Social divisions and institutions:
Assessing institutional parameter variation

Ann-Sofie Isaksson

December 2009

Social divisions and institutions:
Assessing institutional parameter variation

Ann-Sofie Isaksson[*]

Abstract

This paper investigates the hypothesis that the association between property rights institutions and income is weaker in countries with high social divisions. It argues that social divisions should have a negative effect on perceived institutional inclusiveness, which in turn should depress institutional payoffs. Absent a property rights indicator that captures the perceived inclusiveness of institutions, social divisions should then weaken the observed association between property rights institutions and income. The empirical results support this hypothesis, and highlight the importance of evaluating whether the institutions measure used captures the institutional framework applying to the population at large.

1 Introduction

We know that 'institutions matter'. A great number of studies have by now demonstrated the positive association between different measures of institutional development and economic performance (see, for example, Knack and Keefer 1995; Hall and Jones 1999; Acemoglu et al. 2001; Rodrik et al. 2004). Several scholars now point to the need to contextualize the discussion of institutions and their role in the development process (North 1994; Djankov et al. 2003; Rodrik et al. 2004; Mukand and Rodrik 2005; Rodrik 2008; Williamson 2009). The impact of a formal institutional setup depends on a country's specific institutional needs, enforcement strategies and informal institutions, the arguments go, and there is not necessarily a clear mapping from a specific institutional arrangement to an economic outcome.

Keeping in mind the need to contextualize the discussion of institutions and their role in the development process, a pressing question when evaluating the relation between property rights institutions and economic performance should be: property rights for whom? Rich and poor, men and women, people of different ethnic origins, large-scale corporations and small-scale peasants – do they all receive the same protection? Put differently, is there variation in perceived property rights protection within countries, and if so, how does this affect institutional payoffs measured at the country-level?

The aim of this paper is to investigate the hypothesis that the association between property rights institutions and income per capita is weaker in countries marked by social divisions. The argument is that institutional payoffs should increase with perceived institutional inclusiveness, which in turn should be negatively affected by the level of social divisions. If social divisions have a negative effect on the extent to which the institutional framework is perceived to incorporate the different segments of economic actors in society, and our institutional indicators do not take account of this perceived inclusiveness (or lack thereof), they should also have a negative

influence on the strength of the observed association between property rights institutions and income per capita. The results of empirical estimations for a cross-section of countries support this hypothesis and highlight the importance of evaluating the extent to which the property rights indicator used captures the level of protection for society at large.

If not taken into account parameter heterogeneity, i.e., systematic coefficient variation in cross-section data, constitutes a form of regression misspecification (Temple 2000; Brock and Durlauf 2001; Zietz 2005).[1] The above argument suggests the existence of institutional parameter heterogeneity along a social division dimension, in particular if – as is standard in the literature – using an institutional indicator that is poorly suited to capture the inclusiveness of the institutional framework. Against this background, evaluating institutional parameter variation along a social division dimension is an important contribution that should help contextualize the well established association between institutions and economic performance and shed light on the importance of considering the property rights applying for a broad cross-section of the population as opposed to a limited segment of economic actors.

2 Social divisions and institutional payoffs

Institutions can be defined as formal and informal rules that shape the incentives in human exchange, whether political, social or economic (North 1990). Economists usually interpret the concept in a narrow sense, assessing how conducive these rules are to desirable economic behaviour (Rodrik et al. 2004). This paper follows in this tradition, focusing on property rights institutions (hence, 'institutions' refer to property rights protection). Besley and Ghatak (2009) define property rights as the institutional framework in place for protection of the right of an owner of a good or asset to use it for consumption and income generation, to transfer it to another party and to use it to contract with other parties. As such, property rights are essential for investment and trade, and thus for economic development in a wider sense. My main proxy for property rights is a very influential indicator (used by, e.g., Knack and Keefer 1995; Hall and Jones 1999; Acemoglu et al. 2001, 2002) focusing on the risk of expropriation facing foreign investors (see Section 3.1).

The second key concept – social divisions – refers to societal cleavages involving inequality, in terms of social status, economic conditions, or both. As such, it could be seen as the antithesis of social cohesion, describing a situation where citizens feel they are part of the same community, face shared challenges and reap similar societal benefits (Easterly 2006). Social divisions can exist along several dimensions, such as income, class, ethnicity and gender, and what constitutes the most salient dividing lines is likely to vary across societies.[2] To capture social divisions this paper considers cleavages along an economic and an ethnic dimension, as proxied by measures of income inequality and ethnic diversity (see the discussion in Section 3.1).

A significant literature argues that divisions along these lines have a negative impact on institutional development per se (as opposed to on institutional payoffs). With respect to ethnic divisions, several studies suggest an adverse effect of ethnic diversity on institutions and government policies, and thereby on economic performance (see, for example, Easterly and Levine 1997; La Porta et al. 1999; Collier 2000; Alesina et al. 2003; Aghion et al. 2004). The basic argument is that societies with ethnic cleavages tend to have difficulties in agreeing on public

---

[1]Against this background it is surprising that the cross-country institutions literature contains so few studies evaluating, or even allowing for, institutional parameter variation Two papers that specifically focus on variation in the institutional parameter are that of Eicher and Leukert (2006), who find a stronger institutional coefficient in non-OECD than in OECD countries, and that of Cavalcanti and Novo (2005), who find the payoffs from better institutions to be lower at the top of the conditional distribution of international incomes. Other papers (e.g., Baliamoune-Lutz 2005; Baliamoune-Lutz and Ndikumana 2007; Mehlum et al. 2006; and Rodrik 1999) allow for institutional interaction effects, but focus on how institutions affects the impact of another explanatory variable, rather than on the variation in the institutional parameter.

[2] See the discussion of Anthias (1998) and Erdmann (2007).

goods provision and to be prone to rent seeking whereby leaders create rents for the group in power at the expense of society at large. Moreover, Leeson (2005) suggests causation from institutions to fractionalization, describing how heterogeneous agents in pre-colonial Africa relied on social-distance reducing signals (such as adopting someone else's religious practices) to enable trade, and how colonial rulers put an end to this bridging across groups by introducing noise into these signals.[3]

Turning to social divisions along economic lines, several studies suggest that income inequality can be detrimental to institutional development.[4] Glaeser et al. (2003), Sonin (2003) and Hoff and Stiglitz (2004) present models showing how the rich and politically powerful can subvert institutions for their own benefit, using illustrations from the post-communist transition economies. Chong and Gradstein (2007) find evidence of a two-way causation – that income inequality undermines institutions, but also that poorly developed institutions create inequality. Finally, a few empirical papers propose negative effects of *both* income inequality and ethnic fractionalization on institutional development and thereby on economic performance (Easterly 2001; Keefer and Knack 2002; Easterly et al. 2006).

The papers arguing that ethnic fractionalization and income inequality negatively impact on institutional development have in common that they suggest that a lack of social cohesion hinders societies from building institutions that serve an all-encompassing interest. Hence, the argument is that different forms of social divisions can undermine institutions per se, and given the importance of well functioning institutions for economic development, thereby also have a negative effect on economic performance. This paper proposes an alternative (but not contradictory) mechanism; that social divisions undermine institutional *payoffs*, that is, the impact of institutions on economic performance.

The argument is that social divisions should negatively affect perceived institutional inclusiveness, which in turn should depress institutional payoffs. Acemoglu et al. (2002) argue that good institutions should secure property rights for a 'broad cross-section' of society. The inclusiveness of the institutional framework, depending on de jure regulations as well as their de facto application, has to do with the extent to which institutions live up to this criterion, i.e., how well they incorporate the different segments of economic actors in society. Importantly, what should matter for agents' economic behaviour is the *perceived* inclusiveness of the institutional framework – that is, the extent to which each and every individual perceives that his or her property rights are protected.[5] Although perceived and actual property rights are likely to be highly correlated, the distinction is relevant; irrespective of de facto property rights, there may be variation across groups in the extent to which people perceive that property rights offer them protection. This situation seems particularly pertinent in a country marked by social divisions.

My conjecture is that perceived institutional inclusiveness is negatively affected by social divisions. Although social divisions in terms of ethnic fractionalization or income inequality do not

---

[3] This constitutes just a small part of a large literature on ethnic divisions; a wealth of studies analyze how ethnic identities are shaped (see, e.g., Eifert et al. 2009), how ethnic affiliations affect party systems and voting behaviour (see, e.g., Mozaffar et al. 2003, and Lindberg and Morrison 2008), and how ethnic divisions relate to conflict (see, e.g., Collier and Hoeffler 2004, and Basuchoudhary and Shughart II 2007). For in-depth analysis of ethnic group affiliations and ethnic conflict, see Horowitz (1985) and Hardin (1995).

[4] Again, the literature relating income inequality to institutional development is just a small fraction of the extensive literature focusing on the association between income inequality and economic performance (for a good overview see Benabou 1996). Several studies suggest that inequality has a negative effect on growth and investment. Arguments include that inequality motivates redistribution, which in turn creates growth-reducing distortions (see, for example, Persson and Tabellini 1994, and Alesina and Rodrik 1994), that it fuels political instability (see, for example, Alesina and Perotti 1996), and that in the presence of credit constraints it causes the poor to under-invest (see, for example, Galor and Zeira 1993). Barro (2000), on the other hand, finds no *overall* relation between income inequality and growth, but rather that inequality retards growth in poor countries and stimulates growth in richer countries.

[5] For arguments on the importance of the *perception* of institutions see Kaufmann et al. (1999).

automatically imply perceptions of injustice,[6] comparing a country marked by social divisions to a more cohesive society, it seems reasonable to assume that in the former people are *on average more likely to perceive* property rights institutions as protecting some groups more than others.

However, whether we observe that social divisions negatively affect institutions per se, or institutional payoffs, ultimately depends on how we define and measure property rights institutions. If one thought of property rights protection as the extent of protection *perceived by citizens in general*, then if social divisions, as suggested here, have a negative effect on the perception of institutional inclusiveness this would, by definition, be the same as saying that they impact negatively on property rights institutions as such. Hence, if in line with this definition measuring property rights using an indicator based on country averages from comparable national surveys asking a representative sample of the population about how they perceive the security of property rights in their country, social divisions would, if negatively affecting the perception of institutional inclusiveness, bring down the country's average property rights score. However, I am not aware of any study taking this approach. The argument that social divisions instead depress institutional payoffs takes as a point of departure the country level property rights measures used in the literature today.

These indicators tend to focus on assessments of the protection of a small segment of economic actors, like foreign investors (see the discussion of the ICRG measure in Section 3.1), or on expert judgments of formal economic and judicial structures (see the discussion of the Heritage Foundation and World Bank Doing Business indicators in Section 3.1). In particular, there is no survey based property rights measure, in line with the hypothetical indicator described above, aiming to capture perceptions of property rights protection among citizens at large.[7] While such a measure would surely be problematic in many respects, not the least in terms of comparability, it should at least aim at capturing the property rights applying for 'a broad cross section of society'. With respect to expert judgments of the property rights protection facing foreign investors, on the other hand, although probably overlapping the perceptions of property rights protection among citizens in general, it seems a strong assumption that they should be identical. Hence, if social divisions negatively affect the perception of institutional inclusiveness, using a standard measure of property rights two countries could thus get the same institutional 'score', but different institutional payoffs, depending on their levels of social divisions.

Having said this, let us consider why perceived lack of inclusiveness, whether based in actual circumstances or not, should weaken the observed positive association between property rights institutions and economic performance in countries marked by social divisions. Two mechanisms appear important here. First, there should be a direct coverage effect. If property rights induce desirable economic behaviors such as investment and trade, these behavioral effects should increase with perceived institutional coverage. In other words, if some segments of society feel, rightly or not, that the existing property rights institutions offer them no protection, then the effects of these institutions on economic behaviour should be less widespread.[8] Second, there might be a compliance effect; if citizens feel that the institutional framework does not protect their interests,

---

[6] There are, for example, experimental and survey based evidence that when assessing the fairness of a distribution people take into account the inputs - such as effort, skills or luck - contributing to that distribution (see, for example, Hoffman and Spitzer 1985; Fong 2001; Cappelen et al. 2007; and Isaksson and Lindskog 2009). If people believe that the prevailing distribution is based on factors under individual control, such as hard work, they may view it as just even though it is unequal, whereas if they believe it is based on factors outside individual control, such as political favoritism or inheritance, they may regard it as unjust.

[7] The World Values Survey, which is the most comprehensive cross-national attitude survey available (still containing data for only around 50 countries), does not cover views on property rights protection.

[8] The findings of Hellman and Kaufmann (2002), who study firm behaviour and find that perceived inequality of influence is associated with a negative assessment of the fairness and impartiality of courts and of the enforceability of court decisions and with being less inclined to use courts to resolve business disputes, could be said to support this view.

they should be less inclined to comply with its rules. As pointed out by Keefer and Knack (2002) the costs of enforcing property rights depends on the legitimacy of those rights – to what extent they are accepted by society at large. If property rights institutions are seen as protecting the property of one group more than that of another, then the legitimacy of those institutions should be reduced in the eyes of the people who perceive themselves as disadvantaged, making them less willing to live by the regulations put forward.[9]

Consider the case of property rights to land. In many developing countries customary and formal land rights coexist, giving rise to ambiguities and overlapping claims to plots. Studying land rights in Ghana, Goldstein and Udry (2008) find that the security of tenure is highly dependent on social status. According to their findings, the risk of losing one's plot when leaving it fallow is substantial, and importantly, varies considerably depending on the individual's position in the local political and social hierarchy; a man holding a political office faces a 20% risk of losing his land – for a woman not holding a political office this figure is doubled. In line with this variation their results indicate that lower agricultural returns among women are attributable to women's lower social status, in turn giving them less secure tenure, which discourages investment in land. Hence, social divisions affect the de facto land rights of individuals; had men and women the same social status, or in the absence of social status differentials in general, we would not have observed these differences in tenure security. While this example illustrates a case of *actual* variation in property rights across groups within a country marked by social divisions, we need not go that far. As noted above, what matters for economic behaviour is *perceived* property rights protection. Hence, for social divisions to affect institutional payoffs it would suffice if in countries marked by social divisions it is more likely that some groups *perceive* that property rights offer them no protection.

How is this form of variation in property rights protection captured in country level measures of property rights? If measuring property rights protection as perceived by each and every individual in Ghana – in line with the hypothetical survey based property rights indicator discussed above – the lower protection among women and others with lower social status would bring down the country average, and an estimated payoff to property rights protection would be based on this average. However, a property rights indicator assessing the risk of expropriation facing foreign investors seems very unlikely to pick up this within-country variability in effective protection. Rather, it would (in line with its stated intentions) capture the property rights applying to an elite – foreign investors (or in the case of measures focusing on legal structures, de jure rights rather than de facto protection across groups). In a cohesive country there need not be a great difference between the perception of property rights protection of the average citizen and what experts judge as applying to major investors. However, in a country marked by social divisions some groups (like women in Ghana) are likely to fall short of the official standard.

To sum up, the argument suggests that unless our property rights indicator captures the property rights protections perceived by all segments of economic actors in society, the measured association between property rights institutions and economic performance should vary with the perceived inclusiveness of property rights institutions, in turn negatively influenced by the degree of social divisions.

3 Empirical estimation

Above it was argued that the association between property rights institutions and economic performance should vary with social divisions. Let us now turn to the strategy and data used for investigating the empirical support for this claim. In line with the cross-country institutions literature I use linear regression, regressing the measure of economic performance on explanatory

---

[9] Also this argument is supported by the results of Hellman and Kaufmann (2002), who find that perceived inequality of influence is associated with lower levels of tax compliance and with higher levels of bribery.

variables including an interaction term between the institutions indicator and the social division measure. The benchmark OLS regression thus takes the form:

$$(1) \qquad \log y_i = \alpha + \beta \, Inst_i + \gamma \, Socdiv_i + \delta \, Inst_i \cdot Socdiv_i + \varphi \, \mathbf{X}_i + \varepsilon_i$$

where y_i is income per capita in country i, $Inst_i$ is the institutions indicator, $Socdiv_i$ is the social division measure, $Inst_i \cdot Socdiv_i$ is the interaction term allowing the institutional parameter to vary with social divisions, $\mathbf{X}_i$ is a vector of control variables, and ε_i is an error term. The existence of institutional parameter heterogeneity along a social division dimension will be evaluated by interpreting the interaction term parameter δ, associated marginal effects and the results of split sample estimations.

Focusing on a cross-section of countries one faces familiar problems of simultaneity and omitted variables. First, it does not seem unreasonable that institutions and income are mutually reinforcing, i.e., that institutions promote economic development and economic development enables institution building. Trying to establish the causal effect of institutions, a substantial literature attempts to get around this simultaneity problem by instrumenting for institutional development (see, for example, Hall and Jones 1999, and Acemoglu, Johnson and Robinson 2001). Second, if the degree of income inequality differs across sectors of the economy then there are reasons to believe that structural economic change should lead to variation in inequality over a country's development process (see the literature relating to the 'Kuznets curve', originally Kuznets 1955, and later e.g., Bourguignon and Morrison 1990). In the literature linking ethnic divisions to economic performance, finally, measures for ethnic fractionalization have in fact generally been treated as exogenous (see, for example, Easterly and Levine 1997; La Porta et al. 1999; and Alesina et al. 2003). However, to the extent that ethnic divisions are socially constructed (Horowitz 1985; Hardin 1995) a legitimate concern is that the salience of ethnic cleavages might change over time in response to economic incentives (see, e.g., Alesina and La Ferrara 2005) or institutional structures (see, e.g., Leeson 2005).

In theory, these problems can be approached by instrumenting for the key explanatory variables. However, finding valid instruments (uncorrelated with the model error term) is difficult even when using micro-data, and with the country as the unit of analysis it is, if not impossible, then at least very problematic (Besley and Ghatak 2009). For instance, while the aforementioned attempts at instrumenting for institutions (Hall and Jones 1999; and Acemoglu, Johnson and Robinson 2001) were novel, the validity of the instruments used can be questioned (for a critical discussion of the exogeneity of instruments in recent IV approaches see Glaeser et al. 2004; Deaton 2009; and Bazzi and Clemens 2009). Moreover, being interested in whether the association between property rights institutions and income is weaker in countries with high social divisions, the focus in this paper lies on the existence of an interaction effect between institutions and social divisions rather than on their respective point estimates. Reverse causality from economic development to institutions or social divisions should not by itself bias this interaction effect – only to the extent that these (reverse) causal effects vary systematically with institutions or social divisions should they bias the result.

Against this background there are strong arguments for keeping the analysis simple. With the purpose of this paper and the above discussion in mind, cautiously interpreting the robustness of OLS correlation patterns seems preferable to using IV estimation with questionable instruments. Importantly then, the results are not meant to be interpreted in terms of 'impacts' or 'effects'. Rather, focus lies on examining the *variation in the strength of the association* between property rights institutions and income. By including a range of control variables proposed in the literature, and allowing the intercept as well as the institutional slope term to vary across regions, I seek to minimize the influence of omitted variables on the key parameter estimates. I take care to test the

results using a range of different indicators and specifications, and am cautious when it comes to interpreting the point estimates.

3.1 Variables and data

The dependent variable is log GDP per capita in 2005 obtained from the World Development Indicators. I use income levels, rather than growth, considering that the focus explanatory variable is slow moving and has reasonably developed over a considerable period of time, meaning that measuring 'institutions' today, the institutional indicator should still pick up institutional developments from far back. With the aim to uncover contextual variation in the effect of a slow moving variable it seems appropriate to consider its relation to a variable that in a similar fashion captures long run development. Whereas income levels capture long run development, growth rates are transient (for arguments along these lines, see Hall and Jones 1999)

One approach, which is common in the literature (see, for example, Acemoglu, Johnson and Robinson 2001), would be to consider long-term growth. Doing so, however, initial period income (included to control for convergence tendencies) would pick up a considerable portion of the long run influence of institutions on economic performance, meaning that one is left to consider the recent variation in the outcome and explanatory variables. With little recent variation in institutions (the institutional indicator in focus is in fact only available for the period 1982-1997), and considering that my aim is not merely to uncover their overall effect, but the *contextual variation* in this effect, income seems a more appropriate outcome variable for my purposes. Nevertheless, to examine if countries with high social divisions also display a weaker association between institutions and growth, i.e., between institutions and the *pace* rather than the *level* of economic development, I also run a set of estimations using different growth spans as dependent variable.

To proxy for property rights institutions I use the measure of protection against risk of expropriation, developed by the International Country Risk Guides (ICRG). This indicator is a subjective assessment of the risk to foreign investors of 'outright confiscation and forced nationalization' of property, ranging from 1-10, with higher values meaning better protection against expropriation. Even though this measure focuses on risks to foreign investors it is perhaps the most influential indicator used to proxy for property rights institutions (See, for example, Knack and Keefer 1995; Hall and Jones 1999; and Acemoglu et al. 2001, 2002). For instance, although Acemoglu and his colleagues (2002) argue that good institutions should secure property rights for a broad cross-section of society they use the ICRG variable that focuses on risks to foreign investors as one of their main indicators to capture institutional development. The fact that the ICRG measure has had a wide impact in the institutions literature, in spite of its inability to capture the degree of property rights protection for a broad cross-section of society, makes it interesting to use in this context.[10]

As noted, however, the extent to which the institutional parameter varies with social divisions should depend on the institutional indicator used. In particular, if social divisions affect the association between institutions and income via a negative influence on the perceived inclusiveness of the institutional framework, then the better the institutional indicator takes account of the inclusiveness of institutions, the less institutional parameter heterogeneity along a social division dimension we should observe. Ideally then, one would want to compare the results obtained when using a range of different measures that to varying extents capture the inclusiveness of property rights institutions. It is very difficult, if at all possible, to find a property rights proxy that perfectly captures the perceived property rights protection for society as a whole. However,

---

[10] Note that this is not a criticism of the ICRG measure as such – it is probably very useful to an investor looking to invest in a foreign country. What I object to is rather the way the measure is used in the institutions literature to draw conclusions about property rights applying to the overall population in a country.

different measures should have varying success on this account, and the ICRG measure, focusing on the situation faced by foreign investors, should reasonably be in the least successful end of this spectrum.

I consider four alternative property right indicators (see alt. inst. 1-4 in Table A1). Unlike the ICRG indicator, the first three of these measures do not explicitly focus on the conditions of foreign investors, and thus it seems likely that they better capture the inclusiveness of institutions. Even though being based on expert judgments of economic and judicial structures (alt. inst. 1-2) and on a rating of property rights in an 'executive opinion survey' (alt. inst. 3), rather than on the views of general citizens, at least these measures set out to capture property rights in general and not those applying for a very limited segment of investors. Alt. inst. 4, on the other hand, assesses the risk facing foreign investors in the repatriation of profits. Hence, just like the benchmark indicator it is an ICRG measure focusing on risks facing foreign investors rather than the population at large. As such, it should do a poor job of capturing the inclusiveness of property rights institutions, which according to the above argument means that we should observe institutional parameter variation along a social division dimension.

To capture social divisions I focus on ethnic fractionalization and income inequality. The main ethnic fractionalization variable used is that of Alesina et al. (2003), which gives the probability that two individuals selected randomly from the population belong to different ethnic groups. Although recently constructed this measure has become well established in the literature and is available for a great number of countries. However, considering social divisions along an ethnic dimension one has to keep in mind that ethnicity is a complex concept that does not lend itself to easy measurement. In the words of Erdmann (2007:11) it "denotes a historically and socially constructed identity […] that is multifaceted, changeable and has multiple meanings", or as Fearon (2003) puts it – it is a 'slippery concept'. Ethnic group boundaries can be thought of in terms of attributes like color, language, or religion (Horowitz 1985). Hence, there is not necessarily one right way to specify the set of ethnic groups in a country, and even if there was, ethnic diversity does not necessarily imply inequalities across ethnic groups, or ethnic tensions, just as ethnic tensions can be severe in countries with comparatively little ethnic diversity. For these reasons, ethnic fractionalization indicators should be seen as rough proxies for social divisions along ethnic lines, and to make sure that the results are not contingent upon the choice of specific indicator one should consider a range of different measures.

To evaluate the sensitivity of the results to different ethnic diversity measures I also consider the ethnolinguistic fractionalization indicator of Easterly and Levine (1997), the ethnic measure of Fearon (2003), and the language fractionalization measure of Alesina et al. (2003). To investigate whether ethnic *polarization*, rather than fractionalization, matters for the association between institutions and income I use the measure of Montalvo and Reynal-Querol (2005) (based on Esteban and Ray 1994). Finally, in an attempt to capture the depth of ethnic divisions – I also consider Fearon's (2003) measure of cultural diversity, aiming to capture the cultural distance between ethnic groups by estimating the proximity between their languages.

To capture social divisions along economic lines I consider income inequality as measured by the Gini index. As already noted, income inequality does not automatically imply perceptions of injustice. However, comparing more unequal to less unequal countries, it seems reasonable that on average perceptions of injustice are more widespread in the former. The Gini index is a measure of statistical dispersion with a theoretical range of 0-100, with 0 representing perfect equality (that each unit receives an equal share of income), and 100 indicating perfect inequality (that a single unit receives all income). The Gini measure used here is obtained from the Standardized World Income Inequality database (SWIID) (Solt 2009b). Comparing income inequality across countries and over time is problematic because inequality figures are often based on different income definitions (e.g., net and gross) and on different reference units (e.g., household and individual). One is faced with a trade-off between comparability and coverage; greater comparability tends to

come at a cost of limited coverage (see, for example, the measure from the Luxembourg Income Survey 2009), and wider coverage over time and across countries tends to imply limited comparability (see, for example, the measure of Deininger and Squire 1996). This SWIID Gini measure used here, focusing on inequality in terms of net household disposable income, has the advantage that it seeks to maximize comparability for the broadest possible set of countries and years (for more information on the methods used in constructing this Gini indicator, see Solt 2009a). To evaluate the sensitivity of results to different income inequality measures, however, I also consider the share of income held by the richest and poorest deciles, the richest, poorest, and three middle quintiles, as well as the ratio of the income of the richest decile to the poorest decile, and of the richest quintile to the poorest quintile.

Ethnic fractionalization and income inequality capture divisions along different lines and hence constitute different phenomena. Nevertheless, the focus is on these two variables for a reason, namely that they can be viewed as examples of 'social divisions'. If ethnic fractionalization and income inequality individually affect the institutional parameter, and do so because of the shared feature that they represent forms of social divisions, then the two variables should have a combined influence on the institutional coefficient. To examine if this is the case I also consider a composite social division indicator – the first principal component between the ethnic fractionalization and the income inequality indicators (i.e., a weighted average capturing the maximum proportion of the total variation, see e.g., Kumaranayake and Vyas 2006).

Furthermore, believing that social divisions affect the institutional parameter through a negative influence on the perceived inclusiveness of institutions, in an alternative approach I instead interact the institutional indicator with a variable that could be said to proxy for perceived inclusiveness directly. It is based on the executive opinion survey in the World Economic Forum 'Global competitiveness report' asking respondents to rate whether government officials in their country (1=usually favor well-connected firms and individuals, 7=are neutral)".

Turning to the set of control variables, in line with the literature stressing the geographic determinants of economic performance (Gallup et al. 1998; Sachs 2003) and that highlighting the role of international economic integration (Sachs and Warner 1995; Frankel and Romer 1999; Dollar and Kraay 2003) I include controls for distance to equator, for being located in the tropics, for being landlocked, and for exports and imports relative to GDP. A variable capturing whether the country has been engaged in civil war in the recent period is included considering that a potential negative influence of social divisions on income could work via this mechanism. Considering that expropriation often occurs in resource extraction sectors, I include an indicator capturing the share of energy and mineral rents in income. Moreover, to control for the stock of human and physical capital I include controls for school enrolment and capital investment. For a restricted sample I include an alternative trade variable and controls for colonial influence and political tradition.[11] To further limit the extent of unobserved cross-country heterogeneity all estimations include region dummies. The benchmark sample consists of 96 countries, and is limited only by data availability. For variable definitions, descriptive and summary statistics see Tables A1-A3 in the appendix.

4 Results

This section evaluates the hypothesis that the association between property rights institutions and income is weaker in countries marked by social divisions. First it discusses the results of benchmark estimations where the institutional parameter is allowed to vary with the measures included to capture social divisions, i.e., ethnic fractionalization, income inequality, and the composite social division indicator, and then moves on to evaluate the sensitivity of the findings.

---

[11] More specifically I include the geographically predicted trade share of Frankel and Romer (1999), a dummy for ex-colony status, and dummies for being of French, British, German, Socialist or Scandinavian legal origin.

4.1 Social divisions and the institutional parameter

Table 1 presents the results of regressions allowing the institutional slope term to vary with ethnic fractionalization (Panel A), income inequality (Panel B) and the composite social divisions indicator (Panel C). Looking at Panels A and B one can first of all note that as expected the institutional parameter is positive and statistically significant throughout, and that the coefficients of the social divisions indicators, ethnic fractionalization and Gini respectively, are positive in the presence of the interaction term.[12] Most interesting for our purposes, however, is that the interaction term between the institutions indicator and the measures of social divisions – ethnic fractionalization and Gini – has a negative and statistically significant parameter in all estimations, supporting the hypothesis that the association between property rights institutions and income is weaker in societies with high levels of social divisions.

<<TABLE 1 ABOUT HERE>>

The statistically significant interaction effect implies that the impact of each of the two constituent variables (institutions and ethnic fractionalization, and institutions and income inequality, respectively) depends on the value of the other, and hence that they cannot be interpreted in isolation (Braumoeller 2004). To get a picture of the marginal effect of a change in institutions predicted by the model one has to consider both the institutional parameter, the parameter of the interaction term, and the level of the other component in the interaction term:

$$\Delta \log y = \Delta inst \left[\beta_{inst} + \delta_{Inst \cdot socdiv} \cdot Socdiv \right].$$

Based on Regression 6 in Table 1 we can see that with ethnic fractionalization at its mean level, the model predicts a one unit improvement in the institutions index to be associated with a 66% higher income per capita. With ethnic fractionalization at a level one standard deviation above and below its mean, however, the same institutional improvement is instead associated with a predicted income rise of 42% and 93% respectively. Similarly, with the Gini index at its mean level, a one unit improvement in the institutions index is predicted to be associated with a 68% greater income per capita. With a Gini score one standard deviation above and below the mean, on the other hand, the same institutional improvement is predicted to come with a 38% and a 106% greater income respectively (all marginal effects are statistically significant at the 1% level).

As noted, (see the discussion in Section 3) one should be cautious when interpreting the point estimates. What one can say, however, is that the predicted income increases associated with an institutional improvement vary substantially with the level of social divisions; the greater the degree of ethnic fractionalization or income inequality the smaller the predicted income increase associated with a given institutional improvement.

One cannot be sure that the negative interaction effect is driven by a weaker association between property rights institutions and income in countries with strong social divisions. An alternative interpretation would be that it is a varying association between *social divisions* and income at different levels of *institutional development* that drives the result. The negative interaction effect would then imply that the better the institutions, the worse (less positive or more negative) would be the association between social divisions and income. The theoretical motivation for this seems unclear. Still, to approach this issue, let us consider a number of sample splits (see Table A4).

Splitting the sample at the median ethnic fractionalization score and allowing all slope terms to vary between the two groups the institutional parameter in the less fractionalized group is 0.87 and highly statistically significant, whereas in the more fractionalized group it is not statistically

---

[12] Considering that my primary focus is on variation in the institutional parameter I do not wish to draw any conclusions about the causal effects of ethnic fractionalisation and income inequality.

different from zero (the difference between the two coefficients is statistically significant at the 1% level). If, for the purpose of comparison, instead splitting the sample at the median level in the *institutions index,* thus allowing all slope terms to vary for countries with better and worse institutions, there is no statistically significant difference between the ethnic fractionalization parameters of the two groups. Doing the same for the Gini estimation, the institutional parameter in the low Gini group is almost four times the size of that in the high Gini group (the difference is statistically significant), while the results of a sample split at the median level of the institutions index does not allow us to reject that the two groups have similar Gini parameters. These estimations seem to indicate that what drives the identified interaction effect is the institutional parameter varying with social divisions rather than the social division parameter varying by the level of institutions.

So far, we have considered the different dimensions of social divisions separately. Using the composite social division indicator – the first principal component between the ethnic fractionalization and income inequality indicators – we can look for a combined influence of these aspects of social divisions on the institutional parameter. Panel C of Table 1 presents regressions where the institutional parameter is allowed to vary with the composite social division indicator. Before including the interaction term between the social division composite variable and the institutions indicator (Regression 1) the parameter of the social division variable is not statistically significant, seemingly suggesting that on its own the composite division measure does little to explain income per capita. When including the interaction term (Regressions 2-6), however, the social division parameter comes out positive, and the interaction term parameter is as expected negative, both being statistically significant. [13] Evaluating the predicted marginal effects of an institutional improvement at different levels of social divisions, and comparing the results of split sample estimations, the results are qualitatively the same as when done for the estimations using the individual ethnic fractionalization and income inequality indicators above. Hence, it seems that ethnic fractionalization and income inequality share a common feature, which affects the institutional parameter.

4.2 Social divisions and regional variation in the institutional parameter

Inspecting the regional variation in social divisions, Sub-Saharan Africa (henceforth Africa) has the highest score on the composite social division indicator, and Europe the lowest. Knowing this one would, in line with the social division hypothesis put forward, predict that Africa has a smaller and Europe a larger institutional parameter than the rest of the sample. Also, finding the lowest levels of social divisions in Europe and the highest in Africa, a reasonable question is whether the weaker institutional parameter identified in countries with high social divisions could be driven by omitted variables related to the level of economic development. [14] Table 2 presents the results of

---

[13] The interaction effects identified in Table 1 are robust to the inclusion of the alternative trade variable of Frankel and Romer (1999), and to controls for colonial influence and political tradition. Moreover, when in line with the arguments of e.g., Collier (2001) including the square of the ethnic fractionalization measure, and when in line with the hypothesis that the relationship between income and income inequality is characterized by an inverted U-shape (Kuznets 1955) including a squared Gini term (see also Tam 2008, who instead suggest a 'political Kuznets curve', i.e., an inverted U-shape in the relation between income inequality and democratic development, arguing that the traditional economic Kuznets curve might just proxy for the political Kuznets curve), the interaction effect remains. The squared terms, on the other hand, are not statistically significant. Also, including the square of the institutions indicator, to see if increasing returns to institutions is what drives the observed interaction effect, the institution-social division interaction effect remains negative and statistically significant. However, while the institutional square term has a positive and statistically significant coefficient, the parameter of the institutional indicator is now far from statistically significant, and variance inflation factors indicate harmful collinearity (a mean VIF of 38).

[14] The results of Eicher and Leukert (2006), who find a stronger institutional parameter in non-OECD than in OECD countries, and Cavalcanti and Novo (2005), who find institutional payoffs to be lower at the top of the conditional distribution of international incomes, would seem to contradict this idea. However, considering that we focus on very

estimations allowing the institutional slope term to vary across regions. To investigate whether the institutional parameter varies systematically across the specified regions according to the hypothesized pattern, Regressions 1-6 allow the institutional parameter to vary across regions, but not with social divisions. To make sure that the weaker institutional parameter observed in countries with high social divisions is not driven up unobserved regional variation, Regressions 8-14 expose the institutions-social divisions interaction variable to the regional interaction terms, one at a time, as well as all in combination (Regression 7, where the institutional parameter is allowed to vary only with social divisions, is included as a point of reference).

<<TABLE 2 ABOUT HERE>>

As expected from their average levels of social divisions, the coefficient of the interaction term between the institutions indicator and the Africa dummy (Regression 1) comes out negative and statistically significant, and the parameter of the interaction term between the institutions indicator and the Europe dummy (Regression 2) is positive and statistically significant, suggesting a weaker institutional parameter in the African sample and a stronger one in the European. Except for the institutions-EAP (East Asia Pacific) interaction term coefficient (Regression 3), which is positive and statistically significant at the 10% level, the interactions based on the regions occupying middle positions in terms of their levels of social divisions are not statistically significant.

As it turns out the institutions-social division interaction effect is surprisingly robust to the inclusion of the regional interaction terms. In contrast, the regional interaction effects are far from stable. Even in the final regression, which allows the institutional slope term to vary with social divisions as well as across all regions, the social division interaction effect, unlike the regional interactions, remains statistically significant and remarkably stable. This should strengthen the case for that the identified weaker association between property rights institutions and income per capita in countries with high social divisions is not simply picking up unobserved regional variation. Rather, considering that the African and European interaction effects do not survive the inclusion of the institutions-social division interaction, it seems social divisions could help explain the observed regional institutional parameter variation.

4.3 Sensitivity of results

In Table 2 we saw that the 'institutions – social divisions' interaction effect was robust to allowing the institutional slope term to vary across regions, thereby controlling for the influence of unobserved factors varying systematically across these regions. Could the observed interaction effect instead be driven by the institutional parameter varying with some other variable included in the model? Or is institutional parameter variation – along any of the benchmark variables – the rule rather than the exception? To investigate this I expose the focus interaction term to alternative institutional interactions, systematically allowing the institutional parameter to vary with all other benchmark controls. Table 3 presents the results of this exercise, exposing the focus interaction term to the alternative institutional interactions, one at a time (Regressions 2-9) as well as all in combination (Regression 10).

<<TABLE 3 ABOUT HERE>>

Again, the 'institutions-social divisions' interaction effect is remarkably stable to the inclusion of the alternative institutional interaction terms, the coefficient ranging between -0.19 and -0.25 (as compared to -0.22 when included as sole institutional interaction variable) and remaining statistically significant at the 1% level. As opposed to the highly statistically significant

---

institutions-social divisions interaction term parameters in Regressions 2-9, only two of the alternative interactions (institutions-energy/mineral and institutions-war) are weakly statistically significant.[15] Moreover, when including all the institutional interactions in combination (Regression 10), although problematic in terms of collinearity, the institutions-social division interaction term parameter remains stable and is statistically significant at the 10% level. None of the alternative interaction term coefficients are close to being statistically significant in this estimation. Seemingly then, the identified interaction effect between institutions and social divisions is not driven by the institutional parameter varying systematically with some other variable included in the model. Rather, this paper's focus interaction clearly stands out as being the central dimension for institutional parameter variation in the model.

We have seen that the negative 'institutions-social divisions' interaction effect is very stable to the inclusion of alternative institutional interaction terms. But what if we allow the institutional parameter to vary with a variable included to proxy for perceived institutional inclusiveness directly (see Section 3.1. or Table A1)? Believing that social divisions affect the institutional parameter through a negative influence on the perceived inclusiveness of institutions, such an interaction should presumably help explain the observed institutions-social divisions interaction effect. Table 4 compares the results obtained allowing the institutional parameter to vary with the composite social division indicator (Regression 1), the inclusiveness measure (Regression 2), and along both dimensions (Regression 3). As expected, the parameter of the institutions-inclusiveness interaction term is positive (although statistically significant at the 10% level only), suggesting a stronger institutional parameter in countries with an institutional framework perceived to be more inclusive. When included in combination only the original interaction (inst-socdiv) remains statistically significant. However, compared to how very stable it was when facing the alternative institutional interactions above, it now drops considerably in size and is statistically significant only at the 10% level. Based on this, it seems the perceived inclusiveness of institutions could help explain the observed institutional parameter variation along a social division dimension.

<<TABLE 4 ABOUT HERE>>

The results do not appear to be driven by influential observations. Using robust regression,[16] down-weighting observations with particularly large residuals, the negative institution-social division interaction effects identified in Panel A-C of Table 1 remain statistically significant at the 1% level. In fact, they become slightly larger in absolute terms. Furthermore, they are robust to omitting the observations in the top and bottom deciles of the key explanatory variables (institutions and social divisions), as well as to excluding the respective regions, one at a time. Similarly, excluding influential observations identified (using DFBETA) to have a particularly large effect on the interaction term parameter, it remains statistically significant and stable.[17] Moreover, inference should not be biased by heteroscedasticity. Visual inspection of the residuals plotted against the key independent variables reveals no apparent trend in the residual variances, according to the White test we cannot reject the hypothesis of homoscedastic disturbances, and

---

[15] Although interpreting the alternative interaction term parameters lies outside the scope of this paper, one could argue that a negative interaction effect between the institutional indicator and that of having experienced civil war in the recent period could potentially be explained in terms of the social division argument for institutional parameter variation advanced in this paper.

[16] Estimated using 'rreg' in STATA.

[17] The DFBETA statistic is calculated for each observation of the concerned variable. For a particular observation it gives the change in the concerned variable coefficient resulting from omitting the observation, scaling this difference by the estimated standard error of the coefficient when the observation is deleted. The standard cut-off value for DFBETA, above which the observation is considered influential, is the absolute value of $2/\sqrt{n}$, where n is the number of observations. Thirteen such cases are identified for the institutions-social division interaction term, namely Japan, Namibia, The Gambia, Iran, Mongolia, Malawi, Mail, Albania, Switzerland, Madagascar, Guyana, Greece, and Botswana.

using robust standard errors the institution-social division interaction term parameters remain stable and statistically significant in all benchmark specifications of Table 1.

Neither do the results seem to be contingent upon the choice of ethnic fractionalization and income inequality measures (see Table A5-A6). If instead of using the ethnic fractionalization measure of Alesina et al. (2003) we consider the ethno-linguistic fractionalization variable of Easterly and Levine (1997), the ethnic measure of Fearon (2003), the language fractionalization measure of Alesina et al. (2003), and Fearon's (2003) measure of cultural diversity aiming to capture the distance between groups, the negative and statistically significant interaction effect between the fractionalization and institutions measure remains. Only when using the polarization measure of Montalvo and Reynal-Querol (2005), which aims to capture how far the distribution of ethnic groups is from the bipolar distribution (two groups of equal size), the estimation suggests no statistically significant interaction effect.[18] If instead of using the Gini index focusing on the share of income held by the richest and poorest deciles, the richest, poorest, and three middle quintiles, and the ratio of the income of the richest decile to the poorest decile, and of the richest quintile to the poorest quintile, the parameter of the interaction term between the inequality indicator and the institutions measure is statistically significant (except in Regression 7 in Table A6, using the ratio of the richest to poorest decile, where it is only close to being so at the 10% level) and of the expected sign.

What about the sensitivity of key results to the use of alternative property rights indicators? As noted, whether the institutional parameter varies with the level of social divisions should depend on the extent to which the specific property rights indicator used captures the inclusiveness of institutions. If social divisions affect the institutional parameter through a negative influence on the perceived inclusiveness of institutions, then the better the institutional indicator captures institutional inclusiveness the less institutional parameter heterogeneity along a social division dimension we should observe. Considering that it focuses on the situation of foreign investors the main property rights indicator, the very influential ICRG measure of risk of expropriation, could hardly be said to capture inclusiveness. Hence, using alternative indicators that better capture the property rights protection of the population at large we should expect less institutional parameter heterogeneity along a social division dimension.

<<TABLE 5 ABOUT HERE>>

Table 5 presents the results of estimations using four alternative property rights indicators (see Section 3.1). As expected, for the first three of these indicators – which do not explicitly focus on the property rights of foreign investors and hence should not be as problematic as the focus indicator in terms of not capturing inclusiveness – the results in terms of the hypothesized institutional parameter heterogeneity are now weaker. Interacting the alternative property rights measures, one at a time, with the Gini, ethnic fractionalization and composite social division indicators the interaction term parameters all come out negative, but for alt. inst. 1-3 they are only statistically significant in some of the estimations.[19] In fact, out of the four alternative property rights indicators only alt. inst. 4, which just as the benchmark variable focuses on the risk facing foreign investors rather than the population at large, has a statistically significant interaction term parameter when interacted with all three social division variables. Hence, while the identified institutional parameter variation was robust to using different social division measures, it varies with the specific property rights indicator used. Seemingly, institutional parameter heterogeneity along a social division dimension is most important when using measures more problematic in terms of failing to capture the inclusiveness of institutions.

---

[18] It has been suggested that while polarisation indicators are better at explaining civil war (Montalvo and Reynal-Querol 2005) fractionalisation measures better explain economic performance (Alesina et al. 2003).

[19] Moreover, unlike the original interaction effect, which remained remarkably stable when allowing all regions different institutional slope terms, these interactions do not withstand the inclusion of the institution-region interaction terms.

Do countries with high social divisions also display a weaker association between institutions and growth, that is, between institutions and the *pace* rather than the *level* of economic development? In Section 3.1 I discussed the problems with focusing on recent variation when aiming to uncover contextual variation in the effect of a slow moving variable that has developed over a long period of time. Reasonably, however, the longer the growth span considered the better the growth indicator should take account of the level of economic development, and the greater should be the chance of capturing the desired variation, once controlling for initial period income. Table A7 presents the results of estimations using growth 1965-2005, 1975-2005, and 1985-2005 as dependent variables (with and without controls for initial income). As expected, restricting our attention to recent period variation, it is more difficult to detect contextual variation in the parameter of the slow moving institutions variable. Nevertheless, and in line with the above argument, when focusing on the longer growth spans (1965-2005 and 1975-2005) we can identify a weaker institutional parameter among countries with high ethnic fractionalisation, and to some extent among countries with high scores on the composite social division variable. Hence, it seems that the hypothesised parameter variation is more relevant for longer term economic development than for shorter term pace of development.

5 Conclusions

This paper investigated the hypothesis that the observed association between property rights institutions and income per capita is weaker in countries marked by social divisions. The hypothesis was based on the argument that social divisions should have a negative influence on the perceived inclusiveness of property rights institutions, which, if lacking a property rights indicator that perfectly captures the perceived inclusiveness of property rights protection, in turn should reduce the strength of the observed association between property rights institutions and income.

In line with the social division hypothesis, the results suggested a weaker association between property rights institutions and income in countries with high social divisions, as measured in terms of ethnic fractionalization, income inequality and a composite social division indicator. The findings were robust over a wide range of specifications, and seemed to suggest that social divisions are important for explaining observed regional variation in the institutional parameter. Furthermore, allowing the institutional parameter to vary with a proxy for institutional inclusiveness, the stronger institutional parameter in countries with a more inclusive institutional framework could seemingly help explain the observed institutional parameter variation along a social division dimension.

If social divisions affect the institutional parameter through a negative influence on the perceived inclusiveness of institutions, then the better the institutional indicator captures institutional inclusiveness the less institutional parameter heterogeneity along a social division dimension we should observe. The main property rights indicator used, the very influential ICRG measure of risk of expropriation, focuses on the situation of foreign investors and is thus very problematic in terms of not taking account of the inclusiveness of institutions. In line with this, when using alternative property rights indicators seemingly less problematic in terms of inclusiveness, the hypothesized parameter variation was not nearly as robust as when using the standard ICRG measure. Considering how stable the identified interaction effect was to other alterations in the specification, including the use of a wide range of different social division proxies, this is worth stressing. First of all, it adds support to the conjecture that social divisions affect the institutional parameter through a negative influence on the inclusiveness of institutions. This in turn suggests that when using a measure that focuses on the property rights for a narrow segment of the economy while aiming to draw conclusions on the general association between economic performance and property rights institutions, it is particularly important to evaluate whether there is institutional parameter variation along a social division dimension. In more general terms, it points to the importance of carefully evaluating whether the institutions indicator

captures the institutional framework applying to a broad cross-section of the population, and how a failure of it to do so could affect one's conclusions.

Further research is needed to uncover the mechanisms behind the weaker observed association between property rights institutions and income in countries with deep social divisions. For example, would a survey-based property rights measure capturing the perceived property rights protection for a representative sample of the population produce less institutional parameter heterogeneity along the investigated social division dimension? Moreover, considering alternative social division and institutional dimensions should provide interesting openings for future research.

In sum, from an empirical point of view, the results of this paper highlighted the problems with neglecting institutional parameter heterogeneity along a social division dimension, particularly when using property rights measures that focus on very limited segments of economic actors. For policy, the results underscore the importance of building inclusive property rights institutions applying to a broad cross section of the population. This involves evaluating the de jure rights as well as the de facto application of these rights.

Appendix

<<TABLE A1 ABOUT HERE>>
<< TABLE A2 ABOUT HERE>>
<< TABLE A3 ABOUT HERE>>
<< TABLE A4 ABOUT HERE>>
<< TABLE A5 ABOUT HERE>>
<< TABLE A6 ABOUT HERE>>
<< TABLE A7 ABOUT HERE>>

References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: an empirical investigation. *American Economic Review*, 91(5), 1369-1401.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2002). Reversal of fortune: Geography and institutions in the making of the modern world income distribution. *The Quarterly Journal of Economics*, 117(4), 1231-1293.

Aghion, P., Alesina, A., & Trebbi, F. (2004). Endogenous political institutions. *The Quarterly Journal of Economics*, 119(2), 565-611.

Alesina, A., Devleeschaauwer, A., Easterly, W., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth*, 8(2), 155-194.

Alesina, A., & La Ferrara, E. (2005). Ethnic diversity and economic performance. *Journal of economic literature*, 43, 762-800.

Alesina, A., & Perotti R. (1996). Income distribution, political instability and investment. *European Economic Review*, 81(5), 1170-1189.

Alesina, A., & Rodrik, D. (1994). Distribution politics and economic growth. *The Quarterly Journal of Economics*, 109, 465-490.

Anthias, F. (1998). Rethinking social divisions: some notes towards a theoretical framework. *The Sociological Review*, 46(3), 505-535.

Baliamoune-Lutz, M. (2005). Institutions, social capital, and economic development in Africa: an empirical study. International Centre for Economic Research Working Paper Series, no. 18.

Baliamoune-Lutz, M., & Ndikumana, L. (2007). The growth effects of openness to trade and the role of institutions: New evidence from African countries. Working Paper 2007-05, University of Massachusetts Amherst.

Barro, R. J. (2000). Inequality and growth in a panel of countries. *Journal of Economic Growth*, 5(1), 5-32.

Basuchoudhary, A., & Shughart II, W. F. (2007). On ethnic conflict and the origins of transnational terrorism. mimeo.

Bazzi, S., & Clemens, M. (2009). Blunt instruments: On establishing the causes of economic growth. Working paper number 171, Centre for Global Development.

Benabou, R. (1996). Inequality and growth. NBER Macroeconomics Annual 1996, 11-73.

Besley, T., & Ghatak, M. (2009). Property rights and economic development. Centre for Economic Policy Research Discussion Paper Series, no. 7243.

Bourguignon, F., & Morrison, C. (1990). Income distribution, development and foreign trade. *European Economic Review*, 34(6), 1113-1132.

Braumoeller, B. F. (2004). Hypothesis testing and multiplicative interaction terms. *International Organization*, 58, 807-820.

Cappelen, A. W., Hole, A. D., Sørensen , E. Ø., & Tungodden, B. (2007). The pluralism of fairness ideals: An experimental approach. *The American Economic Review* 97, 818-827.

Cavalcanti, T., & Novo, A. (2005). Institutions and economic development: How strong is the relation? *Empirical Economics*, 30(2), 263-276.

Chong, A., & Gradstein, M. (2007). Inequality and institutions. *The Review of Economics and Statistics*, 89(3), 454-465.

Collier, P. (2000). Ethnicity, politics and economic performance. *Economics and Politics*, 12(3), 225-245.

Collier, P. (2001). Implications of ethnic diversity. *Economic Policy*, 116(32), 127-167.

Collier, P., & Hoeffler, A. (2004). Greed and grievance in civil war. *Oxford Economic Papers*, 56(4), 563-595.

Deaton, A. (2009). Instruments of development: Randomization in the tropics, and the search for the elusive keys to economic development. Mimeo, Princeton University.

Deininger, K., & Squire, L. (1996). A new dataset measuring income inequality. *World Bank Economic Review*, 10(3), 565-591.

Djankov, S. E., Glaeser, R. La Porta, F. Lopez-de-Silanes, & Shleifer, A. (2003). The new comparative economics. *Journal of Comparative Economics*, 31, 595-619.

Dollar, D., & Kraay, A. (2003). Institutions, trade, and growth. *Journal of Monetary Economics*, 50, 133-162.

Easterly, W. (2001). The middle class consensus and economic development. *Journal of Economic Growth*, 6, 317-335.

Easterly, W., & Levine, R. (1997). Africa's growth tragedy: Policies and ethnic divisions. *Quarterly Journal of Economics*, 112(4), 1203-1250.

Easterly, W., Ritzen, J., & Woolcock, M. (2006). Social cohesion, institutions, and growth. *Economics and Politics*, 18(2), 103-120.

Eicher, T., & Leukert, A. (2006). Institutions and economic performance: Endogeneity and parameter heterogeneity. University of Washington Ifo Institute for Economic Research and Ludwig-Maximilians-Universität München Working Paper January 2006.

Eifert, B., Miguel, E. & Posner, D. N. (2009). Political competition and ethnic identification in Africa. Forthcoming in *American Journal of Political Science*.

Erdmann, G. (2007). The cleavage model, ethnicity and voter alignment in Africa: Conceptual and methodological problems revisited. German Institute of Global and Area Studies (GIGA) working paper no. 63.

Esteban, J-M., & Ray, D. (1994). On the measurement of polarization. *Econometrica*, 62(4), 819-851.

Fearon, J. D. (2003). Ethnic and cultural diversity by country. *Journal of Economic Growth*, 8, 195-222.

Fong, C. (2001). Social preferences, self-interest, and the demand for redistribution. *Journal of Public Economics* 82, 225-246.

Frankel, J. A., & Romer, D. (1999). Does trade cause growth? *American Economic Review*, 89(3), 379-399.

Gallup, J. L., Sachs, J. D., & Mellinger, A. D. (1998). Geography and economic development. National Bureau of Economic Research Working Paper, No. w6849.

Galor, O., & Zeira, J. (1993). Income distribution and macroeconomics. *Review of Economic Studies*, 60(1), 35-52.

Glaeser, E. L., La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth? *Journal of Economic Growth*, 9, 271-303.

Glaeser, E., Scheinkman, J., & Shleifer, A. (2003). The injustice of inequality. *Journal of Monetary Economics*, 50(1), 199-222.

Global Development Network Growth Database, NYU Development Research Institute: http://www.nyu.edu/fas/institute/dri/global%20development%20network%20growth%20database.htm

Goldstein, M., & Udry, C. (2008). The profits of power: Land rights and agricultural investment in Ghana. *Journal of Political Economy*, 116(6), 981-1022.

Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others? *The Quarterly Journal of Economics*, 114(1), 83-116.

Hardin, R. (1995). *One for all: The logic of group conflict*. Princeton: Princeton University Press.

Hellman, J., & Kaufmann, D. (2002). The inequality of influence. Draft for presentation at Stanford Corruption Workshop, January 2003.

Heritage Foundation (2007). The Index of Economic Freedom. http://www.heritage.org.

Hoff, K., & Stiglitz, J. E. (2004). After the big bang? Obstacles to the emergence of the rule of law in post-communist societies. *The American Economic Review*, 94(3), 753-763.

Hoffman, E., & Spitzer, M. L. (1985). Entitlements, rights, and fairness: An experimental examination of subjects' concepts of distributive justice. *Journal of Legal Studies*, 14, 259-297.

Horowitz, D. L. (1985). *Ethnic groups in conflict*. Berkeley and Los Angeles: University of California Press.

Isaksson, A., & Lindskog, A. (2009). Preferences for redistribution: A country comparison of fairness judgments. *Journal of Economic Behavior and Organization*, 72(3), 884-902.

Kaufmann, D., Kraay, A., & Zoido-Lobatón, P. (1999). Governance matters. Working paper no. 2196, Washington DC: World Bank.

Keefer, P., & Knack, S. (2002). Polarization, politics and property rights: Links between inequality and growth. *Public Choice*, 111, 127-154.

Knack, S. & Keefer, P. (1995). Institutions and economic performance: Cross-country tests using alternative institutional measures. *Economics and Politics*, 7(3), 207-227.

Kumaranayake, L., & Vyas, S. (2006). Constructing socio-economic status indices: How to use principal component analysis. *Health Policy and Planning*, 21(6), 459-468.

Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 45(1), 1-28.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The Quality of Government. *Journal of Law, Economics and Organization*, 15(1), 222-279.

Leeson, P. T. (2005). Endogenizing fractionalization. *Journal of institutional economics*, 1(1), 75-98.

Lindberg, S. I., & Morrison, M. K. C. (2008). Are African voters really ethnic or clientelistic? Survey evidence from Ghana. *Political Science Quarterly*, 123(1), 95-122.

Luxembourg Income Study (2009). Key Figures. available at: http://www.lisproject.org/keyfigures.htm

Mehlum, H., Moene, K., & Torvik, R. (2006). Institutions and the resource curse. *The Economic Journal*, 116,1-20.

Montalvo, J. G., & Reynal-Querol, M. (2005). Ethnic polarization, potential conflict and civil wars. *The American Economic Review*, 95(3), 796-816.

Mozaffar, S., Scarritt, J. R., & Galaich, G. (2003). Electoral institutions, ethnopolitical cleavages, and party systems in Africa's emerging democracies. *American Political Science Review*, 97(3), 379-390.

Mukand, S. W., & Rodrik, D. (2005). In search of the Holy Grail: Policy convergence, experimentation, and economic performance. *American Economic Review,* 95(1), 374-383.

North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press

North, D. C. (1994). Economic performance through time. *The American Economic Review*, 84, 359-368.

Persson, T., & Tabellini, G. (1994). Is inequality harmful for growth? *The American Economic Review*, 84(3), 600-621.

Rodrik, D. (1999). Where did all the growth go? External shocks, social conflict, and growth collapses. *Journal of Economic Growth*, 4, 385-412.

Rodrik, D. (2008). Second best institutions. NBER Working Paper no. W14050, June 2008.

Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: The primacy of institutions over geography and integration in economic development. *Journal of Economic Growth*, 9, 131-165.

Sachs, J. D., & Warner, A. M. (1995). Economic reform and the process of global integration. *Brooking Papers on Economic Activity*, 1, 1-118.

Sachs, J. D. (2003). Institutions don't rule: Direct effects of geography on per capita income. *NBER Working Paper, no. 9490*, NBER.

Temple, J. (2000). Growth regressions and what the textbooks don't tell you. *Bulletin of Economic Research*, 52(3), 181-205.

Solt, F. (2009a). Standardizing the world income inequality database. *Social Science Quarterly*, 90(2), 231-242.

Solt, F. (2009b). Standardizing the world income inequality database. *Social Science Quarterly* 90(2):231-242. SWIID Version 2.0, July 2009.

Sonin, K. (2003). Why the rich may favor poor protection of property rights. *Journal of Comparative Economics*, 31(4), 715-731.

Tam, H. (2008). An economic or political Kuznets curve? *Public Choice*, 134(3-4), pp. 367-389.

Williamson, C. R. (2009). Informal institutions rule: Institutional arrangements and economic performance. *Public Choice*, 139(3-4), 371-387.

World Bank (2007). Doing business project: Economy rankings. available at http://www.doingbusiness.org/economyrankings/

World Economic Forum (2008). The Global competitiveness report 2008-2009. World Economic Forum, Geneva.

Zietz, J. (2006). Detecting neglected parameter heterogeneity with Chow tests. *Applied Economics Letters*, 13, 369-374.

Tables

Table 1: Social divisions and institutional parameter variation (OLS estimation)

Dependent variable is log GDP per capita in 2005

Panel A: Ethnic fractionalization

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	4.588***	3.127***	2.940**	2.919**	2.983**	2.804*
	(1.370)	(1.093)	(1.176)	(1.159)	(1.228)	(1.460)
Institutions	0.487***	0.864***	0.818***	0.813***	0.769***	0.751***
	(0.094)	(0.114)	(0.120)	(0.118)	(0.117)	(0.130)
Ethnic	-0.217	3.310**	3.244**	3.743**	3.627**	3.999**
	(0.491)	(1.545)	(1.548)	(1.550)	(1.514)	(1.576)
Inst-Ethnic		-0.557***	-0.517**	-0.565***	-0.558***	-0.585***
		(0.204)	(0.207)	(0.207)	(0.202)	(0.209)
R-squared	0.84	0.83	0.83	0.84	0.85	0.86

Panel B: Income inequality

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	4.588***	-2.420	-2.973	-2.389	-1.838	-1.154
	(1.370)	(2.184)	(2.206)	(2.278)	(2.332)	(2.383)
Institutions	0.487***	1.455***	1.526***	1.440***	1.344***	1.283***
	(0.094)	(0.248)	(0.275)	(0.287)	(0.286)	(0.290)
Gini	-0.004	0.147***	0.168***	0.156***	0.139***	0.133***
	(0.015)	(0.045)	(0.049)	(0.050)	(0.050)	(0.050)
Inst-Gini		-0.020***	-0.022***	-0.020***	-0.019***	-0.019***
		(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
R-squared	0.84	0.83	0.84	0.85	0.85	0.86

Panel C: Composite social division indicator

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	4.314***	4.082***	4.207***	4.296***	4.250***	4.488***
	(1.139)	(0.900)	(0.998)	(0.997)	(1.062)	(1.064)
Institutions	0.485***	0.634***	0.613***	0.598***	0.547***	0.512***
	(0.089)	(0.076)	(0.078)	(0.079)	(0.081)	(0.083)
Socdiv	-0.094	1.551***	1.702***	1.719***	1.550***	1.590***
	(0.186)	(0.502)	(0.517)	(0.514)	(0.508)	(0.504)
Inst-Socdiv		-0.230***	-0.239***	-0.234***	-0.225***	-0.224***
		(0.062)	(0.065)	(0.065)	(0.063)	(0.063)
R-squared	0.84	0.84	0.85	0.85	0.86	0.87

Notes: 96 observations; Standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; In addition to the reported variables: **Regression 1** includes all benchmark controls, Region dummies, Distance to equator, Landlocked, Tropical, Trade share, Energy/Mineral, Education, Investment, War, and the social division variable *not* in focus (i.e. in Panel B, when focusing on the Gini index, I also control for ethnic fractionalization); **Regression 2** includes region dummies; **Regression 3** includes the variables of (2) plus the geographical controls (Distance to equator, Landlocked, Tropical); **Regression 4** includes the variables of (3) plus Trade share and Energy/Mineral; **Regression 5** includes the variables of (4) plus Education and Investment; **Regression 6** includes the variables of (5) plus War, and in panel A and B the social division variable *not* in focus, i.e. the full set of benchmark controls.

Table 2: Allowing the institutional slope term to vary across regions and with social divisions

Dependent variable is log GDP per capita in 2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Constant	3.029**	5.231***	4.740***	4.050***	4.231***	4.403***	4.488***	4.413***	4.568***	4.675***	4.050***	4.423***	4.662***	-4.335
	(1.237)	(1.227)	(1.142)	(1.179)	(1.145)	(1.210)	(1.064)	(1.309)	(1.191)	(1.085)	(1.088)	(1.072)	(1.131)	(37.598)
Institutions	0.600***	0.404***	0.436***	0.508***	0.506***	0.476***	0.512***	0.518***	0.504***	0.486***	0.552***	0.527***	0.493***	1.399
	(0.099)	(0.098)	(0.091)	(0.092)	(0.092)	(0.099)	(0.083)	(0.101)	(0.099)	(0.088)	(0.086)	(0.086)	(0.093)	(3.809)
Socdiv	-0.065	-0.092	-0.079	-0.079	-0.125	-0.096	1.590***	1.550**	1.547***	1.451***	1.749***	1.546***	1.601***	1.481*
	(0.182)	(0.183)	(0.183)	(0.187)	(0.190)	(0.188)	(0.504)	(0.650)	(0.580)	(0.528)	(0.509)	(0.510)	(0.507)	(0.807)
Inst-Africa	-0.391**								-0.021					-0.908
	(0.167)								(0.216)					(3.826)
Inst-Europe		0.357*							0.033					-0.852
		(0.194)							(0.215)					(3.814)
Inst-EAP			0.442*							0.210				-0.685
			(0.233)							(0.233)				(3.810)
Inst-SA				-0.350						-0.598				-1.411
				(0.397)						(0.372)				(3.825)
Inst-MENA					-0.245							-0.183		-1.032
					(0.290)							(0.272)		(3.819)
Inst-LAC						0.045							0.089	-0.803
						(0.201)							(0.188)	(3.815)
Inst-Socdiv							-0.224***	-0.218**	-0.218***	-0.205***	-0.242***	-0.221***	-0.226***	-0.208*
							(0.063)	(0.085)	(0.074)	(0.067)	(0.063)	(0.063)	(0.063)	(0.106)
R-squared	0.85	0.85	0.85	0.84	0.84	0.84	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87

Notes: 96 observations in all estimations; Standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All estimations include a constant term and benchmark controls (Region dummies, Distance to equator, Landlocked, Tropical, Trade share, Energy/Mineral, Education, Investment, and War).

Table 3: Allowing the institutional slope term to vary with social divisions and all benchmark controls
Dependent variable is GDP per capita in 2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Institutions	0.51***	0.54***	0.50***	0.47***	0.43***	0.54***	0.33	0.71**	0.54***	0.37
	(0.08)	(0.19)	(0.09)	(0.14)	(0.12)	(0.08)	(0.35)	(0.29)	(0.08)	(0.69)
Socdiv	1.59***	1.65**	1.62***	1.74***	1.65***	1.34**	1.51***	1.56***	1.36**	1.26
	(0.50)	(0.63)	(0.52)	(0.65)	(0.51)	(0.52)	(0.53)	(0.51)	(0.52)	(0.77)
Inst-Socdiv	-0.22***	-0.23***	-0.23***	-0.25***	-0.23***	-0.20***	-0.21***	-0.22***	-0.19***	-0.19*
	(0.06)	(0.08)	(0.06)	(0.09)	(0.06)	(0.06)	(0.07)	(0.06)	(0.06)	(0.11)
Inst-Dist.eq.		-0.00								-0.00
		(0.01)								(0.01)
Inst-Land.			0.03							0.01
			(0.11)							(0.13)
Inst-Tropic				0.08						-0.07
				(0.21)						(0.29)
Inst-Trade					0.00					0.00
					(0.00)					(0.00)
Inst-Energy/mineral						-2.04*				-1.54
						(1.11)				(1.48)
Inst-Education							0.00			0.00
							(0.00)			(0.00)
Inst-Investment.								-0.01		-0.00
								(0.01)		(0.02)
Inst-War									-0.23*	-0.17
									(0.14)	(0.18)
R-sq.	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87

Notes: 96 observations in all estimations; Standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All estimations include a constant term and benchmark controls (Region dummies, Distance to equator, Landlocked, Tropical, Trade share, Energy/Mineral, Education, Investment, and War).

Table 4: Allowing the institutional parameter to vary with Socdiv and Inclusive
Dependent variable is log GDP per capita in 2005

	(1)	(2)	(3)
Institutions	0.535***	0.062	0.193
	(0.089)	(0.210)	(0.220)
Socdiv	1.419**		0.871
	(0.549)		(0.557)
Inclusive		-0.505	-0.287
		(0.530)	(0.547)
Inst-Socdiv	-0.206***		-0.127*
	(0.068)		(0.071)
Inst-Inclusive		0.100*	0.068
		(0.060)	(0.063)
R-squared	0.86	0.87	0.87

Notes: 89 observations; standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All regressions include a constant term and benchmark controls (Region dummies, Distance to equator, Landlocked, Tropical, Trade share, Energy/Mineral, Education, Investment, and War).

Table 5: Using alternative property rights institutions measures

Dependent variable is log GDP per capita in 2005

Alt. inst. var. used is:	(1) Inst.1	(2) Inst.2	(3) Inst.3	(4) Inst.4	(5) Inst.1	(6) Inst.2	(7) Inst.3	(8) Inst.4	(9) Inst.1	(10) Inst.2	(11) Inst.3	(12) Inst.4
Alt. Inst.	0.36***	0.13***	0.77***	0.81***	0.64***	0.16	1.14***	1.19**	0.32***	0.06**	0.69***	0.49***
	(0.05)	(0.05)	(0.13)	(0.21)	(0.13)	(0.11)	(0.27)	(0.50)	(0.05)	(0.03)	(0.09)	(0.12)
Ethnic	0.33	-1.65*	0.31	2.67*								
	(0.83)	(0.95)	(1.48)	(1.43)								
Alt.inst-Eth.	-0.06	-0.17**	-0.16	-0.96**								
	(0.14)	(0.08)	(0.29)	(0.44)								
Gini					0.05**	-0.04	0.05	0.03				
					(0.02)	(0.02)	(0.04)	(0.04)				
Alt.inst-Gini					-0.01**	-0.00	-0.01*	-0.02*				
					(0.00)	(0.00)	(0.01)	(0.01)				
Socdiv									0.50*	-0.49*	0.20	0.76
									(0.26)	(0.27)	(0.47)	(0.47)
Alt.inst-Soc.									-0.07*	-0.04*	-0.08	-0.31**
									(0.04)	(0.02)	(0.08)	(0.13)
Observations	94	88	89	96	94	88	89	96	94	88	89	96
R-squared	0.88	0.81	0.87	0.82	0.89	0.81	0.88	0.82	0.89	0.81	0.88	0.82

Notes: Standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All estimations include a constant term and all benchmark controls (Region dummies, Distance to equator, Landlocked, Tropical, Trade share, Energy/Mineral, Education, Investment, and War). **Alt. inst. 1:** is a property rights indicator obtained from the Heritage foundation (ranging from 1-10, with 10 meaning stronger property rights), assessing the extent to which 'a country's laws protect private property rights and the degree to which its government enforces those laws'; **Alt. inst. 2:** is a variable based on a country ranking of the ease of enforcing contracts (rescaled and adjusted so that a higher value means it is easier to enforce contracts), obtained from the World Bank's Doing Business indicators; **Alt. inst. 3:** is a variable based on business leader survey responses to the question 'property rights in your country, including over financial assets, are (1=poorly defined and not protected by law,, 7= clearly defined and well protected by law)', obtained from the World Economic Forum; **Alt. inst. 4:** is a variables based on an ICRG assessment of the risk facing foreign investors in the repatriation of profits (ranging from 0-4, with 4 meaning less risk) (see table A1).

Table A1: Variable descriptions

Dependent variable

Log GDP per capita in 2005 (constant US$). Source: World Development Indicators (WDI).

Property rights measures

Institutions: Valuation of the risk of 'outright confiscation and forced nationalization' of property. Ranges from 1-10, with higher values meaning less risk of expropriation. Here measured as the 1982-1997 average. From Glaeser et al. (2004). Originally developed by the International Country Risk Guide (ICRG).

Alternative measures used for robustness checks: Alt. inst. 1: Scaled to range from 1 to 10, with 10 meaning stronger property rights. Measures the extent to which 'a country's laws protect private property rights and the degree to which its government enforces those laws'. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts'. Source: The Heritage foundation (2007); Alt. inst. 2: Country ranking on the 'enforcing contracts' component (but rescaled and adjusted so that a higher value means it is easier to enforce contracts) in the ease of doing business ranking. Source: World Bank (2007) (Doing Business indicators); Alt. inst. 3: Business leader survey responses (evaluations on a scale from 1-7) to the question 'property rights in your country, including over financial assets, are (1=poorly defined and not protected by law,, 7= clearly defined and well protected by law)'. Source: World Economic Forum (2008); Alt. inst. 4: Assessment of the risk facing foreign investors in the repatriation of profits, 0-4 with 4 meaning less risk (2009), source: International Country Risk Guides (ICRG).

Social division measures

Ethnic: Measures the probability that two randomly selected individuals in a country belong to different ethnic groups: $\text{Ethnic}_j = 1 - \sum_{i=1}^{N} s_{ij}^2$ where s_{ij} is the share of group i ($i = 1...N$) in country j. Source: Alesina et. al. (2003).

Gini: Average net Gini (1986-2005), 0-100, Source: Solt (2009b).

Socdiv: The first principal component between Ethnic and Gini

Alternative measures used for robustness checks: ELF: Ethnolinguistic fractionalization of Easterly and Levine (1997); Fearon ethn.: Ethnic fractionalization measure of Fearon (2003); Lang. fract.: Language fractionalization measure of Alesina et al. (2003); Polarization: Polarization measure of Montalvo and Reynal-Querol (2005); Cult. fract. cultural diversity measure of Fearon (2003); Poorest20, Richest20, Poorest10, Richest10, Middle60: the income shares held by the richest and poorest 20 and 10 percent and the middle 60 percent of the population (average 1985-2005), Source: WDI; Ratio20 and Ratio10: ratio of inc. share of richest 20 and 10% to poorest 20 and 10% (average 1985-2005), source: WDI. Inclusive: Business leader survey responses (evaluations on a scale from 1-7) to the question 'When deciding upon policies and contracts, government officials in your country (1=usually favor well-connected firms and individuals, 7=are neutral)". Source: World Economic Forum (2008).

Control variables: Landlocked: 1 if country is landlocked, 0 otherwise. Source: Global Dev. Network Growth Database; Distance to equator: Absolute value of country's latitude in degrees. Source: Global Dev. Network Growth Database; Region dummies: Africa: 1 if country belongs to Sub-Saharan Africa, 0 otherwise; EAP: 1 if country belongs to the East Asia Pacific region, 0 otherwise; Europe: 1 if country belongs to Europe, 0 otherwise; LAC: 1 if country belongs to the Latin America and the Caribbean region, 0 otherwise; MENA: 1 if country belongs to the Middle East and Northern Africa region, 0 otherwise; NA: 1 if country belongs to North America, 0 otherwise; SA: 1 if country belongs to South Asia, 0 otherwise. Source: Global Development Network Growth Database; Trade share: (exports+ imports) / GDP, averaged over the 1990s. Source: WDI**;** Tropical: 1 if country is tropical, 0 otherwise. Source: Global Development Network Growth Database; Energy/Mineral: Energy and mineral rents as share of GNI (1999); War: 1 if involved in a civil war between 1960 and 1999, 0 otherwise (civil war defined as an internal conflict with at least 1000 battle-related deaths per year). Constructed from Collier and Hoeffler (2004). Education: Average gross primary school enrolment 1985-05 (%). Source: WDI; Investment: Average gross capital formation (% GDP) 1985-2005. Source: WDI.

Interaction terms: multiplicative terms between the component variables

Table A2: Descriptive statistics for key variables

Country	Inst.	Ethnic	Gini	Socdiv	Country	Inst.	Ethnic	Gini	Socdiv
Albania	7.26	0.22	31.45	-0.91	Japan	9.72	0.01	29.94	-1.44
Algeria	6.76	0.34	38.02	-0.29	Jordan	6.56	0.59	38.92	0.31
Argentina	6.31	0.26	44.23	-0.14	Kenya	6.41	0.86	51.32	1.55
Australia	9.38	0.09	30.83	-1.22	Luxembourg	10.00	0.53	25.30	-0.56
Austria	9.74	0.11	26.11	-1.44	Madagascar	4.69	0.88	46.97	1.36
Bangladesh	5.41	0.05	33.67	-1.17	Malawi	6.86	0.67	52.64	1.22
Belgium	9.69	0.56	25.04	-0.52	Malaysia	8.15	0.59	43.87	0.56
Bolivia	5.60	0.74	53.90	1.43	Mali	4.00	0.69	48.20	1.02
Botswana	8.01	0.41	56.26	0.84	Malta	7.88	0.04	28.50	-1.45
Brazil	7.88	0.54	51.61	0.88	Mexico	7.47	0.54	47.55	0.66
Bulgaria	9.04	0.40	26.79	-0.76	Mongolia	7.95	0.37	36.21	-0.33
Burkina Faso	4.85	0.74	51.30	1.29	Morocco	6.71	0.48	39.77	0.12
Cameroon	6.46	0.86	50.22	1.50	Mozambique	6.81	0.69	43.30	0.76
Canada	9.72	0.71	29.55	0.06	Namibia	5.40	0.63	71.75	2.16
Chile	7.80	0.19	47.62	-0.11	Netherlands	9.98	0.11	25.83	-1.46
China	8.11	0.15	35.74	-0.82	New Zealand	9.74	0.40	31.34	-0.53
Colombia	7.35	0.60	51.26	0.99	Niger	5.55	0.65	46.61	0.85
Costa Rica	7.04	0.24	42.99	-0.25	Norway	9.85	0.06	23.96	-1.66
Cote d'Ivoire	7.06	0.82	42.61	1.00	Pakistan	6.15	0.71	33.43	0.27
Cyprus	8.49	0.09	27.79	-1.38	Panama	6.06	0.55	51.52	0.90
Czech rep.	9.88	0.32	23.69	-1.10	Papua New Guinea	7.74	0.27	50.80	0.25
Denmark	9.72	0.08	23.52	-1.63	Paraguay	6.90	0.17	55.88	0.30
Dominican rep.	6.36	0.43	45.70	0.32	Peru	6.21	0.66	51.42	1.12
Ecuador	6.76	0.66	51.19	1.10	Philippines	5.79	0.24	44.41	-0.17
Egypt	6.80	0.18	34.72	-0.81	Poland	7.81	0.12	28.53	-1.28
El Salvador	5.21	0.20	47.69	-0.08	Portugal	9.01	0.05	33.90	-1.15
Ethiopia	6.05	0.72	42.10	0.76	Romania	7.56	0.31	26.86	-0.96
Finland	9.72	0.13	22.66	-1.57	Russia	8.50	0.25	37.47	-0.53
France	9.71	0.10	27.73	-1.36	Senegal	5.93	0.69	44.14	0.81
Gambia	8.38	0.79	54.17	1.55	Sierra Leone	5.71	0.82	51.67	1.48
Germany	9.89	0.17	27.51	-1.23	Slovak Rep.	9.00	0.25	21.93	-1.34
Ghana	6.22	0.67	40.52	0.57	South Africa	7.35	0.75	57.35	1.64
Greece	7.48	0.16	33.20	-0.95	Spain	9.55	0.42	32.05	-0.45
Guatemala	5.16	0.51	52.80	0.88	Sri Lanka	6.54	0.42	36.69	-0.20
Guinea	6.67	0.74	45.79	0.99	Sweden	9.50	0.06	22.71	-1.72
Guinea-Bissau	4.62	0.81	49.72	1.36	Switzerland	9.99	0.53	29.34	-0.34
Guyana	5.96	0.62	47.36	0.82	Tanzania	6.89	0.74	42.13	0.79
Haiti	4.18	0.10	55.03	0.09	Thailand	7.64	0.63	44.91	0.72
Honduras	5.41	0.19	50.73	0.06	Trinidad & Tobago	7.29	0.65	39.82	0.47
Hungary	9.08	0.15	29.53	-1.16	Tunisia	6.51	0.04	40.87	-0.79
Iceland	9.70	0.08	23.62	-1.63	Turkey	7.29	0.32	42.52	-0.09
India	8.07	0.42	33.68	-0.36	Uganda	4.80	0.93	41.03	1.15
Indonesia	7.48	0.74	34.65	0.39	United Kingdom	9.76	0.12	33.54	-1.01
Iran.	4.69	0.67	41.28	0.60	United States	9.98	0.49	35.75	-0.09
Ireland	9.72	0.12	32.45	-1.07	Uruguay	6.94	0.25	44.44	-0.14
Israel	8.51	0.34	32.86	-0.56	Venezuela	7.11	0.50	42.10	0.27
Italy	9.46	0.11	32.86	-1.06	Zambia	6.67	0.78	54.90	1.58
Jamaica	7.04	0.41	49.33	0.47	Zimbabwe	6.03	0.39	61.08	1.05

Table A3: Summary statistics for key variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
Log GDP p. c. in 2005	96	7.90	1.66	4.90	10.82
Institutions	96	7.46	1.64	4.00	10.00
Ethnic	96	0.42	0.26	0.01	0.93
Gini	96	40.09	10.65	21.93	71.75
Socdiv	96	0.00	1.00	-1.72	2.16

Table A4: Split sample estimations

Dependent variable is log GDP per capita in 2005

Panel A: 'High' and 'low' ethnic fractionalization, and 'good' and 'bad' institution samples

	(High Ethnic)	(Low Ethnic)	(Good Inst.)	(Bad Inst.)
Institutions	0.132	0.868***		
	(0.121)	(0.140)		
Ethnic			-1.388	0.034
			(0.950)	(0.597)

Panel B: 'High' and 'low' Gini, and 'good' and 'bad' institution samples

	(High Gini)	(Low Gini)	(Good Inst.)	(Bad inst.)
Institutions	0.249**	0.942***		
	(0.117)	(0.154)		
Gini			-0.047	0.005
			(0.039)	(0.019)

Panel C: 'High' and 'low' Socdiv, and 'good' and 'bad' institution samples

	(High Socdiv)	(Low Socdiv)	(Good Inst.)	(Bad Inst.)
Institutions	0.276**	0.832***		
	(0.116)	(0.127)		
Socdiv			-0.695*	0.047
			(0.388)	(0.221)

Notes: standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All regressions include a constant term and the full set of benchmark controls; The benchmark sample is split at the median level of the concerned variable; In **Panel A** the difference between the institutional parameter in the high and low ethnic fractionalization samples is statistically significant at the 1% level, but there is no statistically significant difference between the ethnic parameters in the good and bad institutions samples; In **Panel B** the difference between the institutional parameter in the high and low Gini samples is statistically significant at the 1% level, there is no statistically significant difference between the Gini parameters in the good and bad institutions samples; In **Panel C** the difference between the institutional parameter in the high and low social divisions samples is statistically significant at the 1% level, whereas the difference between the Socdiv parameters in the good and bad institutions samples just reaches statistical significance at the 10% level (p=0.09).

Table A5: Using alternative ethnic indicators

Dependent variable is log GDP per capita in 2005

Alternative ethnic variable used is:	(1) ELF	(2) Fearon ethn.	(3) Lang. fract.	(4) Polarization	(5) Cult.fract.
Institutions	0.499***	0.826***	0.707***	0.428***	0.720***
	(0.109)	(0.142)	(0.124)	(0.110)	(0.121)
Alt. Ethnic var.	0.025*	4.406***	4.573***	1.179	5.474***
	(0.013)	(1.645)	(1.460)	(1.397)	(1.893)
Inst- Alt.Ethnic	-0.003**	-0.647***	-0.582***	-0.123	-0.759***
	(0.002)	(0.218)	(0.196)	(0.176)	(0.268)
Observations	83	91	94	87	92
R-squared	0.92	0.86	0.86	0.90	0.86

Notes: standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All Regressions include a constant term and all benchmark controls. For variable definitions see Table A1.

Table A6: Using alternative income inequality indicators

Dependent variable is log GDP per capita in 2005

Alt. inequality variable used is:	(1) Richest20	(2) Richest10	(3) Poorest20	(4) Poorest10	(5) Middle60	(6) Ratio20	(7) Ratio10
Institutions	1.526***	1.225***	0.139	0.243	-0.791*	0.691***	0.642***
	(0.390)	(0.288)	(0.174)	(0.154)	(0.455)	(0.148)	(0.138)
Inequality	0.156***	0.156***	-0.534**	-1.009**	-0.206***	0.124*	0.050*
	(0.055)	(0.056)	(0.222)	(0.489)	(0.072)	(0.065)	(0.030)
Inst-Inequality	-0.021***	-0.021***	0.063**	0.110*	0.029***	-0.018*	-0.007
	(0.008)	(0.008)	(0.028)	(0.059)	(0.010)	(0.011)	(0.005)
Observations	97	97	97	97	96	97	97
R-squared	0.84	0.84	0.84	0.84	0.84	0.84	0.83

Notes: standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; All Regressions include a constant term and all benchmark controls. Note that high values on Poorest20, Poorest10 and Middle60 imply less inequality, why the interaction terms incorporating these variables (according to the argument in this paper) should be positive. For variable definitions see Table A1.

Table A7: Using GDP per capita growth as alternative dependent variable

Dependent variable is GDP p.c. growth (%) averaged 1965-05 (Reg. 1-2), 1975-05 (Reg. 3-4), 1985-05 (Reg. 5-6)

Panel A: Ethnic fractionalization

	(1)	(2)	(3)	(4)	(5)	(6)
Institutions	0.641**	0.956***	0.619**	0.897***	-0.063	0.254
	(0.257)	(0.277)	(0.243)	(0.236)	0.168)	(0.218)
Ethnic	5.321	7.573**	6.003**	4.641*	-0.304	2.275
	(3.300)	(3.373)	(2.811)	(2.542)	(2.019)	(2.295)
Initial inc.		-1.033***		-0.843***		-0.223
		(0.242)		(0.206)		(0.161)
Inst-Ethnic	-0.926**	-1.042**	-0.861**	-0.746**	-0.105	-0.423
	(0.414)	(0.423)	(0.379)	(0.344)	(0.269)	(0.310)
Observations	58	58	88	88	96	96
R-squared	0.79	0.74	0.51	0.64	0.69	0.63

Panel B: Income inequality

Institutions	0.114	0.176	-0.033	0.260	0.062	0.436
	(0.481)	(0.435)	(0.421)	(0.348)	(0.354)	(0.388)
Gini	-0.010	-0.040	-0.039	-0.046	0.043	0.052
	(0.090)	(0.079)	(0.077)	(0.062)	(0.063)	(0.067)
Initial inc.		-0.696***		-1.012***		-0.411**
		(0.226)		(0.198)		(0.169)
Inst-Gini	0.005	0.007	0.010	0.010	-0.004	-0.006
	(0.011)	(0.010)	(0.010)	(0.008)	(0.008)	(0.009)
Observations	61	61	64	64	75	75
R-squared	0.75	0.80	0.75	0.85	0.74	0.72

Panel C: Composite social divisions indicator

Institutions	0.226	0.220	0.347**	0.682***	-0.169	0.010
	(0.235)	(0.155)	(0.156)	(0.146)	(0.114)	(0.132)
Socdiv	0.669	2.440**	0.686	0.232	-0.502	-0.423
	(1.479)	(0.937)	(1.018)	(0.861)	(0.735)	(0.760)
Initial inc.		-0.893***		-0.813***		-0.213
		(0.268)		(0.216)		(0.149)
Inst-Socdiv	-0.121	-0.217*	-0.110	-0.071	0.024	0.012
	(0.184)	(0.117)	(0.124)	(0.106)	(0.090)	(0.093)
Observations	51	52	81	81	87	87
R-squared	0.56	0.83	0.58	0.73	0.71	0.72

Notes: Standard errors in parentheses; *significant at 10%, **significant at 5%, ***significant at 1%; Use robust regression (rreg). All estimations include the full set of benchmark controls from Table 1, but using initial period values for education and investment, and considering the trade variable of Frankel and Romer (1999) rather than the actual trade share (which covered the 1990s). Initial inc. refers to log GDP per capita in the first year of growth measurement (or lack of early data covering a wide range of countries the 1965-05 Regressions (1-2) instead use 'initial values' from the early 1970s). Considering that growth fluctuations should affect Gini fluctuations, initial period values for Gini (the first available net Gini measures from Swiid) are used in Panel B, as well as in the composite social divisions indicator in Panel C.