Governance and Conflict Relapse *

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Abstract

Many conflict studies link the sources of social conflicts to sentiments of relative deprivation. They typically regard formal democratic institutions as states’ most important vehicle to reduce deprivation-motivated armed conflict against their governments. We argue that the wider concept of \textit{good governance} is better suited to analyze deprivation-based conflict. The paper shows that the risk of renewed conflict in countries with good governance drops rapidly after the conflict has ended. In countries characterized by poor governance, this process takes much longer. Hence, improving governance is an important part in reducing the onset and incidence of conflict, and good governance will in turn decrease the likelihood of conflict. We also estimate models that decomposes the effect of good governance into what can be explained by formal democratic institutions and less formal aspects of governance, and into what can be explained by economic development and what is due to how well countries are governed. We find informal aspects of good governance to be at least as important as formal institutions in preventing renewed conflict, and also find that good governance has a clear effect over and beyond economic development.

10,200 words plus tables and figures.

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1 Introduction

Are well-governed countries better able to avoid armed conflict? Studies such as Hegre et al. (2001), Fearon and Laitin (2003), and Cederman, Hug and Krebs (2010) answer this question focusing on the extent to which the governing institutions are democratic since democratically elected leaders should be best placed to address grievances. The rules regulating how political leaders are recruited and how citizens participate in this selection, however, are not the only relevant determinants of ‘good governance’. Potentially, the quality of the bureaucratic apparatus, the extent of political corruption, and the appropriateness of the economic policies chosen by political leaders also affect governments’ ability to prevent domestic violent conflicts.\footnote{As Råby and Teorell (2010) argues for the case of interstate conflict.}

In this paper, we study how such an expanded conception of governance might increase our understanding of armed conflict. From a policy point of view, a focus on governance is also fruitful. Most of the governance indicators we discuss are levers politicians and bureaucrats to a large extent have direct control over. In contrast to factors such as GDP or infant mortality rates, which governments affect but slowly, governance is something that governments and international organization can change quickly – if the will exists.

The paper first looks at the theoretical link between governance and conflict, focusing on relative deprivation, before reviewing existing literature on governance and conflict (Section 2). Section 3 discusses what we mean by governance, or more specifically good governance, and discuss varies measures to capture the concept. In addition to identifying seven disaggregated indicators, we combine these into a joint governance index and analyze how traditional democracy indicators relate to more informal concepts of governance such as corruption and bureaucratic quality.

Next, we analyze the effect of governance on conflict relapse (Section 4). Most conflicts today are recurring old ones (Elbadawi, Hegre and Milante 2008), and it is important to understand the causes and consequences of the dynamics between conflict, bad governance and conflict recurrence.

Our statistical models show that the risk of renewed conflict in countries with good governance drops rapidly after the conflict has ended. In countries characterized by poor governance, this process takes much longer. Hence, improving governance plays an important role in reducing the onset and incidence of conflict. We also present an instrument-variable estimation that accounts for the possible endogenous relationship between the two variables, and still conclude that good governance reduces the risk of conflict recurrence.

We find most of our disaggregated governance indicators to be related to a decreased risk of conflict recurrence. This is partly due to positive correlation between the various indicators, but also suggests that reform in the different sectors can be partial substitutes to each other. The implication of that is that any reform that improves governance may be useful, be it to the formal political institutions, bureaucratic quality, or corruption, or other aspects. In some cases, it is a challenge to find an entry point to break this vicious circle of poor governance and conflict. If reform in any sector helps, changes should be sought where they are most feasible.

In Section 4, we analyze to what extent good governance can be separated from formal democratic institutions, on the one hand, and economic development on the other. We show that a model
that takes both dimensions of governance into account fit the data better than a model that only looks at one of these two dimensions. Both aspects of governance are important for preventing conflict recurrence, whereas informal governance seems more important for preventing conflict onset. Likewise, we find a model that separates the two dimensions of governance from average income to improve the fit to the data. In particular, countries that are relatively democratic for their income levels but score poorly on informal governance (e.g., Gabon or Lebanon) are at risk of conflict.

2 Governance and conflict

2.1 Theoretical background

A major channel through which good governance reduces the risk of armed conflict is by addressing ‘relative deprivation’ (Davies 1962, Gurr 1968) – the extent to which actors perceive a discrepancy between their expectations and their ability to fulfill these expectations. In what follows, we think of ‘actors’ very broadly as the vast majority of the population in a country. We focus on internal armed conflicts that set governments against domestic opposition groups. Deprivation, then, can explain internal conflicts if populations perceive governments as the source of the expectations-ability discrepancy and are willing to support armed actions to address the issue.

Governance can be defined as ‘the process of decision-making and the process by which decisions are implemented (or not implemented)’. We sharpen this definition further to match the idea of relative deprivation, and regard good governance as the extent to which the process of decision-making and implementation are to the benefit of the public at large.

This conception of governance is much wider than the formal setup of the institutions that stipulates the formal rules for this process. We argue that governance such defined improves our understanding of the link between deprivation and armed conflict. Although Gurr (1968) regards deprivation more broadly, most later systematic studies of conflict has tended to focus on the extent to which countries are democratic, have equal income distributions (Collier and Hoeffler 2004), or have systematic income differences at the group level (Østby 2008, Cederman, Weidmann and Gleditsch 2011).

Merely looking at inequalities – at the individual or group level – does not get precisely at relative deprivation. In many instances, actors accept inequality as the natural order, even when it is ethnic-geographic in nature. In former Yugoslavia, Slovenes were systematically better off than the rest of the population (Cederman, Weidmann and Gleditsch 2011, 485). This, however, was hardly because of deliberate policies carried out by the Yugoslav authorities in Serbian Belgrade, but rather because Slovenia 100 years earlier was part of the Austro-Hungarian empire whereas much of the rest of Yugoslavia was part of the economically less developed Ottoman empire. It is not obvious that

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2 Gurr (1968, 1104) gives a more complete definition: ‘Relative deprivation is defined as actors’ perceptions of discrepancy between their value expectations (the goods and conditions of the life to which they believe they are justifiably entitled) and their value capabilities (the amounts of those goods and conditions that they think they are able to get and keep).’

3 This definition is taken from the UN Economic and Social Commission for Asia and the Pacific: http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp.
Serbs held the Yugoslav government as responsible for ‘relative deprivation’ because of Serb-Slovene economic inequalities.

Even increasing inequalities may be perceived as acceptable. For instance, the rising economic inland-coastal inequalities in China over the last 20 years (Kanbur and Zhang 2005, 96) is probably perceived to be due to the exports-driven growth at the coast rather than deliberate policies to hold the inland back. Migration, rather than rebellion, is the natural response to such developments. Similarly, poverty at the country level is not a good proxy for relative deprivation (Collier and Hoeffler 2004). The fact that most citizens in African countries are much poorer than citizens in Europe is not automatically translated into a sentiment of relative deprivation strong enough to motivate rebellion. First, the natural target of such sentiments would be the former colonial power. Only if domestic authorities pursue policies that prevent populations from fulfilling their expectations can such ‘deprivations’ be clearly linked to internal armed conflict. Although studies of country-level poverty and horizontal inequality find clear correlations with internal armed conflict, their designs are not entirely satisfying as studies of the importance of deprivation. It is necessary to look at how governments govern to understand how deprivation might be linked to conflict.

Likewise, a singular focus on representative institutions (Muller and Weede 1990, Hegre et al. 2001) is insufficient. The hypothesis implies that democratic governments succeed in reducing deprivation-based social discontent since the executive and the legislature is recruited through free and fair elections and thereby represent the ‘will of the people’. In principle, this should be sufficient to ensure that governments pursue policies that effectively reduce relative deprivation.

However, in practice the hypothesis also requires that the elected decision-makers abide by their own laws, that the military, or actors with the means to grease politicians, are unable to influence decisions in their own favor. Moreover, even if decisions are made with the sincere intention to reduce poverty and provide public goods, decisions have to be implemented to be effective. Successful implementation requires that the bureaucratic apparatus is competent and non-biased, and that the government carries out economic policies that are suitable to achieve its political goals.

Countries may be formally democratic even when several of these criteria are not satisfied. Deficiencies in the less formal aspects of governance may be the reason why the correlation between democracy and internal conflict is rather weak. As shown in the review below, democratic institutions have clear conflict-reducing effects only when they are ‘consistent’ – consolidated institutions with few remaining vestiges of authoritarianism – or when they exist within an economically developed economy.

Our conception of governance is meant to capture the entire ‘chain’ or context of implementation that translates the aggregation of preferences into final implementations of policies. Such a wide definition of governance implies that it is a multi-faceted concept, and various sources identify different dimensions of it. In this paper, we look into seven aspects: (1) formal political institutions, (2) political exclusion and repression, (3) the rule of law, (4) corruption, (5) bureaucratic quality, (6) military involvement in politics, (7) economic policies. Indicators of quality of governance along these dimensions are drawn from several different datasets.

Below, we review existing cross-national comparative research on how governance affects the risk
of conflict recurrence. Few studies, however, look at governance widely defined. Much, however, can be inferred from other studies, such as those that focus on formal democratic institutions. As we will show, formal and informal governance indicators are correlated. Democratic countries have, on average, better governance – less corruption, less repression, better bureaucracies, etc. Moreover, the effects of formal democratic institutions largely overlap with what we understand as governance.

2.2 Formal political institutions

The academic consensus based on global comparisons of the institution-conflict relationship is that democracy in itself does not reduce the risk of civil war onset if we take countries’ income into account – they are no less likely to have internal conflicts than non-democracies (Muller and Weede 1990, Hegre et al. 2001, Fearon and Laitin 2003, Collier and Hoeffler 2004). Moreover, semi-democracies – regimes that are partly democratic, partly autocratic such as Lebanon in the 1970s or Tanzania today – may even have the highest risk of civil war onset. Democracies are not in a better position to end conflicts, either. Collier, Hoeffler and Söderbom (2004), Fearon (2004), and DeRouen and Sobek (2004) find no link between regime type and duration of conflict. Gleditsch, Hegre and Strand (2009) even find democracies to have longer conflicts than other regime types, as exemplified by the conflicts in Northern Ireland, Sri Lanka, and North-East India.

There is no conclusive evidence that democratic institutions do better in post-conflict settings than they do in general. Some studies, such as Mukherjee (2006), find that post-conflict democracies have a lower risk of conflict recurrence. Other studies report contrasting results. Walter (2004) finds no monotonic effect of democracy on the risk of civil war recurrence, but finds that democracies have a lower risk of renewed civil war than semi-democracies. Quinn, Mason and Gurses (2007) find no statistical evidence that the regime type in place two years after the conflict makes a difference for the risk of conflict recurrence. Collier, Hoeffler and Söderbom (2008) find that among post-civil war societies, non-autocracies have a greater risk of reverting to war than strict autocracies. This does not necessarily mean that democratic institutions are directly counter-productive in post-conflict transitions. The majority of the non-autocracies in the sample of post-conflict countries in Collier, Hoeffler and Söderbom (2008) study are semi-democracies. What is missing here is an insufficient amount of democratization rather than too much of it.

There are three possible explanations for the conflict-proneness of semi-democracies. First, they open up for popular participation and organization of opposition groups but do not allow the opposition influence consistent with their electoral strength, thereby creating incentives for violent insurrections (Hegre et al. 2001). Second, the very fact that they are not fully democratic signifies that a struggle is going on over the setup of the institutions, a struggle that may turn violent (Fearon and Laitin 2003). Third, semi-democracies are often newly established and often located in poor and middle-income countries. Conceivably, semi-democracies may be unable to solve conflicts because they often have poor governance.

4The issues treated in this section draws in part on Hegre and Fjelde (2009), which treats the questions related to post-conflict democracy and conflict recurrence in much more detail.
A few studies note qualifications to the conclusion that formal political institutions have no conflict-reducing effects. Hegre (2003) and Collier and Rohner (2008) note that democratic institutions are particularly ineffective in low-income countries. In the poorest countries in the world, democratic institutions may even increase the risk of insurrections. In middle-income countries, these studies indicate that democratic political systems are better able to prevent conflicts from erupting and recurring. Formally democratic political institutions are not sufficient in situations where governments have only partial control over own territory, and therefore are easily challenged by narrow groups.

Independent of the extent to which countries’ political institutions are formally democratic, Cederman, Wimmer and Min (2010) show that complete or partial exclusion of ethnic groups from central power strongly increases the risk of armed conflict.

2.3 ‘Informal’ governance

Several non-quantitative studies highlight the importance of certain ‘prerequisites’ for democratic institutions to be effective. Zakaria (1997), for instance, include an effective ‘rule of law’ as an important element of liberal democracy. Huntington (1965) also highlight the distinction between ‘mobilization’ and ‘institutionalization’. Although his distinctions differ somewhat from ours, institutionalization requires more than merely the recruitment of the executive through elections.

Despite this attention, there are few quantitative studies of the impact on conflict of less formalized aspects of governance, such as corruption, economic policies, or bureaucratic quality. In some cases, informal governance may be as important as formal institutions, e.g. if political corruption is so rampant that elected officials are more accountable to their paymasters than to those who elected them into office.

An important component of our conception of good governance is the capacity of the political systems to implement decisions, often referred to as ‘bureaucratic quality’. There are hardly any studies of the relationship between bureaucratic quality and conflict, but several on the related concept of ‘state capacity’. There is, however, no consensus definition of state capacity, and there is a tendency to conflate measures of regime type and capacity.\footnote{In a recent review and assessment of state capacity measures, Hendrix (2010) lists 12 different operationalizations of the concept. Some of these operationalizations are directly linked to state capacity, while others tend to conflate characteristics of regime type with the regime’s capabilities. The operationalizations can be grouped roughly into four groups: (1) regime type measures such as Polity, XCONST, and SIP; (2) measures of the state’s extractive capability or actual extraction, i.e. taxes/GDP, revenue/GDP, or primary commodity exports/GDP; (3) measures of the quality of a state’s bureaucracy, such as ‘bureaucratic quality’, ‘investment profile’, ‘relative political capacity’; and (4) broader capacity measures such as GDP, military personnel per capita and military expenditures (Hendrix 2010). All these measures, however, are strongly correlated, and are closely related to our other indicators of governance.}

Fearon and Laitin (2003) argue that state capacity, which they proxy by per capita income, is closely linked to the onset of civil war. They find that high-capacity states have much lower risk of conflict than weak states. Several studies find that oil producers have higher risk of civil war than expected from their income levels. Fearon (2005) argues that this is due to relatively weak state capacity in oil states. Oil-producing states, he argues, tend to be under-bureaucratized for their
GDP levels. These states have lower state capacity than otherwise similar non-oil producers, since they have never needed to a capacity to extract taxes and other resources from the citizenry at large.

Using similar data to what we employ below, Fjelde and de Soysa (2009) disaggregate state capacity into the abilities to coerce, to coopt, and to cooperate. Fjelde and de Soysa (2009) argue that the level of revenue extraction better ‘reflects the government’s capacity for societal control and its ability to deter and suppress violent dissent’. They argue that cooptation and cooperation may be more important aspects of state capacity in preventing conflict than purely coercive ability. To arrive at a better proxy for a state’s capacity, they use the ‘Relative Political Capacity’ (RPC) index from Organski and Kugler (1980) which compares actual to predicted levels of state tax extraction. Braithwaite (2010) finds some evidence for the hypothesis that countries with good state capacity are better able to avoid spill-over from neighboring countries. Buhaug (2006) argues that the economic capacity of states with high GDP enables them to buy off oppositional groups.

Another source of leakage in formally democratic systems is widespread corruption. Le Billon (2003) argues that regions with high levels of political corruption are most affected by political instability, and Mauro (1995) reports that corruption is associated with political instability in general. Corruption’s effect on the allocation of public resources, Le Billon argues, may increase grievance and elicit demands for political change. Moreover, the rents generated by corruption may constitute a tempting prize for actors willing to use violence to capture political positions. Finally, corruption undermines the government’s ability to implement public policies that generate economic growth and other outcomes that reduce the risk of conflict. Controlling for other factors, Fjelde (2009) shows that increasing corruption from the 5th to the 95th percentile more than triples the risk of conflict onset. At the same time, she argues that corruption has no conflict-inducing effect in countries with large oil revenues. In such states, where funds for discretionary use are ample, ‘a strategic use of public resources for off-budget and selective accommodation of private interests might reduce the risk of violent challenges to state authority’ (Fjelde 2009, 214).

A few studies also show a link between economic policies and the risk of conflict. Bussmann and Schneider (2007) concludes that economic openness in the form of interstate trade and FDI inflows do decrease the risk of internal conflict, although the process of opening up the economy often is associated with increased levels of violence. Relatedly, Dreher, Gassebner and Siemers (2012) show that economic freedom and globalization reduce countries’ human rights violations.

We also include countries’ respect for human rights as one aspect of good governance. It is difficult to estimate the direct consequence of repression on the risk of conflict, however, as dissent, repression and poor economic performance are heavily intertwined (Carey 2007, Davenport 2007, Moore 1998). Repression increases the risk of political violence, but repression also increases when armed conflict breaks out. Some regimes, though, are clearly able to sustain repressive policies for decades. This ability is likely connected with state capacity, as discussed above. Just as high-capacity or resource-rich regimes have ample funds to co-opt the opposition, they are able to employ repression without increasing the chances of regime collapse (Fjelde and de Soysa 2009).
3 Operationa}lizing indices of governance

In this section, we present in more detail seven governance indices and demonstrate how we construct the overall governance index. Each of the sub-indices is constructed using two or more indicators as detailed in the following sections, and are normalized to vary between 0 and 1.

3.1 Formal political institutions

We have based our index of formal political institutions on the ‘Scalar Index of Polities’ (SIP) developed in Gates et al. (2006). The SIP index is partly based on the Polity (Marshall n.d.) democracy index, the most widely used dataset on formal political institutions in conflict research.\(^6\) Polity categorizes formal institutions using indicators along three dimensions: Openness and regulation of executive recruitment, openness and regulation of popular participation, and the extent to which the executive branch is balanced by other institutions within the political system. A problem with the Polity index, however, is that the participation component includes political violence as part of the definition (Vreeland 2008). The SIP index circumvents this problem by replacing the participation component with data from Vanhanen (2000).

The original SIP measure ranges from 0 to 1. The value 0 is given to political systems where the executive is not elected, where either the vast majority of the population has no right to vote or there is no party competition, and no institutions serves as checks and balances on the executive. A value close to 1 is given to systems where the executive is elected, voting rights are universal and party competition effective, and an institution (typically an elected parliament) is equally influential as the executive branch.

We have made one adjustment to the Gates et al. (2006) SIP index to obtain an index with a more convenient distribution. The transformation is illustrated in Figure 1. The lower panel shows the distribution of the original SIP score. Close to 20% of the country years over the 1960–2008 period are coded as consistent autocracies with scores 0. Approximately 20% are consistent democracies with values approaching 1, and only a small fraction occupy the territory between .2 and .8. To distribute regimes more evenly along a (0,1) scale, we replaced all observations lower than 0.03 with 0.03 and made a ‘logit’ transformation: \( D = \ln(\frac{SIP}{1-SIP}) \), and rescaled this measure to range from 0 to 1. We call this index ‘formal political institutions’.

The ‘formal political institutions’ index is plotted as a function of SIP in the upper right plot in Figure 1. The distribution of the new measure is given in the upper left panel. The proportion of observations that are coded as 0 remains the same, but the remaining observations are distributed much more uniformly.

\(^6\)There are several other indices of formal democracy than the Polity and SIP indices used here, but few as detailed as these and with equally long time series. Most democracy indicators correlate highly, and the Polity and SIP scores are both representative as well as widely used in the academic literature.
3.2 Political exclusion and repression

Political exclusion is obviously intrinsically linked to the indicators of formal institutions discussed above.

**Political terror score.** We include information about the repressive activities of the state, using the Political Terror Scale (PTS; Gibney, Cornett and Wood 2008, Wood and Gibney 2010). Using country reports from the United States Department of State and Amnesty International, the Political Terror Scale classifies countries on a five-point scale with one being least repressive and five being most repressive.\(^7\)

**Ethnic exclusion.** Cederman, Wimmer and Min (2010) have used country experts to systematically code several aspects of ethnic power relations.\(^8\) The measure we use records the proportion of the population that are excluded based on their ethnic affiliation from decision-making authority within the central state power.

\(^7\)See the Political Terror Scale web site: http://www.politicalterrorscale.org/ptsdata.php

\(^8\)Also see http://www.icr.ethz.ch/research/epr.
3.3 The rule of law

WGI Rule of law. This World Governance Indicator captures ‘perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence’ (Kaufmann, Kray and Mastruzzi 2010, 4).

EF Area 2. The ‘Economic Freedom Network’ in collaboration with the Fraser Institute (Gwartney, Hall and Lawson 2010, Ben Nasser Al Ismaily et al. 2010, http://www.freetheworld.com) publishes a set of indicators that are related to good governance. The ‘Area 2’ indicator covers ‘commercial and economic law and security of property rights’. It is an aggregate of indicators capturing the extent of military interference in rule of law and the political process, integrity of the legal system, regulatory restrictions on the sale of real property, and the legal enforcement of contracts.

Freedom House Civil liberties. This index is developed by Freedom House (2010). The original index runs from 1 (low degree of civil liberties) to 7 (high degree). There is considerable overlap empirically between this index and the SIP index of formal political institutions, but a high score for the civil liberties index also requires an established rule of law. To be classified with top rating, countries must ‘enjoy a wide range of civil liberties, including freedom of expression, assembly, association, education, and religion. They have an established and generally fair system of the rule of law (including an independent judiciary), allow free economic activity, and tend to strive for equality of opportunity for everyone, including women and minority groups.’

3.4 Corruption

Large-scale corruption has several detrimental effects on a political system. It means a diversion of public funds, thereby decreasing the funds available for public spending that might reduce political conflict in the long run. The flow of corruption money also creates incentives for actors to use violence and other irregular means to obtain and hold on to office.

ICRG Corruption. We use the corruption index from the International Country Risk Guide (ICRG; PRS Group 2010). The coding takes corruption in the form of demands for bribes into account, but ‘is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, ‘favor-for’-favors’, secret party funding, and suspiciously close ties between politics and business.’

WGI Control of corruption. This indicator from WGI captures ‘perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ‘capture’ of the state by elites and private interests (Kaufmann, Kray and Mastruzzi 2010, 4).
The Transparency International’s Corruption Perception Index is one of the most widely used indicators of corruption. The measure is an aggregate indicator which ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians. Transparency International uses a wide range of sources comprising 13 different surveys or assessments from several different institutions to construct the aggregate indicator. The index ranges from 0 (highly corrupt) to 10 (very clean). In practice, no countries are lower than 1.4 (Afghanistan and Myanmar) or higher than 9.3 (New Zealand and Denmark).

3.5 Military in politics

Heavy military involvement in government may often lead to poor governance, particularly as pertains to the risk of conflict relapse. Militaries, moreover, are not accountable to the public, and likely to distort public spending in favor of military spending.

Military in politics. We use the ‘Military in politics’ indicator from PRS Group (2010) which assesses the military participation in government in a country on a scale from 0 to 6.

Military spending. We also report each country’s military spending as a share of GDP from the World Bank’s World Development Indicators.9

3.6 Bureaucratic quality

Efficient bureaucracies are necessary to implement public policies and carry out day-to-day administration. High-quality bureaucracies may also function as an informal constraint on the executive branch of the government, thereby reducing the incentives for extreme policies.

Bureaucratic quality. This is also taken from PRS Group (2010). It runs from 0 to 4, and high values are given to countries were ‘the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services’ and ‘tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training.

WGI Government effectiveness. This WGI index captures ‘perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies (Kaufmann, Kray and Mastruzzi 2010, 4).

3.7 Economic policies

Governments reduce poverty by a combination of redistribution and stimulating economic growth. Poverty reduction is maximized if economic growth is strongest among the poor population. In

many cases, however, strong economic growth reduces poverty even without redistribution, and even if inequality increases. This is the case in China, for instance, since economic growth has been considerably weaker in the inland.

**WB CPIA score.** To tap into this dimension of governance, we use the World Bank’s CPIA score. Scores from 2005 onwards are publically available (http://data.worldbank.org/indicator).

The index is based on an assessment of performance within four clusters: Economic Management, Structural Policies, Policies for Social Inclusion and Equity, and Public Sector Management and Institutions. The CPIA thereby assesses the extent to which a country’s policy and institutional framework supports sustainable growth, poverty reduction, and the effective use of development assistance. Among the 16 criteria are assessments of property rights and rule-based governance, quality of budgetary and financial management, efficiency of revenue mobilization, quality of public administration, and transparency, accountability, and corruption in the public sector (World Bank 2009).

**EF Area 1** The Economic Freedom Network and Fraser Institute also code countries along several dimensions of economic policies or ‘economic freedom’. Indicators range from 0 (poor) to 10 (good). Codings are available annually from the late 1990s onwards. Economic freedom is defined as ‘when (a) property [individuals] acquire without the use of force, fraud, or theft is protected from physical invasions by others and (b) they are free to use, exchange, or give their property as long as their actions do not violate the identical rights of others.’ (Ben Nasser Al Ismaily et al. 2010, 3).

Their rankings are based on various World Bank publications, the PRS group, the IISS, and other sources. The ‘Area 1’ indicator captures ‘Size of Government: Expenditures, Taxes, and Enterprises’, based on sub-indicators for general government consumption spending as a percentage of total consumption, transfers and subsidies as a percentage of GDP, government enterprises and investment, and top marginal tax rate.

**EF Area 3.** ‘Area 3’ covers ‘Access to Sound Money’, as indicated by money growth, the standard deviation of inflation, inflation in the most recent year, and citizens’ freedom to own foreign currency bank accounts.

**EF Area 4.** ‘Area 4’ covers ‘Freedom to Trade Internationally’. The index is based on indicators on taxes on international trade, black-market exchange rates, and capital controls.

**EF Area 5.** The final EF indicator captures ‘Regulation of Credit, Labour, and Business’. It builds on indicators of credit market regulations, labour market regulations, and business regulations.

**EF Overall score** The Economic Freedom Network also publishes an aggregate of the five area scores, labeled ‘EF overall score’.

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10We have access to older scores, but are not allowed to disclose them except as aggregated over regions.
3.8 Relationship between indices

Figure 2 shows the relationship between the seven indices in scatter plot form, restricted to the year 2005. All indices are positively correlated, but to varying extents. The formal institutions index is correlated by 0.79 with rule of law, but only 0.36 with military influence. Bureaucratic quality is correlated by 0.62 with corruption, but only by 0.39 with exclusion and repression.

Some countries exhibit interesting deviations from the pattern of high correlation between indices. The separate dot in the lower-left corner is Sudan, with low scores on both indicators of governance. Singapore has a high score on the corruption index (i.e., little corruption), but a middle score on formal political institutions. Israel has a low score on the military in politics index, but high scores on bureaucratic quality.

3.9 Combined governance

Finally, we created a composite index of governance based on the seven sub-indices. This index runs from 0 to 1 where 1 represents good governance and 0 poor.

The correlations between the sub-indices (for all countries in the world over the 1960–2008 period)
Table 1: Correlational matrix for governance indices, 1960–2008

<table>
<thead>
<tr>
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<th>Formal Institutions</th>
<th>Exclusion and Repression</th>
<th>Rule of law</th>
<th>Corruption</th>
<th>Military Influence</th>
<th>Bureaucratic Quality</th>
<th>Economic Policies</th>
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<tr>
<td>Exclusion and repression</td>
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<td>1</td>
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<tr>
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<td>.408</td>
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<td>.477</td>
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<td>.560</td>
<td>.625</td>
<td>.461</td>
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<td></td>
</tr>
<tr>
<td>Economic policies</td>
<td>.366</td>
<td>.406</td>
<td>.459</td>
<td>.338</td>
<td>.314</td>
<td>.495</td>
<td>1</td>
</tr>
<tr>
<td>Overall governance</td>
<td>.776</td>
<td>.685</td>
<td>.876</td>
<td>.719</td>
<td>.698</td>
<td>.693</td>
<td>1</td>
</tr>
</tbody>
</table>

are shown in Table 1. The bottom line shows the correlation between each of the sub-indices and the overall governance index. Most indicators have a high correlation, and all correlate with more than 0.6 with the composite governance index. Most closely related are the rule of law and formal institutions index. The formal institutions, on the other hand, has only moderate correlation with the other governance indices. Most of the other indices also have moderate correlations (between 0.314 and 0.589).

3.10 Handling missing data

Several of the governance indicators have substantial amounts of missing data. To a large extent the missing data are not overlapping and listwise deletion would therefore toss out more than 50 percent of our data. As is well known listwise deletion is only appropriate when missing data are thought to be ‘missing completely at random’ (MCAR), meaning that the dependent variable is completely unrelated to the missing data mechanisms (Little and Rubin 2002). This is an untenable assumption. Instead, we assume that the data are ‘missing at random’. This assumption implies that missing values depend on, and can be predicted by, observed information included in the data set, and we therefore perform multiple imputation (Little and Rubin 2002). Multiple imputation involves using all the information available in the dataset to predict missing values. Multiple imputation solves the problem of taking imputation uncertainty into consideration by producing a set of missing value candidates, the variance across these candidates is then directly interpretable as the imputation uncertainty. We perform multiple imputation using Amelia (King et al. 2001, Honaker and King 2010, Honaker, King and Blackwell 2011). In the imputation the time series and panel nature of our data is taken into consideration, yielding highly plausible imputed values.

4 Governance and conflict recurrence

How does governance affect the risk of conflict recurrence? In this section, we study how our seven disaggregated indicators of governance and the aggregated governance indicator relate to the risk of conflict onset and recurrence. We then proceed to attempt to decompose the effect of governance into what can be attributed to formal democratic institutions on the one hand and to more informal aspects of governance on the other. Finally, we seek to distinguish between the two aspects of governance on one hand and that of economic development on the other.
4.1 Sub-indicators, aggregated index of governance, and conflict recurrence

Table 2 reports the results from an empirical analysis of how our governance variables affect the risk of conflict recurrence. We base this on a dataset consisting of all countries in the world for the 1960–2008 period. The unit of analysis is the country year, and the dependent variable is conflict incidence – whether an internal armed conflict is going on in a country year, as coded in the UCDP/PRIO dataset (Gleditsch et al. 2002, Harbom and Wallensteen 2010). All models include a two-category lagged independent variable – the estimates for the other variables should therefore be interpreted as the extent to which the variables change log odds of conflict incidence given the conflict state the year before. The models also include a term called ‘peace years’ which is the log of the number of years without conflict up to $t - 1$. If the country had a conflict at $t - 1$, the peace years variable is set to 0. The estimate for the peace years variable, then, models how the risk of conflict changes with time in peace given that there was no conflict in the previous year, which is the same as the risk of conflict recurrence.\footnote{We do not distinguish between periods of peace that started with the termination of a conflict and those that started with the independence of a country.}

Models 1–7 estimate the effect of each of our seven governance indicators representing the aspects of formal political institutions, repression/exclusion, rule of law, corruption, military involvement, bureaucratic quality, and economic policies. Model 8 includes our aggregated governance measure. To distinguish between how governance affects the risk of conflict onset and how it reduces the risk of recurrence, we have entered an interaction term between the governance indicator and the peace years variable. The models capture that in general, the probability that a country is in conflict is much higher if it was at conflict last year, and that the risk of conflict recurrence gradually diminishes for each new year of peace after the conflict ends.

We also control for the size of the country, whether a neighboring country has conflict, whether one ethnic group is demographically dominant, population size and population growth, and log infant mortality rate.\footnote{The ethnic dominance variable is from Collier and Hoeffer (2004) and is coded 1 if one ethnic group in the country comprises a majority of the population. The population and infant mortality variables originate from the World Population Prospects 2006 (United Nations 2007) produced by the United Nations Population Division.}

Models 1, 4, and 6 in Table 2 show a similar pattern for the governance indicators: The main term for the governance indicator is positive and significantly different from 0, the main term for the peace years variable is negative and significant, and the interaction term between governance and the peace years term is significantly smaller than 0. This pattern is consistent with the expectation that the risk of conflict recurrence decreases over time, but decreases more swiftly in countries with good governance. Models 3, 5, 7, and 8 are roughly similar, but here all terms are not significant. For all these models, the positive estimate for the main term indicate a high initial risk of conflict recurrence.

The model analyzing governance in terms of exclusion is clearly different from the others. Here, the estimate for the governance main term is negative and significant – exclusion and repression increases the risk of recurrence in the short run as well as the long term.
Table 2: Conflict relapse and governance, internal conflict, 1960–2008

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
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<td>conflict</td>
<td>Formal</td>
<td>Exclusion</td>
<td>Rule of law</td>
<td>Corruption</td>
<td>Military</td>
<td>Bureaucracy</td>
<td>Economics</td>
</tr>
<tr>
<td>Conflict, t-1</td>
<td>3.128***</td>
<td>2.997***</td>
<td>3.104***</td>
<td>3.098***</td>
<td>3.088***</td>
<td>3.096***</td>
<td>3.058***</td>
</tr>
<tr>
<td>(0.155)</td>
<td>(0.147)</td>
<td>(0.146)</td>
<td>(0.147)</td>
<td>(0.147)</td>
<td>(0.146)</td>
<td>(0.146)</td>
<td>(0.155)</td>
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<tr>
<td>(0.258)</td>
<td>(0.228)</td>
<td>(0.227)</td>
<td>(0.223)</td>
<td>(0.223)</td>
<td>(0.226)</td>
<td>(0.226)</td>
<td>(0.262)</td>
</tr>
<tr>
<td>ln(Peace years)</td>
<td>-0.352***</td>
<td>-0.722**</td>
<td>-0.332**</td>
<td>-0.222*</td>
<td>-0.378***</td>
<td>-0.155</td>
<td>0.114</td>
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<td>(0.0744)</td>
<td>(0.220)</td>
<td>(0.0987)</td>
<td>(0.110)</td>
<td>(0.114)</td>
<td>(0.0964)</td>
<td>(0.204)</td>
<td>(0.160)</td>
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<td>Formal inst. index</td>
<td>1.015***</td>
<td>(0.288)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Formal inst. peace years</td>
<td>-0.453***</td>
<td>(0.133)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Pol. exclusion and rep. Index</td>
<td>-1.228**</td>
<td>(0.418)</td>
<td></td>
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<tr>
<td>Rule of law index</td>
<td>-0.354</td>
<td>(0.466)</td>
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<td>Rule of law peace years</td>
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<tr>
<td>Corruption index</td>
<td>-1.370*</td>
<td>(0.528)</td>
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<td>Corruption peace years</td>
<td>-0.791***</td>
<td>(0.237)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Military influence index</td>
<td>0.182</td>
<td>(0.581)</td>
<td></td>
<td></td>
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<tr>
<td>Military influence peace years</td>
<td>-0.406</td>
<td>(0.297)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Bureaucratic quality index</td>
<td>1.421***</td>
<td>(0.403)</td>
<td></td>
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<tr>
<td>Bureaucratic quality peace years</td>
<td>-0.894***</td>
<td>(0.192)</td>
<td></td>
<td></td>
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<tr>
<td>Economic policies index</td>
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<td>(0.716)</td>
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<td>Economic policies peace years</td>
<td>-1.799***</td>
<td>(0.357)</td>
<td></td>
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<td>Governance index, t-1</td>
<td>1.541*</td>
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<td>Governance index peace years</td>
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<td>(0.296)</td>
<td></td>
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<tr>
<td>Log population</td>
<td>0.320***</td>
<td>0.326***</td>
<td>0.337***</td>
<td>0.346***</td>
<td>0.342***</td>
<td>0.337***</td>
<td>0.341***</td>
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<td>(0.0381)</td>
<td>(0.0363)</td>
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<td>(0.0357)</td>
<td>(0.0355)</td>
<td>(0.0359)</td>
<td>(0.0358)</td>
<td>(0.0381)</td>
</tr>
<tr>
<td>Log infant mortality, t-1</td>
<td>0.374***</td>
<td>0.286***</td>
<td>0.279***</td>
<td>0.326***</td>
<td>0.282***</td>
<td>0.340***</td>
<td>0.244***</td>
</tr>
<tr>
<td>(0.0834)</td>
<td>(0.0658)</td>
<td>(0.0845)</td>
<td>(0.0874)</td>
<td>(0.0696)</td>
<td>(0.0832)</td>
<td>(0.0787)</td>
<td>(0.0917)</td>
</tr>
<tr>
<td>Neighbor conflict, t-1</td>
<td>0.382**</td>
<td>0.309*</td>
<td>0.345**</td>
<td>0.359**</td>
<td>0.357**</td>
<td>0.382**</td>
<td>0.353**</td>
</tr>
<tr>
<td>(0.113)</td>
<td>(0.124)</td>
<td>(0.125)</td>
<td>(0.125)</td>
<td>(0.123)</td>
<td>(0.123)</td>
<td>(0.120)</td>
<td>(0.124)</td>
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<td>Ethnic dominance</td>
<td>0.191</td>
<td>0.174</td>
<td>0.170</td>
<td>0.162</td>
<td>0.189</td>
<td>0.164</td>
<td>0.107</td>
</tr>
<tr>
<td>(0.116)</td>
<td>(0.109)</td>
<td>(0.109)</td>
<td>(0.109)</td>
<td>(0.109)</td>
<td>(0.109)</td>
<td>(0.109)</td>
<td>(0.116)</td>
</tr>
<tr>
<td>Population growth</td>
<td>0.194</td>
<td>0.331</td>
<td>0.354</td>
<td>0.354</td>
<td>0.320</td>
<td>0.375</td>
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<tr>
<td>(0.497)</td>
<td>(0.430)</td>
<td>(0.437)</td>
<td>(0.440)</td>
<td>(0.427)</td>
<td>(0.449)</td>
<td>(0.440)</td>
<td>(0.508)</td>
</tr>
<tr>
<td>(0.625)</td>
<td>(0.647)</td>
<td>(0.677)</td>
<td>(0.635)</td>
<td>(0.554)</td>
<td>(0.603)</td>
<td>(0.713)</td>
<td>(0.802)</td>
</tr>
</tbody>
</table>

\[ \text{aic} \quad 2453.3 \quad 2738.2 \quad 2741.8 \quad 2756.2 \quad 2744.1 \quad 2743.2 \quad 2744.9 \quad 2456.9 \]
\[ \text{ll} \quad -1215.6 \quad -1358.1 \quad -1359.9 \quad -1357.1 \quad -1361.5 \quad -1356.7 \quad -1356.5 \quad -1216.9 \]
\[ \text{N} \quad 6742 \quad 7365 \quad 7365 \quad 7365 \quad 7365 \quad 7365 \quad 7365 \quad 6742 \]

Standard errors in parentheses
* \( p < 0.05 \), ** \( p < 0.01 \), *** \( p < 0.001 \)

Figures 3 and 4 show the predicted probability of conflict as a function of time since last conflict for each of the models.\(^{13}\) The plots show the risk for two hypothetical countries that are similar except that one has good governance (governance index = 0.75) and the other poor governance (0.15). The values for other predictors are set at the global averages in 2005.

The upper-left plot in Figure 3 shows the predictions based on model 1, Table 2. This model follows the general pattern with a positive and significant main term for the governance (formal political institutions). In the plot this is reflected as a higher initial predicted probability of conflict recurrence for high-governance countries – in other words, democracies have a slightly higher risk of conflict recurrence than non-democracies. The vertical bars indicate the 80% confidence band of the predictions, or the 10th and 90th percentiles of the Clarify predictions. The confidence band for high- and low-governance countries are overlapping, however, implying that the formal institutions

\(^{13}\)The predictions were obtained by means of the Clarify package (King, Tomz and Wittenberg 2000).
index explain little variance in conflict recurrence risk.

The upper-right plot shows that the countries with poor governance in terms of repression and exclusion has a higher initial risk of conflict recurrence than those with good governance. This difference is sustained after several years of peace, although the confidence intervals are overlapping.

The second row of plots in Figure 4 and the first row of plots in Figure 4 show patterns similar to those for formal institutions for the rule of law, corruption, military influence, and bureaucratic quality indicators. The lower-left plot in Figure 4 shows the corresponding predictions based on the economic policies index. Here, the difference between well-governed and less well-governed countries is large and clearly significant – the predicted risk of conflict recurrence remains at about 0.10 for more than 15 years for poorly governed countries.

Finally, the lower right plot in Figure 4 shows the same type of predictions using our combined governance index. This index also captures a clear difference between the risk of conflict recurrence in well-governed and poorly-governed countries. The 80% confidence intervals are non-overlapping from year 5 onwards. Well-governed countries experience a steady decline in the risk of conflict recurrence, but the corresponding risk is hardly reduced after the second year in the poorly governed countries.

None of the indicators of good governance do seem to reduce the risk of conflict onset, but they all affect how fast the risk of conflict recurrence diminishes with time in peace. The fact that all
governance indicators pull in the same direction is useful for two reasons. First, it allows us to treat ‘governance’ as a unified concept that is efficiently captured by our joint governance indicator. We will mostly limit our discussion of statistical results to this indicator in the remainder of the paper. Second, and more importantly, these results mean that all aspects of governance covered here are important to reduce the risk of conflict recurrence, and the fact that the combined governance index is the strongest of them implies that different forms of governance are substitutes to each other.

It is clear from Table 2 that good governance reduces the risk of conflict recurrence. But to what extent is the effect of our governance indices distinct from that of formal (democratic) institutions, or from the economic resources available to governments? The following two sections explore this question.

4.2 Formal vs. informal institutions

To do so, we created an index of ‘informal political institutions’ which is simply the residuals from the regression line formed by the formal institutions index as $x$ variable and the governance index as $y$ variable (the formal institutions index explains 61% of the variance in the governance index). These residuals were rescaled to range from 0 to 1, forming our ‘informal institutions index’. Figure 5
shows the relationship between the formal and the informal institutions for the year 1990. The $x$ axis represents the formal institutions index, and the $y$ axis the informal institutions index (the residuals). Some countries, such as Oman, UAE, Singapore, Switzerland, and Canada do much better in terms of governance than indicated by their formal institutions – the ‘informal institutions’ residual index is high. Others, such as Sudan, Ethiopia, Haiti, and Bulgaria do much worse.

Figure 5: Informal institutions by formal institutions, 1990

The conflict experiences of the countries are also pictured in the graph. Countries with no conflicts over the 1991–2005 period are marked with filled circles. Countries that had no conflict 1946–1990 but a new conflict during the 1991–2005 period are marked with diamonds. Countries with pre-1990 conflicts recurring after 1990 are marked with a square. As expected from Table 2, it is clear from Figure 5 that countries with poor governance have had more conflict and conflict recurrence. No-conflict countries are concentrated in the right half of the figure, and particularly in the upper right corner. Countries such as Botswana, Costa Rica, and Sweden have good formal and informal governance and no conflict. The exceptions to the pattern of conflict and good governance are the conflicts with ETA, IRA, and Al-Qaida in Spain, UK, and the US, respectively.

The new conflicts (diamond markers) are primarily found in the upper left corner of Figure 5; in countries with very incomplete democratic institutions in 1990, but typically good informal governance. Examples are Burundi, Cote d’Ivoire, and Mexico.

Conflict recurrences after 1990 (squared markers) are concentrated in the lower half of the figure, i.e. in countries with poor informal governance relative to their formal governance. Examples are Sudan, Ethiopia, and Haiti among the non-democracies, and Turkey and the Philippines among the
more formally democratic systems. Most exceptions to this pattern of poor governance and conflict are countries with fairly robust formal institutions, such as Bolivia or Bulgaria – these, after all, are well-governed overall since their formal institutions are democratic. One other exception is Syria, which later turned out to be less exceptional.

Table 3 shows the results of estimating a model including both the formal institutions index, the informal institutions index, as well as their interaction terms with the ‘peace years’ variable. In columns 1 and 2, only the formal institutions index variables are included. In columns 2–4, we replace IMR with GDP per capita as indicator of development.\textsuperscript{14} The results are in line with those found in Table 2 and depicted in Figure 3, with a significant and negative interaction term. In column 3, the formal institutions variables are replaced by the informal (residual) index. The interaction term with peace years remains negative, but is not significant, and the log likelihood of the model is lower than in column 2.

Table 3: Conflict relapse and formal and informal institutions of governance, internal conflict, 1972–2005

|                  | Conflicts, t-1 | War, t-1 | ln(Peace years) | Formal instr. index | Formal instr · peace years | Informal instr · peace years | ln infant mortality, t-1 | Neighbor conflict, t-1 | Ethnic dominance | Population growth | GDP per capita, t-1 | Intercept | aic | ll | N |
|------------------|----------------|----------|-----------------|--------------------|---------------------------|-----------------------------|--------------------------|----------------------|---------------------|------------------|------------------|------------------|----------|-----|-----|-----|
| (1) Formal only, IMR | 3.128***       | 4.412*** | -0.352***       | 1.015***           | -0.453***                 | -0.425                      | 0.320***                 | 0.382***             | 0.191               | 0.194            | -0.174           | -7.174***       | 2453.3   | 2472.7 | 6742 |
| (2) Formal only, GDP/cap | 3.070***       | 4.369*** | -0.389***       | 0.616***           | -0.452**                  | -0.477                      | 0.309***                 | 0.372***             | 0.113               | 0.410            | 0.0665***       | -4.129***       | 2465.6   | 2472.7 | 6698 |
| (3) Informal only, GDP/cap | 3.128***       | 4.392*** | -0.369*         | (0.262)            | -0.425                    | (0.287)                     | 0.303***                 | 0.371***             | (0.115)            | (0.270)         | (0.0022)        | -4.091***       | 2472.7   | 2462.9 | 6698 |
| (4) Formal and informal, GDP/cap | 3.108***       | 4.408*** | -0.140          | (0.264)            | -0.472***                 | (0.287)                     | 0.299***                 | 0.301***             | (0.115)            | (0.447)         | (0.0741)        | -4.449***       | 2462.9   | 2462.9 | 6698 |

Standard errors in parentheses
\* p < 0.05, \** p < 0.01, \*** p < 0.001

In column 4, we include all four terms to assess the relative importance of formal and informal terms. Only the interaction between formal institutions and peace years is significant, but the log likelihood of the model is considerably higher than for the two preceding models, and the AIC is lower.

Figure 6 indicates how the results of model 4 should be interpreted. The left panel shows the median predicted probability of conflict just after conflict across 1,000 simulations, assuming typical

\textsuperscript{14}The gross domestic product per capita variable is calculated based on data from Maddison (2007), World Bank (2011) and Gleditsch (2002), measured in international Geary-Khamis dollars (Int$), and log-transformed.
values for control variables. The predicted risk is highest in the upper left corner – in countries with good formal institutions but poor informal institutions (e.g., Indonesia or Lebanon), and decreasing as the quality of the informal institutions improve.

The right panel shows the predicted probability 10 years after conflict. At this point, the risk is highest in countries that score low on both indices (as in Myanmar and Sudan), and decrease with improvement along both governance dimensions.

These predictions come with considerable uncertainty. Below the plots, we report the predicted probability of conflict with confidence intervals for countries with various combinations of values for the formal and informal institution indices. Just after the conflict, the median probability of conflict (recurrence) for a country with scores of 0.20 for both indices is 0.098. The 80% confidence interval for this prediction is (0.072, 0.130). The estimated uncertainty is large, as indicated in Table 2 and Figures 3–4. It is fairly clear, however, that countries with non-democratic institutions but excellent informal governance has lower immediate risk of recurrence than states with democratic institutions but poor informal governance.

10 years after, however, it is clear that countries with good governance has a lower risk of conflict than those with poor governance. The reduction in risk is strongest for countries with good governance along both dimensions, but our results indicate that informal governance is very important for reduction of conflict levels.

15We set control variable to typical values – log GDP per capita to 8.02 or Int$ 3040, log population to 8.87 or 7.1 million, population growth to 1.9%, ethnic dominance to 0.50, and other variables to zero in our Clarify simulations.
4.3 Institutions vs. average income

An inspection of the country names in Figure 5 clearly shows that countries that score high on both the governance and the formal institutions index are relatively rich countries (e.g., Sweden, Switzerland, Ireland). Most countries with low scores for the two indicators are poor (Sudan, Angola, and Bangladesh). We demonstrated in Table 2 that good governance reduces the risk of conflict controlling for poverty (as measured by infant mortality rates). To look more closely into how wealth and governance interrelate we have defined a ‘surplus governance’ index as the residual from regressing our combined governance index on log GDP per capita.

Figure 7 plots these ‘surplus governance’ residuals against GDP per capita for the year 1990. Some countries are considerably better governed than expected from their average income levels. That India, Botswana, and New Zealand are relatively well-governed is well known. In addition, Malawi, Mongolia, and Costa Rica have surprisingly high values for our governance index. Sudan, Peru, and Serbia, on the other hand, turned out as relatively poorly governed in 1990. A set of heavily oil-dependent countries (e.g., Qatar, Saudi Arabia, UAE) also stand out as poorly governed relative to their average incomes.

Figure 7: ‘Surplus governance’ by average income, 1990. ‘Surplus governance’ is defined as the residual of regressing governance on log GDP per capita, normalized to range from 0 to 1.

As is well known from previous studies, Figure 7 shows that most conflict (diamonds) and conflict recurrence countries (squares) have low average incomes. Spain, the UK and the US are the main exceptions. Although patterns are less clear than in Figure 5, there is a tendency for conflicts to recur more frequently in low-income countries that had relatively poor governance for their income.
levels in 1990. Examples are DR Congo, Sudan, and Guatemala. Syria is again the most evident exception. New conflicts, again, seem to occur more frequently in relatively well-governed but poor countries.

To some extent the apparent poor governance of these countries is due to lack of formal democratic institutions. In Figure 8, we have plotted the ‘informal governance’ index defined above against average income. Seen from this perspective, oil exporters such as Oman, Saudi Arabia, and the United Arab Emirates appear as well governed non-democracies, whereas fairly democratic countries such as Venezuela, Lebanon, and Greece have poor informal governance relative to their income levels. As before, there is a tendency for non-conflict countries to be in the upper, well-governed half of the figure.

Figure 8: ‘Informal governance’ by average income, 1990. ‘Informal governance’ is defined as the residual of regressing governance on our formal democratic institutions.

Given this correlation, to what extent does governance explain the risk of conflict recurrence beyond what can be attributed to a country’s average income level? Table 4 reports results from models including our ‘surplus governance’ indicator. The model in column 1 includes only GDP per capita and its interaction with ‘peace years’. These variables are not significant on their own. This finding may be less controversial than it seems, since our model is a model of conflict incidence, controlling for whether the country was at conflict at $t-1$. Given the conflict history (which ultimately may be due to the country’s initial level of socio-economic development), average income adds little explanatory power.

The model in column 2 includes the ‘surplus governance’ indicators. As found for the other governance indicators, ‘surplus governance’ has a strong connection with the risk of conflict recurrence.
Table 4: Governance, GDP per capita, and conflict relapse, internal conflict, 1972–2005

<table>
<thead>
<tr>
<th></th>
<th>(1) GDPcap only</th>
<th>(2) GDPcap and surplus gov.</th>
<th>(3) GDPcap, surplus gov. and formal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict, t-1</td>
<td>3.090***</td>
<td>3.110***</td>
<td>3.102***</td>
</tr>
<tr>
<td>(0.159)</td>
<td>(0.160)</td>
<td>(0.161)</td>
<td></td>
</tr>
<tr>
<td>War, t-1</td>
<td>4.372***</td>
<td>4.406***</td>
<td>4.368***</td>
</tr>
<tr>
<td>(0.261)</td>
<td>(0.264)</td>
<td>(0.267)</td>
<td></td>
</tr>
<tr>
<td>ln(Peace years)</td>
<td>0.565</td>
<td>1.019</td>
<td>0.574</td>
</tr>
<tr>
<td>(0.319)</td>
<td>(0.406)</td>
<td>(0.650)</td>
<td></td>
</tr>
<tr>
<td>ln(GDP per capita), t-1</td>
<td>0.0447</td>
<td>0.0491</td>
<td>-0.117</td>
</tr>
<tr>
<td>(0.0824)</td>
<td>(0.0849)</td>
<td>(0.123)</td>
<td></td>
</tr>
<tr>
<td>GDP per capita · peace years</td>
<td>-0.144***</td>
<td>-0.154***</td>
<td>-0.108</td>
</tr>
<tr>
<td>(0.0403)</td>
<td>(0.0420)</td>
<td>(0.0594)</td>
<td></td>
</tr>
<tr>
<td>SGI · peace years</td>
<td>-0.621</td>
<td>-0.277</td>
<td></td>
</tr>
<tr>
<td>(0.320)</td>
<td>(0.467)</td>
<td>(0.224)</td>
<td></td>
</tr>
<tr>
<td>Log population</td>
<td>0.306***</td>
<td>0.302***</td>
<td>0.296***</td>
</tr>
<tr>
<td>(0.0386)</td>
<td>(0.0386)</td>
<td>(0.0388)</td>
<td></td>
</tr>
<tr>
<td>Neighbor conflict, t-1</td>
<td>0.369**</td>
<td>0.359**</td>
<td>0.354**</td>
</tr>
<tr>
<td>(0.134)</td>
<td>(0.135)</td>
<td>(0.136)</td>
<td></td>
</tr>
<tr>
<td>Ethnic dominance</td>
<td>0.0857</td>
<td>0.0874</td>
<td>0.0752</td>
</tr>
<tr>
<td>(0.117)</td>
<td>(0.117)</td>
<td>(0.117)</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-5.319***</td>
<td>-5.567***</td>
<td>-3.849**</td>
</tr>
<tr>
<td>(0.712)</td>
<td>(0.857)</td>
<td>(1.259)</td>
<td></td>
</tr>
<tr>
<td>aic</td>
<td>2390.2</td>
<td>2389.7</td>
<td>2390.0</td>
</tr>
<tr>
<td>ll</td>
<td>-1186.1</td>
<td>-1183.8</td>
<td>-1182.0</td>
</tr>
<tr>
<td>N</td>
<td>6539</td>
<td>6539</td>
<td>6539</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

– the estimates are very similar to those depicted in Figure 4 based on model 8, Table 2.

Figure 7 helps interpreting the results from the model in column 2. Immediately after conflict (the left panel), the estimated risk of renewed conflict is about 0.10 annually for all types of countries: neither the GDP per capita nor ‘surplus governance’ are able to distinguish clearly between high-and low-probability countries. 10 years after, however, both surplus governance and average income has made a big difference. Poor countries with poor governance have rarely decreased their expected risk of conflict recurrence, whereas countries that are either well governed for their income levels or have high average incomes have reduced their risks to about a quarter of the initial level. The lowest estimated risk is, unsurprisingly, in countries with high income and good governance.

The model in column 3 adds formal institutions to this setup. The AIC of this model is somewhat higher, but the estimates are not easy to interpret. The estimate for the formal institutions index is positive – given the immediate conflict history, the risk of conflict recurrence is high in democratic countries. The detrimental effect of formal institutions is offset by the informal institutions, however. In other words, to end a conflict, a democratic country must be better governed than expected from their income levels. The interaction term between formal institutions and peace history is negative and insignificant, however, indicating that democracies are equally able to remain at peace given their ‘surplus governance’ levels. Figure 9 plots the predicted probabilities of conflict based on model 2, Table 4. Just after conflict termination, the risk of recurrence seems to be highest in high-income, well-governed countries, but differences are not statistically significant. 10 years later, the risk of recurrence is clearly lowest in countries that are both well to do and relatively well governed. The risk of recurrence is about the same in relatively poorly governed rich countries as in relatively well governed poor countries, and both of these have a lower risk of recurrence than countries that are
Figure 9: Predicted probability of conflict by extent of GDP per capita and ‘surplus’ governance, just after conflict (left panel) and 10 years after conflict (right panel). Uncertainty estimates for selected points reported below.

Table 5: Goodness of Fit and Predictive Power for Main Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Obs</th>
<th>ROC AUC</th>
<th>Std. Err.</th>
<th>95% Conf. Interval</th>
<th>Log. Like</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal only</td>
<td>6493</td>
<td>0.642</td>
<td>0.013</td>
<td>0.615</td>
<td>0.670</td>
</tr>
<tr>
<td>Formal only</td>
<td>6493</td>
<td>0.645</td>
<td>0.013</td>
<td>0.620</td>
<td>0.670</td>
</tr>
<tr>
<td>Formal and informal</td>
<td>6493</td>
<td>0.647</td>
<td>0.013</td>
<td>0.622</td>
<td>0.673</td>
</tr>
<tr>
<td>GDPcap only</td>
<td>6493</td>
<td>0.650</td>
<td>0.013</td>
<td>0.626</td>
<td>0.676</td>
</tr>
<tr>
<td>GDPcap and surplus gov</td>
<td>6493</td>
<td>0.653</td>
<td>0.012</td>
<td>0.629</td>
<td>0.678</td>
</tr>
<tr>
<td>GDPcap, surplus gov and formal</td>
<td>6493</td>
<td>0.651</td>
<td>0.012</td>
<td>0.627</td>
<td>0.675</td>
</tr>
</tbody>
</table>

Can the estimations shed any light on the relative importance of informal institutions, formal institutions, GDP per capita and surplus governance in explaining conflict onset and recurrence? To answer that question we evaluate the ability of our model to differentiate between country-years in peace and in conflict. This is done by comparing the in-sample predictive power of the models. In-sample predictive power is evaluated using Receiver Operator Characteristics (ROC) curves. A model that predicts no better than chance has the value 0.5. ROC curves are discussed in detail by Hosmer and Lemeshow (2000), and used as a method for evaluating theories on civil war by Ward, Greenhill and Bakke (2010).

Table 5 compares goodness of fit, in terms of log likelihood, and the within-estimation-sample ability to predict conflict onset/recurrence, for six models from Table 4 and Table 3.\textsuperscript{16} For the purpose of testing the strength of the different models, we re-estimate them on the same subset of data, and log likelihood and ROC AUC values are therefore directly comparable across the models. In terms

\textsuperscript{16}We omit the first model in Table 3, and are left with six models.
of goodness of fit, measured by the log likelihood in the last column of Table 5, the best model is the most extensive one that includes GDP per capita, surplus governance and formal governance. The model that only includes informal institutions, has the lowest log likelihood. In terms of predictive power, the model with GDP per capita, surplus governance and formal institutions has the highest AUC. The least fitting model by this measure is the model than only includes formal institutions. The model that only includes GDP per capita has a better predictive ability than any of the models which exclude GDP per capita, implying that GDP per capita is among the most important predictors.

### 4.4 Endogenity

It is not obvious that conflict and governance are exogenous to each other. Armed conflict often leads governments to introduce martial law and limit political rights, the opposition sometimes to boycott elections, and all parties to increase violence connected to elections. The poor governance of Sudan and Angola in 1990 might very well be due to their past conflict history.

<table>
<thead>
<tr>
<th>Governance Index</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance t−20</td>
<td>0.358***</td>
</tr>
<tr>
<td>Governance t−20⋅peace years</td>
<td>0.0170**</td>
</tr>
<tr>
<td>Democratic wave</td>
<td>0.0268*</td>
</tr>
<tr>
<td>Conflict, t-1</td>
<td>-0.00454</td>
</tr>
<tr>
<td>War, t-1</td>
<td>-0.0517***</td>
</tr>
<tr>
<td>ln(Peace years)</td>
<td>0.00370</td>
</tr>
<tr>
<td>Log infant mortality, t-1</td>
<td>-0.0732***</td>
</tr>
<tr>
<td>Neighbor conflict, t-1</td>
<td>-0.0110***</td>
</tr>
<tr>
<td>Ethnic dominance</td>
<td>-0.00308</td>
</tr>
<tr>
<td>Log population</td>
<td>0.00100</td>
</tr>
<tr>
<td>Population growth</td>
<td>0.00553</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.577***</td>
</tr>
</tbody>
</table>

Standard errors in parentheses: 
* p < 0.05, ** p < 0.01, *** p < 0.001

If the variables are endogenous, the estimations above violate core assumptions of the regression
model and will produce biased results. This bias may be very strong, potentially reversing the sign of the coefficients. To test for endogeneity, we estimate an instrumental-variable model based on model 8 in Table 2. The results are shown in Table 6. The top half of the table gives the results from the first stage of the instrumental variable regression, while the bottom reports those of the second stage.

There are two key explanatory variables in the original model: the country’s governance level, and the governance level interacted with time in the current conflict status. Time, as mentioned above, is measured as the log of the count of years in the current conflict status up until \( t - 2 \). Since governance might be endogenous to conflict, we need an instrumental variable for governance. We use two instruments for this purpose: (1) a measure of democratic waves as proposed by Knutsen (2011), and (2) the 20-year lag of the formal institutions index (Helliwell 1994).

The first instrument takes advantage of the fact that a regime change is more likely to be into democracy during a democratic wave, and conversely more likely to be into non-democracy during a reverse wave. To measure this we employ a wave variable that reports the global net proportion of regime changes in either direction. This variable then is positive if more countries in a year became democratic, and negative if more countries became autocratic. Our instrument is the net proportion of changes toward democracy in the year that the current political system was established, as measured in Strand and Dahl (2012). For example, the system in effect in Romania in 2000 was established in 1989, a peak year of the third wave of democratization where the net proportion changing toward democracy was 0.25. Knutsen (2011) shows that a similar variable is highly correlated with whether a country’s current regime is a democracy, yet still not violating the exclusion criteria, meaning it is exogenous to the current regime type.

The second instrument uses the value for formal institutions index at a time 20 years before the time of observation as a proxy for current governance. Since we do not have data very far back in time for the full governance index, using the 20-year lag of this index is not feasible. The governance index and the formal institutions index are highly correlated \((r = 0.75)\) so using the 20-year lag of this index works well as a proxy for the overall governance index. Most conflicts last less than 20 years, so this instrument should be reasonably exogenous to current conflict. Figure 10 plots the original governance index against the instrumented variable. The instrumented governance level is the predicted governance level from the first stage of Table 6.

Since the dependent variable is dichotomous, we estimate an instrumental probit model. Such models are usually estimated using maximum-likelihood methods. However, our model includes two variables that need to be instrumented for: the ‘raw’ governance variable and the interaction term between governance level and time in current conflict status.\(^{17}\) The variables are functions of each other, but the algorithm still has to treat two variables as endogenous: governance and governance interacted with time in status. Models with more than one instrumented variable are difficult to estimate by means of maximum likelihood estimation (MLE). The solution is to use a two-step model as proposed by Newey (1987). This model is consistent, but less efficient than the MLE approach.

The results of the two-step instrumental variable regression is seen in Table 6. The substantive

\(^{17}\)The time in status part of the term does not need to be instrumented for.
effects are largely similar to the effects seen in Table 2. The size of the effects are somewhat different, but this is to be expected since the instrument is not a perfect rendition of the original variable (cf. Figure 10). The estimation shows that the instrument we use does not violate the exclusion criteria. It also shows that the estimated effect of governance instrumented is roughly the same as seen for the possibly endogenous variable in Table 2. In sum, we conclude that the endogeneity bias in the models shown in Table 2 is moderate, and prefer to relate to the first estimates given that they are more efficient.

5 Conclusion

This paper has investigated whether well-governed countries are better able to prevent armed conflict than poorly governed ones, with a particular focus on avoiding conflict recurrence. We have defined governance more broadly than in earlier studies, supplementing indices of ‘formal’ degree of democraticness with less formal dimensions of governance.

We have studied a set of indicators classified into seven aspects of governance: formal political institutions, political exclusion and repression, the rule of law, corruption, bureaucratic quality, military influence in politics, and economic policies, and operationalized these indexes by means of data from a wide range of available sources.

Our statistical models show that good governance is crucial to reducing the risk of conflict recurrence. Countries that have experienced conflict, have a higher risk of seeing renewed conflict. The risk of renewed conflict in countries with high quality governance, however, drops rapidly after the conflict has ended. In countries characterized by low quality governance, this process takes much longer.
At the same time, there are good reasons to believe that conflicts often erodes the quality of governance. To account for this potential endogeneity, we constructed an instrument for governance that is highly correlated with the observed governance indicator and yet clearly exogenous to conflict. We reach the same conclusions using the instrumented governance variable.

We have also studied the importance of *formal* political institutions (the extent to which countries are regarded as democratic or not) relative to *informal* institutions. The results from this analysis are not very conclusive. They indicate that countries need good institutions along both dimensions to minimize the risk of internal armed conflict, but that informal governance might be somewhat more important than formal institutions.

Moreover, we have shown that good formal and informal governance is a partial explanation of the conflict reducing effect of economic development. High-income countries are on average well governed. Still, a model that includes both GDP per capita and governance fits the data better than a model with only GDP per capita. We find a discernible difference in the risk of conflict recurrence between high-income countries that are well-governed and countries that have poor governance relative to their income levels.

Even though a combination of good formal and informal institutions is optimal, the analysis also shows that all our governance indicators are related to a decreased risk of conflict recurrence. We take this as indication that reform in the different sectors can be partial substitutes to each other. Any reform that improves governance may be conflict-reducing, be it to the formal political institutions, bureaucratic quality, or corruption.

Our analysis sheds light on the somewhat inconclusive results from earlier studies of the relationship between democracy and conflict, that find a heightened risk of conflict in semi-democracies (Hegre et al. 2001, Fearon and Laitin 2003). It is possible that some of the conflict-proneness of semi-democracies is due to their poor governance in a wider sense. Given that good governance as defined here is more frequent in middle- and high-income countries, our results are also in line with Hegre (2003), Collier and Rohner (2008) who find democracy to reduce the risk of conflict more strongly the higher is GDP per capita.
References


URL: http://www.freedomhouse.org/template.cfm?page=15


URL: http://go.worldbank.org/4EDBH32FC0


