



Polarization, politics and property rights: Links between inequality and growth*

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Abstract. We argue that social polarization reduces the security of property and contract rights and, through this channel, reduces growth. The first hypothesis is supported by cross-country evidence indicating that polarization in the form of income inequality, land inequality, and ethnic tensions is inversely related to a commonly-used index of the security of contractual and property rights. When the security of property rights is controlled for in cross-country growth regressions, the relationship between inequality and growth diminishes considerably. This and other evidence provides support for our second hypothesis, that inequality reduces growth in part through its effect on the security of property rights.

1. Introduction

There is a general consensus that the effects of social polarization on economic and political development are likely to be significant. Charting the exact path of its influence has been difficult, however. One strand of research argues that polarized societies find it difficult to reach political consensus on appropriate responses to crisis. A second research focus has been on redistribution. Inquiry into the relationship between income-based polarization (income inequality) and economic growth, for example, has a long history. It focuses on the question, does income inequality stifle growth by increasing political incentives to redistribute? However, empirical investigation has substantiated neither the association of income inequality with redistribution, nor a negative association of redistribution with economic growth.¹

In this paper, we attempt to advance understanding of social polarization and political and economic outcomes in several ways. First, we point to a substantially different channel through which polarization might affect

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economic outcomes. The literature on polarization commonly assumes that political decisions are made on a single policy dimension. We relax this assumption and draw on results from the social choice literature suggesting that increasing polarization reduces the stability of government decisions, and in particular increases the possibility of future extreme deviations from current government policies. The argument we introduce and empirically investigate here is that economic actors react to this uncertainty by reducing the scope of their activities, arranging their businesses so they are less exposed to risk, and investing in inherently less risky enterprises (where their investments can be easily withdrawn or shifted to other activities). These reactions slow the rate of economic growth.

Data issues have plagued cross-country investigations of social polarization. The second contribution of this paper, therefore, is to assess the usefulness of several commonly used polarization measures, including the best available cross-country measure of income inequality, in the light of a theoretically-derived “ideal” indicator of polarization. The third contribution of the paper is to use these several measures of social polarization to test two claims that emerge from our earlier argument: first, that polarization makes the policy environment less stable, particularly by increasing the likelihood of extreme deviations from current policy; and second, that it is because of this effect that polarization depresses economic growth.

One way to test the first claim is to ask whether property and contractual rights are less secure in more polarized societies. That is, we expect that current government policies protecting property and contractual right, like all other government policies, are more likely to change drastically if polarization is higher. In fact, the evidence presented below strongly suggests a negative relationship between polarization and the security of property and contractual rights.

The second claim is that polarization slows growth *because* it makes the policy environment less secure. We test this claim by reexamining the impact of inequality – one type of polarization – on growth. Several recent cross-country empirical studies have found that inequality reduces economic growth.² There are four channels through which this effect is supposed to occur: inequality reduces access to credit markets; it reduces opportunities to achieve economics of scale for manufacturers who sell to the middle class; it increases redistribution through government budgets; and it increases political violence. Each of these in turn reduces growth. We review evidence that shows these to be incomplete explanations of the link from inequality to growth, and then explore the fifth channel that emerges from the arguments of this paper: income inequality should reduce growth by making property rights less secure. Our empirical tests provide support for this hypothesis.

2. Polarization and the multidimensionality of political decision making

The literature offers several ways to think about the effects of polarization on decision making. One problem identified by researchers is the contribution of polarization to government delay in responding to crisis. The assumption in this work is that two groups must agree to policy change; their preferences over the policy differ. Each group has imperfect knowledge about the cost that the other group bears in the event that a particular policy change is delayed, or about the likelihood that the other group will behave cooperatively (e.g., Alesina and Drazen, 1991 or Rodrik, 1999). The greater the differences between the two groups, and the greater the uncertainty about the other group, the larger are the gains to stubbornness, or continued disagreement about collective decisions. This literature then concludes that polarization impedes the formation of consensus to change policy. As a consequence, exogenous shocks trigger large swings in economic outcomes, because government policy makers cannot agree on any compensating policy changes.

Svensson (1998) investigates a second potential consequence of polarization, that it leads governments to underinvest in legal infrastructure. He also assumes that there are two sets of interests – parties – that have different preferences over government spending. However, only one party governs at a time, so policy change does not require the agreement of both. In his two-period model, the government party in the first period has some exogenously-given probability of not being re-elected. It decides how much to invest in the legal system. This investment increases tax revenues in the second period, but not the first. Consequently, the greater the probability that the party will not be re-elected, the less likely that it will benefit from the enhanced second period revenues. The greater the polarization of preferences between the two parties, the more likely that the other party, once in office, will spend increased resources in ways that the first party finds objectionable. Consequently, the greater is polarization and instability, the lower is spending on the legal system in the first period.

Like Svensson, we are concerned with the impact of polarization on the security of property rights. We characterize property rights somewhat differently though, to maintain consistency with the property rights data that we employ in the second part of the paper. This data assesses the risk that governments will repudiate contracts with firms or in other ways make decisions that have the effect of devaluing firm assets. Insecure environments are those where governments are more likely to make large departures from previous commitments to firms.

The question that concerns us here, then, is whether polarization makes large departures more likely. It is easy to see that this is the case under

the specific institutional assumptions of Svensson: expropriation increases government revenues in the current period at the expense of revenues in the second period, and is therefore more likely when a party with different preferences over government spending is expected to govern in the second period. Can these conclusions be generalized to an institutional setting where multiple decision makers have a voice in government policy?

A few key results from the social choice literature suggest that, in fact, polarization can increase instability in government policy making even when there are multiple decision makers. This result, however, depends on relaxing the assumption that government policy making takes place on only one policy dimension. With a single policy dimension, convex preferences, and an odd number of decision makers, Black's (1958) famous median voter theorem shows that there exists a unique policy x' that defeats all other policy proposals $x \in X$, where X is the one-dimensional policy space. In such an environment, polarization has no long-run effect on the decision to move to x' , although the information asymmetries noted previously may delay this shift.

Equilibrium outcomes are more difficult to characterize when one assumes, more realistically, that there are multiple voters or decision makers (more than two) who use a majoritarian decision making rule and who have conflicting preferences. Decision making under these conditions is marked by instability, since it is nearly always possible to find at least one policy proposal that a majority of voters will prefer to any other policy (Plott, 1967 and Davis, DeGroot and Hinich, 1972). More importantly, the policy space is not bounded, and any policy outcome is theoretically possible (McKelvey, 1976). Relative to the unidimensional world, then, when there are multiple policy dimensions, current policies are more likely to be changed and those changes can be larger.

Generating equilibrium outcomes from this decision making environment is the focus of a large literature, which offers several approaches. Polarization affects the equilibrium outcomes under each of these approaches. One set of analyses focuses on institutions that limit the extent to which decision makers can propose and vote on new policies, making departures from the *status quo* more difficult. Shepsle and Weingast (1981) label the equilibrium policies generated in the presence of such institutions as "structure-induced equilibria". There are a plethora of institutional restrictions on collective decision making that are observed in practice. A rule of unanimity creates stability by ensuring that no policy is changed unless all decision makers agree. This is the rule assumed in the crisis and polarization literature discussed earlier. A requirement to make decisions one issue at a time reduces instability by foreclosing the possibility of cycling among different policy proposals. Con-

stitutional restrictions that limit the set of decision makers or that prohibit certain decisions (e.g., those that deprive individuals of property or liberty) also impose stability.

However, increasing polarization creates pressures to replace or to bypass all of these institutional arrangements, with a consequent increase in the magnitude of potential departures from the *status quo*.³ There are many examples of this. Binder (1995), for example, demonstrates that when partisan differences between the Federalists and Republicans widened, the majority Republicans voted to overturn rules that gave minority parties in the House substantial influence over legislation. In the context of the argument in this paper, such rules ensured that large divergences in policy from one government to the next would be more difficult; the rule change made it more likely that the Republican majority in one Congress could adopt one extreme policy that would be supplanted by another extreme policy by a Federalist majority in a subsequent Congress.

A non-institutional approach to the problem of instability under pure majoritarian decision making is to introduce plausible restrictions on decision making that limit the possible departures from the *status quo* and allow for a bounded set of equilibrium outcomes to emerge. One refinement in this literature is to restrict attention to the set of policy outcomes that lie in the “uncovered set”.⁴ However, McKelvey (1986) proves that the upper bound of the uncovered set increases both with the distance between the preferred points of decision makers (one aspect of polarization) and with the number of heterogeneous decision makers or voters (a second aspect of polarization). That is, if one accepts that political decisions are confined to the uncovered set, one can conclude that polarization enables larger changes in government policy than would otherwise occur.

It is straightforward to argue, given these analyses, that polarization exposes economic actors to greater risk of substantial departures from existing government policies, even in an environment where there are multiple government decision makers. Such departures might include dramatically increased tax rates; expropriation; withdrawal of recognition for particular types of contracts; withdrawal of state protection of property rights against encroachment by other third parties; or wide swings in regulatory requirements with which firms are required to be in compliance.

The foregoing analysis outlines the effects that polarization might have in a collective decision making environment characterized by some form of majority rule voting. Independent of the collective decision making environment, however, it is also generally agreed that the costs to governments of enforcing the security of property and contractual rights depend on the “legitimacy” or general acceptance of those rights in society at large. Where

legitimacy and general acceptance are low, explicit and costly government enforcement actions are more often necessary to defend rights. Social polarization is one characteristic of society that can reduce the legitimacy of property and contractual rights, making their enforcement more costly. For example, Knack and Keefer (1997b) show that countries in which individuals exhibit higher levels of “trust” also exhibit greater security of property and contractual rights. At the same time, greater ethnic or linguistic polarization is associated with lower levels of trust in countries.

Confronted with insecure property and contract rights, firms change their production and investment strategies to mitigate this risk. For example, they adopt less efficient production processes in order to reduce their commitment of fixed capital assets that would be vulnerable to devaluation or expropriation as a consequence of government policies; they forego the manufacture of products for which demand is high but which require the use of such capital assets; or they reduce the scale of their operation altogether. It is well-established that insecurity of property and contract rights reduces growth (see, e.g., Knack and Keefer, 1995). The focus of this paper is whether polarization substantially increases this insecurity, and through that channel reduces economic growth.

3. Measuring polarization

Testing the links between polarization and economic outcomes is difficult for two reasons. First, empirical measures of social polarization are scarce. In this section, we explain the potential and limitations of several available measures of social polarization. Second, our argument is premised on the notion that social polarization is reflected in political polarization; cross-country measures of political polarization are non-existent, however. This is not as severe a drawback as it appears: to the extent that social polarization is entirely unrelated to political polarization, and our maintained hypothesis is false, we would expect the empirical tests that we report to be uniformly insignificant. Moreover, to the extent that social polarization directly reduces the legitimacy of contract and property rights in a society, making them more difficult to enforce, then the mapping of social into political polarization is unimportant.

Although most of the social polarization measures that we use here – income and land inequality, and ethnic and linguistic fractionalization – have been used in other contexts in the literature, previous research has not explained how well these measures capture theoretical notions of polarization. In this section we review the theoretical characteristics of an ideal indicator of social polarization and assess the polarization measures that are most fre-

quently used in the literature. Not surprisingly, we find that no measure is perfect, but we do argue that these measures are good proxies.

Esteban and Ray (1994: 824) offer the most persuasive and rigorously developed definition of polarization. They argue that groups in society are polarized with respect to any set of attributes when they exhibit the following three characteristics: the members of each group are homogeneous with respect to the set of attributes; different groups are heterogeneous with respect to these attributes; and the groups are relatively uniform in size. Esteban and Ray conclude that polarization is greatest when society is divided into two similarly sized groups, each internally homogeneous but significantly different from the others on all possible attributes.

According to this definition, then, empirical measures of polarization should account for the distance between groups with respect to particular policy preferences, the homogeneity of group members with respect to these policies, and the relative size of the groups. Data that capture all of these dimensions are not available, especially on a cross-country basis, but not even within individual countries. In our empirical tests below, we therefore turn to proxies for which data are available: ethnic divisions and income and land inequality. Ethnic measures of polarization are commonly used in the literature. We also use inequality measures, since societies can be polarized by income or wealth as well as by ethnicity and language. In the case of inequality variables, however, the polarization explanation that we offer for their effect on property rights is only one of at least two possible explanations. The second explanation is not that the rich and poor are polarized and both have political power, but simply that the rich in more unequal societies may not be politically powerful (the Chinese in Southeast Asia, for example) and for that reason alone feel less secure in their property and contractual rights.

Use of these data rests on two assumptions. The argument of the paper is that polarization makes it more likely that governments will adopt extreme policies. Such polarization is with respect to policy issues, however. The first assumption, then, is that people in different ethnic, income or asset groupings have different preferences over policies; the more divided are people along these (observed) lines, therefore, the more polarized are their (unobserved) preferences with respect to policies. So, for example, we would expect increasing income inequality to increase polarization with respect to bankruptcy law and time limits governing patent protection, while ethnic fragmentation might lead to polarization with respect to regional development and civil service reform. There are striking examples that support this assumption: inter-ethnic competition in Indonesia between the Chinese and Javans is rooted in the economic success of the former and the economic rules of the game; in Nigeria, conflict between rival ethnic groups is driven in large

measure by the desire to control the country's oil wealth. In any case, this assumption is fairly benign since both of the ethnic polarization measures used in the paper take into account politically salient cleavages in society.

Second, we assume that departures in these variables from the three dimensions of polarization defined by Esteban and Ray are sufficiently mild as to allow their use as proxy measures of social polarization. In the two subsections that follow, we describe the data and argue that they are sufficiently close to the notions of polarization with which we are concerned. Note that to the extent that they are imperfect proxies, they introduce noise into the statistical tests that makes it *less* likely that the empirical tests would offer support for the hypotheses outlined above.

3.1. *Ethnic divisions and polarization*

The first set of polarization variables measures ethnic divisions. One of these variables is "ethnic tensions", a subjective variable contained in the International Country Risk Guide (ICRG), published by Political Risk Services, Inc. This guide is marketed primarily to overseas investors, and assigns numerical scores to various dimensions of political risk. "Ethnic tensions" is rated on a 0–6 scale, with larger values indicating greater tensions. We use the earliest value (from 1982, in most cases) of "ethnic tensions" for each country in our empirical tests. We assume that countries with high values of this variable are more polarized with respect to those policies that could differentially affect ethnic groups. Ethnic polarization, as defined by Esteban and Ray, should result in ethnic tensions; by construction, therefore, this measure of social polarization meets the Esteban and Ray criteria.

A second variable, from Sullivan (1991), measures the percent of a country's population belonging to the largest ethnic group. A lower score therefore indicates a more ethnically divided country. Ethnicity is defined by language, race, and/or religion, depending on which of these is viewed by Sullivan as the most relevant source of divisions within the society.⁵ This measure of ethnic heterogeneity captures well one particular dimension of the Esteban and Ray polarization definition, related to the relative size of groups. It diverges from their definition in two ways.

First, it does not capture the distance between ethnic group policy preferences. However, it is unlikely that there is a systematic relationship between the (unmeasured) extent of heterogeneity across groups with respect to their policy preferences and the (measured) extent of ethnic fragmentation. If the relationship is random, it only injects noise into the estimation, making it more difficult to reject the null hypothesis.

Second, the Sullivan measure of ethnic homogeneity falls monotonically as ethnic fragmentation increases. If one takes ethnic homogeneity as a meas-

ure for polarization, though, this implies that polarization rises monotonically with ethnic fragmentation. Such a relationship is inconsistent with theoretical notions of polarization. Horowitz (1995: 37–41) and Esteban and Ray (1994: 624) argue that polarization should be higher when there are a small number of large groups (e.g., as in Bosnia or Fiji) and lower where there is a proliferation of very small groups (as in Tanzania). That is, as the size of the largest group falls from 100 percent, tensions at first increase; beyond some point, however, as the largest group becomes small, further declines in its size diminish tensions. To take this non-linearity into account, we allow the Sullivan measure to enter both linearly and quadratically in the regressions.

Regressing the 6-point “ethnic tensions” scale on the ethnic homogeneity measure and the square of the measure supports this interpretation. The maximum predicted level of tensions occurs when about 37 percent of the population belongs to the largest group.⁶ Guyana and Trinidad, which both score the maximum value of 6 on ethnic tensions, exemplify this pattern fairly well. East Indians comprise 51% and Africans 30% of the population in Guyana, and 40% and 43% of the population, respectively, in Trinidad.

3.2. *Inequality as a proxy for polarization*

The use of income inequality as a proxy for polarization has a long history. James Madison in Federalist no. 10 argued that “. . . the most common and durable source of factions has been the various and unequal distribution of property. Those who hold and those who are without property have ever formed distinct interests in society”. More recently, Berg and Sachs (1988), Haggard and Webb (1993), and Birdsall, Sabot, and Ross (1995) have asserted that unequal income distributions contribute to social and political polarization, and show empirically that inequality undermines the consensus for needed policy reforms. Birdsall, Ross and Sabot (1995) suggest that government capacity to take actions that minimize the long-term disruptive impact of exogenous shocks increases if it enjoys the broad-based legitimacy that equality confers.

There are two possible problems with using inequality data as a measure of polarization. The first relates to its degree of convergence with theoretical notions of polarization; the second relates to the quality of this data generally. Both of these issues are addressed in this section.

As Esteban and Ray make clear, theoretically appropriate measures of income-based polarization should be sensitive to the degree of clustering of the population. Measures of income inequality do not display this sensitivity. They provide a simple example that demonstrates this. Begin with a society of peasants with identical incomes. Then take a fixed amount of total income and redistribute it to a fraction of these peasants. Polarization would rise and

then fall as this fraction went from one to zero (since for values close to zero or one, the vast majority of the society would still have the same income). In contrast, the Gini coefficient for this society would systematically rise (measured inequality would become more severe) as this fraction fell from one to zero.

However, while measures of income inequality diverge in potentially significant ways from measures of income-based polarization, there is evidence that these divergences are more theoretical than actual. For some countries (too few, unfortunately, to be useful for our empirical tests below), there are data that permit us to observe clustering of the population at different income levels (Chen, Datt and Ravallion, 1994). These data allow us to calculate a measure of income-based polarization using the formula devised by Esteban and Ray.⁷ The Chen et al. data include the percent of the population that consumes less than \$21, \$30, \$40, \$50 and \$60/month. One can extrapolate from this data the average consumption per person per month of the remaining fraction of the population and then, using the formula from Esteban and Ray, derive measures of polarization for these countries. The resulting measures are positively and strongly correlated with the Gini coefficient calculated from the same data, suggesting that, in practice, the Gini coefficient is an appropriate proxy for income-based polarization in society.⁸

The quality of income inequality data is a second concern. We use a recent compilation of income inequality data from Deininger and Squire (1996). This dataset has greater coverage over time and across countries than any previous compilation. In addition, and more importantly, they identify a “high quality” subset of observations. Deininger and Squire conclude that many observations in previous compilations fail to meet the minimum standards of quality required for inclusion in their dataset.

To be included, observations must first be based on actual surveys of households excluding, for example, observations derived from national accounts data on sources of income coupled with some assumption about how different types of income are distributed. Second, observations must be based on a representative sample of the nation’s population. This excludes observations based on surveys covering only urban or rural populations, for example. Finally, observations must be based on comprehensive coverage of incomes sources, excluding, for example, observations based only on wages.

Deininger and Squire assess three other quality problems that afflict all inequality datasets. First, for some observations income is measured for households and for others, individuals. This difference appears to matter little. For those cases with data on both, the Gini coefficient averages only 1.7 points higher when it is calculated using individuals as income recipients. Second, they include income observations that are measured either gross or net of

taxes. Where measures of both are available, Ginis based on pre-tax incomes are on average about 2.7 points higher.

Finally, all existing sizeable compilations of inequality data include both income-based and expenditure-based measures. In the Deininger-Squire dataset, where both are available, income-based Ginis average 6.6 points higher than expenditure-based Ginis. They accordingly recommend that any empirical results resting on cross-national variations in Gini be tested for their robustness to an adjustment for differences in expenditure-based and income-based measures. We do this, and find that adding this 6.6 mean difference to the observations that are based on expenditures does not materially change any of the empirical results we report below.

The Deininger-Squire “high-quality” dataset contains multiple observations for income inequality for many countries. For empirical tests in which we examine inequality’s impact on property rights for the 1986–95 period, we chose inequality observations as close to 1985 as possible. The mean year for observations is 1985, with a standard deviation of 4.8 years. To analyze the effect of inequality on growth over the 1970–92 period, we selected observations as close to 1970 as possible, with a mean year of 1971 and a standard deviation of 4.3 years.

Societies can also be polarized according to holdings of assets. Land inequality is the only measure of asset inequality with broad country coverage. Gini coefficients for land inequality circa 1960 and 1970 are available from Taylor and Jodice (1983); Muller and Seligson (1987) include some additional values for circa 1970. Jazairy et al. (1992) report observations for more recent years for many countries. As with the income inequality observations, we created two cross-sections, one centered around the early 1980s (based primarily on Jazairy), and another centered around 1970 (based primarily on Taylor and Jodice). All of the land inequality observations are based on official agricultural censuses undertaken by the UN Food and Agriculture Organization, although they have not been subjected to the level of scrutiny Deininger and Squire (1996) have applied to income inequality data, raising the possibility of greater measurement error.

Table A1 in the Data Appendix shows the simple correlations among all of the polarization measures. Low correlations between income and land inequality, and between either of these and each of the ethnicity variables, suggest that societies are in general polarized in different ways across different dimensions. This provides support for our assumption that redistributive issues are unlikely to be unidimensional, and underlines the importance of looking at multiple sources of polarization when investigating the impact of polarization on economic and political outcomes, as we do below.

4. Insecure property rights and polarization

Our concern in this article is with the impact of polarization on those aspects of government decision making that affect economic actors. For these actors, perhaps the most important aspect of the policy environment is the reliability of a country's guarantees of property and contract rights. Polarization allows extreme departures from these guarantees (for example, against expropriation, to honor contracts with private firms, or for assigning liability in the event of disputes in the private sector), as it allows extreme departures from government policies generally.⁹ Testing this hypothesis is the focus of the discussion below.¹⁰

4.1. *Measuring property rights*

The International Country Risk Guide (ICRG) produces five indicators that specifically evaluate the credibility and predictability of property and contractual rights in a large number of countries: *Expropriation Risk*, *Risk of Repudiation of Contracts by Government*, *Rule of Law*, *Quality of the Bureaucracy*, and *Corruption in Government*. The Data Appendix provides the criteria used by ICRG in assessing countries on each of these five variables.

We use an additive index of these indicators.¹¹ The latter three of the five listed above were rescaled from 6-point to 10-point scales for comparability with the former two. Higher scores are always "better", reflecting lower risks, stronger rule of law, higher quality bureaucracy and lower corruption. The index has a maximum possible value of 50 and a minimum of 0.

The relationship between the first three components of the index (expropriation, repudiation of contracts, rule of law) and the security of property rights is straightforward. High scores on bureaucratic quality are assigned to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy – the predictability of policy under bureaucratic control is an explicit coding criterion. Corruption is somewhat more ambiguous, since corrupt arrangements may be predictable (where, for example, it is widely known that no decision is made unless the minister receives a ten percent commission). In general, though, corruption is likely to be associated with greater uncertainty among economic actors, since corrupt arrangements are generally not legally enforceable. The results we report below are robust to deleting corruption from the index.

An important characteristic of the ICRG index is that it measures the *insecurity* of property rights rather than the allocation of rights (unlike indicators of fiscal redistribution, for example). Weak rule of law, the absence of constraints on government repudiation of contracts, and the ability of bureaucracies to act arbitrarily all undermine the security of property rights,

independent of the level of redistribution in a society. Values of the property rights index for Singapore and Sweden illustrate this crucial conceptual difference.

Government spending as a share of GDP in Sweden is more than double what it is in Singapore, suggesting significantly more redistribution in Sweden. If the property rights index only measured the level of redistribution in a society, then Singapore should have a considerably higher score on the property rights index than Sweden. However, if the index measures the security of property rights, the values of Singapore and Sweden should be similar or somewhat higher in Sweden, where there are more formal constraints on government action. In fact, the index scores for Singapore and Sweden (averaged for the 1986–95 period) are 43.0 and 49.4, respectively, just as one would expect if the ICRG index reflects the security rather than the allocation of property rights.

The validity of the index is further supported by its correlation with other, similar variables. This ICRG property rights index is highly correlated (.9) with an alternative one constructed from data provided by a second investor risk service, Business Environment Risk Intelligence (BERI), using this service's measures of contract enforceability, risk of nationalization, and bureaucratic delays. Rauch and Evans (2000) find that the ICRG and BERI bureaucracy and corruption measures are strongly predicted by such measures of efficient bureaucratic structure as meritocratic recruitment and promotion.¹²

4.2. *The impact of polarization on property rights*

Table 1 reports the results of our investigation of the effect of polarization on the security of property rights, using the four different proxies for polarization in the different specifications. The dependent variable is the index of the security of property rights, averaged over the 1986–95 period. There are three control variables. Given the costs of setting up institutions for protection of private property and the enforcement of contracts, institutional development may be a function of the size and volume of market transactions (Rosenberg and Birdzell, 1986). Thus, per capita GDP and aggregate GDP (as a fraction of U.S. aggregate GDP) are taken into account. Controlling for a third variable, recent growth of per capita income, is intended to capture any bias in the subjective evaluations of property rights, which conceivably are influenced by recent economic performance.

Results presented in Table 1 support the argument that polarization undermines the security of property rights.¹³ The polarization coefficients all have the expected signs and indicate large effects. The coefficient on income inequality (equation 1) is significant at the .01 level, and each 5-point rise

Table 1. Polarization and property rights

| Equation | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| Constant | -22.161 (8.143) | -27.915 (5.603) | -17.996 (5.739) | -21.955 (6.403) | -13.537 (9.990) | -17.961 (8.801) |
| Log 1985 GDP per capita | 7.646*** (0.781) | 7.937*** (0.716) | 6.515*** (0.644) | 7.350*** (0.724) | 7.610*** (1.005) | 8.850*** (0.934) |
| Per capita growth 1980–85 | 0.213 (0.195) | 0.599* (0.294) | 0.405* (0.191) | 0.514** (0.220) | 0.145 (0.211) | 0.232 (0.223) |
| Aggregate GDP, 1985 | 0.036 (0.026) | 0.071* (0.036) | 0.070* (0.035) | 0.072* (0.036) | 0.040 (0.022) | 0.036 (0.024) |
| Gini: income inequality | -0.186*** (0.071) | | | | -0.196** (0.068) | -0.144 (0.081) |
| Gini: land inequality | | -0.093 (0.048) | | | -0.097** (0.032) | -0.076* (0.034) |
| Ethnic tensions | | | -1.21 (0.337) | | -0.935* (0.395) | |
| Ethnic homogeneity | | | | -0.243 (0.150) | | -0.409* (0.165) |
| Homogeneity ² | | | | 0.0019 (0.0011) | | 0.0031** (0.0011) |
| Adj. R ² | 0.74 | 0.70 | 0.70 | 0.67 | 0.80 | 0.80 |
| N | 76 | 85 | 108 | 107 | 64 | 64 |
| Mean dev. | 32.1 | 30.9 | 30.3 | 30.2 | 32.7 | 32.7 |

Dependent variable = International Country Risk Guide Index (ICRG), 1986–95. Inequality measures are circa 1985. Standard errors are calculated using White's (1980) heteroskedastic-consistent variance-covariance matrix. A *, **, or *** indicates significance at .05, .01, or .001 level respectively for two-tailed tests.

in Gini is associated with a decline in the ICRG index of nearly 1 point. Each standard deviation increase in income inequality (i.e., of 9.4) reduces the property rights index by about one-sixth of a standard deviation (i.e., by 1.6). The impact of land inequality in equation 2 is significant at the .05 level for a one-tailed test. Each 10-point rise in the Gini for land inequality is associated with a nearly 1-point drop in the ICRG index. A one standard deviation increase in land inequality (i.e., of 16.3) is associated with a 1.5-point drop in the property rights index.

Another way to examine whether land inequality is a source of polarization is to evaluate whether its effect is more pronounced, as it should be, in

countries where a larger fraction of the labor force is dedicated to agriculture (and therefore, where land is relatively more important than other assets).¹⁴ We find that it is. An interaction term between land inequality and agricultural labor force added to equation 2 of Table 1 is significant at the .05 level (in a two-tailed test). Moreover, where virtually none of the labor force is in agriculture (the UK, Kuwait, and Singapore have the lowest values in the sample at two percent), land inequality has no effect on property rights, while the effect in nations with 80 percent of the labor force in agriculture (Niger, at 92 percent, has the highest value) is double the average effect in the whole sample.¹⁵

“Ethnic tensions” is a highly significant determinant of property rights in equation 3, with each 1-point rise in the 6-point scale associated with a drop of 1.2 points in the 50-point property rights indicator. The coefficients on ethnic homogeneity in equation 4 are nearly significant at conventional levels, and show a non-linear relationship with property rights, as expected. Property rights worsen until the largest group exceeds 64 percent of the population, when rights begin to improve.

Even when they are included together, the differing measures of polarization continue to exhibit the predicted effect on property rights. In equation 5, income inequality, land inequality, and “ethnic tensions” each have a negative and significant independent effect on the security of property rights. In equation 6, the coefficients for ethnic homogeneity and its square both increase in absolute value relative to equation 4, and are statistically significant at the 0.05 level. Land inequality remains significant, while income inequality loses its significance.

4.3. *Testing the robustness of polarization’s effects on the security of property rights*

Table 2 summarizes the robustness of the key results from Table 1 to various changes in specification, sample or method. The table shows (only) the new coefficients and standard errors for the polarization variables from tests identical to those in equations 1–3 in Table 1, but for the indicated change in specification, sample or method.

The first robustness check is in response to the possible claim that the primary effect of polarization is actually to increase levels of political violence. It would therefore be political violence that leads to declines in property rights security and creditworthiness. This is not the case, however. When the frequencies of revolutions, coups and assassinations are added as regressors, as in the first row of Table 2, the estimated effects of polarization change very little.¹⁶ The effects of political violence on property rights are generally negative, as anticipated, but are not statistically significant.

Table 2. Polarization and property rights: Robustness to additional regressors

| Polarization variable: | Gini income | Gini land | Ethnic tensions |
|---------------------------------------|---------------------|---------------------|----------------------|
| Political violence as added regressor | -0.185** (0.070) | -0.083 (0.046) | 1.069*** (0.329) |
| Regime type dummy as added regressor | -0.128 (0.075) | -0.114** (0.041) | -0.954*** (0.310) |
| Continent dummies as added regressors | -0.182* (0.081) | -0.033 (0.051) | 1.421*** (0.306) |
| WLS (log of per capita GDP as weight) | -0.198** (0.073) | -0.081 (0.043) | 1.178*** (0.341) |
| Median regression | -0.215** (0.080) | -0.113 (0.060) | -1.225* (0.585) |
| Robust regression | -0.181* (0.078) | -0.128** (0.044) | 1.208*** (0.369) |

Each cell shows regression coefficient and standard error for the relevant polarization measure, changing the specification as noted, using equations 1–3 in Tables 1 as base regressions. A *, **, or *** indicates significance at .05, .01, or .001 respectively for two-tailed tests.

A second possible concern arises from the influence of regime type. Democracies may tend to have both more equal income distributions and more secure property rights. This would potentially make the measured effects of inequality on property rights in Table 1 spurious. To control for this, we add a dummy variable for regime type. Democracies do exhibit more secure property rights on average (5 to 9 points higher on a 50 point scale), but as shown in the second row of Table 2, accounting for regime type has little effect on the polarization results.¹⁷ The negative effect of land inequality actually increases slightly and the effect of income inequality is still significant at .05 for a 1-tailed test.

It might also be argued that omitted variables specific to each continent account for the results. However, when continent dummies for Latin America and Africa are added as regressors, all measures of polarization remain negative, income inequality is statistically significant and the association of “ethnic tensions” with property rights strengthens substantially. These results are shown in the third row of Table 2. The influence of land inequality declines by two-thirds. This is unsurprising, since Latin America has a large share of the countries that exhibit both highly unequal distribution of land and insecure property rights. Moreover, this association is unlikely to be the spurious product of some unobserved variable characteristic of Latin America and no other continent. In particular, the argument that the relationship between

land distribution and insecure property rights is spurious cannot explain the result reported earlier, that the impact of land inequality increases with the size of the agricultural labor force, as our theory predicts.

Measurement error might also be driving our results, although we rely on the best available compilation of income inequality data. To control for this, we use weighted least squares (WLS), utilizing as weights the log of per capita income as a proxy for data quality.¹⁸ This procedure changes the polarization coefficients by very little, as shown in the fourth row of Table 2. Finally, to ensure that these results are not the product of a few influential observations we employ two standard methods: median regression, which is based on minimizing the sum of absolute residuals rather than the sum of squared residuals, and robust regression, in which observations with larger residuals are downweighted. In most cases, the effect of these techniques is to *increase* the polarization coefficients, as displayed in the bottom two rows of Table 2.

5. Links between inequality and economic performance

The prior section demonstrates a strong and robust relationship between various measures of polarization and the security of property rights. Other work has demonstrated a link between property rights and economic growth (for example, see Knack and Keefer, 1995) and between inequality and long-run growth (Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Clarke, 1995).¹⁹ The findings in Table 1 raise the possibility of a previously unexplored channel through which inequality might affect growth: through its negative influence on the security of property rights. This issue is the subject of this section, which focuses on our income inequality measure of polarization, since among various polarization measures income inequality has commanded nearly universal attention in research on the determinants of growth.

5.1. *Other explanations linking inequality and growth*

No complete explanation yet exists to explain how inequality affects growth. Four arguments have been the subject of the most thorough empirical research. These relate to imperfect capital markets, the size of the market, the politics of redistribution, and political violence. We review each of these and then turn to the tests of the explanation advanced in this paper.

Benabou (1996) and others argue that when capital markets are imperfect, credit applicants who are poor but have high expected rate of return projects (such as investment in their own human capital) have less access to credit

than rich applicants with the same or worse quality projects. Rising inequality reduces the number of people with access to credit markets, excluding many good projects from funding, thereby lowering growth.²⁰ Consistent with the key assumption of this theory, Deininger and Squire (1998) find that countries with higher income inequality have lower rates of educational attainment. Because capital markets tend to be less developed (less perfect) in poor countries than in rich, the theory also implies that the effects of inequality on growth should be worse in poor countries than in rich. Deininger and Squire find that land inequality reduces growth more in low income countries. However, the effects of income inequality on growth do not differ across high and low income countries. Moreover, contrary to the theory, Perotti (1996) finds that income inequality affects school enrollment more in rich countries than in poor countries.

A second argument relates to the size of the market. Murphy, Shleifer, and Vishny (1989) argue that successful industrialization depends on large markets comprised of middle and upper class consumers, which enable manufacturers to justify technologies with increasing returns to scale. In countries where trade barriers or high fixed costs to exporting make international markets more difficult to penetrate, successful industrialization may therefore depend on the existence of a sizeable middle class in the local market. They cite historical evidence from the U.S. in support of their model.

Closer investigation reveals only slight cross-country support for their thesis, however. Their hypothesis implies that the negative effects of inequality on growth should be greater in smaller markets, since in larger markets the absolute size of the middle and upper classes is large even if income inequality is severe. Markets are small when both the domestic market is small and there are barriers to trade. We find that the size of an economy (as measured by aggregate GDP) does have a stronger effect on growth in countries with high trade barriers than in countries with low trade barriers, but this difference is small and not statistically significant. Similarly, as these authors predict, we find that income inequality has a stronger negative effect on growth in countries with small markets, but again the effect is small and statistically insignificant. Land inequality, on the other hand, has the same impact in small and large market countries, contrary to their hypothesis.²¹

A third channel through which inequality is believed to reduce growth is through income redistribution, particularly in democracies. This hypothesis has venerable roots. James Madison wrote in Federalist Paper No. 10 that "... democracies ... have ever been found incompatible with personal security or the rights of property; and have in general been as short in their lives as they have been violent in their deaths." Somewhat more recent analysis has formalized this early intuition, Meltzer and Richard (1981) show theoretically

that the level of income tax preferred by the majority of voters increases with the degree of income inequality. Alesina and Rodrik (1994) and Persson and Tabellini (1994) extend these findings to develop hypotheses that countries with higher levels of inequality should experience lower growth. In their models, when inequality is severe governments face greater pressures to redistribute income from those who have invested most, or have the greatest ability, to those who have invested less or have less ability. The policy of redistribution is predictable and does not change unless the level of inequality itself changes.²² In this paper, government policies change even if the level of inequality is constant, and those changes can be large if inequality is high.

Two tests have been used to examine this proposition. Persson and Tabellini (1994) hypothesize that pressures for redistribution are likely to be more pronounced in democracies than in autocracies. Alesina and Rodrik (1994) and Deininger and Squire (1998) find no empirical support for this hypothesis in cross-country tests.²³ The second test focuses on whether transfer payments rise when inequality grows. Using a variety of measures of redistribution, Perotti (1996) finds no evidence of a positive relationship between redistribution and income inequality in democracies, contrary to the predictions of the median voter models.²⁴ Moreover, he uncovers no cross-country evidence that higher levels of fiscal redistribution are harmful to growth.

The fourth strand of analysis linking polarization and growth focuses on political violence and instability. Substantial evidence indicates that both political violence and inequality retard growth, but there is no conclusive evidence that inequality leads to violence.²⁵ Findings in the literature of positive correlations between inequality and violence prove to be sensitive to model specification, to the particular violence measure used, and to the inclusion of inequality observations of suspect quality.²⁶ For example, Perotti (1996) reports that income inequality worsens his index of political violence and that violence in turn is significantly and negatively associated with growth rates over the 1960–85 period. Using nearly identical data, Alesina and Perotti (1996) demonstrate similar links among inequality, political violence and investment rates. However, when we replicate these models with the Deininger-Squire compilation of inequality data, we find no link between inequality and violence. Perotti finds that the share of income of the middle class has a highly significant ($t = 2.1$) effect on political violence. Substituting the Deininger-Squire data set of income inequality, but otherwise using Perotti's data, we find that the coefficient on inequality plummets and is insignificant ($t = .58$).²⁷

The prediction that polarization worsens political violence is nevertheless intuitively appealing. Its relationship with inequality may be weak because inequality does not forge sufficiently high levels of group cohesion and iden-

tification necessary to overcome the considerable collective action problems entailed in organizing violence for political ends. It is possible that ethnic divisions forge stronger links within groups, and are more associated with political violence than is inequality, but a test of this speculation is outside the scope of this paper and must remain a topic for future research.

5.2. *Property rights, inequality, and growth – the polarization link*

Insecure property and contractual rights can affect growth directly, by influencing the choice of production process and the efficiency with which production is carried out, and indirectly, by reducing incentives to invest (see Barro, 1991 and Knack and Keefer, 1995 for a fuller discussion of this relationship). If inequality operates principally through the security of property rights in reducing growth, then the independent effect of inequality on growth should diminish substantially after controlling explicitly for the security of property rights. On the other hand, if inequality operates primarily through high, but certain, levels of redistribution, we would not expect large changes in the coefficient on inequality after controlling for the security of property rights.

The dependent variable in Table 3 is average annual growth in per capita income over the 1970–92 period. Following Alesina and Rodrik (1994) and Persson and Tabellini (1994), regressors include beginning-year (1970) per capita income, a measure of human capital (mean years of education completed for 1970; data are from Barro and Lee [1993]), and inequality. Following Alesina and Rodrik (1994), we use Gini coefficients for income and land inequality as inequality measures. However, we use the Deininger-Squire income inequality dataset, which was unavailable to them. All inequality observations used in these tests are from 1980 or earlier, to minimize the possibility of reverse causation. Following Knack and Keefer (1995), we use the earliest available observations of the ICRG property rights index.

Results are displayed in Table 3. Growth is positively related to educational attainment, and negatively related to initial income, the conditional convergence result found by Barro (1991) and others. Income inequality is negatively associated with growth, while the property rights index is positively associated with growth.

The critical result in Table 3 is that the addition of the property rights index substantially reduces the inequality coefficients, by nearly one-half in the case of income inequality (comparing equations 1 and 3), and by one-third for land inequality (equations 4 and 6). By way of comparison, the inequality coefficients do not consistently or substantially diminish when a similar experiment is conducted with indexes of violence and instability. For income

Table 3. Inequality, property rights and growth, 1970–92

| Equation | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------------------|---------------------|----------------------|----------------------|---------------------|---------------------|---------------------|
| Constant | 10.691 (3.162) | 12.064 (2.605) | 13.117 - (3.416) | 5.377 (2.147) | 5.796 (1.936) | 6.461 (2.072) |
| Log 1970 GDP per capita | -0.775 (0.388) | -1.734*** (0.452) | -1.652*** (0.447) | -0.352 (0.269) | -0.937** (0.284) | -0.774** (0.282) |
| Mean years of education 1970 | 0.835 (0.432) | 0.162 (0.539) | 0.179 (0.497) | 1.123*** (0.305) | 0.680* (0.333) | 0.815* (0.354) |
| Gini: income inequality | -0.088** (0.025) | | -0.046 (0.030) | | | |
| Gini: land inequality | | | | -0.039** (0.012) | | -0.026* (0.012) |
| Property rights index, 1982 | | 0.140** (0.027) | 0.119** (0.033) | | 0.080*** (0.023) | 0.062* (0.025) |
| Adj. R ² | 0.20 | 0.36 | 0.39 | 0.20 | 0.22 | 0.26 |
| N | 56 | 56 | 56 | 89 | 89 | 89 |
| Mean dep. var. | 1.83 | 1.83 | 1.83 | 1.37 | 1.37 | 1.37 |

The dependent variable is average annual growth of per capita income, 1970–92, calculated from Summers and Heston (1991). Inequality observations are circa 1970. Standard errors are calculated using White's heteroskedastic-consistent variance-covariance matrix. A *, **, or *** indicates significance at .05, .01, or .001 level respectively for two-tailed tests.

inequality, an F test shows the coefficient on income inequality in equation 3 is significantly lower than its equation 1 value (using a one-tailed test). This evidence supports the conclusion that property rights is an important channel through which income polarization affects growth. However, it makes clear as well that other channels also matter, as indicated by the fact that the inequality coefficients remain negative, and significant in the case of land inequality.

6. Conclusion

The key observation of this paper is that polarization makes large changes in current policies, including those guaranteeing the security of contract and property rights, more likely under a wide range of institutional arrangements. In addition, social polarization may directly undermine the security of rights. These are simple and previously unnoted explanations of such phenomena as the deterioration of property rights security when inequality is high, and the negative effect of inequality on economic growth. Our empirical results

provide strong support for the argument that polarization causes a deterioration in the security of property rights. In addition, our results distinguish our explanation linking polarization and growth from previous explanations that focus on redistribution.

The policy implications of these two approaches are quite distinct. If redistributive policies, *per se*, are to blame for the low growth engendered by inequality, for example, governments that seek to mitigate income inequality in a society must inevitably confront a trade-off between equity and growth. If, on the other hand, the insecurity of property rights slows growth in unequal or otherwise polarized societies, then governments that commit over the long run to particular redistributive policies incur less risk of slowing economic growth.²⁸ Fiscal redistribution that reduces inequality may actually increase growth by reducing the risks of policy uncertainty.

Notes

1. For a review of this literature, see Benabou (1996). Also see the discussion in Helliwell (1994).
2. For example, Clarke (1995), Alesina and Rodrik (1994), and Persson and Tabellini (1994).
3. For example, the greater is polarization, the more likely is logrolling that defeats the issue-by-issue rule, as in Shepsle and Weingast (1981).
4. A policy alternative y is said to *cover* a policy choice x if a majority prefers y to x and if the points that a majority prefers to y form a proper subset of the points that a majority prefers to x . Uncovered policies are intuitively more attractive to political agents, which provides the concept with some plausibility. If platform y covers platform x , candidates for election would always prefer platform y , since not only does y defeat x , but all the policies that defeat y also defeat x . Policy choices inside the uncovered set defeat all policy choices outside the uncovered set, but policy choices inside the uncovered set can be defeated by other points inside the set. Hence, if the size of the uncovered set expands, uncertainty about policy outcomes should grow.
5. A third ethnicity variable, an index of “ethno-linguistic fractionalization” reported in Taylor and Hudson (1983), has been widely used in the economics and political science literature. The Sullivan measure has substantially greater country coverage, as the fractionalization index is not reported for many African and other countries which were not yet independent when the variable was constructed in about 1960. The homogeneity variable and the fractionalization index are correlated at $-.60$. In tests below, we report results using the Sullivan measure. In every case, when the fractionalization index is substituted, the direction of effects is similar, although it is less often statistically significant.
6. The R^2 for this regression is $.28$, indicating a slightly better fit for this quadratic specification than for a simple linear regression of tensions on homogeneity, which produces an R^2 of $.24$.
7. Esteban and Ray prove that only this formula provides a measure of polarization consistent with their three criteria: $P = \sum_{i=1}^n \sum_{j=1}^n \pi_i^{1+\alpha} \pi_j |y_i - y_j|$, where there are n groups, where the i th group has income y_i and population π_i . The formula also includes an un-

- observable parameter, α , which represents the “strength of group identity,” or intra-group homogeneity. Esteban and Ray prove that α must range between 0 and 1–6.
8. We calculated the polarization measure using four different values of the unobservable constant α (the minimum allowable value, 0, the maximum allowable, 1.6, as well as 0.3 and 0.7). The resulting values of polarization are always positively correlated with the Gini coefficient, which is most important for the purposes of this paper. The correlation with Gini ranges from very strong (.75 for α equal to 0 and .3) to a weaker but still significant .37 (for $\alpha = 1.6$).
 9. Increasing polarization need not affect liability laws or expropriation directly to undermine investor confidence. Given high polarization on other margins (say, regarding national defense), the potential of tradeoffs and logrolling across policy dimensions makes all other policies vulnerable to change.
 10. A more direct hypothesis, that government policies are more volatile when polarization increases, cannot be tested because of a lack of data on the volatility of government economic and regulatory policies.
 11. This additive index is correlated at about .99 with indexes using weights obtained from factor analyses. Correlations among the five components of the index range from .68 to .88. The index has a high degree of reliability, with a Cronbach’s alpha of .94. For further information on these property rights variables see Knack and Keefer (1995), in which they are found to be important determinants of economic performance. The ICRG dataset we use is available for a nominal fee from the PRS Group (www.prsgroup.com).
 12. The ICRG bureaucracy and corruption measures are also strongly and negatively correlated across countries with entrepreneurs’ perceptions of uncertainty in the way rules and laws are administered by bureaucracies and the courts, as measured in a survey conducted for the World Bank’s 1997 *World Development Report*. Those survey measures and the BERI index are not used as dependent variables here because of the small number of countries in their samples with data on income and land inequality, relative to the ICRG sample.
 13. Svensson (1998) reports a similar regression using income inequality, but not the other three measures.
 14. Russett (1964) makes a similar point in the context of political violence.
 15. Detailed results available on request from authors.
 16. Values are annual averages for the 1980s, with data from Banks (1993). These are the violence measures used by Barro (1991).
 17. Clague et al. (1996) conclude that democracies have more secure property rights than most autocracies. The dummy variable for regime type used here is constructed as follows: democracies are countries scoring no more than four on the sum of the Freedom House indices of political freedoms and civil liberties for 1986 (from Gastil, 1986).
 18. Summers and Heston (1991: 341) report that the margin of error in their estimates of real gross domestic product is much lower for richer than for poorer countries.
 19. Studies examining shorter periods, such as decades, tend to find weaker relationships between income inequality and growth (Barro, 2000). The relationship even changes sign when estimates are based solely on within-country variation over time (Forbes, 2000), a method particularly sensitive to measurement error in the inequality data, as noted by Barro (2000). The effects of polarization via property rights on growth involve longer-run processes; therefore our empirical tests in this section follow Persson and Tabellini (1994) and Alesina and Rodrik (1994) in using long-run averages with one observation per country.

20. Note that credit markets are built on contractual relationships that are likely to be less reliable in more polarized countries. That is, polarization should increase the imperfections in capital markets in the same way that it makes other property and contractual rights less reliable.
21. These results are available from the authors upon request. Moreover, other empirical evidence (Helliwell, 1994) indicates that the direct effects on growth of market size are very modest in strength.
22. In their models, redistribution policy is instantaneously adopted and constant over time (in part to ensure time consistency). They suggest that the redistribution argument can be recast in terms of property rights. Our argument is that there is an important difference between an unfavorable allocation of property rights to those with high ability, which is consistent with a known policy of redistribution, and an uncertain allocation of property rights, which is not and which is the focus of this paper.
23. Knack and Keefer (1997) show that the stronger impact of inequality on growth in democracies demonstrated by Persson and Tabellini (1994) is an artifact of their regime type classifications and measurement error in their inequality data.
24. Persson and Tabellini suggest that transfer payments are not a sufficient test of their model, since redistribution can take place through non-fiscal means as well. However, it seems probable that the median voter would be more decisive in debates over the government budget, which are most often conducted in legislatures, than over other redistributive issues, such as eminent domain proceedings or regulatory hearings, which are conducted in regulatory agencies and courts, over which legislatures (and therefore the median voter) have less direct influence.
25. Barro (1991) among others has found evidence that political violence and instability curtail growth, although Alesina et al. (1996) find that coups are in turn inspired by poor economic performance.
26. See Wang et al. (1993) and citations therein for a sample of this literature.
27. Detailed results are not reported here for space reasons, but are available upon request.
28. Malaysia seems to have accomplished this in consistently granting formal economic privileges to the indigenous *bumiputera*, or Malay, population over ethnic Chinese and Indian Malaysians.

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Data appendix

Table A1. Correlation coefficients for polarization measures

| | 2 | 3 | 4 |
|---------------------------|------|-------|--------|
| 1. Gini income inequality | 0.11 | -.25* | 0.18 |
| 2. Gini land inequality | | -.06 | 0.04 |
| 3. Ethnic tensions | | | -.49** |
| 4. Ethnic homogeneity | | | |

** indicates significant at .01 for two-tailed tests.

* indicates significant at .05 for two-tailed tests.

Table A2. Summary statistics

| | Mean | Std. dev. | Minimum | Maximum |
|------------------------|------|-----------|---------|---------|
| Property rights index | 30.4 | 10.2 | 9.8 | 50 |
| Gini income inequality | 41.9 | 9.4 | 25.2 | 63.0 |
| Gini land inequality | 54.9 | 16.3 | 8.0 | 97.2 |
| Ethnic tensions | 3.1 | 1.7 | 1 | 6 |
| Ethnic homogeneity | 68.4 | 25.4 | 17 | 100 |

Inequality measures are circa 1985. Property rights index is averaged over 1986–95.

Definitions of Property Rights Index components:

Quality of the bureaucracy:

High scores indicate “autonomy from political pressure” and “strength and expertise to govern without drastic changes in policy or interruptions in government services”; also existence of an “established mechanism for recruiting and training.” Scored 0–6.

Corruption in government:

Lower scores indicate “high government officials are likely to demand special payments” and “illegal payments are generally expected throughout lower levels of government” in the form of “bribes connected with import and export licenses, exchange controls, tax assessment, police protection, or loans.” Scored 0–6.

Rule of law:

This variable “reflects the degree to which the citizens of a country are willing

to accept the established institutions to make and implement laws and adjudicate disputes.” Higher scores indicate “sound political institutions, a strong court system, and provisions for an orderly succession of power.” Lower scores indicate “a tradition of depending on physical force or illegal means to settle claims.” Upon changes in government in countries scoring low on this measure, new leaders “may be less likely to accept the obligations of the previous regime.” Original variable name in ICRG is “law and order tradition.” Scored 0–6.

Expropriation of private investment:

Assessment of risk of “outright confiscation” or “forced nationalization.” Scored 0–10, with lower scores for higher risks.

Repudiation of contracts by government:

Indicates the “risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down” due to “budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities.” Scored 0–10, with lower scores for higher risks.

Property rights index:

Sum of 5 preceding variables, with the first 3 transformed into 10-point scales. Where used as a dependent variable, the index is averaged over 1986–95. As an independent variable in growth regressions, the first available data point (1982 for most countries) is used.