The Rule of Law and Economic Growth:
Where Are We?

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The literature on the rule of law and economic growth has been one of the more dynamic areas of theoretical and empirical work in political science, economics and law, joining an interest in institutions and fundamental economic processes. We also now have more cross-national data purporting to measure the rule of law than we know what to do with. Yet even the very best work in the field has not been adequately attentive to the problems caused by the multidimensionality of the rule of law concept. To what extent are discrete components of the "rule of law complex" related to one another theoretically? How do the discrete components of the rule of law cluster empirically across countries? To what extent are empirical findings deploying one conception—and measure—of the rule of law robust to specifications that consider alternative conceptions of the rule of law?

The first section of this paper explores the core causal mechanisms through which the rule of law has been associated with economic growth: through security of property and enforcement of contract; through checks on government; and through checks on corruption and private capture. We underline that these dimensions of the rule law—however important—rest on the even more fundamental solution to the question of political order: the sublimation of violence and the provision of security of person.

The second and third sections explore the empirical relationship between these distinct components of the rule of law complex. We base this discussion around a selection of prominent rule of law measures for a sample of 74 developing and transition economies. This discussion confirms both the complementary nature of many of the different dimensions of the rule of law, but also their distinctness: measures of property rights, checks on government and corruption are correlated but by no means as tightly as might be believed and very much less tightly than in similar exercises conducted on a global as opposed to developing country sample.

A somewhat surprising finding is that these measures--which make up the staple of the law and development literature—are not well correlated with measures of security of person or "law and order" in the more traditional sense. A cluster analysis shows, however, that the level of violence—used as a proxy for security of person—is one of the more important factors in differentiating among developing countries with respect to the rule of law. Some developing countries have managed to control social violence while others have not.

In the fourth and fifth sections, we undertake two empirical exercises, both building on influential work that has shaped the literature on institutions and economic growth. The well-

known paper by Acemogulu, Johnson and Robinson (2001) addresses the determinants of economic growth over the long-run by investigating the institutional determinants of the great divergence in per capita incomes across countries. Despite the incredible care exercised by Acemoglu et. al. in addressing endogeneity issues, their instrumental variables approach is incapable of distinguishing between competing institutional hypotheses about the origins of long-run growth and by no means can be taken as a demonstration of the primacy of a property rights story.

Building on a model developed by Barro (1997), we also consider the determinants of both growth and the volatility of growth in the intermediate-run, replicating Barro's work by considering the determinants of economic performance during the 1985-2004 period. These simple growth regressions raise similar issues to those raised in our discussion of Acemoglu et. al., and also cast doubt on some institutional explanations offered in both the economics and political science literatures. First, aggregated rule of law indices have explanatory effect, but it remains difficult to know what components of the rule of law are therefore most significant. Among more disaggregated measures, corruption seems to perform better than either measures of property rights or purportedly objective measures of checks on government, suggesting private capture may be as damaging as predatory governments.

Second, we find that measures of violence affect the volatility of growth, a finding in line with recent work on the economic consequences of civil war (Collier 2007). The findings with respect to violence may help explain an important observation about the experience of the developing countries: that weak economic performance over the very long run is not simply the result of low average growth rates but of high volatility.

Because of the difficulties in isolating the effects of a particular dimension of the rule of law, either theoretically or methodologically, we conclude by arguing that it may be more useful to think about what we call "rule of law complexes." These complexes—in some cases pathologies—can be seen as interlocking sets of institutions that can combine to stunt or promote economic growth, but in somewhat different ways across countries. The conclusion speculates on the implications of these findings for the appropriate sequencing of political, institutional, and legal reforms.

Theoretical Issues

It is important to acknowledge at the outset the fundamental skepticism introduced in Adam Przeworski's important paper, "Institutions Matter?":

> The theory of "new institutionalism" consists of two propositions: 1) 'Institutions matter': they influence norms, beliefs, and actions; therefore, they shape outcomes; 2) 'Institutions are endogenous': their form and their functioning depend on the conditions under which they emerge and endure. Now, the embarrassingly obvious observation is that if endogeneity is strong, then institutions cannot have a causal efficacy of their own…Conditions shape institutions and institutions only transmit the causal effects of these conditions.

As we will see, this skepticism has generated increasing attention to specification: efforts to identify more precisely what can be attributed to institutions—including the rule of law—and what must be attributed to the underlying social, and even ecological, circumstances that gave rise to these institutions in the first place.

However there is an additional point that we pursue here: that the various institutions associated with the rule of law are not only endogenous to some underlying set of causal factors, such as geography or factor endowments, but they are endogenous—or at least complementary--to one another. Property rights are meaningless in the absence of mechanisms for adjudication and enforcement, which if they are to be independent require various checks on government. These institutions, in turn, are dependent on the capacity of governments to provide security of person—"law and order"—which in turn is a result of functioning police, legal and penal institutions, checks on executive authority and independence of the judiciary.

We start the exploration of this point by reviewing briefly four major theoretical routes from the rule of law to growth: through the mitigation of violence; through protection of property rights; though institutional checks on government; and through control of biases that distort public policy, including corruption. In each case, we consider some of the channels through which these different dimensions of the rule of law are related conceptually; in the following section we explore the same relationships empirically.

The Rule of Law as Security of Person

For the early contract theorists, but most notably for Hobbes, the state of nature was characterized by continuing and ongoing threats to personal security as well as property. The rule of law meant in the first instance the provision of security. There is a deep logic in this view; it makes little sense to talk about security of property or the integrity of contract if the economic agents engaging in these activities are themselves not secure (Narayan et al. 2000, Black et al. 2000, Belton 2005).

Unfortunately, the breakdown of central authority and the emergence of civil conflict and criminality are very much with us. A theoretical literature has explored the economic effects, in different formulations, of anarchy (Hirshleifer 1995), extortion (Konrad & Skaperdas 1998), private predation (Grossman & Kim 1995), and lawlessness (Dixit 2004). But it has taken the empirical work of Collier (1999, Collier et al. 2003, 2006) to show just how devastating the effects of civil conflict can be. Civil conflict not only destroys infrastructure, private property and life directly, but diverts resources from the provision of public goods and productive private activity into violence.

Even in the absence of full-blown civil war or state failure, societies may still suffer from their inability to provide personal security. A growing concern is the effect of crime of various sorts on the course of economic development (Ayres 1998; Buvinc & Morrison 1999). The World Bank (2006) has estimated that decreasing the homicide rate by ten percent increased per capita GDP by 0.7% to 2.9% over the subsequent five years even when controlling for a variety of other determinants. In a more general statement, Lorentzen et. al. (2008) show how premature adult mortality—from all sources, including crime—has a profound effect on time horizons, investment, and economic activity.

It is one thing to document the economic costs of civil conflict and crime; it is quite another to reconstitute the rule of law in this most basic sense when it is lacking. Civil wars typically last a long time (Fearon & Laitin 2003). Few civil wars end through negotiated settlement, perhaps as few as 20% (Walter 1997); the remainder end in decisive military victory for one side or the other. Even then, recidivism is high, on average, 39% of states emerging from conflict return to conflict in the first five years, and another 32% return to conflict in the following five years (Collier et al. 2006).

A recurrent theme in the literature on post-conflict settings is the interdependence of the reforms required for enduring security. Either victory or a political settlement needs to be institutionalized at the political level (Norris 2007). This settlement needs to be enforced, particularly given that civil war provides cover for criminal activity, private violence, and vendetta (Kalyvas 2006). Such enforcement requires a host of complementary institutional developments (Samuels 2006): building a credible and neutral police force; developing public prosecutors and defenders; reforming the criminal code; ensuring the competence and independence of judges; and guaranteeing the integrity of the penal system.

The literature on the rule of law and economic growth has tended to ignore the fundamental role of security, although recent work by Robert Bates (2001) and North, Wallis and Weingast (2009) have sought to put the question back on the agenda. Outside of the work of Paul Collier and Lorentzen et.al. (2008), economists who have intuited the primal importance of conflict for economic activity, such as Rodrik (1999), get at the issue indirectly through proxies such as ethnic heterogeneity. Surprisingly, we have no sustained tests of the extent to which shortcomings with respect to property rights are a result of bad institutions or the much more fundamental problem of civil conflict or pervasive criminality.

The Canonical Economic Formulation: Property and Contracting Rights

Among economists, the core theoretical insight linking law to economic development runs through property rights and contract enforcement (Coase 1960, Alchian 1965, Demsetz 1967, Alchian & Demsetz 1973, Williamson 1971, 1985; for reviews and syntheses, see Furubotn & Pejovich 1972, Barzel 1997; Asoni 2008; on the so-called new economic history see North & Thomas 1973; North 1981, 1990; Haber et al. 2003). There is a direct lineage from this earlier work to the strand of new growth theory that focuses on the role of institutions (Acemoglu et al. 2001, 2005; Rodrik et al. 2002; Easterly & Levine 2003).

The link from property rights to growth runs through the incentives individuals have to invest and trade when such rights are secure. The capacity to contract is equally fundamental. Some trade can take place in the form of barter or "spot" exchanges but more complex inter-temporal transactions require the ability to make and receive promises about future actions. This is particularly true of financial transactions, which from a legal point of view are primarily

contracts; not surprisingly, a major strand of the law and economic development literature has dealt with financial development (La Porta et al. 1998; Djankov et al. 2002).

The cross-national empirical literature on property rights and growth is easily summarized as there have been relatively few contrarian voices. A number of studies have found that more robust property rights protection---typically measured through survey data on risk of expropriation (e.g., from the International Country Risk Guide) or including risk of expropriation as a component of a wider index (per Kaufmann 2003a,b)---are associated with better long-run economic performance (Knack & Keefer 1995; Scully 1988; Barro 1997; Clague et al. 1996, 1999; Zak & Knack 2001; Keefer & Knack 2002; Keefer 2007; Asoni 2008). The new literature on institutions and long-run growth tests similar propositions, since either the conception of institutions or the proxy for them is the extent of property rights protection (e.g., Acemoglu et al. 2001; Acemoglu & Johnson 2005). Cross-national tests have now been supplemented with micro-level studies of the effects of property rights as well (Besley 1995; Alston & Schneider 1996; Anderson & Hill 1975, Libecap 1989; Galiani & Schargrodsky 2006; Malesky 2009).

The Canonical Political Formulation: Checks on Government

An important theoretical contribution to the debate on the rule of law and economic development has come from the joining of arguments about property rights and contracting to the long-standing tradition about the significance of institutional checks and balances. Legal scholars have also associated the rule of law with restraints on the state (Hayek 1978, Dicey 1982, Cass 2001), including through an independent judiciary.

Institutional checks and balances are economically important because governments not only have the power to renege on their commitments but powerful incentives to do so. Given these incentives, the rule of law cannot be credible, and the purported gains from property rights and enforcement of contract not fully realized, unless there are effective limits on executive discretion (for example, Buchanan & Tullock 1962 and Hayek 1973 on constitutions; Root 1994; Olson 1993 and McGuire & Olson 1996; North & Weingast 1989; Weingast 1995, 1997; Schultz & Weingast 2003; Acemoglu, Johnson &Robinson (2005).

Weingast (1997) provides an exemplary statement of this logic. Sovereigns, he argues, can choose either to respect citizens' rights or to transgress them. In making this choice, the ruler

faces two constraints. The first is economic. For economic growth to occur the sovereign or government must not merely establish the relevant set of rights, but make credible commitments to them. Olson (1993, McGuire & Olson 1996) attempts to show that this constraint alone can provide incentives for autocrats to exercise restraint and provide public goods, since the autocrat's own returns---in the form of taxes---will rise accordingly.

Weingast (1997) introduces more realism by noting that sovereigns must also consider *political* constraints on the exercise of their discretion. Although citizens face coordination challenges, they can ultimately rise up and attempt to dispose of the sovereign. Even autocrats make institutional, legal, and policy concessions to guard against this threat. North & Weingast (1989) detail a variety of institutional changes that constrained royal power in the wake of the Glorious Revolution, including the abolition of the Star Chamber and prerogatives surrounding it, the requirement that property rights cases be heard under common law and dismantling the royal administrative apparatus. But the pivotal innovation was the requirement that Parliament sit on a regular basis and exercise an effective veto on the raising of new revenues. Root (1994), North & Weingast (1989), and Schultz & Weingast (2003) find that these institutional changes affected both the state's capacity to borrow and private investment.

One variant of this research program has focused on democracy itself as a necessary condition for the restraint of state power. Among economists, Barro (1996) was among the first to test for the effects of democracy on growth. Controlling for property rights protection, which was found to be a highly significant predictor of growth, the effects of democracy were mildly negative; we discuss these findings in more detail below. Among political scientists, Przeworski et al. (2000) found that regime type had no effect on investment, the growth rate of the capital stock, or overall income growth.[1]

An alternative empirical approach that is more in line with the theory is to consider not the effects of regime type per se but the precise institutional checks that might enhance the

[1] A number of new approaches to testing the democracy-growth nexus have restored some of the indeterminacy that prevailed pre-Przeworski et al (for example Gerring et al. 2005). Petrova & Bates (2007) is of particular theoretical interest. They find that the Przeworski et al. findings are not robust to an alternative specification of regime type that includes a third, intermediate type. Semiauthoritarian or semidemocratic regimes---many transitional in nature---show greater economic volatility than either authoritarian or democratic regimes. Moreover, when this intermediate regime type is included in cross-country regressions, democratic regimes are found to have a significantly lower level of expropriation risk than fully autocratic ones.

credibility of commitments (Cox & McCubbins 2001, Tsebelis 2002, MacIntyre 2003). These veto points can arise from basic constitutional arrangements (presidentialism, bicameralism), electoral rules (proportional representation and the corresponding likelihood of coalition governments) or other "horizontal" checks on government, such as independent central banks or regulatory agencies (Schedler et al. 1999) and most importantly, the independence of the judiciary itself. The most comprehensive effort to construct a database of such checks has been undertaken by Henisz, who find a relationship between such checks and economic growth (Henisz 2000a), the volatility of policy (Henisz 2004), foreign direct investment (Henisz 2000b) and investment in infrastructure (Henisz 2002) and telecommunications (Henisz & Zelner 2001; see also Stasavage 2002, 2003).

Both the endogeneity and complementarity of rule-of-law institutions become clear when we move from checks on government writ large to the more specific question of judicial independence. La Porta et al. (2004) code judicial independence using objective indicators such as judicial tenure and the law-making power of judicial decisions, and find that independence has positive effects on the security of property rights. Interestingly, however, an overlapping team (Glaeser & Shleifer 2002) does not find that judicial independence is associated with long-run growth. Feld & Voigt (2003) offer a possible explanation for these divergent findings. They construct a new database on high courts that encompasses both de jure measures, such as formal institutional arrangements, and de facto measures such as the effective length of terms and trends in budgets. They find that whereas GDP growth (1980-1998) is not affected by de jure independence, it is affected by de facto independence.

These findings return us to the problem of institutional complementarities. Consider the following set of causal claims. Judicial independence can arise from the length of judicial appointment, control over judicial administration (Russell 2001), budget (Domingo 2000), discipline (Hanssen 1999), and the power of judicial review (see Ginsburg 2003 on Asia and Hammergren 2007 on Latin America). It is obvious, however, that these powers are an equilibrium outcome of some deeper political relationships, such as whether judges are elected or appointed (e.g., Hanssen 1999) or changes in the political composition of [the] three branches of government (McNollgast 2006).

But even these intra-institutional relationships may not get at the core factors determining the integrity of property rights. In a biting critique of the "rule of law orthodoxy," Upham (2006,

p. 85) notes that the American judiciary is not only subordinate in a formal institutional sense, but that American judges are appointed by politicians or are elected, and "overwhelmingly follow their political preferences when the opportunity presents itself." These facts notwithstanding, the United States has obviously enjoyed high growth over the long run. Upham contends that this outcome probably rests on some underlying features of the political system that go far beyond institutions, such as the lack of polarization across the parties or deeper political settlements that resolve the problem of violence. In an important critique of North & Weingast (1989), Stasavage (2002, 2003) argues that Parliament acted as a check on the king not because of institutional arrangements but because it directly represented bondholders. Moreover, this new set of institutional arrangements emerged in the wake of civil war, suggesting that both checks on government and the integrity of property rights required a more fundamental political settlement that limited violence and re-established "law and order."

Corruption and the Rule of Law

The principle of equal treatment and procedural fairness seems central to our conception of the rule of law: whatever law exists should be consistently applied across similar cases and and not be vulnerable to bias introduced as a result of corruption (Dicey 1982, Holmes 2003). But the focus on procedural fairness as a key element in the rule of law underscores an important assumption in the property rights approach: that it is the state that needs to be checked. But challenges to the principle of equal treatment and procedural fairness are by not means limited to those emanating from the state. Indeed, it is possible to have secure property rights that favor an inefficient allocation of resources because of *private* capture and corruption (Keefer 2004, Haber et al. 2003).

There are certainly circumstances in which corruption might enhance efficiency; think, for example, of a bribe designed to circumvent a tariff (Bhagwati 1982). However there are a number of plausible channels through which the violation of the norm of procedural fairness through corruption can have an adverse effect on economic activity. First, if individuals cannot be confident of equal treatment by the judicial system, then the courts cease to be a dependable institution for dispute resolution. Parties are forced back on the costly alternative of private enforcement, and investment and trade suffer accordingly. Second, rent-seeking and corruption

raise costs for producers and consumers by diverting resources into the rent-seeking process (key theoretical treatments include Kreuger 1974, Bhagwati 1982, Shleifer & Vishny 1998). Third and most importantly, corruption and rent-seeking introduce policy distortions that constitute barriers to long-run growth: monopolies, restrictions on entry, protectionism, misallocation of government spending, and private expropriation of assets through managerial malfeasance.

Research on corruption and economic growth has exploded since the mid-1990s. Mauro (1995) showed that higher corruption as measured by surveys of investors was associated with lower investment and growth. A stream of other studies followed (e.g., Knack & Keefer 1995, Wei 1997, La Porta et al. 1999, Ades & Di Tella 1997, Treisman 2000, Pellegrini & Gerlagh 2004). Micro-level studies based on more direct measures of corruption—such as asking respondents about their actual experiences of corruption or its costs—confirmed the cross-national findings (Reinikka & Svensson 2002, Reinikka 2001, Johnson et al. 2002). Clever natural experiments also teased out the returns to corruption (for example, Fisman 2001).

The adverse effects of corruption on economic growth have achieved the status of received wisdom, but there are ample puzzles that again suggest the complementarity institutions. East Asia's rapid growth constitutes a particularly important anomaly in this regard. Many countries in the region---including Korea, Taiwan, Thailand, Malaysia, Indonesia, and now China and Vietnam---were characterized by extensive corruption during their transformative growth experiences (Campos 2001, Rock & Bonnett 2004). Most were also lacking in formal institutional checks on executive discretion. Why might corruption be less debilitating in some settings than in others? Shleifer & Vishny (1993) argue that centralized political institutions provide incentives for leaders to limit arbitrary behavior on the part of lower-level officials. When corruption is decentralized, by contrast, no individual politician or bureaucrat fully internalizes the costs of their corrupt behavior, and property rights are less secure as a result (Bardhan 1997, pp. 1324-26; Campos et al. 1999; and Rock & Bonnett 2004; MacIntyre 2001; Li & Lian 2001). These and other analyses of corruption underscore the more fundamental point that the effect of any given component of the rule of law complex—in this case corruption—is highly conditional on other institutional arrangements.

How Closely Correlated are Rule of Law Measures?

So how, exactly, do these discrete components of the rule of law hang together empirically in developing countries? We begin by considering the correlations among a variety of rule of law indicators that purport to measure some of the key concepts outlined above (see also Haggard, MacIntyre and Tiede 2008; Skanning 2009; Treisman 2008 on corruption; Rios-Figueroa and Staton 2008 on judicial independence and Kurtz and Schrank 2007 and Woodruff 2009 on measures of institutions and governance more generally). All data (except conflict years, which are simply summed) are averaged over the period 2003-7.The exercise is undertaken on a sample of 74 developing and transition economies, defined as those outside the OECD with the exception of the "late joiners"--the Czech Republic, Hungary, Korea, Mexico, Poland, and the Slovak Republic—which are included. We omitted all countries with a population under 1 million. We omitted countries for which all indicators were not available, which biases our results because of the exclusion of a number of low-income countries. Nonetheless, the countries included cover a large swath of the developing and formally socialist world.

We consider eleven indicators of the rule of law. Some are aggregate indices built on a number of discrete components. Some indicators—including those that make up aggregate indices--are subjective: they are based on evaluations of experts, investors or citizens. Others are purportedly "objective," including discrete features of political institutions that are subject to measurement (veto gates) or proxies designed to capture features of the institutional and legal (murder rates or internally displaced persons as a measure of the de facto security of person).

This difference in type of indicator has been a point of concern in the literature, but is by no means as hard-and-fast as it may appear. Glaeser et. al. (2004) argue that claims about legal institutions should be limited to those amenable to "objective" measurement because of the risk of bias in subjective measures. Treisman (2008) expresses a similar concern in a review of the corruption literature, arguing that subjective indexes are not capturing corruption "but inferences made by experts and survey respondents on the basis of conventional understandings of corruption's causes." In an important critique of the World Bank's goverance indicators, Kurz and Schrank (2007) argue that the significance of governance variables in cross-country growth regressions disappears altogether when controlling for recent economic performance.

Woodruff (2009), however, makes an important distinction between de jure and de facto institutions that calls into question the utility of at least some nominally "objective" measures. He points out that Peru received a perfect score on one "objective" measure of judicial independence in a prominent paper (La Porta et. al. 2004), despite the fact that the independence of the judiciary was consistently being undermined by the executive and corruption was rampant (see also Rios-Figueroa and Staton 2008 on de jure and de facto measures of judicial independence). The invocation of "objectivity" by no means guarantees that what is being counted—meaningless statute in this case—has any bearing on how the legal system actually works. Subjective measures may well be capturing interesting gaps between de jure and de facto institutions (Feld & Voigt 2003)

These caveats aside, we provide a correlation matrix among a number of measures that include indices, objective and subjective measures (Table 1; see Appendix 1 for a more complete discussion of the variables). These measures are arrayed following our theoretical discussion:

- Measures of security of person, including both subjective and objective measures (Political Risk Services index of Political Stability and Absence of Violence; the number of internally displaced persons divided by population, used here as a proxy for internal conflict; and homicides per 100,000 people).
- Measures of security of property and enforceability of contract (Political Risk Services Contract Viability and Average Protection against Risk of Expropriation; World Bank measure of number of procedures required to enforce a contract);
- Measures of checks on government (Henisz measure of political constraints, Cignarelli & Richards measure of judicial independence);
- Indices of control of corruption (Transparency International Perception Index, Economist Intelligence Unit measure of corruption among political officials).

In addition, we include two aggregate rule of law measures, the World Bank's Governance VII Rule of Law; World Economic Forum Rule of Law).

//Insert Table 1 here//

A first point to note is that the correlations across various rule of law measures is not as high as we might expect, not even reaching 0.5 in many cases. These suggest a first important

point: that findings with respect to the rule of law and economic growth are likely to be highly sensitive to use of indicator. A second point to note is that while the aggregate indices have statistically significant correlations with most of the other measures in our data set, those relationships are not particularly strong either with the important exception of corruption. This pattern is actually problematic for understanding what particular features of the rule of law are most significant for explaining economic growth, and suggests that at least these two aggregate measures load heavily on the corruption dimension. It is possible that the weight given to different underlying sources of aggregate measurements emphasize certain sources more than others (see Kaufmann, Kraay & Mastruzzi 2007: 21; Skaaning 2009).

A third finding is that the relationships among the different components of the rule of law are significantly weaker than for a similar exercise by Haggard, McIntyre and Tiede (2008)[2] that included developed as well as developing countries. The correlation between aggregate rule of law measurements and corruption is quite high for both samples of countries, but the Haggard McIntyre and Tiede study also showed relatively high correlations between corruption and both property rights protection and security. For developing countries, by contrast, the correlation between different components of the rule of law complex consistently exceeded 0.5 only for corruption and institutional variables. These findings suggest strongly that different rule of law complexes may be operating among the advanced industrial and developing countries, a point we explore in more detail in the following section.

It is also worthwhile to note two interesting theoretical anomalies. Risk of expropriation is correlated with measures of effective checks on government, judicial independence, and both subjective indices of corruption (although again, perhaps not as tightly as we might have expected). However, the risk of expropriation is not correlated with measure of the viability of contract, a point also made in an important paper on the "unbundling" of economic institutions by Acemoglu and Johnson (2005). They find that property rights, defined and measured as protection against risk of expropriation, has a significant effect on economic growth while contracting institutions do not, even when controlling for the endogeneity of both sets of economic institutions through an instrumental variables design.

[2] This study analyzed rule of law measures for the single year of 2004 for 104 to 212 countries, depending on the indicators. (See Haggard, MacIntyre, Tiede 2008).

Second, the findings with respect to violence are also weak. The aggregate index of Political Stability and Absence of Violence from Political Risk Services is correlated with control of both corruption and expropriation risk, although not with the integrity of contract. But objective measures of civil conflict (internally displaced persons) are not related to either property rights or contracting. Although homicides are weakly (inversely) associated with property rights, the murder rate is not correlated with contracting either.

Rule of Law Complexes in Developing Countries

The correlation matrix is designed to capture the relationship among the components of the rule of law across the sample. However, it does not rule out the possibilty that components of the rule of law might be highly correlated in some cases but not in others; put differently, the aggregate relationships might be masking the existence of different rule of law complexes among the developing countries. To explore this possibility, we used cluster analysis, a method for classifying observations (countries in this case) into relatively homogenous groups (clusters) based on some selected set of properties (our different rule of law measures). Each group identified by cluster analysis is as internally homogenous as possible, but as distinct as possible from all other groups. Although cluster analysis is not causal, it is a useful tool for constructing typologies and also in underlining empirical complementarities among components of the rule of law.

To simplify the analysis, we chose six indicators from those outlined in Table 1 to capture the major components of different rule of law complexes: internally displaced persons and homicides (for security of person); Political Risk Service's risk of expropriation index (for property rights); Henisz's measure of constitutional checks and the Cignarelli measure of judicial independence (to capture more purely institutional arguments); and Transparency International's well-known Corruption Perception Index.

Following Rudra (2007), we apply the most common representation of distance, or the Euclidean distance, and use Ward's method to generate the clusters; we also employ the weighted average linkage as a robustness check. Ward's method is designed to optimize the minimum variance within clusters, and works by joining groups that result in the lowest increase in the error sum of squares. At each stage, after the union of every possible pair of clusters is

considered, the method fuses the two clusters whose increase in the total within-cluster error sum of squares is minimal. Several studies have observed that Ward's method is superior to the alternatives in identifying clusters (Blashfield 1976; Tidmore and Turner 1983). Although the dimensions of analysis naturally reflect our analytic interests, the number of clusters generated is not entirely arbitrary because "stopping rules" provide guidance to the demarcation of "true" clusters within the data.

Using this method on the 74 countries in our sample generates three clusters; one with 49 countries, one with 19, and the third with only four (El Salvador, Jamaica, Colombia, and South Africa; see Appendix 2 for the list of countries. Taiwan and Kazakhstan defied classification into a cluster). Given the pattern of clustering, we focus primarily on the differences between Cluster 1 and Cluster 2. Table 2 shows the means and standard deviations of each of the variables in the three clusters; Table 3 regresses the rule of law indicators on the clusters, omitting Cluster 1, to see which of the indicators are statistically significant in distinguishing the clusters.

The clusters vary in well-defined ways. Cluster 1 has better property rights and less corruption than Cluster 2 and these differences are significant. Interestingly, the two clusters do not differ significantly with respect to formal institutional measures: checks on government or judicial independence.

//Insert Tables 2 and 3 here//

However, the most notable difference between the two large clusters is in domestic violence. Cluster 2 has four times the homicide rate (and Cluster 3 has fully 10 times the homicide rate). The significance of homicides in differentiating the clusters is particularly clear in the multivariate regressions in Table 3, which show that it is far and away the most significant factor in differentiating the clusters.

As we have seen, rule of law measures are more tightly clustered across the advanced industrial states, in part precisely because of their similar levels of income. The developing world, by contrast, is much more heterogeneous. There is a group of countries (Cluster 1) that have a significant level of corruption--their corruption indices average a meager 3.85 on a ten point scale—but in which the risk of expropriation is relatively low (3.3 on a 1-4 scale, with 4 being the least risky). Moreover, the homicide rate approaches advanced industrial states levels.

A second cluster of cases does not differ significantly with respect to formal institutional measures, including both constitutional checks and the independence of the judiciary. This is consistent with the idea that formal or de jure institutions are not the problem and institutional engineering of them not likely to be the solution. Corruption and protection of property rights are worse in this second cluster, but crime is far and away the most distinguishing factor; even though corruption and contract viability and average risk against expropriation do not differ much from the first cluster, basic challenges to the security of person remain unresolved.

Rule of Law and Economic Growth in the Long-Run: Which Institutions Matter?

In turning from these correlations to the causal question of the relationship between the rule of law and economic growth, it is important to note that the recent literature has pursued two somewhat different targets. The more ambitious objective is to explain why some countries are poorer than others. Why the tremendous divergence across countries in per capita GDP? This is clearly a very long-run question, since current differences are the result of historical processes of some duration. The second strategy is to look at more recent experience, modeling economic performance during the postwar period or some portion of it. In this section, we consider the highly influential paper by Acemoglu et. al. (2001) which tackles the first question; in the next one, we replicate the results of the similarly well-known work of Robert Barro on growth in the intermediate run.

As we noted above, a central analytic concern in the new growth literature has been the problem of the endogeneity of institutions, including those measuring the rule of law. To solve the problem of the endogeneity of property rights protection to economic growth, Acemoglu et al. (2001) consider settler mortality in developing countries in the eighteenth and nineteenth centuries. They hypothesize---but by no means demonstrate---that high settler mortality reflected unappealing environments that generated “extractive” political institutions and correspondingly weak property rights protection and rule of law. By contrast, low settler mortality produced “neo-Europes” with more robust rule of law. According to Acemoglu et al., these (hypothesized) early institutions proved remarkably persistent. Once on a bad institutional path, it proves difficult for countries to shift onto another path. The authors demonstrate a very strong causal influence from

settler mortality to current measures of property rights, measured by an earlier variant of the expropriation risk variable we use in Table 1.

Despite the caution with which Acemoglu et al. approach the endogeneity problem, they are somewhat less clear on what institutions—what components of the rule of law—are really doing the work. In what is for many political scientists an infamous footnote, Acemoglu et. al. (1371-2) acknowledge this problem:

> "government expropriation is not the only institutional feature that matters. Our view is that there is a "cluster of institutions" including constraints on government expropriation, independent judiciary, property rights enforcement, and institutions providing equal access to education and civil liberties, that are important to encourage investment and growth. Expropriation risk is related to all these institutional features."

Although we are highly sympathetic with this "cluster of institutions" view, we replicate Acemoglu et al.'s model using the same rule of law variables chosen for our cluster analysis for 1995, the date of their cross section.[3] Of course, virtually all of these measures may be endogenous to long-run growth as well, including institutional measures, and we therefore test whether settler mortality is likewise a good instrument for the other rule of law variables we have discussed; security of person, institutional checks and corruption. For good measure, we also include one aggregate rule of law measurement created by the World Bank, its Governance VII indicator.

A good instrument is determined both by the significance of the coefficient as well as the R-squared for this first stage. The first stage regressions conducted and displayed in Table 4 show that settler mortality is indeed a good instrument for the protection of property rights. Unfortunately, however, it is also a good instrument for *all* the institutional variables used in our

[3] The analysis begins by providing a near replication of Acemoglu et al.'s model. It is a near replication as the data available for this project contained slightly fewer cases than reported in their 2001 paper; our largest sample had 56 observations while their's had 64. In our replication of Acemoglu et al's model we use the same rule of law variables as our cluster analysis, except that we had insufficient data for the inclusion of homicides and civil conflict. The PITF civil conflict data was inadequate for our analysis due to the fact that the countries and time periods used in Acemoglu did not include a sufficient amount of countries with state failures and for those countries the PITF variable contained no variation.

analysis as well as Political Risk Service's Political Stability and Absence of Violence measure. In all cases except the murder rate,[4] the coefficients for settler mortality in the first stage of the regression were significant at the $p<0.01$ level and all R-squares range from 0.29 to 0.55. In almost all cases, the R-squares for the substituted rule of law variables exceed those for the risk of expropriation variable used.

In the second stage of the analysis, we then determine the effect of these various rule of law measures (instrumented using log settler mortality) on long-term growth. In every instance, where log mortality was a good instrument for the rule of law variable, we likewise find that the instrumented variable significantly affects long-term growth in the second stage. Again, the coefficients for these second stage models are consistently significant at the $p<0.01$ level.

//Insert Table 4 here//

In a subsequent paper, Acemoglu and Johnson locate a distinct instrument that allows them to differentiate between the significance of property rights versus contracting. Yet our replication suggests that Acemoglu and Johnson have not solved the issue of "unbundling institutions" because of the even wider array of "rule of law" measures that may also be producing the divergence in long-run growth. Moreover, although settler mortality does not predict the level of subsequent violence measured as homicides, this is not cause for comfort because the model does not consider whether the findings on other institutions are in fact robust to the inclusion of measures capturing the security of person. As the civil war literature has suggested strongly, the debilitating effects of violence might well account for variation in long-run economic performance, even if that particular channel has not yet been adequately tested.

Economic Growth in the Intermediate-Run: Democracy, Property Rights and the Rule of Law

In addition to the growing academic work on divergence in long-run growth trajectories, there is also a strong interest in examining the determinants of growth in the intermediate run.

[4] Although the UN homicide data does not reflect the years of data used by Acemoglu and Johnson, we replicated their two stage model with homicide rates for the single year of 2004. Although this included only one year of data, we found that homicides were not a significant predictor of growth in either the first or second state regression.

This strand of research was heavily influenced by Robert Barro's pioneering 1997 study, *Determinants of Economic Growth*, which was unique at the time for its inclusion of institutional variables including measures of the rule of law and democracy. As with the Acemoglu, Johnson and Robinson exercise, we are interested here in the extent to which findings can discriminate among different components of the rule of law, and are robust to the consideration of alternative measures.

Barro's 1997 extension of neoclassical economic growth models begins with the assumption that growth is a function of initial conditions (captured by GDP per capita and a measure of the human capital stock) but also argues that growth "depends on an array of choice and environmental variables" (p. 8). Barro divides these choice variables between those made by the private sector, including saving rates, labor supply, and fertility rates, and those made by the government including spending, tax rates, government-induced distortions and "maintenance of the rule of law and property rights." To measure the rule of law, Barro relies on the International Country Risk Guide data, an early proprietary data set that purported to provide measures of value to investors on country risk. He finds that an overall index of the "law and order tradition," made up of discrete rankings on seven sub-indices provides the best measurement for "overall maintenance of the rule of law." But Barro clearly interprets this variable as a measure of property rights. As he argues, the index "gauge[s] the attractiveness of a country's investment climate by considering the effectiveness of law enforcement, the sanctity of contracts, and the state of other influences on the security of property rights" (p. 27).

Barro (1997) finds that raising the rule of law variable by one of seven ranks leads to a 0.5% increase in the growth rate over the period. A headline finding was also that measures of democracy—using Freedom House data—did not have positive effect and may have even been mildly adverse for growth. In a later piece, Barro (2000) reports findings with respect to two other series offered by ICRG: one for corruption in government, the other for the quality of the bureaucracy. He notes that these indicators are highly correlated with the rule of law index. In most years, that correlation is close to 0.8, well above what we find in our sample of developing countries. He finds, however, that controlling for the rule of law index, corruption and bureaucratic quality do not contribute much to economic growth. He argues that this finding may result from the fact that corruption can, in some cases, be efficiency-enhancing while bureaucratic efficiency might have adverse affects if governments are carrying out bad policies.

Although path-breaking at the time, Barro's work and other growth models in this vein have been criticized for problems ranging from multicollinearity (Lindauer and Pritchett 2002) to the failure to address endogeneity problems (Murray 2006; Clemens and Bazzi 2009). To these we add an additional set of concerns: whether the models as specified are in fact robust to alternative specifications using different rule of law measures. Given the lack of transparency in how the aggregate indices are constructed, we cannot be certain what aspects of the rule of law matter and in particular whether Barro's inference about the significance of property rights is justified.

We replicate Barro, looking both at real GDP growth (1985-2004) and at the volatility of growth as measured by the standard deviation over the period. In lieu of the ICRG data, we test for the effects of a battery of rule of law measures including aggregate indices: the World Bank rule of law indicator (an aggregate measure similar in spirit to the one used by Barro), homicides, internally displaced persons and a measure of the area of the country vulnerable to civil conflict (for security of person), contract viability and risk against expropriation (for security of property), Henisz veto points and Cignarelli and Richards' judicial independence measurements (for institutional conceptions of the rule of law) and Transparency International's Corruption Perception Index (for corruption),

The results in Table 5, show how various measures of the rule of law are related to growth. In one important regard, these findings vindicate Barro. An increase in the World Bank's aggregate rule of law measure has a positive impact on growth over the 1985-2004. In contrast to Barro, we find that corruption does have a significant effect. As shown in Table 5, column 12, the regression with both corruption and the World Bank aggregate rule of law indicator shows an improved goodness of fit over the other models and a test of joint significance indicates that both variables should be included in the model ($p=0.001$). However, while the test for joint significance supported the inclusion of both independent variables, it also resulted in eliminating the statistical significance of corruption in the final growth regression. As in the Barro's original work, the aggregate rule of law measure trumps corruption.

In other ways, the analysis of this sample of developing countries challenges some of Barro's findings and in particular his inferences with respect to the significance of property rights. The discrete components of the rule of law—including measures of both property rights and contract viability--are all insignificant, leaving us with the question of what components of

the rule of law the aggregate measure is capturing. One possibility, as Kaufmann et al. (2007) have conceded, is that the findings with respect to the aggregate measure may really be driven by corruption; as we have seen, the aggregate index is highly correlated with both corruption measures. However, the aggregate measure may also be capturing some still opaque combination of complementary institutions that improve economic performance.

Finally, in Table 6 we look at the volatility of growth and find a quite a different picture. Both violence indicators (homicides per 100,000 and civil war violence as a proportion of area) are negative and significant. A similar joint significance test provides strong evidence that both variables should be included in the regression (p=0.007), and when we do both variables remain significant. These findings are suggestive of the important civil war findings of Collier (2007, 2009) that the sublimation of violence is a crucial determinant of economic performance.

//Insert Tables 5 and 6 here//

Conclusion: Rule of Law Complexes in the Developing World

The purpose of this paper is in part to go back to theory; to begin with a clear understanding of the different channels through which the rule of law might influence economic growth and to encourage tests that get at the weight that these specific channels might play. The dominant line of theoretical inquiry in both the economics and political science literature has centered on property rights and the institutions required to enforce them, such as checks on government and judicial independence. However, corruption has also gotten significant attention in the burgeoning governance literature, implying a different set of mechanisms in which private capture of the state plays a more central role.

Our findings suggest that a number of these inferences are quite fragile and that more complex complementarities among rule of law institutions are probably at work. First, we noted that the correlation among rule of law indicators among the advanced industrial states is much higher than among developing countries. Second, we found—as other studies have—that aggregate indices perform better than the discrete components of the rule of law that are often highlighted in the theoretical literature. One explanation for this outcome suggested by Woodruff (2009) is that indices and subjective measures may be capturing informal institutions, or important differences between de jure and de facto rule of law. Another possibility is that indices

are capturing exactly the complementarities among institutions in a way that standard tests typically do not.

One response to these findings is to keep digging: to find more instruments, to run more regressions, in an effort to find the "taproot" of the rule of law and economic growth. An alternative is to focus more attention on the complementarities among rule of law institutions: how multiple dimensions of the rule of law complex interact. In this regard, we found at least some evidence for the significance of political order, a theme that has run through political science from Hobbes to Huntington to Bates. The incidence of violence appears to be a powerful factor in discriminating among rule of law complexes in developing countries and was an important determinant of the volatility of economic growth. To think that the fine points of the law, judicial independence or corruption constitute the fundamental barrier to economic growth in the face of the breakdown of order and widespread violence seems strange; rather, the failure of those institutions itself is almost certainly a result of state failure and the restoration of order thus the primary rule of law task.

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Appendix 1
Description of rule of law indicators

AGGREGATE RULE OF LAW MEASUREMENTS

Governance VII

Rule of Law aggregate measurement includes **"**the extent to which agents have confidence in and abide by the rules of society, including the quality of contract enforcement and property rights, the police, and the courts, as well as the likelihood of crime and violence."
Point estimate -2.5 to 2.5 (-2.5 poor governance/2.5 good governance)
Years: 1996, 1998, 2000, 2002-2006
Countries: 212

World Economic Forum: Rule of Law

Rule of Law aggregate measurement includes: "Common crime imposes costs on business; organized crime imposes costs on business; money laundering through banks is pervasive; effectiveness of police; the judiciary is independent from political influences of government, citizens, or firms; legal framework to challenge the legality of government actions is inefficient; intellectual Property protection is weak; Protection of financial assets is weak; Illegal donation to parties are frequent; Percentage of firms which are unofficial or unregistered / Tax evasion."
Years: 1996, 1998, 2000, 2002, 2003-2007
Countries: 91 to 136

SECURITY OF PERSON

Intentional homicides

United Nations' list of intentional homicides per 100,000 people
Year: 2003-2007
Countries: 198

Civil Violence Due to Conflict of War

Internally displaced persons (IDPs) divided by population

Measures the number of internally displaced persons assisted by and protected by the UNHCR including people with IDP like situations divided by the population.
(Source: UNHCR cite)
Years: 1995 to 2005

Political Instability Task Force (PITF) Violence indicator

Binary variable indicating whether a country received a score of 3 out of 4 as to the scaled portion of the country affected by fighting for either revolutionary or ethnic wars or a country that received 4 out of 4 for scaled violence associated with regime change.
Years: 1955 to 2006

Political Risk Services Political Stability and Absence of Violence

Measurement includes
"*Government Stability.* Measures the government's ability to carry out its declared programs, and its ability to stay in office. This will depend on issues as: the type of governance, the cohesion of the government and governing party or parties, the closeness of the next election, the government command of the legislature, and approval of government policies.

Internal Conflict. Assess political violence and its influence on governance. Highest scores go to countries with no armed opposition, and where the government does not indulge in arbitrary violence, direct or indirect. Lowest ratings go to civil war torn countries. Intermediate ratings are awarded on the basis of the threats to the government and business.
External conflict: The external conflict measure is an assessment both of the risk to the incumbent government and to inward investment. It ranges from trade restrictions and embargoes, whether imposed by a single country, a group of countries, or the international community as a whole, through geopolitical disputes, armed threats, exchanges of fire on borders, border incursions, foreign-supported insurgency, and full-scale warfare.
Ethnic tensions: This component measures the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise."

Higher ratings are given to countries where tensions are minimal even though differences may still exist.

Years: 1996, 1998, 2000, 2002-2005
Countries: 141

SECURITY OF PROPERTY
Political risk services property
Measures contract viability and average protection against risk of expropriation.

Years: 1984 to 1997; after 1997 proprietary. Included data from 2005 for this analysis
Countries: 141

World Bank Doing Business
Measures the number of procedures to enforce a contract.

Years: 2004-2007
Countries: 135

INSTITUTIONAL FORMATION
Henisz Checks on State Power
Measures political constraints and veto points

Years: 1946 to present
Countries: 135

Cingranelli & Richards Judicial Independence
This variable measures "the extent to which the judiciary is independent of control from other sources, such as another branch of the government or the military. A score of 0 indicates "not independent", a score of 1 indicates "partially independent" and a score of 2 indicates "generally independent"."

Years: 1996, 1998, 2000, 2002-2007
Countries: 193

CORRUPTION
Transparency International Perception Index
Scores countries by perceived level of corruption

Years: 1996 to present
Countries: varies

Economist Intelligence Unit (EIU) corruption
Measures corruption among public officials
Countries: 1996, 1998, 2000, 2002-2007

Appendix 2
Cluster Analysis

Cluster 1

ALBANIA
ALGERIA
ARGENTINA
ARMENIA
AZERBAIJAN
BANGLADESH
BOLIVIA
BULGARIA
CAMEROON
CHILE
COSTA RICA
CROATIA
CZECH REPUBLIC
ESTONIA
ETHIOPIA
GHANA
HUNGARY
INDIA
INDONESIA
ISRAEL
JORDAN
KAZAKHSTAN
KENYA
KOREA, SOUTH
KUWAIT
LATVIA
LITHUANIA
MADAGASCAR
MALAYSIA
MEXICO
MOLDOVA
MOROCCO
NICARAGUA
NIGERIA
PAKISTAN
PANAMA
PERU
POLAND
ROMANIA
SAUDI ARABIA
SLOVAKIA
SLOVENIA
SINGAPORE
SRI LANKA
TAIWAN
THAILAND
TUNISIA
UAE
UKRAINE
URUGUAY
VIETNAM
SENEGAL

Cluster 2

ANGOLA
BOTSWANA
BRAZIL
BURKINA FASO
DOMINICAN REPUBLIC
ECUADOR
GUATEMALA
HONDURAS
MALAWI
MOZAMBIQUE
NAMIBIA
PARAGUAY
PHILIPINES
RUSSIA
TANZANIA
TRINIDAD & TOBAGO
UGANDA
VENEZUELA
ZIMBABWE

Cluster 3

COLOMBIA
EL SALVADOR
JAMAICA
SOUTH AFRICA

Tables and Figures

Table 1. Correlations of rule of law indices by complex area

	WB Rule of law	WEF Rule of law	**Homicides**	IDPs	PRS Political Violence	**PRS Risk of Expropriat.**	WB Contract enforcement Procedures	**Henisz Veto points**	Cignarelli & Richards Judicial Independ	**Transparenc International Corruption**	EIU Corrupt. control
WBrol	1.00										
WEFrol	0.86*	1.00									
Homicides	-0.40*	-0.41*	1.00								
IDP	-0.12*	-0.04	0.10*	1.00							
PRS Violence	0.43*	0.38*	-0.05	-0.12*	1.00						
PRS Expropri	0.64*	0.47*	-0.25*	0.02	0.31*	1.00					
WB Contract	-0.32*	-0.25*	0.01	-0.05	-0.09*	-0.19*	1.00				
Henisz Veto points	0.59*	0.40*	-0.22*	-0.26*	0.09*	0.43*	-0.22*	1.00			
C& R Judicial I	0.70*	0.48*	-0.11*	-0.16*	0.14*	0.50*	-0.30*	0.62*	1.00		
TI corruption	0.91*	0.80*	-0.20*	-0.11*	0.45*	0.54*	-0.26*	0.50*	0.65*	1.00	
EIU corruption	0.86*	0.74*	-0.29*	-0.12*	0.47*	0.58*	-0.27*	0.52*	0.59*	0.88*	1.00
	Aggregate		**Security of Person**			**Security Property**		**Institutional**		**Corruption**	

Table 2. Summary statistics by cluster

	Homicides	IDP	Risk of expropr	Henisz Veto	Judicial Independ	TI Corruption
				Cluster 1		
N	49	49	49	49	49	49
mean	5.71	0.002	3.34	0.52	0.46	3.85
(s.d.)	(3.87)	(0.01)	(0.48)	(0.27)	(0.35)	(1.57)
				Cluster 2		
	19	19	19	19	19	19
	20.71	0.00	2.93	0.44	0.39	2.93
	(5.47)	(0.00)	(0.69)	(0.25)	(0.32)	(0.91)
				Cluster 3		
	4	4	4	4	4	4
	52.24	0.01	3.25	0.37	0.53	4.01
	(5.42)	(0.02)	(0.50)	(0.27)	(0.44)	(0.46)
Total	72	72	72	72	72	72
	12.25	0.002	3.22	0.49	0.45	3.62
	(12.56)	(0.01)	(0.56)	(0.26)	(0.34)	(1.43)

Table 3. Multivariate regressions of rule of law indices on cluster groupings

	Homicides	IDP	Risk of expropr	Henisz Veto	Judicial Independence	TI Corruption
Cluster 2	15.00*	-0.001	-0.40*	-0.08	-0.07	-0.92*
	(1.19)	(0.003)	(0.15)	(0.07)	(0.09)	(0.38)
Cluster 3	46.53*	0.01	-0.09	-0.15	0.06	0.06
	(2.30)	(0.004)	(0.28)	(0.14)	(0.18)	(0.72)
Constant	5.71*	0.002	3.34*	0.52*	0.46*	3.85*
	(0.63)	(0.001)	(0.08)	(0.04)	(0.05)	(0.20)
R-squared	0.88	0.05	0.10	0.03	0.01	0.08
N	72	72	72	72	72	72

Table 4. Acemoglu and Johnson Replication of Log GDP per Capita

	PRS risk* (AJR 2001)	Govii	PRSviolence	Henisz constraints	Cignarelli JI	Transparency Corruption	EIU Corruption
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Panel A: Two Stage Least Squares				
Rule of Law	0.85**	1.19**	12.04**	4.30**	2.06**	0.47**	3.74**
Variable (2-7)	(0.12)	(0.15)	(2.59)	(0.65)	(0.48)	(0.06)	(0.58)
			Panel B: First Stage using rule of law variable (2-7)				
Log European	-.74**	-.54**	-0.05**	-0.15**	-0.30**	-1.54**	-0.17**
Settler mortality	(-9.12)	(0.07)	(0.01)	(0.02)	(0.07)	(0.23)	(0.03)
R-squared	0.42	0.50	0.29	0.44	0.29	0.55	0.41
N	56	55	55	55	54	39	44

Notes: The dependent variable for all of the columns is log GDP per capita in 1995, PPP basis. Panel A reports the two stage least squares estimates, instrumenting the rule of law variable (indicated in the column heading) using log settler mortality. Panel B reports the first stage for these regressions. All coefficients were significant at $p<0.01$.

*Column 1 represents a near replication of Acemoglu and Johnson (2001) Table 4, column 1.

Table 5. Long term growth 1985 to 2004

	(1)	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)
Log gdp (1985)	-1.515***	-1.477***	-1.505***	-1.808***	-1.719***	-1.534***	-1.455***	-1.347***	-1.476***	-1.494***	-1.799***
	(0.450)	(0.445)	(0.455)	(0.370)	(0.474)	(0.368)	(0.453)	(0.335)	(0.450)	(0.443)	(0.369)
Government consumption	0.052	0.051	0.055	0.024	0.013	0.030	0.043	0.049	0.052	0.054	0.015
(1985-2004)	(0.038)	(0.039)	(0.042)	(0.044)	(0.044)	(0.044)	(0.042)	(0.042)	(0.039)	(0.038)	(0.042)
Investment	0.106***	0.117***	0.110***	0.122**	0.093**	0.129**	0.118***	0.128**	0.117***	0.117***	0.105**
(1985-2004)	(0.039)	(0.040)	(0.041)	(0.047)	(0.039)	(0.049)	(0.041)	(0.048)	(0.040)	(0.040)	(0.048)
Education years	-0.050	-0.064	-0.072	-0.162	-0.148	-0.090	-0.078	-0.035	-0.065	-0.066	-0.164*
(1985)	(0.095)	(0.093)	(0.097)	(0.098)	(0.100)	(0.091)	(0.095)	(0.088)	(0.094)	(0.093)	(0.094)
Life expectancy	0.052	0.052	0.051	0.061	0.061	0.047	0.051	0.008	0.053	0.055	0.061
(1985)	(0.050)	(0.048)	(0.051)	(0.041)	(0.050)	(0.042)	(0.049)	(0.049)	(0.049)	(0.048)	(0.039)
Fertility	-0.907***	-0.797***	-0.803***	-0.786***	-0.655***	-0.735***	-0.803***	-0.872***	-0.797***	-0.807***	-0.688***
(1985)	(0.208)	(0.217)	(0.225)	(0.208)	(0.234)	(0.230)	(0.217)	(0.212)	(0.219)	(0.214)	(0.216)
Polity 2	-0.014										
(1985-2004)	(0.044)										
Freedom House PR		-0.015	0.045	0.186	0.352	0.014	0.060	-0.473	0.001	-0.001	0.145
(1985-2004)		(0.588)	(0.599)	(0.541)	(0.564)	(0.543)	(0.574)	(0.536)	(0.589)	(0.578)	(0.485)
Freedom House squared		-0.011	-0.020	-0.038	-0.044	-0.016	-0.013	0.074	-0.013	-0.012	-0.021
		(0.077)	(0.081)	(0.067)	(0.073)	(0.066)	(0.077)	(0.073)	(0.077)	(0.076)	(0.060)
Henisz vetos (1985-2004)			-0.032								
			(1.353)								

TI corruption perception Index (1985-2004)				0.265** (0.119)							-0.198 (0.199)
World Bank ROL (1985-2004)					1.043*** (0.340)						1.374** (0.589)
PRS Risk against expropriation (1985-2004)						0.241 (0.235)					
Cignarelli & Richard (1985-2004)							0.276 (0.382)				
Homicides (1985-2004)								-0.006 (0.014)			
IDP (1985-2004_									3.099 (7.806)		
PITF violence indicator (1985-2004)										0.198 (0.488)	
_cons	11.949*** (3.437)	11.122*** (3.528)	11.505*** (3.647)	12.619*** (3.609)	12.648*** (3.717)	10.039** (3.873)	10.657*** (3.633)	13.360*** (3.786)	11.029*** (3.578)	11.065*** (3.521)	14.473*** (3.652)
N	95	98	89	83	90	88	98	77	98	98	83
R-sq	0.536	0.541	0.541	0.623	0.604	0.588	0.544	0.565	0.542	0.542	0.657

Note: PITF violence indicator: Binary variable indicating whether a country received a score of 3 out of 4 as to the scaled portion of the country affected by fighting for either revolutionary or ethnic wars or a country received a 4 out of 4 for scaled violence associated with an adverse regime change.

Table 6. Standard deviation of long term growth 1985 to 2004

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Log gdp (1985)	-0.377	-0.339	0.050	-0.104	-0.361	-0.200	-0.273	0.810	-0.335	-0.171	0.881
	(1.083)	(1.057)	(1.106)	(1.731)	(1.331)	(1.320)	(1.071)	(0.824)	(1.065)	(1.002)	(0.806)
Government consumption (1985-2004)	0.104*	0.128**	0.151**	0.098	0.105	0.084	0.101*	0.087	0.133**	0.098*	0.057
	(0.062)	(0.057)	(0.064)	(0.080)	(0.084)	(0.063)	(0.055)	(0.058)	(0.057)	(0.055)	(0.052)
Investment (1985-2004)	0.056	0.057	0.066	0.034	0.057	0.022	0.060	0.016	0.059	0.056	-0.004
	(0.057)	(0.056)	(0.062)	(0.104)	(0.080)	(0.086)	(0.054)	(0.063)	(0.057)	(0.054)	(0.060)
Education years (1985)	-0.081	-0.112	-0.115	-0.191	-0.195	-0.142	-0.156	-0.322	-0.123	-0.096	-0.320
	(0.278)	(0.271)	(0.302)	(0.254)	(0.265)	(0.268)	(0.274)	(0.230)	(0.273)	(0.268)	(0.224)
Life expectancy (1985)	0.111	0.115	0.123	0.115	0.118	0.126	0.111	0.027	0.120	0.091	-0.004
	(0.084)	(0.083)	(0.093)	(0.130)	(0.095)	(0.112)	(0.085)	(0.097)	(0.086)	(0.078)	(0.098)
Fertility (1985)	0.821***	0.870***	0.840***	0.901***	0.904**	1.147***	0.853***	0.830***	0.871***	0.973***	0.878***
	(0.277)	(0.293)	(0.312)	(0.326)	(0.393)	(0.432)	(0.293)	(0.250)	(0.296)	(0.307)	(0.253)
Polity 2 (1985-2004)	-0.126										
	(0.110)										
Freedom House PR (1985-2004)		0.446	0.367	0.143	0.546	0.392	0.674	-0.187	0.573	0.303	-0.328
		(0.813)	(0.762)	(1.257)	(1.079)	(1.103)	(0.782)	(0.714)	(0.792)	(0.807)	(0.719)
Freedom House squred		-0.024	-0.071	0.026	-0.026	-0.011	-0.030	0.072	-0.040	-0.008	0.090
		(0.088)	(0.108)	(0.134)	(0.107)	(0.120)	(0.087)	(0.084)	(0.085)	(0.087)	(0.083)
Henisz vetos (1985-2004)			-5.275								
			(3.560)								

TI corruption perception Index (1985-2004)				0.071 (0.415)							
World Bank ROL (1985-2004)					0.521 (1.180)						
PRS Risk against expropriation (1985-2004)						0.360 (0.490)					
Cignarelli & Richard (1985-2004)							0.839 (0.686)				
Homicides (1985-2004)								-0.056*** (0.018)			-0.058*** (0.019)
IDP (1985-2004_									23.872 (17.834)		
PITF violence indicator (1985-2004)										-1.971** (0.830)	-1.883** (0.880)
_cons	-3.928 (6.678)	-6.449 (7.366)	-7.395 (7.447)	-7.326 (8.644)	-6.252 (8.192)	-10.706 (8.264)	-7.867 (7.260)	-6.597 (7.084)	-7.165 (7.523)	-5.883 (7.393)	-3.952 (7.037)
N	95	98	89	83	90	88	98	77	98	98	77
R-sq	0.234	0.215	0.237	0.196	0.210	0.219	0.222	0.398	0.225	0.241	0.426

="* p<0.10 ** p<0.05 ***p<0.01

Note: PITF violence indicator: Binary variable indicating whether a country received a score of 3 out of 4 as to the scaled portion of the country affected by fighting for either revolutionary or ethnic wars or a country received a 4 out of 4 for scaled violence associated with an adverse regime change.