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Legal Quality, Inequality, and Tolerance

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# Legal Quality, Inequality, and Tolerance

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## **Abstract:**

Previous findings suggest that income inequality leads to lower legal quality. This paper argues that voters' tolerance of inequality exerts an additional influence. Empirical findings suggest that inequality leads to lower legal quality due to its effect on trust while the tolerance of inequality, proxied by the political ideology of the median voter, exerts an independent influence.

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## Introduction

The legal system is an important foundation stone of modern nations. Virtually no matter which political ideology people ascribe to, a strong and fair legal system is part of their vision of the ideal state. All citizens demand protection of their lives and property rights (with the possible exception of hardcore communists) and legal systems also perform important economic tasks: they combat corruption (Treisman, 2000; Ali and Isse, 2003), enable countries to attract foreign investments (Lambsdorff, 2003) and encourage economic growth (Kormendi and Meguire, 1985; Clague et al., 1999; Feld and Voigt, 2003). Likewise, income inequality is a fact of life in all nations, yet much more disputed than having a strong legal system. As is the case for legal quality, many cross-sectional studies find that inequality also affects economic growth (Persson and Tabellini, 1994; Alesina and Perotti, 1996; Deininger and Squire, 1998).<sup>1</sup> It may therefore be fruitful to connect these two strands of the growth literature, since the standard explanations for the negative result typically obtained in cross-country regressions include various channels that might connect inequality and legal performance. The median voter theorem for example suggests that inequality may lead to an increased demand for redistribution, which is often found to lower growth. By diverting government resources from other purposes, this could lead to lower investments in legal quality. Inequality may also affect the accumulation of human capital when there are imperfections in the financial markets (Perotti, 1993; Barro, 2000), which could in the long run lead to lower legal quality if well-educated citizens demand more legal protection. In an empirical contribution to this literature, Keefer and Knack (2002) specifically connect these two sets of results by suggesting that inequality affects economic growth through influencing the quality of the legal system, stating that “social polarization is one characteristic of society that can reduce the legitimacy of property and contractual rights”. They go on to find robust empirical evidence that the

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<sup>1</sup> Most cross-sectional studies find a negative relation between income inequality and economic growth. It should, however, be noted that fixed effects estimates in Barro (2000) and Forbes (2000) exhibit a significantly positive relation, which may suggest that the negative effect of inequality in the former type of study could be due to a time-invariant factor associated with inequality.

main channel through which income inequality affects growth is by leading to lower protection of property rights.

However, the way inequality is thought to influence legal quality is not free of value judgments that could differ between countries. Alesina and Angeletos (2002) for example show that Americans are more tolerant of inequality than Europeans, which could in itself lead to higher legal quality in the US, given the argument that inequality mainly leads more people to question the legitimacy of decisions of legal systems. Comparing political ideologies, it is also obvious that Marxists would be much more adverse to inequality than e.g. libertarians. As national cultures differ in such respects, there is thus no reason to believe that citizens of different nations have the same tolerance of inequality; plenty of anecdotal evidence suggests the opposite. This paper therefore reexamines Keefer and Knack's (2002) results but deviates in three important ways. Firstly, the paper employs an alternative measure of legal quality; secondly, it takes into account that the effect of inequality on legal quality may depend on individuals' differing assumptions about society and thus their tolerance of inequality; and thirdly, due to the measure of tolerance, it is restricted to considering only democratic societies. In a broader perspective, the paper thus addresses the effects of social norms. The paper is structured as follows. Section 2 develops a simple model where inequality and merit assumptions affect individuals' demand for legal protection. Section 3 describes the data used in section 4 to test for the broad prediction from the model. Section 5 discusses the results and concludes.

## 2. The model

To illustrate how inequality and tolerance might influence legal quality, I here develop a simple model. The model assumes that the economy has two firms (or sectors), a large number of workers/consumers/voters and a government that supplies legal protection and collects taxes. One of the firms is an 'innovator' firm that produces product  $x$ . The firm invests in new technology at the beginning of each period, which leads to more efficient production and an improved product. The other firm is an 'imitator', i.e. a firm that does not invest in new technology but merely imitates the innovator firm; it produces product  $y$ . As infinitely-lived consumers have preferences for better products,

the imitator has an incentive to appropriate the new technology since consumers are willing to pay a higher price for better products; i.e. the price of product  $x$ ,  $p^x$ , is higher than that of product  $y$ ,  $p^y$ . If innovators' technology is stolen, products  $x$  and  $y$  are of equal value and prices are equalized at price  $p$ , where  $p^x > p > p^y$  due to increased competition. This naturally implies that the investment is wasted for the innovating firm, thereby creating a demand for legal protection of the intellectual property rights to innovations. I assume that any invention can be protected, e.g. by a patent, in only one period after which it automatically spills over into the imitator firm. As workers are paid their expected marginal productivity, workers in innovator firms will earn a higher wage,  $w^{high}$ , than workers in imitator firms, who earn  $w^{low}$ . Both types maximize utility in (1), depending on consumption of the two goods, where  $x$  is preferred in accordance with the preference parameter  $b > 1$ , labor  $l$ , taxes  $t$ , and a measure of income inequality  $\Gamma$  defined as  $w^{low} / w^{high}$ , which enters this way for both types of workers. The effect of income inequality is thus an effect of tolerance of inequality  $\gamma$ , and not of status motives. Maximization is naturally conditioned on the standard budget constraint (2);  $\delta$  is the subjective time preference rate,  $r$  is the interest rate, and subscripts  $i$  denote time. Legal quality enters in the economy as a probability  $\lambda$  that the intellectual property rights to innovations are protected by the legal system, which is financed by an income tax  $t$ .

$$U = \sum_{i=0}^{\infty} (1 + \delta)^{-i} [b_i x_i^\alpha + y_i^\alpha - l_i^\beta + c \Gamma^\gamma] \quad (1)$$

$$\sum_{i=0}^{\infty} (1 + r)^{-i} w_i l_i (1 - t_i) = \sum_{i=0}^{\infty} (1 + r)^{-i} [p_i^x x_i + p_i^y y_i] \quad (2)$$

Although firms are directly affected by legal quality, they do not vote in this economy, their employees do. I hence do not specify firm behavior other than the assumptions about prices and wages above. Workers' utility maximization, on the other hand, implies an optimal demand for legal quality, depending on what they perceive that they will receive from better legal quality, weighed against the tax that pays for the legal system and their tolerance of inequality. Now assume that the expected preference is (3), where  $B$  is the preference for better products.

$$b_i = B\lambda_i + 1 - \lambda_i \quad (3)$$

Equation (3) thus captures the likelihood that both products are equally preferred when innovators' new technology is illegally appropriated with probability  $1 - \lambda$ . In this situation, workers in imitator firms receive a technology-induced wage increase a period early, compared to the situation where technological innovations are protected and thus only lead to raises in the innovator firms. In the latter situation, investments in technology will lead to increasing wages in innovator firms in the same period as the investment but only after one period in imitator firms when the technology automatically spills over. Finally, assume for simplicity that the positive marginal impact of legal quality on wages,  $w_\lambda$ , is linear and the same for both firms;  $h_t$  denotes the necessary marginal tax increase to finance better legal quality. Solving the maximization problem with these assumptions yields the demand for optimal legal quality  $D\lambda$  of the two types of workers in (4) and (5).<sup>2</sup>

$$D\lambda_{high} = \frac{\beta + Qp_i x_i^{high} + \frac{h_t}{1-t_i} w_i^{high}}{\gamma \Gamma^\gamma \left[ 1 - \frac{1}{(1+\delta)\Gamma} \right] + Q(p_i^x - p_i) x_i^{high}} \quad (4)$$

$$D\lambda_{low} = \frac{\beta + Qp_i x_i^{low} + \frac{h_t}{1-t_i} w_i^{low}}{\gamma \Gamma^\gamma \left[ 1 - \frac{1}{(1+\delta)\Gamma} \right] + Q(p_i^x - p_i) x_i^{low} + \frac{\delta}{1-\delta}} \quad (5)$$

$$Q = (B-1) \frac{\beta}{\alpha w_\lambda (1-t_i)} \quad (6)$$

These rather complicated expressions exhibit some interesting implications. Firstly, as workers in the two sectors do not benefit equally fast from innovations, their preferences for legal quality come to differ although demand for legal quality is increasing in income, depending positively on the overall wage level,  $w$ , and

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<sup>2</sup> It can also be shown that as the tolerance of inequality increases, so does the span of preferences for legal quality. See the appendix for details

consumption,  $x$ . It is thus obvious that demand for legal quality decreases with increasing discrepancy between wages in the two sectors, i.e. with the level of income inequality. Secondly, there is a direct effect of income inequality as voters have preferences for equality. Thirdly, this effect is further enhanced when tolerance of inequality is low, i.e. when  $\gamma$  is high. As income inequality in the long run is determined exogenously by the size of each of the two firms, this leads to the implication that income inequality can affect legal quality negatively, as average and median demand for legal quality depends on the composition of firms in the economy. It should be noted that the model also implies that economic growth is thus impaired by inequality due to the adverse effect on investments. Most importantly, it follows that all voters' demand for legal quality depends on the actual level of inequality multiplied by their tolerance of such inequality. This result may be exacerbated if workers in the two firms differ with respect to their tolerance. Hence, given that political parties act in accordance with voters' demands, the level of inequality could come to depend on both actual income inequality as well as voters' tolerance of inequality. Finally, the model replicates the empirical regularity that richer populations demand higher legal quality.

The simple model above thus illustrates one of many ways in which inequality could affect legal quality. It should be noted that the model is only partial, as it does not specify firms' decisions. However, the general results hold as long as firms are able to pay different wages. As such, the model generates results that can be interpreted in a way similar to Keefer and Knack (2002), as demand for legal quality will be lower than actual legal quality, i.e. legal quality is excessive and therefore not legitimate, if it protects a level of income inequality above that preferred by voters. In that case, the inherent equity-efficiency trade-off comes to be out of balance with voters' preferences. This is the main implication to be tested in section 4.

### 3. Data

In order to test the broad qualitative predictions of this model, I draw data from various sources. Firstly, I employ data from the Canadian Fraser Institute to measure legal quality corresponding to the  $\lambda$  in the model (Gwartney and Lawson, 2002). These data are formed as indices distributed from 0 (no quality) to 10 (perfect quality) by drawing

on data from various primary sources; the indices are published once every five years for a large set of countries. Although it is clearly problematic to develop good measures for such complex conceptions as legal systems, the five Fraser indices are usually assessed to be good indicators for institutional development (de Haan and Sturm, 2000; Paldam, 2003).<sup>3</sup> The index used here measures ‘legal quality and the protection of property rights’. I use the observations from 1980, 1990 and 2000 and thus divide time into three ten-year periods beginning in 1970. As is standard, inequality  $I$  is measured by the Gini coefficient, obtained from Deininger and Squire (1996). As some of the data are based on income while other are based on expenditure, I follow Deininger and Squire’s (1996) approach in adding 6.6 to expenditure-based Gini coefficients to make the two types comparable. I use the earliest acceptable observation for each country in a given decade.<sup>4</sup>

In order to measure norms and tolerance of inequality  $\gamma$ , I use political ideology as a proxy. This choice is based on both intuitive political arguments and results from experimental economics. The former arguments suggests that ideology can be used as a proxy for tolerance, as pure Marxists would find inequality strongly unfair and detrimental to society while individuals with a pure Hayekian mental model of society would probably see inequality as natural, fair and even desirable due to its efficiency effects. The latter studies show that individuals’ merit assumptions and equity-efficiency trade-offs are significantly associated with political ideology and influence their behavior in economic experiments (Mitchell et al., 1993; Scott et al., 2001;

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<sup>3</sup> Scholars of law often reject the idea that notions of legal quality can be reduced to simple numerical measures. Nevertheless, in order to support general claims, it is necessary to complement detailed case studies with more broadly focused studies as is the tradition in economics. See e.g. Siems (2004) for a discussion of the arguments for and against such measures.

<sup>4</sup> It is a trivial point to note that there are other measures of income inequality than the Gini coefficient. Deininger and Squire (1996) for example also report the shares of total income held by the five income quintiles, which is often used as an alternative measure. For the purpose of this paper, there are unfortunately too few observations available on these measures. The paper is therefore confined to using only Gini coefficients.

Michelbach et al., 2003). Hence, it appears that people on the political right wing tend to be more tolerant of inequality and behave accordingly, as they ascribe inequality to merit and efficiency to a larger degree than their political opponents. The experimental studies thus also support the use of political ideology as a proxy for tolerance of inequality.

I measure such ideology by using the categorization in Beck et al. (2001) who define the three largest government parties at any time between 1975 and 2000 according to whether they have a leftwing, centrist or rightwing political orientation.<sup>5</sup> By coding leftwing parties  $-1$ , centrist parties  $0$ , and rightwing parties  $1$ , a crude measure of the ideology of government in any year is obtained. I thereafter average this measure over each decade and standardize the variable. The resulting index is normally distributed around zero, where countries that have had a leftwing government in all 10-year periods are assumed to have a median voter with leftwing sympathies and ideology and thus also with a low tolerance of inequality (a high  $\gamma$  in the model). This measure has both advantages and shortcomings, as have all proxies. Ideally, one would wish a direct measure of norms and tolerance of inequality while political ideology is only related to such norms. As such, I run the risk that the measure captures behavioral traits of politicians unrelated to such norms. On the other hand, normative attitudinal measures such as those revealed in social surveys may be unrelated to actual behavior.<sup>6</sup> In this respect, political ideology as a direct action measure could thus be a better proxy for actual tolerance and norms by being revealed directly through voters' behavior. It follows that the measure only makes sense when elections are free, since voters otherwise cannot reveal their true preferences. I therefore impose the restriction that countries must have been democratic in at least two of the three periods according to the Gastil index of political rights (Freedom House, 2003).

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<sup>5</sup> Extending the dataset back to 1971 was done in most cases by replacing the missing values with data coded in the same way as in the rest of the dataset, based on readily available information on governments in the period.

<sup>6</sup> Bjørnskov (2004) provides an example by showing that the degree of acceptance of corruption as well as a broader measure of social norms is absolutely unrelated to actual levels of corruption.

The remaining data fall in two groups. As control variables in all analyses below, I enter GDP per capita and trade volume as percentage of GDP (denoted openness) along inequality and inequality interacted with political ideology. Both derive from the Penn World Tables, Mark 6 (PWT6) and are corrected for purchasing power parity (see Summers and Heston, 1991). The second group of variables is chosen to capture potential transmission channels from inequality to legal quality. They include ethnolinguistic fractionalization (ELF), defined as the probability that two random citizens of a given country do not belong to the same ethnic or linguistic group. The ELF originally derives from a Soviet anthropological atlas but has been updated by Roeder (2001). I include two variables to capture government involvement in the economy. The first is an index on government size, which includes tax levels and structure, governments' share of GDP and the extent of government controlled enterprises, taken from Gwartney and Lawson (2002). The second, taken from the PWT6, is government sectors' share of GDP. I test for the influence of schooling by drawing average schooling in years from Barro and Lee (2001). Two dummies measuring if a given country has either a common law system or a Scandinavian-type mixed legal system are drawn from CIA (2003). As the last transmission mechanisms, I include social capital in the form of trust, measured as the national percentage of people answering yes to the question "In general, do you think that most people can be trusted, or can't you be too careful?"; this is normally referred to as generalized trust. Most variables are measured at the beginning of each period or as close to as possible.<sup>7</sup> Finally, I include period dummies to account for macroeconomic conditions and potential alterations in measurement methods that leave the country rankings intact. Table 1 reports descriptive statistics on the data; Appendix Table 1 lists the countries included in the study.

INSERT TABLE 1 ABOUT HERE

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<sup>7</sup>The exception is trust, which is treated as a time-invariant feature. All available observations from the WVS are therefore averaged for each country and used in all periods. For a background, see e.g. the discussions in Putnam (1993) and Bjørnskov (2004).

#### 4. Results

To test the theoretical predictions arising from the model in section 2, I employ a simple baseline specification consisting of income inequality, inequality interacted with political ideology, and initial GDP per capita as it is well known that richer countries have better institutions. I also include openness to trade, as Rodrik et al. (2002) in an influential critique of the trade-growth association forcefully argue that the effects of openness on growth mainly work through promoting institutional development. Figure 1 plots the simple relation between legal quality and the Gini coefficient where the simple correlation coefficient is -0.65. To substantiate this association, Table 2 reports the results of regressing legal quality on the baseline specification employing different estimation methods.

INSERT FIGURE 1 ABOUT HERE

INSERT TABLE 2 ABOUT HERE

Column 1 shows the results of estimating the ‘standard’ model, i.e. excluding the interaction term, by pooled ordinary least squares (OLS) and thereby replicates Keefer and Knack’s (2002) result that inequality leads to lower legal quality. Column 2 reports the results of estimating the baseline specification, demonstrating that the interaction term not only becomes significant but also increases the precision with which the ‘pure’ effect of inequality is measured. The predictions of the model thus receive substantial support from the data.<sup>8</sup> However, these results could in theory be driven by either a small number of deviant observations or be a consequence of reverse causation. In order to corroborate the result, the next columns therefore employ two departures from OLS. Firstly, column 3 corrects for potential endogeneity by estimating the effects using a two-stage least squares (2SLS) method where inequality and the interaction term are

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<sup>8</sup> It should be noted that I do not report any regressions where political ideology enters on its own, as it never attained significance in any specification. Including it does, however, induce noise from a few outlier observations.

instrumented with values lagged one decade. This has the effect of increasing the size of the coefficients while maintaining the significance of the results. Secondly, columns 4 and 5 (denoted ‘sample robustness’) test for the effects of influential observations by excluding outliers based on two statistics: column 4 defines outliers as observations with a residual outside a band of  $\pm 2$  standard deviations; column 5 alternatively defines outliers as observations with a DFBETA associated with the interaction term outside this band.<sup>9</sup> Column 4 hence tests for the effects of general outliers while column 5 tests for the possibility that the effects of the interaction term are driven by a small number of aberrant observations. In both cases, the sample is reduced by about a third to only 64 observations. The exclusion of outliers has the effect of increasing the significance of the estimate on inequality and slightly decreasing the significance on the interaction term while the sizes of both prove to be quite robust to sample alterations.

The results in Table 2 thus point to a total effect of inequality that is mediated by the proxy for tolerance, political ideology, and provide substantial support for the main hypothesis of this paper. To illustrate the effect, take the example of an average country that receives a shock to its level of inequality at the beginning of a decade, implying that the Gini coefficient increases by one standard deviation. The results indicate that this shock would, all other things being equal, by the end of the period have resulted in a decrease of legal quality of about 0.67 points, or 10% of the initial ‘level’, which corresponds to the difference between current legal quality in Estonia (6.67) and Mauritius (6.00). However, the results also indicate that the shock would have a 10% smaller effect in countries with an ideology one standard deviation above the average. Although this may at first seem an inconsequential effect, it corresponds to the difference between deteriorating to the level of Taiwan instead of Mauritius. In the longer run, the interaction term could thus have substantial importance.

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<sup>9</sup> DFBETA is the change in a regression coefficient that results from the exclusion of a particular observation. It thus more precisely measures the importance of single observations to single coefficients than the residual.

Following the approach in Keefer and Knack (2002), I next include a set of variables chosen to capture potential transmission mechanisms. The idea of this approach is that including a variable that captures a transmission mechanism will be reflected in the effects of inequality and the interaction term; i.e. if inequality negatively affects variable 'z' that in turn affects legal quality, the inclusion of this variable will then lead to a lower estimated effect of inequality. The results estimated by 2SLS are reported in Table 3; OLS estimates (not shown) are similar.

INSERT TABLE 3 ABOUT HERE

Firstly, the two first columns replicate the effect of including the interaction term, this time corrected for potential endogeneity. The results also show that openness to trade, which is included in the baseline specification, is always insignificant, changes sign and has no effect on the estimates on inequality. I thus find no support for the view of Rodrik et al. (2002) that openness leads to growth mainly through strengthening institutions such as the legal system. Secondly, I include ethnolinguistic fractionalization as an alternative measure of social polarization. Easterly (1997) and Tornell and Lane (1999) suggest that ethnically polarized countries may experience a larger demand for redistribution between ethnic groups, which *ceteris paribus* would leave less resources available for the legal system; Keefer and Knack (2002) find evidence of a similar effect. The same result is obtained in the local public finance literature, where polarization is found to lead to lower provision of public goods such as legal quality (e.g. Alesina et al., 1999). Yet, including ELF proves to have no effect in the present sample of democratic societies.

I also test more directly for the potential effects of redistribution that are commonly credited for leading to lower growth in the inequality literature (e.g. Persson and Tabellini, 1994) although such variables could also proxy for government investments in institutions. Including government size has no effect while governments' share of GDP becomes significant at  $p < 0.10$  but fails to affect the estimates on inequality. Thirdly, inequality may influence legal quality by leading to lower rates of schooling if better-educated citizens demand more legal protection. Perotti (1993) and Barro (2000)

both find that inequality leads to lower schooling rates and the results in Table 3 may at first suggest that some of the effect of inequality could be due to its effects on schooling. The estimate on inequality becomes approximately 20% smaller and is significant at only  $p < 0.10$  while the inclusion of schooling has no effect on the interaction term. However, at closer inspection this is an effect of noise induced by a small set of outlier observations. Even when excluding income inequality, schooling has no effect on legal quality and the present results thus reject this transmission mechanism.

Fourthly, I include two institutional measures. The specification in column 8 includes two dummies that take the value one if a country has either a common law system or a Scandinavian legal system. The inclusion of these variables is based on findings indicating that countries with either system experience lower corruption and higher legal quality (Treisman, 2000; Glaeser and Shleifer, 2002). Including these variables has the multiple purposes of both testing for the influence of different systems and any specific Scandinavian influence. The coefficient on common law is virtually zero and while the coefficient on having a Scandinavian system is positive as expected, it is small and insignificant. The only real effect the variables have is to strengthen the identification of the effect of the interaction term. The second institutional measure to be included is social capital captured by generalized trust scores since inequality is known to be negatively associated with levels of trust (Zak and Knack, 2001; Uslander, 2002). It could therefore be the case that inequality comes to proxy for social capital, which has been found to lead to better legal performance (La Porta et al., 1997; Rice and Sumberg, 1997; Knack, 2002). Including the level of trust indeed has the effect of rendering inequality insignificant at conventional levels while social capital becomes significant at  $p < 0.10$ . Yet, the effect on the interaction term is only marginal and the lower level of significance is mainly due to the slightly reduced sample size. Indeed, excluding inequality from the equation implies that the estimate on trust becomes slightly larger and significant at  $p < 0.05$  while it has no effect on the interaction term. As a final check, I therefore instrument trust as some authors suggest that social capital

may be an effect of formal institutions (Stolle and Rothstein, 2002; Rothstein, 2003).<sup>10</sup> The results reported in column 9 indicate that contrary to the findings in Knack (2002) there may be a need for instrumentation. This procedure has the effect of rendering inequality insignificant while the interaction term still remains significant. It also has the effect of producing a much larger coefficient on social capital than without instrumentation, which may seem surprising.<sup>11</sup> I leave this question to future research.

In summary, the results indicate that inequality exerts a negative influence on legal quality, but more so in countries with a leftwing ideology. The most likely transmission channel is trust, which is known to be higher in countries with a more equal income distribution, yet the interaction term between inequality and ideology is unaffected by each of the potential transmission mechanisms in the above, which may point to an independent effect of the tolerance of inequality as described in the theoretical section. These findings lead to a set of implications outlined in the concluding section.

## 5. Discussion and concluding remarks

This paper has examined the effects of income inequality on legal quality. A simple model exemplified how the behavior of perfectly rational voters/workers with a preference for equality can imply that inequality leads to lower legal quality and more so in countries where voters are less tolerant of inequality. The data seem to broadly support the implications of this hypothesis. The empirical findings indeed show that

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<sup>10</sup> The instruments are ELF and schooling. Both are almost perfectly uncorrelated with the error term from the regression in Table 3, column 2.

<sup>11</sup> There can be two explanations for this result. The first is sample variation, i.e. that although the instruments should be uncorrelated with the residual, they could by chance be correlated in the slightly smaller sample used in columns 8 and 9. This does nonetheless not seem to be the case. The second explanation is that the non-instrumented estimate is in fact biased downwards, which would be the case if generalized trust were an imperfect measure of features such as social trust and trustworthiness, or if the relation is endogenous. Given that people's answers to such questions are likely to be influenced by random fluctuations (adverse stories appearing in the media etc.) this seems as likely an explanation as the alternative.

income inequality leads to lower legal quality as previously found by Keefer and Knack (2002). By including variables to capture a set of potential transmission mechanisms, the findings suggest that the effects of inequality on legal quality are mainly due to inequality being associated with lower social capital measured as social trust, a result found by previous studies not dealing with inequality (La Porta et al., 1997; Rice and Sumberg, 1997; Knack, 2002). One contribution of this paper is thus to connect the empirical findings with respect to income inequality and trust. The second contribution derives from the finding that inequality interacted with political ideology exerts a significant positive influence on legal quality. The effect is broadly unaffected by including a set of variables intended to capture potential transmission mechanisms and thus warrants further discussion since political ideology, which is used to proxy for voters' tolerance of inequality and related social norms, could also measure other features of society. The interpretation adopted here is that political ideology measures the tolerance of inequality although other interpretations are at hand. When interpreting the results, it should be emphasized that trust and tolerance and related social norms form two differing parts of the social capital concept that should not be combined although the early literature on social capital tended to do so.

If ideology simply measured the preferences of government members, it should be expected that inequality leads to redistribution when tolerance of inequality is low. It could also be the case that leftwing governments react to high inequality by increasing redistributive efforts of purely ideological reasons, which would make any effect stronger, but more difficult to interpret. Yet, this is clearly not the case, as I find no evidence of any effect of inequality pertaining to redistribution. Purely ideological differences will likely only show in a limited number of cases since most governments (after all) are relatively pragmatic. But robustness exercises show that the results are neither driven by a small group of outlier observations (Table 2) nor by overall government involvement (Table 3), which further strengthens the case for considering political ideology an appropriate measure of tolerance of inequality. It hence appears that political ideology does not have the expected consequences if it were only measuring government ideology.

It may therefore seem reasonable to interpret the positive interaction term as evidence of a legitimacy effect similar to the argument in Keefer and Knack (2002). More specifically, inequality *per se* is associated with social trust, which leads to higher legal quality. Hence, where interpersonal trust is high, legal decisions will also tend to be considered legitimate since the persons taking the decisions will be perceived more likely to act fairly. Yet this intuitively appealing effect should be supplemented with the finding that legal quality is lower in countries where income inequality is high *and* is not tolerated by the general public. As demonstrated by the theoretical model, strong legal protection in a situation with high inequality and low tolerance leads most voters to weigh equity higher than efficiency and hence find the legal protection of innovations excessive. In such situations, legal decisions will often be considered illegitimate by a substantial part of the population while inequality may not be detrimental to legal quality when it is tolerated, as e.g. resources may be untied to invest in real improvements instead of compensation to groups that may feel adversely affected by such decisions.

While the paper connects the results of inequality and social capital in the form of trust, the main result may thus be that the tolerance of income inequality, measured by median political ideology, has a functional influence on the quality of legal systems. In other words, inequality does not affect legal quality to the same degree in all countries. Controlling for the effect of social trust, inequality may even be beneficial in some countries where social norms dictate that voters' tolerance of inequality is high. Although the findings presented in this paper warrant further research, the tentative political and economic implications of the results are that inequality may not be a substantial concern in *real* terms in countries where it is less of a concern in *normative* terms. When designing future policies to bring about better legal systems in e.g. developing and transition countries, this distinction should probably be kept in mind, as it implies that one size does not fit all.

## Appendix

Forming a Lagrange function,  $L$ , solves the model in section 2. This yields a number of first-order conditions outlined here. Note that  $\mu$  is the Lagrange multiplier.

$$\frac{dL}{dx_i} = 0 = \alpha b_i x_i^{\alpha-1} - \mu (\lambda p_i^x + (1-\lambda) p_i) \quad (\text{A1})$$

$$\frac{dL}{dy_i} = 0 = \alpha y_i^{\alpha-1} - \mu (\lambda p_i^y + (1-\lambda) p_i) \quad (\text{A2})$$

$$\frac{dL}{dl_i} = 0 = -\beta l_i^{\beta-1} + \mu w_i (1-t_i) \quad (\text{A3})$$

Demand for legal quality is solved in the same manner through a first-order condition as if voters/workers could choose the level of legal quality. Note that I drop time subscripts to denote steady-state demand (where labor supply is constant). The function  $h_t$  denotes the marginal impact on taxes of increasing legal quality. Solving this problem yields the solution in equations (4) and (5) in the text. As noted, the model also implies that the span of preferences for legal quality decreases with tolerance of inequality. This follows from the ratio between demands for legal quality of the two types in (A4).

$$\frac{D\lambda_{low}}{D\lambda_{high}} = \frac{\beta + Qpx^{low} + \frac{h_t}{1-t_i} w^{low} \mathcal{N}^\gamma \left[ 1 - \frac{1}{(1+\delta)\Gamma} \right] + Q(p^x - p)x^{high}}{\beta + Qpx^{high} + \frac{h_t}{1-t_i} w^{high} \mathcal{N}^\gamma \left[ 1 - \frac{1}{(1+\delta)\Gamma} \right] + Q(p^x - p)x^{low}} \quad (\text{A4})$$

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Table A1. Countries included

Country		
Argentina	Finland	Mauritius
Australia	France	Namibia
Austria	Gambia	Nepal
Bahamas	Germany	Netherlands
Bangladesh	Greece	New Zealand
Barbados	Guyana	Spain
Belgium	Honduras	Sri Lanka
Bolivia	Iceland	Sweden
Botswana	India	Switzerland
Brazil	Ireland	Taiwan
Canada	Israel	Thailand
Chile	Italy	Trinidad and Tobago
Colombia	Jamaica	Turkey
Costa Rica	Japan	United Kingdom
Denmark	Luxembourg	United States
Dominican Republic	Madagascar	Uruguay
Ecuador	Malaysia	Venezuela
El Salvador	Mali	

Table 1. Descriptive statistics

	Average	Minimum	Maximum	Std. dev.	Obs.
Legal quality	6.66	2.31	9.62	1.83	129
Inequality	39.26	24.90	61.90	9.06	117
Political ideology	0.10	-1.00	1.00	0.69	127
Initial GDP	6847	322	23217	5946	126
Openness	66.27	11.51	226.26	36.65	129
ELF	38.54	0.70	98.40	25.20	132
Government size	5.39	1.87	8.60	1.54	128
Government share in GDP	16.77	4.60	44.38	7.70	129
Schooling	6.25	0.50	12.00	2.77	126
Common law system	0.36	0	1	0.48	132
Scandinavian legal system	0.11	0	1	0.32	132
Social capital (trust)	34.15	4.65	63.97	16.17	96

Table 2. Results

	1	2	3	4	5
Estimation method		OLS	2SLS	Sample robustness	
Inequality	-0.211 *** (-2.712)	-0.281 ** (-3.462)	-0.363 ** (-2.394)	-0.271 *** (-3.043)	-0.277 *** (-3.087)
Inequality*ideology		0.149 ** (2.419)	0.179 ** (2.537)	0.131 * (1.836)	0.146 ** (2.019)
Initial GDP	0.817 *** (8.319)	0.784 *** (8.091)	0.711 *** (4.971)	0.667 *** (7.719)	0.652 *** (7.491)
Openness	-0.028 (-0.469)	-0.048 (-0.823)	-0.031 (-0.486)	0.019 (0.268)	0.027 (0.373)
Observations	105	105	93	64	64
Adjusted R squared	0.652	0.668	0.687	0.706	0.691
F statistic	40.304	36.192	34.648	39.345	36.843
Standard error of estimate	1.050	1.026	1.011	1.024	1.030

Note: the dependent variable is legal quality; all regressions include a constant term and period dummies; coefficients are standardized; t-statistics in parentheses; \*\*\* denotes significance at  $p < 0.01$ ; \*\* at  $p < 0.05$ ; \* at  $p < 0.10$ . Instruments for inequality and the interaction term in column 3 are values lagged one period; exclusion of outliers is based on residuals in column 4 and on DFBETA associated with the interaction term in column 5.

Table 3. Results – potential transmission mechanisms

	1	2	3	4	5	6	7	8	9
Inequality	-0.272** (-2.051)	-0.363** (-2.394)	-0.363** (-2.370)	-0.373** (-2.318)	-0.358** (-2.394)	-0.297* (-1.707)	-0.373** (-2.428)	-0.277 (-1.354)	-0.046 (-0.174)
Inequality*ideology		0.179** (2.537)	0.180** (2.513)	0.179** (2.519)	0.172** (2.448)	0.169** (2.358)	0.197*** (2.740)	0.144** (2.213)	0.155** (2.215)
Initial GDP	0.763*** (5.637)	0.711*** (4.971)	0.713*** (4.982)	0.719*** (5.116)	0.623*** (4.385)	0.666*** (4.640)	0.675*** (4.667)	0.672*** (4.585)	0.605*** (3.673)
Openness	-0.010 (-0.166)	-0.031 (-0.486)	-0.029 (-0.454)	-0.027 (-0.421)	-0.005 (-0.074)	-0.029 (-0.466)	-0.038 (-0.582)	0.074 (0.934)	0.097 (1.134)
Ethnolinguistic fractionalization			0.008 (0.119)						
Government size				0.034 (0.440)					
Government share in GDP					-0.135* (-1.874)				
Schooling						0.103 (0.961)			
Common law system							-0.005 (-0.083)		
Scandinavian legal system							0.067 (0.093)		
Social capital								0.191* (1.827)	0.497** (2.030)
Observations	95	93	93	93	93	93	93	72	72
Adjusted R squared	0.676	0.687	0.683	0.683	0.698	0.691	0.684	0.786	0.757
F statistic	40.178	34.648	29.357	29.344	31.404	30.402	25.915	38.165	32.658
Standard error of estimate	1.034	1.011	1.017	1.017	0.995	1.003	1.017	0.759	0.815

Note: the dependent variable is legal quality; all regressions include a constant term and period dummies; coefficients are standardized; t-statistics in parentheses; \*\*\* denotes significance at  $p < 0.01$ ; \*\* at  $p < 0.05$ ; \* at  $p < 0.10$ . Instruments for inequality and the interaction term are values lagged one period; instruments for trust in column 9 are ELF and schooling.



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