing law and order? Many of Coase's followers have interpreted his article as supporting the "free market" idea that a well-functioning market economy with well-defined property rights only requires the common law to deal with the problem of social harm. In such a world, regulation is unnecessary. But Coase's reasoning does not necessarily imply the superiority of pure private litigation. Efficiency depends on whether private litigation, regulation, both, or neither work better to address the problems raised by Coase. Different institutions might be most efficient—and most attractive to a libertarian—under different circumstances.

We have presented a model in which the optimal choice of a law enforcement strategy depends crucially on the vulnerability of law enforcement in a country to subversion by powerful interests that might be affected. We argued that, in line the model, regulation became the increasingly efficient strategy of law enforcement in the United States between 1887 and 1917. The rise of the regulatory state may have been an efficient response to changing conditions.

None of this is to say, of course, that regulation is generally or even usually efficient as a solution to the problem of market failure. We often see regulation being subverted by special interests, or by the very bureaucrats supposed to enforce it. The empirical record of regulation around the world is mediocre at best—and we have argued that in many times and circumstances, doing nothing is the most efficient response to market failure. Indeed, a more general view of social control of business emphasizes the tradeoff between the vulnerability of alternative institutional arrangements to private and public abuse (Djankov et al. 2003).

At the most general level, our paper argues that establishing law and order is itself an economic problem. Different countries at different times attempt to solve this problem differently—sometimes successfully, sometimes not. We have presented one approach to the efficiency of alternative institutional arrangements—based on the idea of subversion of justice. We believe that this approach provides a constructive strategy for comparing the efficiency of many basic institutions of a market economy.

Appendix

Proof of Proposition 1: We consider four different cases with respect to the level of the cost of the subversion of justice, *X/S*, relative to the minimum fines necessary to implement alternative enforcement schemes (see figure 2).

1. $\frac{X}{S} < \frac{C}{p}$. In this case, the firm has access to cheap intimidation technology, so no regulatory scheme can force the firm to invest in precaution. For any fine from regulation, social loss if there is no regulation equals $L_N = \pi_\alpha P_\alpha SD + (1-\pi_\alpha)P_1 SD$.

2. In this case, neither strict liability nor negligence schemes can implement efficient level of precaution for the type β firms. The two relevant options are to regulate or to do nothing. Regulation forces firms to maintain the high level of precaution if the fine, *F*, is set in the interval $\frac{SC}{p} \leq F < X$. Under our assumptions, both types of firms choose the high level of precaution, which is excessive for type α firms. The expected social loss under regulation equals $L_R = \pi_\alpha P_\alpha SD + (1-\pi_\alpha)P_2 SD + SC$. When C is small, i.e. $(1-\pi_\alpha)(P_1-P_2)D > C$, then excessive precaution is less wasteful than the expected damage from its absence, and regulation dominates laissez faire regime. When $C > (1-\pi_\alpha)(P_1-P_2)D$, then doing nothing is more efficient.

3. For *X/S* in the interval $\frac{C}{P_1} < \frac{X}{S} < \frac{C}{P_1-P_2}$

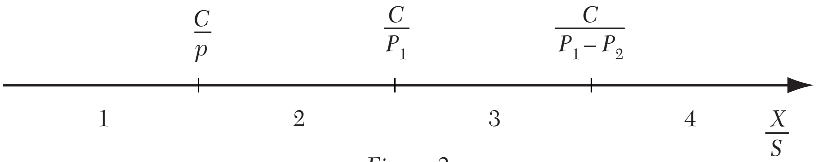

Figure 2.

negligence becomes a subversion-of-justice-proof option. If $P_\alpha < P_1$ then negligence achieves the first best outcome when F is set in the interval $\frac{SC}{P_1} < F < \min\left\{X, \frac{SC}{P_\alpha}\right\}$. The expected loss in this case is equal to $L_{CN} = \pi_\alpha P_\alpha SD + (1 - \pi_\alpha)(P_2 SD + SC) = L_{FB}$.

If $P_\alpha > P_1$ then negligence cannot achieve both the efficiently low level of precaution for the type α firms and the efficiently high level of precaution for the type β firms. The social loss coincides with that under regulation, and the choice between laissez faire and regulation is the same as in case 2.

4. If $\frac{X}{S} > \frac{C}{P_1 - P_2}$, then the subversion of justice is not an acute problem, and high fines necessary for strict liability scheme cannot be avoided. Any fine larger than $\frac{SC}{P_1 - P_2}$ and smaller than X leads to the first best outcome in the strict liability scheme.

Proof of Proposition 2: For both parts of the proof, we propose a penalty scheme (F, R), and then show that the proposed values of F and R are weakly less than X, and that with these values of F and R, inequality (2) (in the case of claim (a)) and inequality (1) (in the case of claim (b)) hold.

For claim (a) (negligence), if $X > SC/P_\alpha$, then set $F = SC/P_\alpha - (P_1 - P_\alpha)\, SC/2\,(P_1 \cdot P_\alpha)$ and $R = 0$. Condition (1) must hold as $P_1 \cdot F = \frac{SC(P_1 + P_\alpha)}{2P_\alpha}$ which is greater than SC and $P_\alpha \cdot F = SC - \frac{(P_1 - P_\alpha)SC}{2P_1}$ which is less than SC. When $SC/P_\alpha > X > SC/P_1$, then set $F = X$ and $R = 0$ and condition (2) holds as $P_1 X > SC > P_\alpha X$. When $X > SC/P_\alpha$, then set $F = X$ and $R = X - \varepsilon/p$, where $(P_1 + p)\, X - SC > \varepsilon > (P_\alpha + p)\, X - SC$ and again condition (2) holds.

For claim (b) (strict liability), always set $F = X$. If $(P_1 - P_2)\, X > SC$, set $R = 0$ and condition (1) holds. If $SC > (P_1 - P_2)X$, but $X > SC/p$, set $R = (SC - \varepsilon)/p$ where $(P_1 - P_2)X > \varepsilon$, and again condition (1) holds. If $SC > (P_1 - P_2)\, X$ and $SC/p > X$, set $R = X$, and the condition must hold.

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