

The Injustice of Inequality<sup>1</sup>

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Abstract

In many countries, the operation of legal, political and regulatory institutions is often subverted by the wealthy and the politically powerful for their own benefit. This subversion takes the form of corruption, intimidation, and other forms of influence. We present a model of such institutional subversion – focusing specifically on courts – and of the effects of inequality in economic and political resources on the magnitude of subversion. We then use the model to analyze the consequences of institutional subversion for the law and order environment in the country, as well as for capital accumulation and growth. We illustrate the model using some historical evidence from Gilded Age United States, nineteenth century Mexico, and the transition economies of the 1990s. Finally, we present some cross-country evidence consistent with the basic predictions of the theoretical model.

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## I. Introduction

Recent empirical research on a cross-section of countries suggests that economic inequality is related to a variety of adverse social and economic outcomes. Alesina and Rodrik (1994) and Persson and Tabellini (1994) show that inequality reduces economic growth, especially in democracies. Barro (1996) concurs but argues that this is only true in poor countries. Waldmann (1992) identifies adverse consequences of inequality for infant mortality. Fajnzylber, Lederman, and Lloayza (1999) show that countries with higher inequality have more violent crime. These results are generally robust to controls for the absolute level of poverty.

Inequality may impact development through many channels. Murphy, Shleifer and Vishny (1989) argue that greater equality, as reflected in the presence of a significant middle class, creates demand for industrial goods and leads to industrialization. Perotti (1993), Alesina and Rodrik (1994), and Persson and Tabellini (1994) argue that inequality reduces growth because it encourages redistribution from the rich to the poor. This distortionary redistribution rather than the inequality itself damages the economy. Banerjee and Newman (1991, 1993), Benabou (1996, 2002), Aghion and Williamson (1998), and Piketty (1997) also examine the adverse consequences of inequality for growth. They maintain that credit constraints – faced primarily by the poor – deter productive investment in education, new business, and new careers.

In this paper, we propose another mechanism by which inequality shapes economic and social outcomes: it enables the rich to subvert the political, regulatory, and legal institutions of society for their own benefit. If one person is sufficiently richer than another, and courts are in some way corruptible, then the legal system will favor the rich, not the just. Likewise, if political and regulatory institutions can be moved by wealth or political influence, they will favor the established, not the efficient. This in turn leads the

initially well situated to pursue socially harmful acts, recognizing that the legal, political, and regulatory systems will not hold them accountable.

Inequality can promote rent-seeking in two distinct ways. First, the have-nots can redistribute from the haves through violence, the political process, or other means. Such Robin Hood redistribution jeopardizes property rights, and deters investment by the rich. This mechanism is emphasized by Perotti (1993), Alesina and Rodrik (1994), and Persson and Tabellini (1994). Second, the haves can redistribute from the have-nots by subverting legal, political and regulatory institutions to work in their favor. They can do so through political contributions, bribes, or just deployments of legal and political resources to get their way. This King John redistribution renders the property rights of those less well positioned – including small entrepreneurs -- insecure, and holds back their investment. Here we focus on a particular version of the King John redistribution.

At a broader level, this paper is related to a large literature on the use of economic, political, and institutional arrangements to foster the interests of the powerful. Grossman and Helpman (2001) synthesize the literature on special interest politics. Persson and Svensson (1989) and Alesina and Tabellini (1990) show how a government can use public debt to restrict the spending of future governments. Shleifer and Vishny (1994), Boycko, Shleifer and Vishny (1996), Alesina, Baqir, and Easterly (2000), and Robinson and Verdier (2001) focus on public sector employment as a mechanism of drawing political support. Acemoglu and Robinson (2000a, 2000b, 2002), Rajan and Zingales (2002), Aghion and Alesina (2002), and Glaeser and Shleifer (2002c) focus on the design of political institutions when incumbents aim to secure political support. This paper is most closely related to our previous work (Glaeser and Shleifer 2002a, 2002b), which also examines the consequences of the subversion of institutions by the powerful for resource allocation and efficient institutional design.

We specifically focus on the effects of unequal distribution of economic and political resources on the workings of the legal system. In many countries, litigants bribe judges and legislators. They threaten and coerce judges and prosecutors. They spend significant resources on attorneys to slow the workings of justice. In any plausible model of courts, the economic and political resources of the litigants matter for the outcome of the case. Likewise, in a reasonable model of regulation, such resources determine whether regulation serves public welfare or secures rents for the regulated firm, as argued forcefully by Stigler (1971).

Inequality crucially shapes the mechanisms of institutional subversion. In the legal context, the rights and wrongs of the case still matter even when the litigants are unequally matched. But if there is some scope for private action to influence outcomes, then relative resources also matter. When the two litigants are relatively equally matched, the outcome depends on the merits of the case. But when legal armaments are unequal, the stronger litigant has an advantage in court.

When courts are subverted, there is less reason not to steal in the first place. If the politically strong expect to prevail in any court case brought against them, they would not respect the property rights of others. This breakdown in the security of property follows inequality when institutions are weak to begin with. The breakdown in property rights in turn leads to a breakdown in investment, at least on the part of the potential victims.

We present a model of inequality and the administration of justice. In the first stage of this model, one agent decides whether or not to steal from another. We interpret theft broadly as any type of commercial strategy – from direct stealing to contract violation to recruitment of the state's regulatory machine to discourage competition – aimed to expropriate others to benefit oneself. The first agent's expectations about judicial penalties determine whether or not he steals. In the second stage, if theft occurs, the victim must decide whether or not to go to court to retaliate. The victim's decision

about using a court depends on his beliefs about the likelihood of legal success. We do not consider extra-legal retaliation, but it is clear that in many cases ineffectual courts render such retaliation more attractive.

If the victim decides to pursue legal redress, both he and the defendant decide whether or not to bribe the judge. Bribes are not legal contracts—we assume that there is no way for a judge who takes a bribe to either formally or informally commit to a specific ruling. However, when a judge accepts a bribe, he leaves himself open to punishment by the briber. The briber can always reveal the bribe and harm the judge. The level of bribes is limited by the financial resources of the two litigants and by their ability to punish the judge if he accepts a bribe and then does not follow through.

In equilibrium, either no or only one agent actually bribes the judge, and the judge rules in favor of the briber. Two factors influence the outcome of the case: the legal merits and the relative resources of the opponents. When judges really care about the legal merits or when the penalties on corrupt judges are high, bribery is small and a victim generally wins the case. When penalties on the judges are small or when their interest in justice is weak, then relative resources matter. When the defendant has greater wealth or political power to punish the judge, he wins the case. Under these circumstances, victims suffer without using the courts and theft is ubiquitous.

We then use the model to ask about the level of theft in the society. Interactions between different members of society occur randomly, and each engenders the possibility of theft. The model predicts that theft occurs only when one individual has significantly more power or resources than the other. An increase in social inequality leads to more unequal interactions and therefore to more theft. The number of unequal relationships also rises as the level of social and economic interaction rises. When individuals only deal with their neighbors who possess similar amounts of influence, theft is low. As interactions become more varied, it rises.

In our model, theft is a source of insecurity of property rights, and such insecurity is a deterrent to investment. In this respect, our model follows a long tradition of economic writings, starting with Montesquieu (1748) and Smith (1776), which sees the protection of private property as the principal obligation of the state because of the importance of such protection for investment. More recent studies documenting the importance of the security of property for investment include Barro (1991), DeLong and Shleifer (1993), and Knack and Keefer (1995).

The model also predicts that weak political institutions lead to societies in which small elite groups do all of the investing and a much larger group has no possessions and no political power. A strong middle class develops only when strong political institutions protect it from the powerful. The causality between inequality and weak justice runs in both directions. Initial inequality leads to subversion of institutions, but weak institutions themselves mean that only those who can protect themselves become rich.

We illustrate the model with three case studies. First, we look at the American Gilded age between 1865 and 1900. Industrialization created large inequalities of wealth, which undermined the existing legal system. The inadequacies of the law in turn brought a public demand for reform that was realized in the Progressive Era. Second, we look at Mexico between 1870 and 1910. During this period, legal institutions were weak and the expropriation of the poor pervasive. Economic growth was relatively slow. The period ended in a Revolution ostensibly aimed at curing the judicial and other institutional injustices of the Porfirio era. Third, we look at the transition economies of Eastern Europe. In several countries, privatization created a significant amount of new private wealth. The existing legal and political institutions were not strong enough to stand up to the inequality in the economic and political power of different actors. The new wealth was able to subvert both justice and other institutions. The rise of Vladimir Putin in Russia can be interpreted as a democratic response to the institutional breakdown.

In addition, we present some cross-country evidence, which tends to support the basic predictions of the model. Inequality is related to lack of law and order. The negative impact of inequality on growth is more pronounced in countries with weak institutions than in those with strong ones.

These results add up to significant grounds for concern about the consequences of inequality in countries with weak institutions. At the same time, we recognize that attempts to deal with such inequality have often led to Robin Hood-style redistributive policies that had even more adverse consequences for progress.

## II. The Model

Our model of inequality and the breakdown of judicial systems proceeds in three stages. In the first stage, individuals choose whether or not to invest in a project, which if successful, yields a return of  $D$ . This investment has a cost of  $\theta D < D$  (there is no discounting). In the absence of impediments, such as insecure property rights, everyone invests. The assumption that the investment project is of a fixed size is not innocuous. It implies that even the rich do not invest more than  $D$ . After presenting our basic results, we examine the consequences of relaxing this assumption.

In the second stage, each individual is paired with another, and each member of this pair then decides whether or not to expropriate the other's investment. There is no possibility of stealing from someone who had not invested. Expropriation can take the form of routine theft, or of destruction of investment, entailing a loss of the entire project (i.e.  $D$ ) to the victim. The offender gains  $\delta D < D$  from the theft.

The interpretation of the model relies heavily on what kinds of theft and expropriation we have in mind. In some instances, it can be a direct taking of property. More realistically, one can think of cheating in a transaction, using illegitimate – or illegal – practices to damage a business partner or a competitor, or even using friendly government officials to deny a potential competitor a license or to shut him down. Indeed, for our purposes, one of the parties in a transaction can be a government official holding up an investor rather than a private individual. Although we use the words theft, expropriation, and crime to describe these actions, we are only focused on civil disagreements, so all the litigation we describe is between private parties.

If one individual steals from the other, there is a possibility of legal retaliation. At some cost,  $C$ , the victim can go to court and seek damages equal to the loss of property. In court, a judge decides whether the claim is justified, and if so awards “ $D$ ” to the victim. We assume that this award amount is fixed (i.e. there is no possibility for double or triple damages). The judge may be bribed or threatened.

Our objective is to determine the overall amount of theft in the society, and to trace its negative impact on investment. We proceed recursively. First, we examine the outcome of the trial conditional upon theft having occurred and the victim suing. We then examine the decision to sue. Next, we consider the decision to expropriate, and finally the impact of equilibrium expropriation on investment.

### *The Outcome of the Trial*

The trial stage of this model also has a temporal structure. First, both the plaintiff and the defendant simultaneously and separately offer bribes to the judge. These bribes are secret gifts, and no contract can be written based on them. We denote the plaintiff’s bribe by  $B_p$  and the defendant’s by  $B_D$ . Both actors face credit constraints that limit bribes to  $B_p \leq \bar{B}_p$  and  $B_D \leq \bar{B}_D$ .  $D$  is greater than either credit constraint.

If the judge accepts a bribe, he has no contractual obligation to rule for the briber. If the judge rules for the plaintiff, the defendant pays a judgment of  $D$  to the plaintiff. If the judge rules for the defendant, there is no transfer of cash.

A successful briber acquires the ability to punish the judge. This takes the form of revealing the bribe and causing the judge either embarrassment or true legal problems. Only an actual briber can punish the judge. This punishment is costless to impose if the briber has already lost the case. If the briber has won, his victory is annulled when the bribe is revealed. Thus, no briber who wins the case ever punishes the judge.

We only consider equilibria where bribers who are unsuccessful in the case actually punish the judge rather than go away. Since punishment is free, this focus can be justified either by reputational concerns, or any utility of vengeance. The punishment from the plaintiff is  $Z_p$  and from the defendant  $Z_D$ .  $Z_p$  and  $Z_D$  are exogenous parameters that represent the political power of the two litigants. In the population as a whole, there is a continuous distribution  $G(Z)$  of political power, and we assume that  $D$  exceeds the maximum value of  $Z$ . The political power of each actor is perfectly observable.

The judge obtains utility of  $V$  from “doing the right thing.” This can be thought of as the reputational loss from having his decision reversed on appeal, or as a pure utility gain from following the law (Posner 1995). The value of  $V$  differs among judges and is described by a density function  $f(V)$  and a cumulative distribution  $F(V)$ . We assume that  $V > 0$ . The value of  $V$  becomes known as soon as the lawsuit is filed, but not before (i.e., the plaintiff does not know the identity of the judge before filing the case).

### *The Decision of the Judge*

When the judge accepts both bribes, and rules for the plaintiff, his utility is  $V + B_p + B_D - Z_D$ . When the judge accepts both bribes and rules for the defendant, his utility is  $B_p + B_D - Z_p$ . Thus, when the judge has accepted both bribes, he rules for the plaintiff if and only if  $V > Z_D - Z_p$ . We can immediately rule out equilibria in which the judge accepts one person's bribe and rules for the other, since in this case he is strictly better off accepting both bribes. The judge will also always take at least one litigant's bribe, since there is no reason not to take the bribe of the winner in the case.

When  $V > Z_D - Z_p$ , the judge has three options: (1) take both bribes and rule for the plaintiff, (2) take the plaintiff's bribe and rule for the plaintiff, and (3) take the defendant's bribe and rule for the defendant. The first option dominates if  $B_D > Z_D$  and  $V + B_p > Z_D$  (but this is not an equilibrium for the defendant). The second option dominates if  $B_p + V > B_D$  and  $Z_D > B_D$ . The third option dominates if  $B_D > B_p + V$  and  $Z_D > V + B_p$ .

Likewise, when  $V < Z_D - Z_p$ , there are also three possible options for the judge: (1) take both bribes and rule for the defendant, (2) take the plaintiff's bribe and rule for the plaintiff, and (3) take the defendant's bribe and rule for the defendant. The first option dominates if  $B_p > Z_p$  and  $B_D > V + Z_p$  (but this is not an equilibrium for the plaintiff). The second option dominates if  $B_p + V > B_D$  and  $V > B_D - Z_p$ , and the third if  $B_D > B_p + V$  and  $Z_p > B_p$ .

Since these are exogenous parameters with continuous distributions,  $V \neq Z_D - Z_p$  almost everywhere. Each of the litigants then knows that only one of them wins when both bribe, and so the loser is better off not bribing. This implies that it is not an equilibrium for both individuals to bribe the judge.

Moreover, if only one litigant bribes the judge, it is not an equilibrium for the judge to rule against him. The loser is, in this case, better off not giving the bribe. The judge never turns down the bribe from the litigant to whom he will award victory. In any pure strategy equilibrium, the winning party always bribes the judge, and the judge never accepts a bribe from the losing party – although it is offered.<sup>2</sup> If the judge accepts the bribe of the defendant and rules for the defendant, the judge's utility is  $B_D$ . If the judge accepts the bribe of the plaintiff and rules for the plaintiff, his utility is  $B_P + V$ .

Given this behavior of the judge, we can solve for the equilibrium behavior of the two litigants.

*Proposition 1:*

- (a) If  $V > Z_D - Z_P$  and  $V > \text{Min}(Z_D, \bar{B}_D) - \bar{B}_P$ , then  
 $B_P = \text{Max}(0, \text{Min}(Z_D, \bar{B}_D) - V)$ ,  $B_D = \text{Min}(Z_D, \bar{B}_D)$ , the plaintiff wins the case, and only the plaintiff's bribe is taken.
- (b) If  $V > Z_D - Z_P$  and  $V < \text{Min}(Z_D, \bar{B}_D) - \bar{B}_P$ , then  $B_P = \bar{B}_P$ ,  $B_D = \bar{B}_P + V$ , the defendant wins the case, and only the defendant's bribe is taken.
- (c) If  $V < Z_D - Z_P$  and  $V > \bar{B}_D - \text{Min}(Z_P, \bar{B}_P)$ , then  $B_P = \text{Max}(\bar{B}_D - V, 0)$ ,  
 $B_D = \bar{B}_D$ , the plaintiff wins the case, and only the plaintiff's bribe is taken.
- (d) If  $V < Z_D - Z_P$  and  $V < \bar{B}_D - \text{Min}(Z_P, \bar{B}_P)$ , then  $B_D = V + \text{Min}(Z_P, \bar{B}_P)$ ,  
 $B_P = \text{Min}(Z_P, \bar{B}_P)$ , the defendant wins, and only the defendant's bribe is taken.

The size of bribes in this model is constrained either by the economic resources of the litigants,  $B$ , or by their political resources,  $Z$ . Proposition 1 tells us that the plaintiff

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<sup>2</sup> There are no mixed strategy equilibria where the judge takes both bribes and randomizes since the judge (almost everywhere) strictly favors one of the litigants.

wins whenever  $V > \text{Min}(Z_D, \bar{B}_D) - \text{Min}(Z_P, \bar{B}_P)$ . Thus, if  $Z_D > \bar{B}_D$  and  $Z_P > \bar{B}_P$ , the plaintiff wins whenever  $V \geq \bar{B}_D - \bar{B}_P$ . In this case, when the ability to punish the judge is high, it is the financial resources of the two parties that determine the outcome. Alternatively, if  $Z_P < \bar{B}_P$  and  $Z_D < \bar{B}_D$ , the plaintiff wins when  $V > Z_D - Z_P$  and loses otherwise. If the ability to punish the judge is low, then the political power of the actors matters more than their ability to bribe. In either case, the relative resources of the litigants – economic or political -- shape the outcome of the case.

For the rest of the paper, we assume that  $\bar{B} > Z$  for all actors, i.e., that political power is in shorter supply than financial credit. In this case, if  $V > Z_D - Z_P$ , the equilibrium strategy for the plaintiff is to bribe  $Z_D - V$  (or zero if this quantity is negative), while the defendant offers  $Z_D$  but the bribe is not accepted. If  $V < Z_D - Z_P$ , then the defendant bribes  $V + Z_P$  and wins, the plaintiff offers to bribe  $Z_P$ , the bribe is rejected and he loses. As a consequence, the plaintiff wins if  $V > Z_D - Z_P$ , and gets  $D - \text{Max}(0, Z_D - V)$  from the action. If  $V < Z_D - Z_P$ , the plaintiff loses, the defendant pays  $V + Z_P$ , and gets  $D - V - Z_P$  from the action.

### *The Decision to Use the Courts*

The cost of using a court is  $C$ . This cost covers the filing fee, legal representation, and delays associated with civil litigation. Djankov et al. (2002) present evidence that legal procedures are heavily formalized in most countries, and that the time and financial costs of pursuing even the simplest disputes in court are extremely heavy.

If the potential plaintiff knew the value of  $V$ , he would file the case whenever  $V > Z_D - Z_P$  and not otherwise. However, the plaintiff must base his decision to sue on the expected value of  $V$ . In this case, the expected payoff from the lawsuit is:

$$(1) \quad \int_{V=\text{Max}(0, Z_D - Z_P)}^{Z_D} (D - Z_D + V) f(V) dV + \int_{V > Z_D} D f(V) dV .$$

The following proposition follows:

*Proposition 2:* If  $D - Z_P > C$ , then for any plaintiff with a fixed level  $Z_P < Z_{\text{Max}} - V_{\text{Max}}$ , there exists a value of  $Z_D > Z_P$  denoted by  $Z_D^*(Z_P)$  at which the plaintiff is indifferent between suing and not suing. For values of  $Z_D$  below  $Z_D^*(Z_P)$ , the plaintiff always prefers to sue. For values of  $Z_D$  above  $Z_D^*(Z_P)$ , the plaintiff does not sue. The value of  $Z_D^*$  rises with  $Z_P$ , falls with  $C$ , and rises with  $D$ . If we write  $V = v + \varepsilon$ , where  $v$  is constant across judges, then  $Z_D^*(Z_P)$  rises with the level of  $v$ .

This proposition makes several points. First, the willingness to use courts rises with the honesty of the judge ( $v$ ) and falls with litigation costs. Also, courts are more likely to be used when damages are large. More importantly for our argument, courts are always used when the victim is more powerful than the offender. Only when the offender is much more powerful than the victim does the former walk away from the crime.

This Proposition helps us to understand the circumstances in which courts are used. In countries where judges are particularly venal, we expect courts to be rarely used. When courts are corrupt, moreover, inequality becomes very important. Two roughly equally powerful individuals would use courts, but significant inequality between them

keeps them away from courts (at least when the plaintiff is weaker than the defendant). High costs of using the legal system also deter the potential litigants.

### *The Decision to Steal*

The potential offender assumes that the victim will respond optimally when deciding whether or not to commit an offense initially. We imagine that two individuals are matched and both simultaneously decide on whether to steal from the other. There is no connection between the two decisions to steal, so we think of them as separate choices. We assume that, while  $V$  is not known, each party knows his own characteristics and those of his match when deciding whether or not to steal. At this point, we think of the power of the potential offender as  $Z_A$  and the power of the victim as  $Z_B$ . The offender ends up being the defendant in court and the victim ends up being the plaintiff. Conceivably, we could end up having two offenders and two victims in a pair: a truly Hobbesian outcome.

If the offender knows that the victim will not go to court, he chooses to steal. Thus, if  $Z_A$  is greater than  $Z_D^*(Z_B)$ , the offender acts with impunity. We are not allowing non-legal forms of redress, but inequality is probably even more important in deterring weak victims from punishing strong offenders outside of courts.

The next result follows immediately:

*Lemma 1:* If  $D - Z_p > C$ , an offense does not occur unless  $Z_A$  is greater than  $Z_B$ .

*Proof:* If  $Z_p > Z_D$ , then the plaintiff always wins the case, and so will always sue. For this reason, the potential offender always loses from the offense.

It follows from Lemma 1 that when two people interact, only the politically stronger of the two attacks the other. Naturally, this result hinges on the fact that damages are always observable and there are not hidden offenses. Indeed, this framework is unhelpful for thinking about street crime with limited detection.

When  $C$  is high, both individuals may choose not to use the courts, and anarchy ensues. At the extreme, if  $C > D$ , no one ever uses the courts and all property is violated.

We focus on the case where  $D - Z_p > C$ , so theft occurs when  $Z_A > Z_D^*(Z_B)$ . Theft may also occur even if the victim sues. The offender's costs from the suit are:

$$(2) \int_{V=0}^{Z_A - Z_B} (Z_B + V) f(V) dV + \int_{V > Z_A - Z_B} D f(V) dV$$

If the offender knows that  $Z_D^*(Z_B) > Z_A$ , then he only harms if  $\delta D$  exceeds (2). This leads to our third proposition:

*Proposition 3:* If the victim sues for damages, then an offense occurs if and only if  $Z_A$  is greater than  $Z_A^{**}(Z_B) > Z_B$ , where  $Z_A^{**}$  is falling with  $\delta$  and  $D$  and rising with  $Z_B$ . If  $V = v + \varepsilon$ , where  $v$  is constant across judges, then  $Z_A^{**}(Z_B)$  rises with the level of  $v$ . When  $D$  is sufficiently large relative to  $Z_p, Z_D$ , and  $C$ , then  $Z_D^*(Z_B) > Z_A^{**}(Z_B)$  and  $Z_A^{**}(Z_B) \approx Z_B + F^{-1}(1 - \delta)$ .

This proposition tells us that theft may occur even against a victim who will sue, but declines when it is more wasteful and when the victim is more powerful. Honest judges protect property. Somewhat more interestingly, theft rises with the scale,  $D$ , of

investment. The reason is that the benefit of an offense scales with  $D$  but only part of the cost scales with  $D$ . The costs that represent bribe payments are independent of  $D$ , which makes theft more attractive as the scale of enterprise rises (Glaeser and Shleifer 2002b).

When  $D$  is particularly large, two forces come into play. First,  $Z_D^*(Z_B) > Z_A^{**}(Z_B)$ , which means that some harms are litigated. The marginal violator expects to be taken to court. When  $D$  is sufficiently large,  $Z_D^*(Z_B)$  determines whether there is an offense in a match. Second, when  $D$  is large,  $Z_A^{**}(Z_B) \approx Z_B + F^{-1}(1 - \delta)$ . This means that only relative, not absolute, power determines whether theft occurs. There is a constant power gap between a potential victim and the marginal violator who exploits him. This gap is a function of the level of waste and of the honesty of the judge.

The combination of propositions tells us that socially damaging actions are more likely when the two parties are unequal in their resources, or more precisely, when the aggressor has much more political power than the victim. Also, whichever proposition applies, the level of harm is determined by the honesty of the judge. In cases where  $D$  is low and Proposition 2 applies, which is more likely when litigation costs are high, then these costs become a critical determinant of the security of property.

### *The Overall Level of Theft*

To assess the overall level of theft, we assume that, in every period, two random members of society are matched and one has an opportunity to steal from the other. Our interest is in the impact of social inequality on the level of such theft.

For the following proposition, we assume that all the possible distributions of  $Z$  have densities that are single-peaked and symmetric. We use the following definition:

Definition: The density function  $\tilde{g}(z)$  is a single-troughed, symmetric mean preserving spread of the density function  $g(z)$  if  $g(z) - \tilde{g}(z)$  is single-peaked around the median of  $z$  and symmetric.

*Proposition 4:* If  $D$  is sufficiently large, then the level of harm rises as the variance of  $Z$  is increased through a single-troughed, symmetric, mean-preserving spread.

Proposition 4 gets at the heart of the paper. It states that an increase in the inequality of power or resources raises the overall level of expropriation. In the model, this works through the subversion of justice. Unequal resources enable some individuals to expropriate others with impunity. Unsurprisingly, expropriation follows.

In the next proposition, we consider the distribution of matches and its dependence on the social organization of the society. We model the possibility that, in some societies, people interact with others more closely matched to them in political power, and examine the impact of such closeness on expropriation. Specifically, we assume that  $Z = \lambda\alpha + (1 - \lambda)\mu$ , where  $\alpha$  is a random variable that is common to any match, and  $\mu$  is an idiosyncratic term. The parameter  $\lambda$  captures the degree of social connectivity. Given this structure, we can establish:

*Proposition 5:* If  $D$  is sufficiently large, then an increase in  $\lambda$  reduces the amount of expropriation in the society.

When two random individuals in a society have more comparable political power, it is less likely that the inequality of resources leads to a breakdown in justice. Traditional environments that depend on interactions among similarly situated individuals are less likely to face problems of expropriation than the highly volatile

modernizing environments where the weak interact with the strong. Alternatively, an influx of powerful outsiders can lead to a breakdown in property rights.

### *The Level of Investment*

To complete the model, we return to the investment decision. For any individual with political resources  $Z$ , the expected return from investment minus the expected losses from crime plus the expected gains from using the courts equal:

$$(3) \quad G(Z_A^{**}(Z))D - \theta D + \int_{Z_A=Z_A^{**}(Z)}^{z_b^*(Z)} \left( \int_{V>Z_A-Z} Df(V)dV - \int_{V=Z_A-Z}^{Z_A} (Z_A - V)f(V)dV - C \right) g(Z_A)dZ_A$$

The first two terms  $G(Z_A^{**}(Z))D - \theta D$  reflect the expected returns if the investment is made times the probability that the investment is not expropriated  $G(Z_A^{**}(Z))$  minus the cost of investment  $\theta D$ . The third term,

$$\int_{Z_A=Z_A^{**}(Z)}^{z_b^*(Z)} \left( \int_{V>Z_A-Z} Df(V)dV - \int_{V=Z_A-Z}^{Z_A} (Z_A - V)f(V)dV - C \right) g(Z_A)dZ_A,$$

reflects the expected benefits of using the courts minus the expected bribes minus court fees. Investment occurs if and only if expression (3) is positive.

We now assume that  $V$  is deterministic and equals  $\nu$ . This assumption is not absolutely necessary, but it simplifies the algebra considerably. Since risk is eliminated, victims use the court system if and only if they know they are going to win, i.e. if and only if  $Z > Z_A - \nu$ . In this case, investors are expropriated if and only if they encounter a potential offender whose level of  $Z$  is more than  $\nu$  higher than their own, and in fact, the court system is never used. The threat of litigation is just a deterrent to potential

offenders. The expected return from investment is equal  $G(Z + v)D - \theta D$ , and we can prove the following proposition:

*Proposition 6:* If  $\theta > G(\underline{Z} + v)$ , where  $\underline{Z}$  denotes the minimum value of  $Z$ , there exists a value of  $Z$ , denoted  $Z_I$  at which individuals are indifferent between investing and not investing. For values of  $Z$  above  $Z_I$ , investing is preferred to not investing, whereas for values of  $Z$  below  $Z_I$ , not investing is preferred to investing. Moreover,

- (a) The value of  $Z_I$  is increasing with  $\theta$ .
- (b) The value of  $Z_I$  is decreasing with  $v$ .
- (c) If the variance of  $Z$  is increased through a mean-preserving spread, then the value of  $Z_I$  rises if and only if  $\theta > .5$ .
- (d) If  $Z = \lambda\alpha + (1 - \lambda)\mu$ , where  $\alpha$  is a random variable that is common to the match, and  $\mu$  is an idiosyncratic term, then proportion of the population that invests is increasing with  $\lambda$ .

The condition  $\theta > G(\underline{Z} + v)$  is necessary to assure that investment is not attractive for the least powerful member of society.

According to part (a), investment declines when its price increases. According to part (b), investment becomes more common as judges become more honest.

The result on increasing the variance of power requires that the returns from investment are not too high, i.e.  $\theta > .5$ . If  $\theta$  is less than .5, undertaking a project is understood to be highly risky, and the marginal investor succeeds (without being expropriated) if and only if he is lucky enough to meet a very weak individual. An increase in inequality increases the probability of encountering somebody very weak and therefore raises the likelihood of investment.

The final comparative static tells us that connectivity among individuals is also important. When individuals interact with different people, then the likelihood expropriation tends to increase, and therefore investment declines.

The essence of Proposition 6 is that in weak legal systems, politically impotent individuals are unlikely to invest. Under our assumption that each person can only invest a fixed amount, how many invest determines the overall levels of investment. But this assumption may not always hold: in many cases, individuals with power can expand their own levels of investment if insecure property rights deter others from investing.

In a small digression, we illustrate the consequences of relaxing the assumption that investment per individual is fixed. To this end, we simplify the model even further, and assume that there are only two levels of  $Z$ :  $\bar{Z}$  and  $\underline{Z}$ . Investors with the high level of  $Z$  are never robbed. The people with low levels of  $Z$  are expropriated if they encounter a high  $Z$  type and if  $v < \bar{Z} - \underline{Z}$ . Denote the proportion of individuals with  $Z = \bar{Z}$  by  $\pi$ . Consider a transition from a situation where  $v > \bar{Z} - \underline{Z}$  to one where  $v < \bar{Z} - \underline{Z}$  due to either a change in the level of corruption of the judiciary or an increase in the level of inequality. If  $\theta > \pi$  and this transition occurs, the low  $Z$  types stop investing.

However, this may not reduce aggregate investment if the high  $Z$  types then undertake the foregone projects. Suppose that individuals can undertake surplus projects that have not been undertaken by others, but at a cost for the marginal project of  $\theta(N)$ , where  $N$  reflects the total number of extra projects that any one person undertakes. If increases in inequality or judicial corruption push the weaker citizens out of investment, then there are two scenarios to consider. First, the high  $Z$  types may undertake all of the surplus projects. In this case, there is no reduction in investment, and the welfare losses from weak property rights just come from the fact that high rather than low cost

individuals are undertaking projects. Second, only some of the projects may be undertaken. In this case, ignoring integer constraints, the high Z types invest until the point where  $\theta(N)$  equals one. The social losses in this case combine the loss from underinvestment with the loss from extra costs.

To formalize this, assume that after their first project individuals are able to invest a continuous amount. If the number of extra projects is denoted by I, assume that the cost of this extra investment is  $\theta + \Theta I^2 / 2$ . We assume also that  $\theta + \Theta(1 - \pi) / \pi > 1$ , so that there are some surplus projects, and that each high Z type invests in exactly  $(1 - \theta) / \Theta$  surplus projects. In that case, the per capita social loss resulting from moving from a situation where property rights are secure and everyone invests, to a regime where property rights are insecure and only the powerful invest, equals:

$$(4) \quad D \left( (1 - \theta)(1 - \pi) - \frac{\pi(1 - \theta)^2}{2\Theta} \right)$$

This equation makes it clear that the social loss from an increase in inequality or a breakdown in rule of law depends on  $\pi$ , the proportion of people who are left able to invest, and on  $\Theta$ , the extent to which having the wrong people invest raises costs. There are two natural interpretations of  $\Theta$ . First, it might just represent the decreasing returns to any one individual managing more investments. Second, it might represent the losses if there is person specific knowledge or talents in investment. When  $\Theta$  is low, there are few costs from having all investment undertaken by a few people. When  $\Theta$  is high, then such a situation leads to substantial welfare losses.

This distinction may help to understand why breakdowns in the protection of property rights may be more important in some phases of development than in others. For example, during industrialization, especially for follower countries that are able to

copy the technology of leader countries, scale economies may mean that  $\Theta$  is low and there are few losses from concentrating investment in the hands of a few oligarchs. In other phases of development, when local innovation, local knowledge, small business formation, and entrepreneurial initiative are important,  $\Theta$  is much higher and it may be more costly to society to have a breakdown in property rights.

Going back to the original model with fixed investment per capita, Proposition 6 also sheds light on the evolution of income distribution. Since  $Z_I$  is the minimum value of  $Z$  at which people invest,  $1 - G(Z_I)$  is the proportion of the population that is investing and growing richer over time. When  $Z_I$  is low, a broad spectrum of the society is investing and over time gradually enriching themselves. However, when  $Z_I$  is high, then only the very powerful are investing and only they are growing rich over time.

This logic provides us with another link between inequality and injustice. A weak judicial system, which is described by a high value of  $C$  or a low value of  $\nu$ , leads not only to low levels of investment (or misallocated investment) across society as a whole, but also to a very unequal income distribution. Only the most powerful members of a society—those able to protect their investment—actually invest. Conversely, a low value of  $C$  and a high value of  $\nu$  enable a wide swath of society to actually invest and be sure that they can keep their earnings. This argument suggests that the development of a large middle class relies on the existence of strong judicial institutions.

Another way of putting this is that, in nations with weak judicial institutions, the equilibrium correlation between political power and wealth has to be high. Only the politically powerful, those with high values of  $Z$ , are able to protect their investments. In countries with stronger institutions, the connection between political power and wealth is weaker, as individuals with a wide range of political resources can become wealthy.

These implications may help explain why England developed a large middle class before other European countries. The stronger legal protection afforded by the common law meant that an English merchant could invest with less fear of expropriation than his French counterpart. As a consequence, an English middle class could develop when the French middle class could not. In nations with still weaker institutions, such as Tsarist Russia, the middle class was even smaller than in France. If the demand from the middle class facilitates investment in fixed cost technologies (as argued by Murphy, Shleifer and Vishny 1989), then strong legal institutions not only support investment directly, but also have an indirect benefit by changing the distribution of income.

As a final aside, we have so far treated the level of  $Z$  as an exogenous parameter. In reality,  $Z$  is a valuable asset and individuals would take actions to expand their level of political power. Investment in  $Z$  may take the form of bribing politicians on a regular basis, investing in media outlets or acquiring connections. One way of doing this is to combine and form alliances and for firms to merge. The incentive to invest in  $Z$  is stronger in weak legal regimes than in strong ones. We should thus expect to see combinations arising in periods and in places where legal institutions are failing.

### **III. The U.S. During the Gilded Age**

Glaeser and Shleifer (2002b) argue that many American institutions failed to keep up with the needs of the Gilded Age. In 1841, DeToqueville surveys the United States and finds a country that is marked both by its equality and by the strength of its legal institutions. He comments that “Men are [in America] seen on a greater equality in point of fortune and intellect, or, in other words, more equal in their strength, than in any other country of the world, or in any age of which history has preserved the remembrance.” DeToqueville points to several factors contributing to American equality: (1) “that great equality existed among the immigrants who settled on the shore of New England,” (2) the absence of primogeniture, and (3) equality of human capital (in his words in America “in

proportion to the population, there are so few ignorant and so few learned individuals.” DeToqueville emphasizes not only the equality of wealth, but also that of political power.

In DeToqueville’s view, equality is accompanied by relatively strong institutions. He writes “in the United States, I never heard anyone accused of spending his wealth buying votes.” Indeed (by comparison with the later age), it is utterly surprising how little space DeToqueville devotes to the subversion of institutions. While he worries about excessive democratic tendencies (which he sees as being checked by strong courts), he is not concerned with the rich overwhelming the political and legal systems.

In the next 50 years, the United States changed. The economic opportunities of industrialization and the increasing size of the American market made a number of Americans extremely rich. As a long literature starting with Kuznets documents, inequality rose significantly over the 19<sup>th</sup> century. While there is some debate on wage inequality, Lindert and Williamson (1985) and Lindert (2000) document growing wealth inequality during this time, including a striking rise in the number of enormous fortunes.

The growth of individual fortunes paralleled, indeed derived from, the growth of large companies and trusts. In 1832, at the time of DeToqueville, the McLane report finds only 106 manufacturing firms with assets that were greater than \$100,000 in the United States. In contrast, Chandler (1977) finds 278 firms with more than \$20 million in assets in 1917. Much of this change came about because of scale economies inherent in the shift to a mass industrial economy. Some of this expansion in scale, however, was a response to the incentives created by weak institutions.

Wealth inequality fueled the subversion of institutions. While DeToqueville describes magistrates as upright guardians of democracy, the muckrakers 50 years later describe a judicial system subverted by powerful interests. The late 19<sup>th</sup> century is filled with stories of corrupt politicians and judges. Albert Cardozo, the father of the great

progressive jurist Benjamin Cardozo, worked hard on behalf of William Marcy Tweed, who appointed him to the New York State Supreme Court. Cardozo senior, who was eventually impeached, was accused of many crimes, ranging from pardoning politically connected criminals to helping Gould and Fisk with their financial manipulations (Callow 1966). Lincoln Steffens' (1906) "The Shame of the Cities" is a chronicle of thievery. David Phillips (date) writes in "The Treason of the Senate" of senators selling their votes to the highest bidder.

The great protagonists of the Gilded Age subverted institutions as part of normal business practice (Josephson 1934). The famous Erie Railroad battle between Commodore Vanderbilt and Jay Gould culminated in massive bribery both of the judges and of the New York State legislature. The financial operations of Jay Gould and Jim Fisk were abetted by their alliance with William Marcy Tweed who supplied friendly judges on demand (Callow 1966). Corporate battles against unionization were fought with the arms of state police. Famous scandals, in which major figures in the US government were bribed by the railroads, are only the most visible representations of a widespread corruption of American institutions.

One particularly obvious example of the wealthy subverting the government is the massive transfers of land to the railroad and traction companies. Both inter-city and intra-city transportation firms were heavily subsidized through massive grants of public lands. The growing public transportation industry was stimulated by long leases of public space (e.g., 999 years) for nominal fees (e.g., one dollar). Massive bribes to public officials lubricated this generosity (Glaeser 2001). The story of the American transport industry in the Gilded Age is one of powerful firms bribing politicians and judges to receive large quantities of previously public land.

The legal dominance of big actors is also apparent in workmen's compensation. Fishback and Kantor (2000) describe the legal obstacles that were put in place when a

worker or his family wanted to sue an employer for personal injury or death. The vast inequality of legal armaments meant that the employer would either escape without paying or delay payment almost indefinitely. In some cases, judges were bribed. In other cases, politicians were influenced to select judges sympathetic to business firms.

The wealthy also used their legal might in their relations with shareholders. During this era, shareholders had little ability to challenge the actions of corporate managers. The Pujo Investigation in 1912 found significant abuses of minority shareholder rights – comparable to what we see in some emerging markets today (La Porta et al. 1997, 1998). As Ida Tarbell (1903) writes of the South Improvement Company (an early Rockefeller concern) “its capital stock can be expanded or ‘watered’ at liberty.” A number of the impressive fortunes of the Gilded Age, including Gould’s, were made by bilking investors. An investor like Commodore Vanderbilt might have had recourse, but small minority shareholders could be expropriated with relative impunity.

One reason for the growth in the scale of business during this period was the accumulation of political power. The Republican leader of the Senate, Nelson Aldrich, organized the creation of trusts. The profitability of these trusts came in part from their ability to manipulate the Senate and the courts. Government policies, such as the high and pervasive tariffs of this period, responded to the influence of powerful firms, and the trusts came about in part to enhance this influence.

Did the breakdown of judicial institutions during the Gilded Age hurt growth and investment? After all, the Gilded Age is often seen as a time of remarkable growth of the American economy. This reputation for expansion should not obscure the fact that economic growth over the 1860-1910 period was much slower than that afterwards. The weaknesses of the system did not cause a collapse, but the institutional failures may have unduly limited the expansion. Indeed, as our discussion following Proposition 6 suggests, the major investments of the new industrial economy could have been

efficiently undertaken by relatively few large firms, but – at the same time – the lack of law and order may have stymied smaller scale entrepreneurship.

The institutional failures of the Gilded Age elicited a major political response. First the Progressives and then the New Dealers changed the institutions to counter the power of the big firms. Rising taxation and regulation, including the regulation of interstate commerce, the anti-trust laws, the securities laws, and other forms of state intervention – were central elements of reform. Anti-trust policy in particular aimed as much at eliminating the political power of trusts as at cutting their monopoly rents. Richard Hofstadter (1955, p. 227) writes that trust busting was based on “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.”

Without necessarily endorsing the wisdom of all the reforms, we can agree that the subversion of institutions was countered peacefully and effectively. The fundamental strength of American democracy ultimately meant that when the public sought to restrain the power of the mighty, Theodore Roosevelt, Woodrow Wilson and F.D.R. had the tools to do so. A vigorous array of government policies compressed the distribution of income between 1900 and 1960. Other policies protected the legal rights of the weak. The excesses of the Gilded Age were eventually corrected and inequality declined, as did corruption. As we shall see in the Mexican example, popular responses to the subversion of institutions by the powerful can have less benign results.

#### **IV. Mexico in the 19<sup>th</sup> Century**

When Mexico adopted its first constitution in 1824, it had more inequality and weaker political institutions than the United States, and possibly Europe. While a small Creole elite commanded significant resources, the vast majority of Mexicans lived in

extreme poverty. Where DeToqueville admires the remarkably egalitarian distribution of human capital in the United States, ninety percent of the Mexicans were illiterate.

A key determinant of Mexican inequality is the division between the Spanish settlers and the Mestizo and native peasants. In Cortes' wake, the Spaniards acquired all of the political power and most of the wealth of the nation -- pretty much as colonizers have done in most other colonies. The natives, and the mixed children of Spaniards and natives, were left with relatively little. In the U.S., of course, there was a comparable divide between the white settlers and the natives (and African-American slaves). However, because the white settlers represented a much higher share of the population north of the Rio Grande, inequality was lower.

Mexico's political institutions could not stand up to such high inequality. North Americans had 150 years of pseudo-self-governance before independence. The common law tradition emphasized judicial independence. Spanish colonial institutions were not weak, but they were designed to protect the interests of the Spanish crown and supported by the strength of Spanish arms. In both 1767 and 1804, the colonial administration expropriated Church lands without legal hindrance. When the Spaniards departed, there left no independent legal infrastructure behind. We cannot be sure whether the lack of judicial independence, the absence of check-and-balances in the political structure, or the nature of the legal tradition itself was the crucial source of institutional weakness. Suffice it to say that the empirical evidence points to all of these factors as potential of institutional weakness (La Porta et al. 1999, 2002).

The immediate aftermath of independence was warfare. Pure military power shaped political and economic outcomes until the reform period of 1850s. Santa Anna, a sometimes successful General, dominated Mexican politics during this period. The 1824 constitution emulated the American one, but by 1829, it had been upset by a revolution.

Indeed, the first 25 years of Mexican independence look much like a purely Hobbesian world where the country was ruled – though barely so -- by those with the most guns.

The national leaders committed themselves to fighting each other and the U.S., and left local administration to caciques or local bosses. Krauze (2000, p. 132) writes that during this early period Mexico was “an assemblage of villages, settlements and provinces isolated from one another, without any conception of politics, even less of nationality, and controlled by the strong men of each locality... these men had become local monarchs.” With this level of insecurity, the country stagnated.

In 1855, Santa Anna was forced into his final political exile, and Benito Juarez, the Minister of Justice, initiated reforms. Interestingly, these began with legal reform: the Ley Juarez. Ley Juarez abolished the jurisdiction of ecclesiastical and military courts in civil cases, making a step toward civil control over the practice of justice. Following the Ley Juarez, land reform was put in place through the Ley Lerdo, and ultimately a new constitution was completed in 1857. The constitution recognized the lack of governance in the Mexican hinterland and attempted centralization.

Along with centralization, both the Ley Lerdo and the constitution attempted to cut the power and wealth of the Church. The liberals supporting the constitution were opposed by the Church-back conservatives, and so tried to impoverish their opponents. Juarez’s land expropriation from the Church was more extensive than that of the Spanish colonizers; “take away the property from dead hands,” he said. However, the land reforms embedded in the Ley Lerdo became a classic instance of the forces described in our model: it turned into expropriation of the weak by the strong.

Victor Alba (1967) writes that in the Ley Lerdo “the dogmatic liberals did not confine themselves to expropriating Church property. They also declared the ejidos, the public lands, the property of the whole nation.” Ejidos had been “communes of the

Indians” and after the reforms “the same people, many of them Spaniards, who had bought Church lands now bought the lands that the Indians had been granted.” The net result was that “the latifundistas were easily able to expand their holdings at the expense of the Indians.” No legal protection was given to the victims of the “massive land seizures that accompanied the Ley Lerdo in 1856-1857” (Hart 1989, p. 38). Those with superior political clout kidnapped the supposedly liberal reform.

After the brief episode of the Mexico’s Hapsburg Emperor in the 1860s, Juarez returned to power in 1867 and was re-elected in 1871. But Mexico’s brief democratic episode ended in the “liberal” dictatorship of Porfirio Diaz, who seized power in 1876 and ruled for 34 years. In many ways, Diaz was an institution builder for Mexico. He presided over a period of peace and stability unknown since colonial times. Foreign investment rose significantly during this time period and modernization started.

Inequality rose significantly as well. Solid evidence on changes in Mexican inequality is hard to find, but both contemporary observers and recent empirical research (Lindert and Williamson 1985) find that Mexico achieved astounding levels of inequality under Diaz. In 1908, at the end of the Diaz regime, John Kenneth Turner (date), an American muckraker, wrote that “it was under Porfirio Diaz that slavery and peonage were reestablished in Mexico, and on a more merciless basis than they existed even under the Spanish Dons.” Krauze (2000, p. 219) writes that “the gap between rich and poor was immense” and that “industrialists, bankers, important officials, Diaz’s corps of intellectuals and technocrats (the *cientificos*), and the richest landowners all lived amid marble, ivory and tapestries in the old palacios at the center of the capital or in the French-style mansions built in the neighboring districts of Roma, Santa Maria, or Juarez.”

In the shadow of such inequality, courts and other institutions offered the poor little protection. Bushnell and Macaulay (1988) write that under Diaz and his protégé Gonzalez:

The Mexican liberal reform, as it culminated in the administration of Manuel Gonzalez, invited abuse. Lands occupied by poor people could be declared vacant by larcenous surveyors and sold out from under them. Illiterate Indians who received deeds to ejido property could be deprived of them by theft or trickery. The church, their corporate defender since the Spanish Conquest, no longer had the strength to stand up for them. The deprived and the disposed were now at the mercy of the liberal state. An independent judiciary, a free press, and political democracy might have responded to their concerns, as occurred in some other rapidly developing countries. But these essential institutions were suppressed soon after Porfirio Diaz returned to power ....

Turner (date) also describes ongoing abuses whereby Diaz "enriched himself, the members of his immediate family, his friends, his governors, his financial ring and his foreign favorites" through "the confiscation of the lands of the common people." There was no uniform application of any body of law during this time period. The powerful were able to use the judicial system to expropriate the lands of the poor. It is also clear that the investment carried out during this time period was limited to those individuals, Mexican and foreign, who were powerful enough to protect their holdings.

Many investments in Mexico were financed by the Americans. In many ways, the U.S. financiers of the railroads, mines and oil fields of Mexico benefited the country, not to mention Diaz himself. While investing in Mexico, especially in the railroads, the Americans also partook in the massive expropriation of Indian land (Coatsworth 1974). At the end of the Diaz period, through legal purchase and illegal expropriation, Americans owned over 100 million acres of Mexican land. The U.S. financial and military muscle ensured that, at least under Diaz, they were safe from expropriation.

As the Gilded Age engendered the Progressive reaction, the Porfiriato led to the Mexican revolution. Dispossessed peasants rallied to the banners of Pancho Villa and Zapata, overthrowing the remnants of the Diaz regime. The American investors did get expropriated, although the American arms secured some degree of compensation.

The Mexican revolution led to a far different series of reforms than the American legal and political change. America strengthened its institutions in a way that appears to have meaningfully undercut the ability of the rich to subvert its institutions. While the Mexican revolutionaries argued for many reforms similar to those in the U.S., for decades after the revolution no real institutions were set up to provide legal protection to the weak. The Presidency remained all-powerful, with no judicial independence, no meaningful checks and balances, and no recourse against powerful opponents who were close to the state. Once the PRI leaders were ensconced in power, they had little incentive to create such institutions.

## **V. Transition Economies**

The transition of economies of Eastern Europe and the former Soviet Union from socialism to capitalism commenced around 1989-1991, following the fall of the Berlin wall and the end of communism in the U.S.S.R. At that time, many economists cautioned against the backlash by the losers from economic transition. Those left behind by the privatization and restructuring of former state enterprises, the argument went, will use their political muscle to stop and possibly reverse future reforms, and indeed might bring back into government socialist or communist parties (Kornai 1990). Those involved in reform and privatization programs took this argument to heart, and attempted policy design that would minimize the risks of such backslide (Boycko, Shleifer and Vishny 1995). These concerns were intimately related to the idea that inequality is bad for development because the have nots will use their political power to redistribute from the haves, thereby undermining investment and growth.

Despite the widespread fear of a populist backlash, it never materialized. Several countries – including Poland -- actually elected socialist and pseudo-communist politicians in the aftermath of radical reforms, but these politicians typically continued the reforms with somewhat less radical market rhetoric. At the same time, reforms in many countries did indeed stall, or even failed to get started. The problem, however, was not a popular backlash, but rather the capture of political and legal institutions by the winners of initial changes. In some countries, particularly those in Central Asia, the winners from the political transition gained control over state assets personally, and transformed their countries into crony capitalist dictatorships. In other countries, of which the most conspicuous is Russia, the economic transformation itself created a cadre of winners who succeeded in subverting the institutions of the state to further their political and economic influence and to enrich themselves.

This reality of transition was first recognized by Joel Hellman (1998), who referred to this phenomenon as “winner take all” reforms. It has since been extended in both theoretical and empirical work relating to Russian and other countries in the Former Soviet Union (Sonin 1999, Hellman, Jones, and Kaufmann 2000). Because it fits very naturally with our analysis, we focus on Russia in the following discussion.

The Russian mass privatization program, conducted between 1992 and 1994, created nearly 40 million individual shareholders in the more than 14,000 medium and large-scale enterprises that were auctioned off. However, through secondary trading, ownership in many of these firms – particularly the valuable ones – quickly concentrated in the hands of relatively few industrial groups, which often had commercial banks as part of their organizations. Persons controlling these groups quickly became known as oligarchs, and they equally quickly embraced a range of strategies that consolidated their economic and political control. They used their control of profitable businesses, including banks, to gain control of additional enterprises, including those in the energy

sector. They used their influence over Parliament and courts to dilute minority shareholders with legal impunity, and thereby to consolidate their control over their business groups. They used political contributions, and the government's lack of funds, to convince the government to pursue a "shares-for-loans" program, which transferred to the oligarchs the control over several of the country's most valuable enterprises. They used their resources to acquire newspapers and television stations, perhaps the most powerful instruments of political influence. Last but not least, they used their economic and political power to stop further reforms of law and order, including corporate governance, commercial and central banking, and securities markets. Ultimately, several of the oligarchs simply joined the government. The process of subversion of political and legal institutions brought an extreme model of crony capitalism to Yeltsin's Russia.

Russia of the 1990s exhibits many elements of the injustice of inequality we have noted. These include the breakdown of legal institutions, the subversion of political institutions – including the Parliament, the government, and the Presidency, the formation of industrial groups driven by political (and ultimately economic) considerations rather than traditional efficiency, as well as the consequent discrimination in economic policy against smaller firms. Importantly, recent economic criticisms of Russia's transition have identified the institutional discrimination against smaller, entrepreneurial firms – as the culprit of the country's economic difficulties (McKinsey and Co. 1999). In line with this analysis, Russia has some of the highest levels of regulation of smaller firms in the world (Djankov et al. 2002a), as one would indeed fear from our model.

It is widely agreed, then, that the development of small business in Russia was lacadaisical during the 1990s, in part because of a hostile economic environment. Unlike in the Gilded Age United States, or in the Porfirio Mexico, the subversion of institutions in Russia was not accompanied by massive investment on the part of the winners and economic growth either. Opinions differ on Russia's economic performance in the 1990s, although there is little doubt that it was inferior to that in the Central European

countries, where institutional subversion was far more moderate. The comparison may not be entirely appropriate, however, since the oligarchs spent the decade consolidating their control over economic assets, and may not have gotten around to investing. As the century turned, the picture on investment was brightening.

The political response to the end of the Yeltsin era, however, seems more similar to that in the U.S. circa 1900 than to the Mexican Revolution. Yeltsin's successor, Vladimir Putin, was elected largely on a law and order platform. He immediately embarked in a pursuit of law and order through both legal reform and an increase in the police powers of the state. He also greatly undermined, if not destroyed, the political influence of the oligarchs, in some instances confiscating their assets and forcing them to emigrate. There is little doubt that, from the perspective of late 1990s, political freedom in Russia has declined. It remains to be seen whether the reduction in institutional subversion through centralization of political power actually manifests itself in genuine economic growth. Whatever the ultimate outcome, Russia in the 1990s offers a most remarkable illustration of how vast inequality of economic and political resources, in the context of initial institutional weakness, can lead to a substantial breakdown of law and order.

## **VI. Cross-Country Evidence**

As our last piece of evidence, we present some cross-country correlations between inequality, institutional quality, and growth. Empirical work in this area, including that presented below, is highly compromised by the endogeneity of the variables and by mutual causation. For this reason, we see this evidence as only suggestive.

Nonetheless, the theory does issue clear predictions about correlations, and it makes sense to verify whether these hold in the data. We consider two predictions of the

theory. First, we look for a relationship between inequality and law and order. Second, we examine whether the link between inequality and growth is stronger in countries with weaker legal systems. Table 1 summarizes all the data we use in the analysis.

For our first empirical task, we use two measures of inequality. First, we use the Gini coefficient calculated by Deininger and Squire (1996) as a measure of income inequality. This measure is problematic because it doesn't focus on the very rich—those who, in our model, are the main potential abusers of institutions. Our second measure is an estimate of corporate ownership concentration, used as an indicator of wealth concentration, from La Porta et al. (1998). For each country, this measure looks at the 10 largest non-state publicly traded companies, and reports the average (over the 10 companies) combined ownership stake of the three largest shareholders in each company. As the Progressive era discussion emphasizes, breakdowns in judicial institutions are as likely to cause this type of concentration as to be caused by it.

We will use three measures of institutional quality from the International Country Risk Guide. These are the risk of expropriation by the government (such as confiscation or forced nationalization), risk of contract repudiation (generally by the government as well), and rule of law. The last variable is an assessment of the law and order tradition of the country, and pertains generally to the quality of legal institutions rather than just the risk of abuse by the state.

Figure 1 establishes the basic relationship between the risk of expropriation and the Gini coefficient. The relationship is strong and negative. In some of the cases where the relationship doesn't work as well, we suspect that the Gini coefficient does not accurately capture the true degree of inequality. For example, Indonesia is rated as having little inequality and significant risk of expropriation. However, the Gini coefficient is not capturing the inequality of political influence during the Suharto era (Fisman 2001). Indeed, we would think that this inequality – reflected in the ownership

of most large firms by the President, his family, and his close associates -- makes Indonesia a clear example where we would expect legal institutions to fail.

Table 2 shows the relationships between the three rule of law variables and the Gini coefficient. In regression (1), we present the relationship also shown in Figure 1. The relationship between the risk of expropriation and inequality is strong—the correlation coefficient is over 50 percent. In regression (2), we include three control variables: GNP per capita, average schooling per capita and a dummy for whether the country uses common law or civil law. The first two controls are themselves endogenous—after all, the model suggests that income is higher in countries with better rule of law. The coefficient on inequality falls in half when we include the controls, but remains statistically significant.

Regressions (3) and (4) show the relationship between the risk of contract repudiation and income inequality. Again, more unequal countries have a higher risk of repudiation. In this case, the raw correlation between the two variables is over 40 percent. When we include the other controls, the coefficient drops but remains statistically significant. Regressions (5) and (6) show that more unequal societies have weaker rule of law. In this case, inclusion of the other controls reduces the t-statistic on the Gini coefficient to 1.5.

In Table 3, we consider the relationship between the rule of law and our measure of ownership concentration. Regression (1) shows a strong relationship between concentration and the risk of expropriation. As we have emphasized earlier, this could as easily reflect causality from risk of expropriation to concentration as the other way around. In regression (2), we show that this result is robust to the inclusion of our three controls. In regressions (3) and (4), we find that the risk of contract repudiation is positively related to ownership concentration. Countries with less legal certainty have more concentration. Finally, in regressions (5) and (6), we examine the relationship

between concentration and rule of law. Again, without controls there is a strong relationship but with controls the relationship becomes at best marginally significant.

Overall, these results point to correlations between inequality and legal institutions that are roughly in line with the model. In general, more income inequality is associated with weaker legal systems. Similarly, greater ownership concentration – our proxy for wealth concentration -- is also associated with weakness of legal regime.

A large literature, including Alesina and Rodrik (1994), Persson and Tabellini (1994), and Barro (1996), examines the inequality-growth connection. Here we only look at one implication of the model. In our model, the adverse effects of inequality on growth are especially pronounced in countries with weak legal regimes. Countries with strong rule of law should not see a negative relationship between inequality and growth.

To test this implication, we create a dummy variable based on the ICRG Rule of Law Index. Specifically, we code countries as having strong legal systems if they have a value for the Rule of Law Index that is greater than the mean value for the sample. We then interact this Rule of Law Index with the Gini Coefficient, and run a regression of the growth rate in per capita GDP between xx and yy on the Gini, the dummy variable for rule of law and the interaction. The result is:

$$(4) \text{ GDP Growth} = 4.7 - .09 * \text{Gini} - 3.7 * \text{Rule of Law Dummy} + .11 * \text{Interaction}$$

(1.3)      (.03)      (1.8)      (.04)

Standard Errors in Parentheses, Number of Observations=87, R-Squared=.21.

These results are consistent with the model. Inequality is bad for growth, but only in countries with poor rule of law. For the countries with good rule of law, inequality has no effect on economic growth.

These results suggest that the negative effects of inequality may well work through the law and order channel that our model points to. In countries like the U.S., which have strong legal institutions protecting investors against expropriation, inequality is not likely to be a problem. In countries where institutions are not as strong, inequality may lead to institutional breakdown, reduction and misallocation of investment, and consequently lower growth.

## **VII. Conclusion.**

This paper describes a possibly important adverse effect of inequality on economic and social progress: the subversion of legal, regulatory, and political institutions by the powerful. We argued that this risk indeed became a reality in a number of countries at different times in their history: the U.S. during the Gilded Age, Mexico in the nineteenth century, and Russia in the 1990s. The U.S. was remarkably successful in addressing the problems of institutional subversion, Mexico less so, and the verdict on Russia remains open.

It is tempting to conclude from this analysis that, especially in countries with weak political institutions, inequality is a source of institutional breakdown and should be countered at all costs through redistributive policies. Indeed, some of our discussion is not that distant from Marxist analyses of imperialism, colonialism, and globalization, which see institutional capture by the powerful -- whether local oligarchies or foreign capital -- as the crucial source of underdevelopment (Baran 1957). Although we share with the radical writers a concern over the inequality of political power, we do not find much in these writings much that we agree with. More importantly, the solutions we envisage -- institutional reform rather than redistribution -- are very different.

In many countries, the political response to institutional subversion by the rich has not been the democratic transformation of institutions, but rather a turn to massive redistribution, often in the context of a social revolution. Such revolutions have replaced the old oligarchies of the rich, with the new socialist or institutionalist oligarchies. In some cases, the effect has been a massive redistribution from the rich to the poor, with devastating consequences for economic and social progress. In other cases, the principal effect has been a change in elites, with continued capture of institutions by those in power. Dornbusch and Edwards (1991) present a depressing account of macroeconomic populism in Latin America, motivated largely by redistribution, and setting back the development of the region by many decades.

We do not believe, therefore, that the solution to King John redistribution is Robin Hood redistribution. At this point, we do not offer a positive theory of the form that the crisis of the oligarchical state is likely to take, or even a prediction that a crisis is unavoidable. Rather, we can suggest that, at least in some instances, countries have experienced peaceful institutional transformations that addressed the problems of subversion. There might be useful lessons in these experiences.

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## Appendix: Proofs of Propositions

*Proposition 1:* First, we prove that the strategies in claim (a) describe an equilibrium, and then we show its uniqueness. The plaintiff gains nothing from offering more (after all he wins the case). If the plaintiff offers less, he loses, and the value of the case is higher than the bribe (by assumption). The defendant has no benefit from reducing his bribe: he is losing the case anyway and does not care about offering less since the bribe is not paid anyway. The defendant does not pay more because he is constrained. If he were not and paid more than  $Z_D$ , the judge would pocket his money and he would still lose the case.

To prove that the equilibrium in (a) is unique, consider any other pair of bribes. First, the plaintiff cannot get less than  $D + V - \text{Min}(Z_D, \bar{B}_D)$ , since he can always offer  $V + \text{Min}(Z_D, \bar{B}_D)$  and win the case. Thus, he never offers more than  $\text{Min}(Z_D, \bar{B}_D) - V$ . Suppose the plaintiff offers less than  $\text{Min}(Z_D, \bar{B}_D) - V$ . In any such equilibrium, the plaintiff can offer  $B_p + V + \varepsilon$ , which is a winning bribe. This could not be an equilibrium, however, because the defendant could always offer  $\text{Min}(Z_D, \bar{B}_D) - V$  and win. Thus, all equilibria have the plaintiff offering  $\text{Min}(Z_D, \bar{B}_D) - V$ , but the plaintiff only makes this offer when the defendant bids  $B_D = \text{Min}(Z_D, \bar{B}_D)$ .

To prove that the actions described in claim (b) are an equilibrium, we note that the defendant never offers more than this amount since he wins the case anyway, and never offers less, because he would then lose the case and be strictly worse off. The plaintiff cannot offer more and gains nothing from offering less.

To prove uniqueness, we note that the defendant can always win by offering  $\bar{B}_p + V$ , so he cannot get less than  $-\bar{B}_p - V$ . If the defendant offered more than  $\bar{B}_p + V$ , he would

earn strictly less than this, so it would not be an equilibrium. If the defendant offers less than this, the plaintiff would offer  $B_D - V + \varepsilon$  and win the case, and thus the defendant would be better by offering  $\bar{B}_P + V$ . However, the plaintiff's only offer that induces the defendant to offer  $\bar{B}_P + V$  is  $\bar{B}_P$ .

In situation (c), we have an equilibrium because the plaintiff wins the case and thus never offers more (since he would then pay more) and never offers less (since he would then lose the case and do worse). The defendant cannot offer more and would gain nothing by offering less.

This equilibrium is unique because the plaintiff can guarantee victory by offering  $\bar{B}_D - V$  and thus never pays more (except when this is negative and then the plaintiff clearly offers zero). If the plaintiff offered less, the defendant would outbid him and the plaintiff would be strictly worse off. The only defendant's offer that can induce the plaintiff to offer  $\bar{B}_D - V$  is  $\bar{B}_D$ .

In situation (d), the defendant does not offer more than  $V + \text{Min}(Z_p, \bar{B}_P)$  since he is winning anyway. If the defendant offers less, he loses and is worse off. The plaintiff cannot offer more because, in that case, the judge either takes both bribes and he loses, or he is constrained. The plaintiff has no incentive to offer less.

This equilibrium is unique because the defendant can always guarantee victory by offering  $V + \text{Min}(Z_p, \bar{B}_P)$ , thus he never offers more. If the defendant offers less, the plaintiff could offer  $\text{Min}(Z_p, \bar{B}_P)$  which would make the defendant strictly worse off. Again, the only plaintiff's offer that induces the defendant to offer  $V + \text{Min}(Z_p, \bar{B}_P)$  is  $\text{Min}(Z_p, \bar{B}_P)$  (or more, and more cannot be an equilibrium because it is either infeasible or leads to losing one's bribe as well as the case).

*Proposition 2:*

The benefits of suing are  $\int_{V=\text{Max}(0, Z_D - Z_P)}^{Z_D} (D - Z_D + V) f(V) dV + \int_{V > Z_D} Df(V) dV$ . At  $Z_D = Z_P$ , the plaintiff always wins the case, and pays less than  $D - Z_P$  which is greater than  $C$ , so suing is optimal. If  $Z_D > V_{\text{Max}} + Z_P$ , then the defendant always wins, and the case generates negative returns. The derivative of this with respect to  $Z_D$  equals:

$$-f(Z_D - Z_P)(D - Z_P) - \int_{V=Z_D - Z_P}^{Z_D} f(V) dV \text{ (if } Z_D > Z_P \text{) which is strictly negative, and which}$$

we denote as  $\Delta$ . Hence there exists a value of  $Z_D^*$  at which

$$(A1) \quad C = \int_{V=Z_D^* - Z_P}^{Z_D^*} (D - Z_D^* + V) f(V) dV + \int_{V > Z_D^*} Df(V) dV,$$

and it is always optimal to sue if  $Z_D$  is less than  $Z_D^*$  and always optimal not to sue otherwise.

Differentiating this equation gives us that  $\frac{\partial Z_D^*}{\partial C} = \frac{1}{\Delta} < 0$ , and  $\frac{\partial Z_D^*}{\partial C} = \frac{F(Z_D^* - Z_P)}{-\Delta} > 0$ ,

and  $\frac{\partial Z_D^*}{\partial Z_P} = \frac{f(Z_D^* - Z_P)(D - Z_D^* + Z_P)}{-\Delta} > 0$ . When  $V = v + \varepsilon$ , (A1) can be rewritten:

$$(A1') C = \int_{\varepsilon=Z_C^*-Z_P-v}^{Z_D^*-v} (D-Z_D^*+v+\varepsilon)\phi(\varepsilon)d\varepsilon + \int_{\varepsilon>Z_D^*-v} D\phi(\varepsilon)d\varepsilon,$$

where  $\phi(\cdot)$  is the density function for  $\varepsilon$ . Differentiation then yields:

$$\frac{\partial Z_D^*}{\partial v} = \frac{(D-Z_P)\phi(Z_C^*-Z_P-v) + \int_{\varepsilon=Z_C^*-Z_P-v}^{Z_D^*-v} \phi(\varepsilon)d\varepsilon}{-\Delta}, \text{ which is positive.}$$

*Proposition 3:* When  $Z_A = Z_B$ , the offender loses the lawsuit and is worse off by committing the theft. When  $Z_A$  is sufficiently high, then the probability that he loses the lawsuit goes to zero and he always commits the theft. The costs of the lawsuit are

$$(1-F(Z_A-Z_B))D + \int_{v=0}^{Z_A-Z_B} (Z_B+V)f(V)dV, \text{ and the derivative of this with respect to } Z_A$$

equal  $-f(Z_A-Z_B)(D-Z_A)$ , which is strictly negative. By continuity, there exists a value of  $Z_A$  denoted  $Z_A^{**}(Z_B)$  at which the offender is indifferent between stealing and not, so that for values of  $Z_A$  above that level, he always steals.  $Z_A^{**}(Z_B)$  satisfies:

$$(A2) \delta D = (1-F(Z_A^{**}-Z_B))D + \int_{v=0}^{Z_A^{**}-Z_B} (Z_B+V)f(V)dV$$

Differentiating this equation gives us that  $\frac{\partial Z_A^{**}}{\partial \delta} = \frac{D}{f(Z_A-Z_B)(D-Z_A)} < 0$ ,

$$\frac{\partial Z_A^{**}}{\partial D} = \frac{\int_{v=0}^{Z_A^{**}-Z_B} (Z_B+V)f(V)dV}{f(Z_A-Z_B)D(D-Z_A)} > 0, \text{ and } \frac{\partial Z_A^{**}}{\partial Z_B} = \frac{f(Z_A-Z_B)(D-Z_A) + \int_{v=0}^{Z_A^{**}-Z_B} f(V)dV}{f(Z_A-Z_B)(D-Z_A)} > 0$$

When  $V = v + \varepsilon$ , (A2) can be rewritten as:

$$(A2') \quad \delta D = (1 - \Phi(Z_A^{**} - Z_B - \nu))D + \int_{\varepsilon=0}^{Z_A^{**} - Z_B - \nu} (Z_B + \nu + \varepsilon)\phi(\varepsilon)d\varepsilon.$$

$$\text{Differentiation then yields: } \frac{\partial Z_A^{**}}{\partial \nu} = \frac{\phi(Z_A - Z_B - \nu)(D - Z_A) + \int_{\varepsilon=0}^{Z_A - Z_B - \nu} \phi(\varepsilon)d\varepsilon}{\phi(Z_A - Z_B - \nu)(D - Z_A)} > 0$$

$$\text{Rewriting (A2), we find: } F(Z_A^{**} - Z_B) = 1 - \delta + \frac{1}{D} \int_{\nu=0}^{Z_A^{**} - Z_B} (Z_B + \nu)f(\nu)d\nu$$

Returning to equation (A1), we can write:

$$F(Z_D^* - Z_B) = 1 - \frac{1}{D} \left( C + \int_{\nu=Z_D^* - Z_A}^{Z_D^*} (Z_D^* - \nu)f(\nu)d\nu \right), \text{ which implies that when } D \text{ is}$$

sufficiently large, then  $Z_D^* > Z_A^{**}$ . When  $D$  is sufficiently large, the third term becomes arbitrarily small and it follows that  $Z_A^{**}(Z_B) \approx Z_B + F^{-1}(1 - \delta)$ .

*Proposition 4:* Following *Proposition 3*, when  $D$  is sufficiently large, theft occurs when out of the set of two  $Z$ 's drawn in a pair,  $Z_{Max} - Z_{Min} > F^{-1}(1 - \delta)$ , where  $Z_{Max}$  represents the greater value of  $Z$  in the pair and  $Z_{Min}$  represents the lower value of  $Z$  in the pair. We let  $k = F^{-1}(1 - \delta)$  and  $Z_{Med}$  denote the median value of  $Z$ . Note that the probability that  $Z_{Max} - Z_{Min} > k$ , equals the probability that  $Z_1 - Z_2 > k$  plus the probability that  $Z_1 - Z_2 < -k$ . Given the symmetry of the problem this also equals twice the probability that  $Z_2 - Z_1 > k$ . Thus, the proof only requires us to show that the mean preserving spread increases the probability that  $Z_1 - Z_2 > k > 0$ .

The probability that  $Z_1 - Z_2 > k$  can be written as

$$\int_{Z_1=-\infty}^{+\infty} \int_{Z_2=Z_1+k}^{+\infty} g(Z_2)g(Z_1)dZ_2dZ_1 = \int_{Z_1=-\infty}^{+\infty} (1-G(Z_1+k))g(Z_1)dZ_1, \text{ and our goal is to show that if}$$

$\tilde{g}(Z)$  is a symmetric single-toughed mean-preserving spread of  $g(Z)$ , then we must

$$\text{show that } \int_{-\infty}^{+\infty} G(Z+k)g(Z)dZ - \int_{-\infty}^{+\infty} \tilde{G}(Z+k)\tilde{g}(Z)dZ > 0, \text{ or using the notation that}$$

$$\tilde{g}(Z) \text{ equals } g(Z)+h(Z), 0 > \int_{-\infty}^{+\infty} \tilde{G}(Z+k)h(Z)dZ + \int_{-\infty}^{+\infty} H(Z+k)(\tilde{g}(Z)-h(Z))dZ.$$

We now use two lemmas:

*Lemma 2:* Suppose  $\Psi(Z)$  is increasing for  $Z \leq Z_{Med}$  and decreasing for  $Z \geq Z_{Med}$ . Then

$$0 > \int_{-\infty}^{+\infty} \Psi(Z)h(Z)dZ.$$

Proof: Since  $h(Z)$  represents a single-toughed mean-preserving spread, there exists a  $q > 0$  such that for all values of  $Z$  greater than  $Z_{Med} + q$  or less than  $Z_{Med} - q$ ,  $h(Z) \geq 0$ , and otherwise  $h(Z) \leq 0$ . Furthermore, because  $h(Z)$  must integrate to zero,

$$\int_{-\infty}^{Z_{Med}-q} h(Z)dZ = - \int_{Z_{Med}-q}^{Z_{Med}} h(Z)dZ \text{ and } - \int_{Z_{Med}}^{Z_{Med}+q} h(Z)dZ = \int_{Z_{Med}+q}^{\infty} h(Z)dZ$$

Using the fact that  $\Psi(Z)$  is increasing for  $Z \leq Z_{Med}$ , we obtain:

$$\int_{-\infty}^{Z_{Med}-q} \Psi(Z)h(Z)dZ \leq \int_{-\infty}^{Z_{Med}-q} \Psi(Z_{Med}-q)h(Z)dZ = \Psi(Z_{Med}-q) \int_{Z_{Med}-q}^{Z_{Med}} h(Z)dZ \leq \int_{Z_{Med}-q}^{Z_{Med}} -\Psi(Z)h(Z)dZ$$

Similarly, since  $\Psi(Z)$  is decreasing for  $Z \geq Z_{Med}$ ,

$$-\int_{Z_{Med}}^{Z_{Med}+q} \Psi(Z)h(Z)dZ \geq -\int_{Z_{Med}}^{Z_{Med}+q} \Psi(Z_{Med}+q)h(Z)dZ = \Psi(Z_{Med}+q) \int_{Z_{Med}+q}^{\infty} h(Z)dZ \geq \int_{Z_{Med}+q}^{\infty} \Psi(Z)h(Z)dZ.$$

Hence the result.

$$\text{Lemma 3: } \int_{-\infty}^{+\infty} H(Z+k)\tilde{g}(Z)dZ = -\int_{-\infty}^{+\infty} \tilde{G}(Z-k)h(Z)dZ.$$

First, note that a simple change of variables argument implies that

$$\int_{-\infty}^{+\infty} H(Z+k)\tilde{g}(Z)dZ = \int_{-\infty}^{+\infty} H(Z)\tilde{g}(Z-k)dZ. \text{ Second integration by parts tells us}$$

$$\text{that: } \int_{-\infty}^{+\infty} H(Z)\tilde{g}(Z-k)dZ = -\int_{-\infty}^{+\infty} h(Z)\tilde{G}(Z-k)dZ + \tilde{G}(Z-k)H(Z)\Big|_{-\infty}^{+\infty}, \text{ but the last term is}$$

zero (using the property that  $H(Z)$  equals zero at both extremes), and the lemma follows.

To prove the proposition first notice that from Lemma 3 we obtain

$$\int_{-\infty}^{+\infty} \tilde{G}(Z+k)h(Z)dZ + \int_{-\infty}^{+\infty} H(Z+k)(\tilde{g}(Z)-h(Z))dZ =$$

$$\int_{-\infty}^{+\infty} (\tilde{G}(Z+k)-\tilde{G}(Z-k))h(Z)dZ - \int_{-\infty}^{+\infty} H(Z+k)h(Z)dZ$$

Since the density  $\tilde{g}$  is single peaked, the function  $\Psi(Z) = \tilde{G}(Z+k) - \tilde{G}(Z-k)$  satisfies the hypothesis of Lemma 2 and hence it suffices to show that

$$\int_{-\infty}^{+\infty} H(Z+k)h(Z)dZ \geq 0.$$

Using a change of variables and integration by parts exactly as in the proof of Lemma 3, one verifies that

$$\int_{-\infty}^{+\infty} (H(Z+k) + H(Z-k))h(Z)dZ = 0. \quad (A3)$$

Since  $h$  is single-troughed, the function  $\Psi(Z) = H(Z-k) - H(Z+k)$  satisfies the hypothesis of Lemma 2 and hence

$$\int_{-\infty}^{+\infty} H(Z+k)h(Z)dZ \geq \int_{-\infty}^{+\infty} H(Z-k)h(Z)dZ. \quad (A4)$$

(A3) and (A4) imply that

$$\int_{-\infty}^{+\infty} H(Z+k)h(Z)dZ \geq 0.$$

*Proposition 5:* If  $D$  is sufficiently large, then an increase in  $\lambda$  reduces the amount of theft in society. Theft occurs when  $Z_{Max} - Z_{Min} > F^{-1}(1-\delta)$  or  $(1-\lambda)(\mu_{Max} - \mu_{Min}) > F^{-1}(1-\delta)$  or  $(\mu_{Max} - \mu_{Min}) > F^{-1}(1-\delta)/(1-\lambda)$ . If the distribution of  $\mu$  is characterized by a density function  $p(\cdot)$  and a cumulative distribution

function  $P(\cdot)$  then following the logic of the last proof, we can write the amount of theft

as  $2 \int_{\mu_1=-\infty}^{+\infty} (1 - P(\mu_1 + k)) p(\mu_1) d\mu_1$ , where  $k$  equals  $F^{-1}(1 - \delta)/(1 - \lambda)$  and differentiating

this with respect to  $k$  yields:  $-2 \int_{\mu_1=-\infty}^{+\infty} p(\mu_1 + k) p(\mu_1) d\mu_1$ , which is clearly negative. As a

consequence, anything that increases  $k$  reduces theft and anything that decreases  $k$  increases theft. As  $k$  is rising  $\lambda$ , this leads to a reduction in the level of theft.

*Proposition 6:* We denote the returns to investment by  $W(Z)$ , which equals  $(G(Z + v) - \theta)D$ . As  $Z$  approaches the maximum value of  $Z$ ,  $G(Z + v)$  approaches one and investment yields strictly positive returns. When  $Z$  equals  $\underline{Z}$ , then by assumption the value of  $W(Z)$  is negative. As  $G(\cdot)$  is a continuous, monotonically increasing function, there must exist a value of  $Z$ , denoted  $Z_I$ , at which individuals are indifferent between investing and not investing, i.e. where  $G(Z_I + v) = \theta$ . For values of  $Z$  above  $Z_I$ , investing is preferred to not investing, whereas for values of  $Z$  below  $Z_I$ , not investing is preferred to investing. Moreover, differentiation immediately yields that  $\frac{\partial Z_I}{\partial v} = -1$ , and

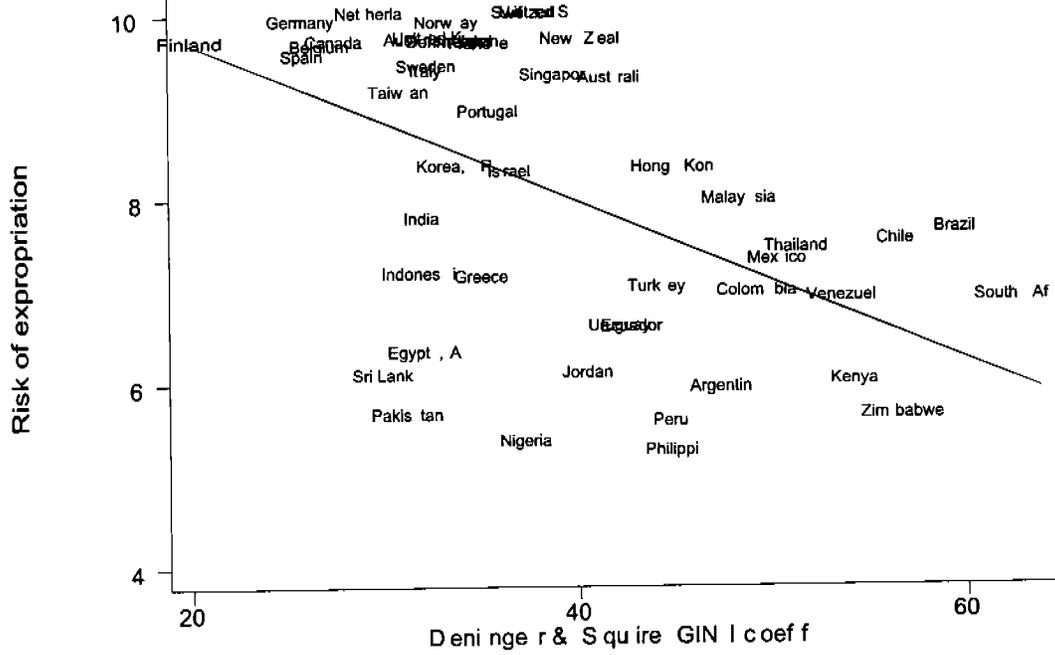
$$\frac{\partial Z_I}{\partial \theta} = \frac{1}{g(Z_I + v)}, \text{ which produces the first two comparative statics.}$$

A mean preserving spread in  $G(\cdot)$  causes  $G(Z_I + V)D$  to fall (and  $Z_I$  to rise) if and only if  $Z_I + V$  lies above the median value of  $Z$ . The value of  $Z_I + V$  is defined so that  $G(Z_I + V) = \theta$ , and therefore,  $Z_I + V$  lies above the median of  $Z$  if and only if  $\theta$  is greater than .5.

If  $Z = \lambda\alpha + (1 - \lambda)\mu$ , then  $W(\mu) = (P(\mu + v/(1 - \lambda)) - \theta)D$ , and for the marginal investor, denoted  $\mu_I$ ,  $P(\mu_I + v/(1 - \lambda)) = \theta$ , and differentiation produces

$$\frac{\partial \mu_I}{\partial \lambda} = -\frac{v}{(1 - \lambda)^2}, \text{ so the proportion of investors rises with } \lambda.$$

Figure 1



**Table 1: The Variables**

This table describes the variables included in our study. The first column gives the name of the variable. The second column describes the variable and gives the range of possible values. The third column provides the sources from which the variable was collected.

Variable	Description	Sources
Gini Coefficient	Gini Coefficient for income inequality in each country. When the 1990 coefficient is not available, we use the most recent available.	Deininger and Squire (1996); World Bank
Ownership Concentration, 10 largest private firms	The average percentage of common shares owned by the three largest shareholders in the ten largest non-financial, privately-owned domestic firms in a given country. A firm is considered privately owned if the State is not a known shareholder in it.	<i>Moodys International</i> , <i>CIFAR</i> , <i>EXTEL</i> , <i>WorldScope</i> , 20-Fs, <i>Price-Waterhouse</i> and various country sources.
Risk of Expropriation	ICR's assessment of the risk of "outright confiscation" or "forced nationalization". Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for higher risks	International Country Risk Guide
Risk of Contract Repudiation	ICR's assessment of the "risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down" due to "budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities." Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for higher risks.	International Country Risk Guide
Rule of Law	Assessment of the law and order tradition in the country produced by the country-risk rating agency <i>International Country Risk (ICR)</i> . Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for less tradition for law and order. (We changed the scale of this variable from its original range going from 0 to 6).	International Country Risk Guide

Table 2: Inequality and Rule of Law

	(1)	(2)	(3)	(4)	(5)	(6)
	Risk of expropriation	Risk of expropriation	Risk of contract repudiation	Risk of contract repudiation	ICRG rule of law index	ICRG rule of law index
Deninger & Squire GINI coeff	-0.0862 (0.0201)	-0.0414 (0.0115)	-0.0858 (0.0236)	-0.0300 (0.0139)	-0.0706 (0.0140)	-0.0174 (0.0114)
dummy (=1 for common law country)		0.5661 (0.2217)		0.5860 (0.2676)		0.3851 (0.2119)
log(GNP per capita, avg. 1970-1995)		1.0883 (0.1427)		1.2287 (0.1722)		1.0053 (0.1325)
log(school attainment, avg. 1960- 1985)		-0.5368 (0.4117)		-0.3974 (0.4970)		-0.2698 (0.3280)
Constant	11.4151 (0.8095)	1.5997 (1.0350)	10.9312 (0.9476)	-0.7119 (1.2495)	6.3662 (0.5809)	-3.0061 (0.9675)
Observations	49	45	49	45	99	76
Adjusted R- squared	0.2654	0.8030	0.2036	0.7735	0.2001	0.6986

Standard errors in parentheses.

Table 3: Wealth Concentration and the Rule of Law

	(1)	(2)	(3)	(4)	(5)	(6)
	Risk of expropriation	Risk of expropriation	Risk of contract reputation	Risk of contract reputation	ICRG rule of law index	ICRG rule of law index
largest 3 firms share of total ownership	-5.8205 (1.5641)	-2.1961 (0.9818)	-6.4619 (1.7581)	-2.4219 (1.0553)	-5.5783 (1.6536)	-1.4762 (0.9361)
dummy (=1 for common law country)		0.3136 (0.2537)		0.3230 (0.2727)		0.2177 (0.2419)
log(GNP per capita, avg. 1970-1995)		1.1237 (0.1608)		1.2565 (0.1729)		1.2485 (0.1534)
log(school attainment, avg. 1960-1985)		-0.6850 (0.4718)		-0.6811 (0.5071)		-0.6633 (0.4498)
Constant	10.8766 (0.7464)	1.0900 (1.1944)	10.7082 (0.8390)	-0.3761 (1.2838)	6.7480 (0.7891)	-4.2966 (1.1389)
Observations	45	41	45	41	45	41
Adjusted R- squared	0.2260	0.7600	0.2214	0.7800	0.1909	0.8035

Standard errors in parentheses.