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FRAGILITY AND CONFLICTS

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MOBILISING EUROPEAN RESEARCH
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ABSTRACT

In this paper, we will derive policy implications for the prevention of conflict from the main results of the most relevant empirical research on conflict. The first thing that we have done is to describe a framework for the study of conflict, which helps to classify the different dimensions of a conflict process, basically shocks and propagation mechanisms, in order to understand why some policies will have a long- or short-term effect, depending on whether they address the factors that act as shocks or as propagation mechanisms. We claim that, if we want to find measures to prevent conflict in the long-term, we need to look for policies that address the propagation mechanisms of conflicts, in other words, policies that make countries resilient to conflict in the presence of shocks. But, what are the most important propagation mechanisms of conflicts that should be targeted in order to reduce the probability of conflict? Most of the attention has focused on the role of poverty. However, the idea that poverty is the main determinant of conflict is based upon weak empirical grounds. Instead, it is institutions, in particular, law and order institutions, which seem to be the driving mechanism, and, thus, policies to prevent conflict should be changed in this direction. To tackle fragility, it is important to concentrate on the institutional design. When the system is affected by shocks, it reacts differently, depending on its resilience. Countries with good institutional frameworks (a high level of law and order) are resilient to shocks. Sub-Saharan African countries are usually countries with poor institutional frameworks.

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1 Introduction

Conflicts and fragility are intimately related, and, although not all fragile countries end up in civil war, their latent conflict is present and the risk of violence is, in many cases, simply there. All the indices of fragility are constructed with variables that are correlated among themselves, which makes it very difficult to analyse which are the main drivers of fragility. Some of these factors may be causes or consequences of other factors that are also included in the averages. To analyse the causes of fragility using these indices is an impossible task.

Many definitions of fragility concerning the security and violence dimension are based upon actual violence rather than on potential violence. This is why not all fragile countries are conflict countries. However, they are *potential* conflict countries. What we do know is that many fragile countries have a high risk of violence. A consensus exists that conflict is the ultimate manifestation of fragility, and, thus, the analysis of the main causes of fragility is closely-linked with the analysis of the main causes of conflict.

The UNU Research Brief 2, 2008 makes this point very clear:

“State fragility has serious repercussions for national and international security and prosperity. Many fragile states are ravaged by conflict and have become “failed” states. Some have only recently emerged from devastating civil wars and remain fragile. Others have histories of military *coups* or have been through serious political crises. Others still are small states with limited resources endowments and high debts, and are subject to natural hazards that render them extremely unstable.” (UNU Research Brief, 2008: 1)

Trying to disentangle which of the different dimensions (economic, social, and political variables...*etc.*) that compose the indices of fragility really capture the potential for instability can only be done by analysing the causes of instability and conflict.

Conflict can be understood as a process that needs three fundamental elements to exist and to propagate. All conflicts have an origin, usually produced by an unexpected event. Although many times we know that a country runs the risk of entering into a state of conflict, it is very difficult to predict the precise moment in time in which the latent conflict becomes a manifestation of violence. In fact, usually, the beginning of a violent conflict is triggered by an unexpected event or shock.

A change occurs which makes conflict break out, and this may explain why conflict starts today, and also why there was no violent conflict yesterday. The discovery of natural resources, the assassination of a president, *etc.*, are examples of unexpected shocks that have been connected with the beginning of some violent conflicts. However, in order for conflicts to endure, we also need some elements of propagation. The second element is that all conflicts have propagation mechanisms which make conflicts continue, which, in the context of conflict, may be some social cleavages (ethnic divisions), or political repression, *etc.* And, finally, all conflicts need financing.

The problem we have in the analysis of conflict is that all potentially conflictive countries receive many unexpected shocks; however, not all of them enter into conflict. The countries that do not have potential conflict, in other words, those which do not have the propagation mechanisms for conflict, are the ones that are safe. We therefore believe that a very useful and reasonable definition for fragile countries is the following: fragile countries are countries which have these propagation mechanisms, and which, in the presence of any unexpected shock, are at a high risk of entering into a violent conflict process.

Therefore, for practical reasons, to study the main drivers of fragility, we can create an analogy with the analysis of macro-economic cycles. Researchers in this field distinguish between shocks and their propagation mechanisms as being two different and independently interesting issues. For instance, a cycle could be caused by a productivity

shock that is propagated through many alternative mechanisms. In the case of fragility, the situation is similar. For instance, in many situations of fragility, civil wars are started by shocks which, given a particular propagation mechanism, trigger fully-fledged conflicts.

This is why, in order to identify the main causes of fragility, we need to identify which are the propagation mechanisms that make countries enter into violence in the presence of shocks. The literature on the incidence of civil war does precisely this. Therefore, analysis of the causes of the incidence of conflict is critical to understand what the main drivers of fragility are.

If we understand civil war as a process which is started by a shock, and which propagates into a fully-fledged conflict by different mechanisms, we need to separate very clearly which factors act as propagation mechanisms, and which factors act as shocks, although, in some cases, the identification of shocks and propagation mechanism may be complicated. Since shocks are, by definition, very difficult to predict, policies to prevent conflict should address propagation mechanisms. However, it will still be very difficult to protect countries from all potential unexpected shocks. We will address these policy implications at the end.

Fragility is thus connected to conflict, and it is therefore unsurprising that the so-called Copenhagen Consensus identified conflict as one of the ten key priorities for development community. The panel of experts who gathered in Copenhagen in May 2004 suggested that:

“measures to reduce the number, duration or severity of civil war would stand very high in the ranking of priorities for development, if they could be expected with any confidence to succeed.”

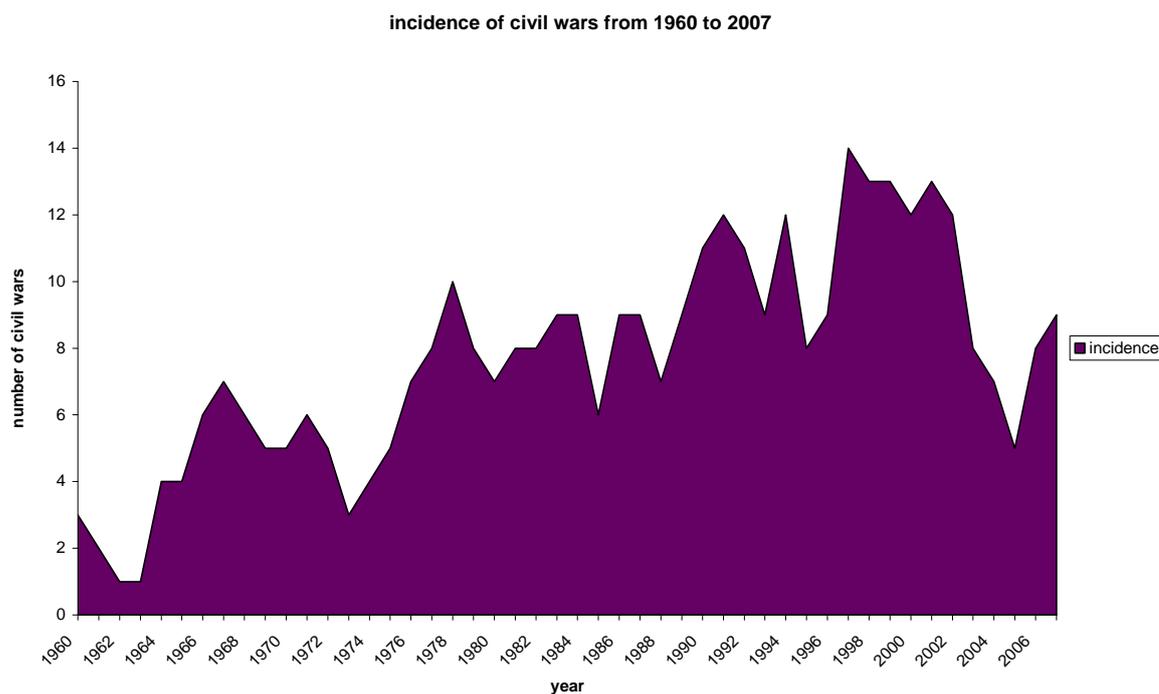
Needless to say, the chances of success of any effort to reduce the severity of armed conflicts or to prevent their outbreak impinge upon a proper understanding of their root causes and the triggering factors.

In this paper, we will derive policy implications for the prevention of conflict from the main results of the most relevant empirical research on conflict. The first thing that we have done so far has been to describe a framework for the study of conflict that helps to classify the different dimensions of a conflict process, basically shocks and propagation mechanism, in order to understand why some policies will have a long- or short-term effect, depending on whether they address factors that act as shocks or as propagation mechanisms. In the next section, we will briefly describe the conflict trends in Africa, to see whether conflict is a persistent phenomena or not, and therefore to check whether propagation mechanism played an important role in explaining these conflicts or not. In Section 3, we will examine the main propagation mechanisms, and we will challenge some empirically weak, or even unsupported, relationships and recommendations on this topic. The idea that poverty is the main cause of conflict is prevalent in all international policies to address conflict. However, we will show that, in fact, this is not the case. Institutions, in particular, law and order institutions, instead, seem to be the driving mechanism, and therefore policies to prevent conflict should be changed in this direction. To tackle fragility, it is important to concentrate on the institutional design. When the system is affected by shocks, it reacts differently, depending on its resilience. Countries with a good institutional framework (a high level of law and order) are resilient to shocks. Sub-Saharan African countries are usually countries with poor institutional frameworks. In Section 4, we will show some examples on how specific exogenous shocks, in particular, in Sub-Saharan African countries, may act as the catalyst which sparks the conflict, bearing in mind that these exogenous shocks only matter in poor institutional environments. In Section 5, we include the conclusion and we propose, based upon the previous results, a list of potential policy implications for the prevention of conflict.

The results of this paper are derived from dozens of empirical studies. The economic literature on conflict has considered different strategies to deal with the empirical analysis of civil wars, depending on data availability. Each of these strategies has its advantages and disadvantages. In principle, there is yearly information on the existence or absence of conflict and sets of explanatory variables for many countries. The old studies on civil wars either collapse these data into a cross-section, or use the panel structure without using techniques that can deal with the correlation of unobservable effects and random perturbations (like, for instance, the so-called fixed effects estimator). The limitations of cross-section studies are well-known. The main disadvantage, as always with cross-sectional studies, is the likely correlation between country-specific effects and the random perturbation of the regressions. Recent studies (for instance, Besley and Persson 2009, or Djankov and Reynal-Querol 2009) have used fixed effects estimators to deal with the problems of cross-section analysis. There are also many case studies of specific civil wars (Aranson and Zartman 2005, or Collier and Sambanis 2005) and, more recently, micro studies (Vargas and Dube 2008, or Angrist and Krueger 2007).

2 Conflict Trends

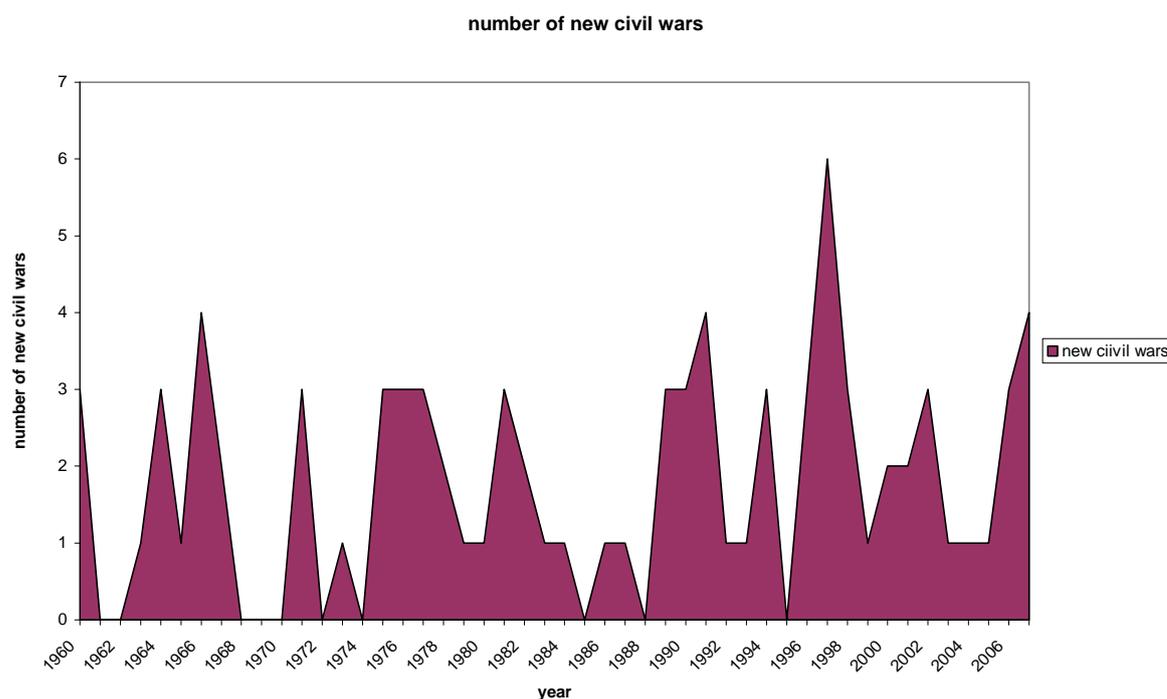
In order to study conflict trends, we will use the definition of “civil war” from the Armed Conflict Dataset, a joint project between the Department of Peace and Conflict Studies, Uppsala University and the Centre for the Study of Civil War at the International Peace Research Institute, Oslo. An armed conflict is defined as a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths. In this paper, we are going to use the words *conflict*, *armed conflict* and *civil war* to refer to the different types of violent situations. Using this definition, in 1946, only 6 civil wars were active in the world, while in 1997, 25 civil wars were active in the world. The peak, in number of active conflicts, was reached in 1992, with 37 active conflicts. Although, during the middle and the end of 1990s, there was a decreasing trend in the absolute number of active civil wars, during the last years, this trend has started to increase once more. Sub-Saharan African countries have, on average, hosted more than one-third of all civil wars, which indicates that SSA probably has more fragile countries than other regions in the world, and this is, therefore, an important reason why we need to pay special attention to fragile countries in Sub-Saharan African region. Figure 1 shows the conflict trend in Sub-Saharan African countries, in which we calculate the number of total active conflicts per year. This general trend is very similar to that followed by all world conflicts.

Figure 1: Incidence of civil wars from 1960 to 2007

Source: Armed Conflict Database

However, from this trend, we do not know whether the number of civil wars in SSA increases because there are many new outbreaks of civil war, or because previous civil wars do not end and last for many years. Thus, we cannot infer whether the trend comes from the high persistence of previous conflicts or from new outbreaks. Every year, we may have conflicts that started in the previous year, we have new outbreaks, and fortunately, we also have conflicts that end. The number of new outbreaks of conflict every year can be seen in Figure 2. The trend of incidence and outbreaks is clearly different. The trend of outbreaks is flatter than the trend of incidence, which suggests that persistence plays a crucial role in explaining the overall conflict trend, although the new outbreaks also achieve a peak at the beginning of the 1990s.

Figure 2: Number of new civil wars



Source: Armed Conflict Database

The new outbreaks of civil war, commonly referred in the literature as the onset of civil wars, indicate the time at which the conflict starts or breaks out. Over time, the importance of previous conflicts *versus* new outbreaks is increasing in SSA, which indicates that the persistence of conflicts is a crucial phenomenon for understanding the trend of the active civil wars during the period analysed. A standard way of analysing the persistence of a process is to calculate the probabilities of transition between different states, as presented in Table 1. We define four potential states. First of all, we have countries with no conflict at year t , but also no conflict during the previous year, at $t-1$ (Quadrant bottom right). Second, we have countries with no conflict at t , but with conflict at $t-1$ (Quadrant bottom left). In this case, the country had experienced the end of a civil war. Third, we have countries with conflict at period t , but with no conflict the previous year at $t-1$ (Quadrant top right). In this case, the country experienced an outbreak of civil war. Finally, we have countries that have conflict at year t , and were also in conflict in the previous year, $t-1$. (Quadrant top left).

In this table, for all the countries that had at least one year of conflict during the period 1960-2007, we have calculated the percentage of the country-year observations that have been recorded in each of the four states that we defined above. In other words, this table presents the distribution of country-year observations for different possible states: for example, 14.36% of the country-year observations were in conflict one year and also the previous year. 4.17% were in conflict at t but not at $t-1$ (capturing new conflicts). And 3.87% had no conflict at t but did at $t-1$. And in 77.6% of cases, the country was at peace during period t and also the previous year.

Table 1

	Conflict at period $t-1$	Non-conflict at period $t-1$
Conflict at t	14.36%	4.17%
Non-conflict at t	3.87%	77.6%

Source: Armed Conflict Database

An alternative way to analyse persistence is to concentrate on the cases where conflicts exist at time **t-1**. This is presented in Table 2. The numbers indicate that, among all country-year observations between 1960 and 2007, 78.8% of the years in which countries were at conflict at time **t-1**, they were also in conflict the following year, and only 21.22% were not. These percentages undoubtedly give a clear indicator of the importance of the persistence of conflict.

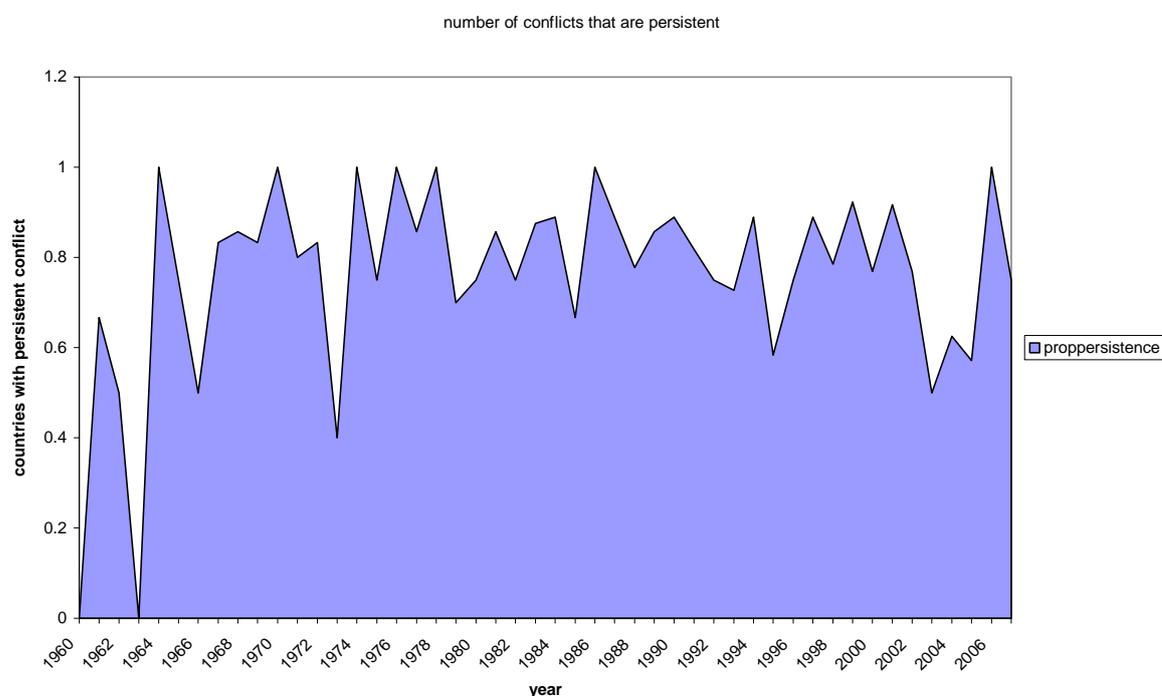
Table 2

	Conflict at period t-1
Conflict at t	78.8%
Non-conflict at t	21.22%

Source: Armed Conflict Database

The figure of 78.8% is an average for all periods. However, it would be interesting to see whether persistence is the same for all periods. We therefore calculate, for each year, the percentage of conflicts at **t** that were also active at **t+1** (Figure 3). Again, the numbers confirm a high persistence of conflicts.

Figure 3: Number of Conflicts that are persistent



Source: Armed Conflict Database

These descriptive statistics indicate that conflicts in Sub-Saharan African countries are quite persistent, and thus the study of the propagation mechanisms is very important. Although this seems very intuitive and reasonable, the literature to date has been somehow unclear on this issue. That is why we believe that introducing this slight formalisation to the study of the conflict process may help us a great deal to clarify and to define appropriate policies, as well as to understand why some of them may only have short-term effects. This is what we explore in the next sections.

3 Propagation Mechanisms of Civil Conflict

Propagation mechanisms are crucial to understand which countries are resilient in the presence of shocks. Poverty, bad institutions, ethnic differences, and abundance of natural resources, among others, could be important propagation mechanisms. However, as Blattman and Miguel (2009:31) explain, “in many cases, it is still not clear which of the above correlates actually causes war and which are merely symptoms of deeper problems”.

3.1 Poverty and civil war

Even though there is little solid-grounded agreement around this key issue, income differences have received considerable attention. The report on *Investing in Development - Practical Plans to Achieve the Millennium Development Goals* published by the UN Millennium Project in 2005 argues that:

“poor and hungry societies are much more likely than high-income societies to fall into conflict over scarce vital resources, such as watering holes and arable land [...] poverty increases the risks of conflict through multiple paths.”

This understanding of the root causes of conflicts implies that “investing in development is especially important to reduce the probability of conflict”.

These prescriptions have been basically driven by two seminal and influential academic papers, namely, those of Collier and Hoeffler (2004), and Fearon and Laitin (2003). Collier and Hoeffler (2004) find that the political and social variables that are most clearly related to grievances have little explanatory power with regard to the outbreak of a conflict. Conversely, economic variables, which could proxy some grievances, but are more closely-related to the viability of rebellion, have considerable explanatory power. Fearon and Laitin (2003) also find that lower *per capita* gross domestic product has a significant and negative effect on the onset of a civil war; they argue that it is the factors that explain which countries have been at the risk of the outbreak of a civil war that are the conditions that favour insurgency. These include the incidence of poverty, political instability, rough terrain and a large population; income *per capita* is their proxy for the “state’s overall financial, administrative, police and military capabilities”; once a government is weak, rebels can reasonably expect a higher probability of success.

Although there is a strong correlation between poverty and civil war, the direction of causality is not clear. Though seemingly plausible and intuitive, the argument that poverty is the main cause of instability is based upon weak empirical grounds, because of the possibility that conflict also causes bad economic conditions.

One very descriptive and intuitive piece of evidence to show the relationship between poverty and civil wars is to see what happens when we exclude the OECD countries. Basically, all contemporaneous civil wars are concentrated in non-OECD countries.¹ However, not all non-OECD countries suffer from civil wars. Taking a sample of 211 countries, which is made up of 28 OECD countries and 183 non-OECD countries, only half of them suffered from a civil conflict or civil war between 1960 and 2007.

Thus, it is reasonable to analyse the relationship between poverty and civil war by looking only at the sample of non-OECD countries. If the results on the relationship between poverty and civil wars are just driven by the inclusion of OECD countries, then the policy implication may be very different. If we wish to ascertain good policies to prevent conflict, these policies should also explain the different probabilities of conflict among

¹ With the exception of Spain and UK, due to terrorism. And recently the US due to the 11-S, which some sources codify it as a civil war.

the 183 non-OECD countries. The question that we are trying to answer is why countries like Botswana did well, but countries like Sierra Leone did not.

Table 3 ranks countries according to their level of *per capita* income in 1960. The first column lists the fifteen poorest non-OECD countries in 1960. The second column indicates whether they suffered from conflict at some point during this period or not. Eleven of the fifteen poorest non-OECD countries in 1960 suffered a civil war during the period 1960-2007. The third column ranks the fifteen richest non-OECD countries in 1960. The fourth column indicates whether they suffered from conflict during the period 1960-2007. Surprisingly, we find similar experiences of civil war. Among the fifteen richest in 1960, nine suffer from some kind of civil war between 1960 and 2007.

Table 3: Ranking of the 15 poorest and the 15 richest non-OECD countries in 1960

15 poorest	Conflict	15 richest	Conflict
Ethiopia	Conflict	Bahamas, The	
Lesotho	Conflict	Venezuela	Conflict
Myanmar	Conflict	Bermuda	
Tanzania		Trinidad & Tobago	Conflict
Togo	Conflict	Argentina	Conflict
Malawi		Uruguay	Conflict
Romania	Conflict	Saudi Arabia	Conflict
Burkina Faso	Conflict	Israel	Conflict
Cape Verde		Iraq	Conflict
Congo, Dem. Rep.	Conflict	Puerto Rico	
Guinea-Bissau	Conflict	Iran	Conflict
Niger	Conflict	Chile	Conflict
Mali	Conflict	Mauritius	
Botswana		Barbados	
Rwanda	Conflict	Hong-Kong	

Source: Armed Conflict Database

This table provides indicative preliminary evidence that the correlation between poverty and civil war found in many studies may be just spurious, and that maybe some other factors favour the conditions for economic development which, at the same time, favour the conditions for peaceful negotiations, but these are missing in the traditional specification. If this is the case, then OECD countries are peaceful not because they are rich, but because, historically, they suffer from some circumstances which favour negotiation settlements and economic development at the same time. If we restrict this analysis to Sub-Saharan African countries, we find exactly the same results.

Djankov and Reynal-Querol (2009) use panel data and the fixed effects estimator and find that the correlation between poverty and civil war to be spurious. They find that other factors accounted for by historical phenomena jointly determine income evolution and conflict in the post-World War II era. In particular, the statistical association between poverty (as proxied by income *per capita*) and civil wars disappears once they include country variables which are invariant over time (in particular country fixed effects). This means that the relationship between civil wars and poverty may be driven by the common determinants, some of which are often not included in the typical econometric specification (which is based upon a cross section). Thus, once we look at the within-country differences, the results indicate that poverty is not a cause of civil war, and that poor countries are not at higher risk of conflict. The fact that poor countries suffer more conflict than rich countries is simply a spurious correlation.

This does not mean that economic factors do not affect the probability of civil war. Shocks to the economy may act as a catalyst in fragile countries. The next section is devoted to the study of economic shocks and conflict. The evidence of previous papers shows that the level of poverty does not seem to be a propagation mechanism for conflict.

Inequality could potentially be another economic important propagation mechanism for conflict. Cross-country evidence on the relationship between inequality and conflict is weak due to the lack of reliable data on inequality measures, in particular, for fragile countries. Sambanis (2005), using case studies, promoted the idea that inequality could also be an important factor to explain civil war. Barron *et al.* (2004), using a unique dataset that mapped conflict across all 69,000 Indonesian village-neighbourhoods, examined the potential associations between conflict and poverty, inequality, shocks, ethnic and religious diversity, and community level associational and security arrangements. They found that:

“poverty by itself has very little correlation with conflict. Changes in economic conditions, on the other hand do. Unemployment is universally closely associated with higher conflict rates.” (Barron *et al.* 2004: 31).

They also found that there were:

“positive associations between local conflict and unemployment, inequality, natural disasters, change in source of incomes, and clustering of ethnic groups within villages.” (Barron *et al.* 2004: 1).

They suggested future areas of research on the role of inequality. Murshed *et al.* (2005) provided a study of the insurgency in Nepal, where inequality played a crucial role. Similar results, on the effect of increasing inequality, was found by Macours (2008), also using data from Nepal.

Stewart (2001) emphasised that we also need to pay attention to the role of horizontal inequalities, a topic which was also explored by Ostby (2005). Cramer (2003) discussed why the literature has paid little attention to inequality, in the light of the fact that it could be an important determinant of conflict. The first problem that he identified was that the empirical foundations of this relationship were weak, and, second, that there were “common problems in the way in which we define and analyse inequality as well as shortcomings in our ability to measure it.” (Cramer 2003: 1).

The main conclusion is that, contrary to what seems to be a very stable belief among policy-makers, poverty is not a main driver of conflict. This conclusion is obtained from results that look at within-country variations, and also from specific micro studies. Once researchers overcome the limitations of cross-section analysis, the results indicate that poor countries are not at a higher risk of suffering civil war than rich countries. This result is also supported in the sample of Sub-Saharan African countries. But if poverty is not the main propagation mechanism of conflict, then where should we look? And how can policy-makers address these other problems? Next sub-section will show that certain types of institutions play a crucial role in understanding the different risk of conflicts among Sub-Saharan African countries.

3.2 Institutions and conflict

There are very few studies that link economic development, institutions and civil wars. The existing measures of institutions only capture some dimensions of what we mean by the institutional development of countries. For example, some studies use the democracy variable, which captures constraints on the executive and political competition. Other studies work with measures that capture what researchers commonly refer to as the “quality of institutions” that capture the security of property rights, or the rule of law of the country.

The studies that use democracy variables, such as Hegre *et al.* (2001), Sambanis (2001), and Reynal-Querol (2002b), find that partly-democratic countries are more prone to civil war than full democracies and full autocracies. This means that democratic and authoritarian states have fewer civil wars, and that intermediate regimes are the most conflict-prone. This U-shape relationship between democracy and conflicts can be

interpreted with the idea that, in order to start a civil war, some level of freedom is necessary. Otherwise, people cannot organise themselves. Thus, it seems that freedom is not a sufficient condition to prevent civil wars, although it is necessary.

A recent study, Collier and Rhoner (2008), considers the interaction between institutions and economic factors, in which they find that the net effect of democracy is ambiguous, as, in rich countries, democracy makes countries safer, whereas below a certain income threshold, democracy increases the proneness to political violence.

Other studies explore the idea that the effect of economic determinants on conflict depends on the institutional environment. In this respect, Besley and Persson (2008) provide a theoretical and empirical framework for the study of the causes of conflict, where this inter-action plays an important role. They develop a theoretical model on the economic and institutional determinants of civil war, and use this model to interpret the evidence on the prevalence of civil conflict across countries, and its incidence within countries over time. The main empirical contribution of this paper is the approach to the study of the incidence of conflict, checking for unobserved causes behind the uneven incidence of civil war across countries and time by fixed country-effects and fixed year-effects. One of the main results is that country-specific price indices constructed for agricultural products, minerals and oil have considerable explanatory power in predicting the within-country variation of conflict. In addition, this seems to depend on the country's institutional framework.

Finally, some studies analyse the role of the democratic environment of neighbouring countries. Gleditsch (2007) analyses the neighbouring effect of democracy, and finds that countries in regions with more democracies are less likely to experience conflict.

Empirical studies that use institutional quality, rather than democracy variables, are extremely scarce, although the theoretical literature on this is quite extensive. The idea that strong institutions prevent conflict is present in the old theoretical literature of conflict: Haavelmo (1954), Grossman (1994, 1996), Skaperdas (1992, 1996), Garfinkel (1990), and Hirshleifer (1995), among others. Djankov and Reynal-Querol (2007) empirically investigated the idea of whether the quality of economic institutions has played a role in sustaining peace. In particular, they tested the hypothesis that, when governments cannot enforce the law and protect property rights, conflict emerges. The results indicate that a lack of secure property rights and law enforcement is an important cause of civil war.

As in the case of poverty, in Table 4, we rank the fifteen countries with the weakest law and order systems, and the fifteen countries with the strongest legal systems for the sample of non-OECD countries. The law and order index is the average of the law and order indicator from 1984 to 1999.² It measures the strength and impartiality of the legal system, and the popular observance of the law. The source for this variable is the International Country Risk Guide (ICRG). Surprisingly, and contrary to the case of *per capita* income, we observe different patterns between countries with good institutions and countries with bad institutions. In this case, thirteen of the fifteen countries with bad institutions experienced conflict between 1985 and 2007, and only two of the fifteen countries with good institutions suffered from conflict.

² The same results apply if we use the value of institutions for 1984. The reason for using averages is that since the quality of institutions is a very persistent variable over time, we have more observations considering the averages of the available observations over the period rather than just the value for 1984.

Table 4: Ranking of the 15 countries with the lowest quality of institutions and the 15 countries with the highest quality of institutions in 1984-99. Sample of Non-OECD countries

15 worst	Conflict 1985-2007	15 best	Conflict 1985-2007
Guinea-Bissau	Conflict	Singapore	
Congo, Dem. Rep.	Conflict	Moldova	Conflict
Colombia	Conflict	Slovenia	
Liberia	Conflict	Croatia	Conflict
Haiti	Conflict	Hong-Kong	
Iraq	Conflict	Cuba	
Suriname	Conflict	Taiwan	
Bolivia		Bulgaria	
Sri Lanka	Conflict	Namibia	
Guatemala	Conflict	Botswana	
Angola	Conflict	Brunei	
Bangladesh	Conflict	Bahrain	
El Salvador	Conflict	Saudi Arabia	
Peru	Conflict	Chile	
New Caledonia		Qatar	

Source: Armed Conflict Database

This table provides indicative evidence that, among the different variables that make up the indices of fragility, institutions seems to be an important driving factor. Countries with weak governments tend to fail (enter into a process of violence) more often than countries with strong institutions.

If we use the sample of Sub-Saharan African countries, we find similar results. This preliminary evidence seems to indicate that, contrary to poverty, differences in law enforcement can explain the different probabilities of civil war among Sub-Saharan African countries. Since the institutional framework changes very slowly, good institutions can act as an insulating mechanism, making the countries resilient to conflict even in the presence of external shocks. Botswana represents the typical example of a country with good institutions, not only among SSA, but also among all non-OECD countries, that avoids conflict in a pro-conflict environment.

3.3 Ethnic divisions and conflict

The role of ethnic diversity in conflict has also been very controversial. The conflict literature use measures of ethno-linguistic fractionalisation to analyse the effect of ethnic diversity on civil wars. Researchers directly took the measures that have been used in the literature of economic growth since many of the explanations among economists of the effect of ethnic fractionalisation on growth put emphasis on the conflict channel.

Many authors have stressed the importance of ethnic heterogeneity in the explanation of growth, investment, and the efficiency of government. Easterly and Levine (1997) found empirical evidence to support their claim that the very high level of ethnic diversity of countries in Africa explains much of their poor economic performance. Several authors have interpreted the finding of a negative relationship between ethnic diversity and growth as being a consequence of the high probability of conflict associated with a highly fractionalised society. For this reason, many papers use the index of ethno-linguistic fractionalisation (ELF) as the indicator of ethnic heterogeneity. The index of ethnic fractionalisation has a simple interpretation as the probability that two randomly-selected individuals from a given country will not belong to the same ethnic group. However, many authors have found that, even though ethnic fractionalisation seems to be a powerful explanatory variable for economic growth, it is not significant in the explanation of civil wars and/or other kinds of conflicts. These results have led many authors to disregard ethnicity as a source of conflict and civil wars. For example, Fearon and Laitin (2003) and Collier and Hoeffler (2004) found that neither ethnic fractionalisation nor re-

ligious fractionalisation have any statistically significant effect on the probability of civil wars.

However, ethnic fractionalisation may not be the appropriate measure of ethnic diversity. Many authors have already discussed different problems with the ELF measure. For example, Posner (2004) argued that ELF has important shortcomings related to the underlying ethnographic data from which the index is calculated, related to the way the measure is used, and finally related to the attempt to summarise ethnic diversity in one index. The last point is common to basically all studies of ethnic diversity.

Moreover, traditional models of conflict predict that the existence of two large groups generates more conflict than the existence of a large number of small groups. Esteban and Ray (1999), constructed a rent-seeking model of conflict, and they theoretically found that the measures of polarisation are related to conflict, rather than to measures of fractionalisation.

The relationship between social heterogeneity and social conflict is not obvious. Initially, one could think that the increase in diversity increases the likelihood of social conflicts. However, this does not have to be the case. In fact, many researchers agree that the increase in ethnic heterogeneity initially increases potential conflict, but, after a certain point, more diversity implies less potential conflict. Horowitz (1985), who is the seminal reference on the issue of ethnic groups in conflict, argues that the relationship between ethnic diversity and civil wars is not monotonic: there is less violence in highly homogeneous and highly heterogeneous societies, and more conflicts in societies in which a large ethnic minority faces an ethnic majority. If this is so, then an index of polarisation should capture the likelihood of conflict, or the intensity of potential conflict, better than an index of fractionalisation.

Montalvo and Reynal-Querol (2005) argued that one possible reason for the lack of explanatory power of ethnic heterogeneity on the probability of armed conflicts and civil wars was the measure of heterogeneity. In empirical applications, researchers should consider a measure of ethnic polarisation, the concept used in most of the theoretical arguments, instead of an index of ethnic fractionalisation. The original purpose of the polarisation index was to capture how far the distribution of the ethnic groups is from the $(1/2, 0, 0, \dots, 0, 1/2)$ distribution (bipolar), which represents the highest level of polarisation. This type of reasoning is frequently present in the literature on conflict. While the polarisation index has a maximum at two groups, the fractionalisation index grows with the number of groups.

Collier and Hoeffler (1998) note that the “co-ordination costs would be at their lowest when the population is polarised between an ethnic group identified with the government and a second, similarly-sized ethnic group, identified with the rebels”. Collier (2001) also emphasised that the relationship between ethnic diversity and the risk of violent conflicts is not monotonic. Highly heterogeneous societies may even have a lower probability of civil wars than homogeneous societies. The highest risk is associated with the middle range of ethnic diversity. The polarisation index satisfies this condition. Notice also that Fearon (2003) pointed out that the index of fractionalisation, which is not sensitive to discontinuities, cannot capture important differences in ethnic structures. In particular, the idea of majority rule is not well-reflected by the index of fractionalisation. In contrast, the sensitivity of the polarisation is at its highest when groups are close to 50%.

Collier (2001) noticed that ethnic diversity could be not only an impediment for co-ordination, but also an incitement to victimisation. Dominance, or one ethnic group in a majority, can produce victimisation, and, thus, increase the risk of a civil war. Consequently, the effect of ethnic diversity will be conditional on it being measured as dominance or fractionalisation. In principle, fractionalisation should make co-ordination more difficult, and, thus, civil wars will be less probable, since it will be difficult to maintain cohesion among rebels. Collier (2001) argued that the problem with the results in East-

erly and Levine (1997) was that they were unable to distinguish between fractionalisation and dominance. The empirical results reported by Collier (2001) seemed to indicate that a good operational definition of dominance implies a group that represents between 45% and 90% of the population.

All of these arguments indicate that measures of polarisation should better capture the potential for conflict, rather than measures of fractionalisation. Montalvo and Reynal-Querol (2005) find that ethnic polarisation is an important determinant of the incidence of civil war. Having a polarised society could be an important propagation mechanism for conflict, which means that polarised countries may be less resilient to external shocks.

The case of the Sudan, the Democratic Republic of Congo (DRC), and the Congo are just several examples of this theory. These three countries have two important propagation mechanisms in common, in that they are highly polarised, and have bad institutions. None of these states were able to avoid long-lasting civil wars. Botswana, instead, is an example of a state that is as polarised as the Congo, but has high quality institutions, the best in Africa. Botswana is the clearest example of a country that avoided conflict by implementing a good institutional framework. South Africa can also be taken as an example of a highly-polarised country that managed to stop long-lasting conflict by changing institutions and making them more inclusive.

Few studies analyse how transnational linkages and interactions across state boundaries influence the likelihood of civil war. Gleditsch (2007) found that transnational linkages between states and regional factors strongly influenced the risk of civil conflict. For example, he found that more transboundary ethnic groups increase a country's risk of conflict.

More sophisticated analysis of conflict comes from Lim *et al.* (2007), who construct a theoretical model to predict conflict areas, based upon ethnic/religious differentiation. They model this difference as a separation of groups whose members prefer similar neighbours, with a characteristic group size at which violence occur. They apply this model to predict conflict in small areas of the former Yugoslavia and to India, and they find that this model accurately predicts most of the locations of reported conflict. This paper provides new evidence that ethnic differences matter.

The main conclusion on the role of ethnicity in explaining conflict is that countries in which a large minority is facing a majority are more prone to civil wars in the presence of external shocks. However, being polarised does not destine a country to conflict. Experiences in Africa have shown that high quality institutions, which increase the inclusion of all social groups, reduce the latent conflict generated by ethnic divisions. Good institutions make countries more resilient to conflict. For example, Reynal-Querol (2002a) find that religious polarisation is an important determinant of ethnic/religious civil wars, but that this effect is dramatically reduced in countries with proportional political systems.

3.4 Natural resource and conflict

The role of natural resources in explaining conflict is probably one of the most often discussed topics in the political arena, but one with the most controversial in the academic literature. In part, this is due to the multiple concepts that can be used to capture what we mean by the term "a country with an abundance of natural resources". Most of the literature has focused upon measures that capture the importance of natural resource export rents over GDP, or over total exports. These measures capture how much an economy depends on natural resource exports. It is therefore not a measure of abundance, but of dependence.

Collier and Venables (2009) explain that incentives to grab a share of resource rents not only weakens government, but may lead to its overthrow through insurgency at either a regional or a national level. Natural resources can provide both the motive and the means for insurgency, although they also provide funds for the government (or those with access to government funds) to equip itself in order to retain power at the

same time. The links between natural resources and conflict have been studied in the theoretical and empirical literature.

The fundamental point made by the theoretical literature is that the threat of conflict matters in many situations in which conflict does not actually occur. For example, Caselli and Cunningham (2009) show the importance of understanding exactly how resource rents alter the leader's probability of staying in power, and, hence the economic, political and military strategies that are followed by the leader.

The increased risk that comes from natural resources has long been discussed in the case study literature (Klare, 2001), but the first statistical analyses were by Fearon and Laitin (2003) and Collier and Hoeffler (2004). Collier and Hoeffler (2004) found that primary exports, a proxy for natural resources, have a positive effect on the probability of civil wars. Some case studies provide a more compelling explanation of the relationship between natural resources and civil wars (Ross 2003). However, the results were controversial: see, for example, the special issue of the *Journal of Conflict Research* devoted to the topic. In this issue, Fearon (2005) showed that the relationship between primary commodity exports and conflict found in Collier and Hoeffler was not robust to minor changes in the sample framing. Fearon argued that oil drives these results. Oil predicts the risk of civil war not because it provides an easy source of rebel finance, but because oil producers have low state capabilities. Also in this special issue, Humphreys (2005) argued that:

“the impact of natural resources on conflict cannot easily be attributed entirely to the weak states mechanism, and, in particular the impact of natural resources is independent of state strength. And that the link between natural resource and conflict is driven in part by agricultural dependency rather than by natural resources more narrowly defined.”

One alternative approach, which claimed to resolve the exogeneity problem, was to measure natural endowments not as a share of GDP, but from a global snapshot valuation of sub-soil assets for the year 2000 made by the World Bank. On this basis, a high value of sub-soil assets appeared to reduce the risk of civil war. Bulte and Brunschweiler (2009) argue that the main effect is that historical conflict increases the dependence on resource extraction, as the fallback sector for the economy.

The debate continues, with some authors claiming to have found much stronger statistical evidence for the original proposition than the previous literature did. First, the 2000 snapshot of sub-soil assets is itself subject to severe endogeneity problems: the value of sub-soil assets is dependent upon the amount invested in prospecting, and, thus, the developed countries have more extensive discovered endowments than the poorest countries. Second, Collier, Hoeffler and Rohner (2009) re-estimate the Collier-Hoeffler model on a much larger sample, and address the problem of the missing data.

Ross (2004a), using thirteen case studies, discussed different hypothesis on how natural resources influence civil war. He found evidence that overall natural resource abundance made conflict more likely to occur, last longer and produce more casualties, in these case studies.

Ross (2004b) found a couple of regularities in the recent literature on natural resource and civil wars:

“First, oil increases the likelihood of conflict...; second, ‘lootable’ commodities like gemstones and drugs do not make conflict more likely to begin, but they tend to lengthen existing conflicts; third, there is no apparent link between legal agricultural commodities and civil war; finally, the association between primary commodities and the onset of civil war is not robust.” (Ross 2004b: 337).

Ross (2006) used new and improved measures on natural resource, based upon Hamilton and Clemens (1999), Gilmore *et al.* (2005), and Humphreys (2005). With this

new data, he finds evidence on the relationship between oil, gas and diamonds and civil war, although this evidence is based upon a small number of civil wars.

There are different channels through which an abundance of natural resources might affect conflicts. For example, countries that depend on natural resources are very vulnerable to shocks to the prices of commodities. We will address this channel in Section 4, which examines economic shocks and civil conflict.

Second, the relationship between natural resources and conflict is intimately linked with the relationship between natural resources and governance. Countries with a dependence on natural resources may damage the quality of institutions through many different mechanisms such as, for instance, generalised rent-seeking behaviour. Third, natural resources provide resources to finance conflict, either for the rebels or for the government. All these channels have been considered in Collier and Venables (2009).

3.4.1 Natural resources and governance

The relationship between natural resource dependence and institutional quality is very controversial, due to a reverse causality problem. Either it is resource dependence that damages institutions, or it is countries with bad institutions that become dependent on natural resources when they have been discovered. Or maybe both mechanisms are in place. This topic is still under debate in the literature on the “resource curse”.

What is clear is that, in order to understand the relationship between natural resources and conflict, we need to understand the relationship between natural resources and institutions. Collier and Venables (2009) address the relationship between natural resources and state fragility. They argue that there is a good deal of evidence from case studies, cross-country regressions and panel data studies that natural resources, in particular point-source resources (for example, hydrocarbons, rather than agricultural based), retard economic and institutional development (for example, Murshed, 2004; Mavrotas *et al.* 2006; Collier and Hoeffler, 2005). The main research questions have to do with the mechanisms through which this occurs, and the circumstances under which it happens. They argue that there are three main reasons which explain why resource abundance can threaten the quality of governance and create an increased risk of state fragility.

The first is that it increases the opportunity to take resources away from the incumbent government, which they term as looting. The primary feature of resources is that they produce rent, and hence are a target for rent-seeking, which can take the form of corruption, theft or wholesale conflict for the control of the state. Theft can occur as the resource is extracted from the ground, by individuals or by mafias; alluvial diamonds (as in Sierra Leone) are hard to control compared to the centralised production of diamonds in kimberlite pipes (Botswana and South Africa), but even oil can be stolen at source, as indicated by the “bunkering” of Nigerian oil. It might occur through control of trade, as with high value minerals, such as coltan, which come from the DRC. And theft can occur as revenues enter or are spent by the government, in the form of large-scale theft and petty corruption.

The second is that resource abundance can change the characteristics and behaviour of the incumbent government, primarily by reducing its accountability; resource revenue may reduce citizen scrutiny of government, and also allow government to buy its way out of trouble.

The third is that resources may create a more difficult economic environment; resource rich economies are subject to extreme volatility and may face particular difficulties in creating new jobs, both factors which pose threats to stable government.

While these are negative effects of resource abundance on governance, it is important to recall that there is also positive potential. A resource-rich state has the funds to build

state capacity, to educate the population and to develop the infrastructure for economic development.

3.4.2 Natural resource and financing conflicts

Primary commodity exports provide opportunities for rebel predation during conflict, and thus they can finance the escalation and sustainability of rebellion. The best-known cases are the diamond-financed rebellions in Sierra Leone and Angola. Oil also provides ample opportunities for rebel finance, whether through “bunkering” (the tapping of pipelines and the theft of oil), the kidnapping and ransoming of oil workers, or extortion rackets against oil companies (often disguised as “community support”).

A second channel is that rebellions may actually be motivated, as opposed to merely being made feasible, by the desire to capture the rents, either during or after the conflict. Weinstein (2005) provides a convincing argument for this channel by endogenising the motivation of the rebel group. He argues that, in countries with valuable natural resources, many of the recruits will be motivated by loot-seeking, rather than by any political cause. The rebel organisation will not be able to screen out such recruits, so that, even if the rebellion starts out with a political agenda, over time it is likely to become loot-seeking. The evolution of the FARC from a rural protest movement to a multi-million dollar drug producer and trafficker may be a good illustration of this. Combined with the financial feasibility effect, this implies that the rebellions which are the most feasible, and are thus the most common, are also those most likely to become motivated by loot-seeking. Natural resources can make rebellion attractive even if there is no realistic prospect of capturing the state itself. Indeed, loot-seeking may be easier during the lawless conditions that prevail during a conflict, than during peacetime. Angrist and Kugler (2008) use a quasi-experimental design to study the impact of demand shocks for illicit resources on rural economic conditions and civil conflict in Colombia. Their results show increased violent death rates in growing areas after the increase in coca cultivation. They argue that the results are consistent with the notion that coca supports rural insurgents and paramilitaries.

It is reasonable to think, therefore, that natural resource dependent countries may, overall, have more civil wars than less dependent countries. Table 5 shows that, indeed, African countries which are dependent on a single commodity face a higher (average) risk of experiencing civil war than countries that are (at least somewhat) diversified. We define a country as “not diversified” if it needs to export a single commodity that constitutes more than two-thirds of all exports. Results are robust, albeit around the proximity of the two-third criteria.

Table 5: Commodity Export Diversification and Civil War

	Not Diversified	Diversified
Average Risk of Civil War Outbreak	5.2%	1.3%
Average Incidence of Civil War	14.4%	8.6%

Diversified = 1 Commodity constitutes > two-thirds of all exports

All the problems that we have mentioned come not because of *resource abundance* but because of *resource dependence*. When the economy depends on natural resources, the resilience of countries to external shocks is dramatically reduced. And countries whose economies depend on natural resources have poor institutional performance. The idea that institutions may help to develop other economic sectors already exists, and it is possibly the only way to stop the resource curse. Changes in the institutional framework may help to make changes to the structure of the economy, and therefore make countries less dependent on natural resources. With this, we mean the necessity to implement reforms that stimulate the creation of new businesses to which all social groups have access. These are easy to implement and are also low cost measures.

3.5 Other factors

There are other factors that have been related to the existence of conflict. However, not all of them can be understood as propagation mechanisms. There are some variables that simply make conflict easier, but they are not the main catalysts of conflict. For example, a large population has been related to the existence of conflict. Collier and Hoeffler (2002) considered the size of the population to be an additional proxy for the benefits of a rebellion since it measured potential labour income taxation, and Fearon and Laitin (2003) indicated that a large population implied difficulties in controlling what goes on at local level and increases the number of potential rebels that can be recruited by the insurgents.

In addition, mountains are another dimension of opportunity since this terrain could provide a safe haven for rebels. Long distances from the centre of the state's power also favours the incidence of civil wars, especially if there is a natural frontier between them, such as a sea or other countries (Fearon and Laitin, 2003). The micro-economic evidence of the importance of the geography of countries on civil conflicts is described by Bughaug and Rod (2006) for the case of African countries.

Other factors, such as war in geographically-contiguous countries (Hegre and Sambanis, 2006), and refugee-flows (Gleditsch, 2006), have been found to be related to civil wars.

Recent studies focus on the relationship between international trade and civil war. Gleditsch (2007) found that countries with higher inter-regional trade are significantly less likely to experience conflict. Martin *et al.* (2007) identify two possible mechanisms to explain the relationship between international trade and civil war, namely, deterrence and insurance. The first effect argues that trade openness lowers the risk of conflict. The second effect works in the opposite direction. The results of their empirical analysis conclude that trade openness may deter the most severe civil wars, but may increase the risk of lower scale conflicts.

There are probably other factors that are related to conflict. Our purpose is not to address all of them, but to concentrate on the main potential propagation mechanisms of conflict that have been the centre of much discussion in the literature. In summary, we have shown that, among all of these mechanisms, institutions seem to be the most important, making countries more resilient to external shocks. Since fragility is defined as countries which are less resilient to shock, fragile countries will have very poor institutional frameworks.

4 Shocks and Conflict

Propagation mechanisms help us to identify which factors make a country more, or less, resilient to conflict. Among all of them, we have shown that institutions are a fundamental factor in the resilience of countries to external shocks. There are many different shocks that can drive a fragile country into a process of violence. By definition, these shocks are very difficult to measure and even more difficult to predict. All countries receive shocks, although not all of them escalate into conflict. Thus, trying to make a complete list of all the potential shocks is an impossible task. For this reason, identifying the timing of the beginning of a civil war is also an extremely difficult. There is also disagreement with regard to the number of human deaths that elevate the category of a conflict to a civil war.

In this section, we will concentrate on how some specific civil wars are connected with some abrupt changes that we call shocks. We believe that it is useful to provide some evidence on how some types of easy measurable shocks may be correlated with the onset of the conflict. The assassination of a president, political reforms, droughts, the discovery of natural resources, the sudden windfall of resources, *etc.*, are shocks that may

send fragile countries into violence. Among all the potential shocks, the ones that are easiest to measure and observe are economic shocks.

Usually, other shocks, such as assassinations, shocking news on television, *etc.*, are very difficult to keep track of, especially when they do not develop into conflict. The advantage of economic shocks is that we can measure all of them, whether they drive conflict or not. This is the reason why we will concentrate on economic shocks.

4.1 Economic shocks and civil conflict

The first study in the literature of civil war that addresses the reverse causation problem between economic factors and civil wars is Miguel *et al.* (2004), which, in a study of 41 African countries, found that exogenous economic shocks were strongly related to the outbreak of civil conflict. This paper makes a significant advance in the study of the relationship between economic factors and conflict. Their results suggest that sudden variations in income can explain why countries incur armed conflicts. In particular, they find that a 5% drop in income growth increases the likelihood of a civil conflict in the following year by up to 10 percentage points. It is important to notice that the analysis by Miguel *et al.*, deals with the effects that shocks, and changes in *per capita* income, can have on conflict, and not with the relationship between poverty (level) and civil war, which we discussed in previous section.

The idea that poverty is not a propagation mechanism for conflict is perfectly consistent with results of Miguel *et al.* (2004). These authors found that sudden changes in income growth affect the probability of conflict. Miguel *et al.* (2004) analyse the effect of one component of income growth, namely, transitory shocks caused by the change in rainfall. One can imagine a situation in which a sudden - and exogenous - fall in consumption drives people to violence. This relationship would then be similar to that between income and democracy, and economic growth and democracy. Acemoglu and Robinson (2001), for instance, emphasised that regime changes were more likely during periods of recession, because the costs of political turmoil, both to the rich and to the poor segments of the population, are lower during such times. This is analogous to the results of Miguel *et al.* (2004). However, Acemoglu and Robinson also found that “holding inequality and other parameters constant, rich countries are not more likely to be democratic than poor ones”, and a similar line of reasoning could explain the relationship between poverty and civil war.

It therefore seems that, while the level of income does not imply a higher risk of conflict, abrupt changes in income seem to be related with civil conflict. It is, therefore, crucial to analyse which economic shocks could affect conflict.

In this section, we shall concentrate the analysis on economic shocks driven by drought, and changes in primary commodity prices. There are some fundamental reasons why we focus on these types of shocks. First of all, the use of changes in *per capita* income may be highly controversial, due to the potential problems, such as reverse causality. Drought (captured by rainfall) and the international price of primary commodities, are exogenous, and are not subject to the problem of reverse causality. Second, we already know that droughts and changes in primary commodity prices affect *per capita* income, particularly in developing countries. Third, these shocks are easy to measure. Moreover, the economy of many Sub-Saharan African countries are especially dependent on the weather conditions, since it depends on agriculture, and also on commodity prices, since many countries are highly dependent on the exportation of the country's most abundant primary commodities. This is very convenient, since the report concentrates on fragility in Africa.

There are two potential mechanisms that can explain the effect of sudden economic shocks on civil conflict. The opportunity cost mechanism, which basically argues that a negative income shock increases the probability of conflict by basically increasing the labour supply to rebel groups. This is the mechanism that has been most pre-dominant

in the theoretical literature of conflict, such as Grossman (1991). The second mechanism argues that a positive income shock can also increase the probability of conflict through a rent-seeking mechanism. The idea is that greater resources mean that the return to predation could be higher. This mechanism could be of great importance in countries which are highly dependent on natural resources, where governments control the rents from these resources. A sudden windfall of resources may lead to fights in the political sphere for the control of such resources. Also, if the opposition group controls part of such resources, the same mechanisms may generate an increase in fighting.

Thus, it is not clear which mechanism will dominate, especially with primary commodity shocks, and it may clearly depend on the type of commodity. While drought affects farmers, and, thus, it is reasonable for the opportunity cost mechanism to dominate, for primary commodity shocks, it may depend on whether it affects farmers more (with agricultural products) or government more (minerals and oil).

4.1.1 Evidence on the rent-seeking mechanism, and the opportunity cost mechanism using the full sample of countries

Besley and Persson (2008), for example, provide a theoretical framework to understand these relationships. They argue that higher prices of imported commodities raise the probability of conflict because higher imported prices reduce wages and therefore reduce the cost of conflict by reducing the demand for labour. In addition, the higher prices of exported commodities increase the probability of conflict, because these high prices increase the gain from holding power by booting natural resource rents. Higher prices of export commodities may have a direct effect on civil war by increasing rents.

First, the reduction of wages due to the higher prices of imported commodities has a direct effect on the probability of conflict by lowering the opportunity cost of fighting. Second, increases in primary commodity exportation, due to the higher prices of exported commodities, may generate rent-seeking behaviour that brings the country in question into conflict. In fact, Besley and Persson (2008), using a sample of all countries, provide evidence of these two channels.

They exploit changes in commodity prices in the world market to generate exogenous variations in resource rents. Following their model, they interpret a higher export price index as a positive shock to natural resources rents, and a higher import price index as a negative shock to income. They found that both export and import price indices for agricultural and mineral products are positively related to the incidence of civil war. However, the oil-export price-index does affect civil wars, while the oil-import price-index does not.

They also found that the effect of world-market price indices are heterogeneous, depending on whether or not a country is a parliamentary democracy or has a strong checks and balances.

Moreover, Besley and Persson (2009) also find results that are consistent with the prediction that economic shocks are important determinants of repression and civil war, using data on human rights violations, in particular, measures of political terror, and purges. They also find that more inclusive political institutions, as measured by parliamentary democracy, significantly reduce the prospect of violence.

Dube and Vargas (2008) estimated the effect of commodity price shocks on civil war dynamics in Colombia. Using regional data for Colombia, they found that increased oil prices increased conflict (a looting or rapacity effect) while increases in coffee prices had the opposite effect, possibly by increasing the value of devoting labour time to coffee production. Thus, they found evidence of *both* mechanisms, depending on whether the shock is in a labour-intensive sector, such as shocks to the prices of agricultural goods, or shocks in capital-intensive sector, such as shocks to the price of oil.

Their analysis focused on the price of coffee and the price of oil. They employed a unique event-based dataset which records for the measures of conflict: guerrilla attacks, paramilitary attacks, clashes and war-related casualties in 900 municipalities over the period 1988-2005. They found that a sharp drop in the price of coffee during the 1990s increased the violence in the municipalities that cultivated coffee, and that an increase in the price of oil, increased the violence in oil regions. These results support the theoretical predation model of Dal Bó and Dal Bó (2006).

4.1.2 Evidence of the opportunity cost mechanism in Sub-Saharan African countries (SSA)

4.1.2.1 Droughts and civil conflict in SSA

Following the mechanism explained above, one would expect that sudden droughts, which directly affect agriculture, would increase the probability of conflict. This is what Ciccone (2008), inspired by Miguel *et al.*, (2004) finds. Ciccone (2008) found robust evidence that civil conflict was more likely to start following years of low rainfall. Low rainfall level is a very good proxy of drought. Ciccone (2008) argued that:

“If conflict onset is partially driven by the opportunity cost of revolt, conflict outbreak in Sub-Saharan African should be more likely following drought.”

He found that conflicts in Sub-Saharan African countries were more likely to follow drought years. In particular, the results indicate that a 50% drop in rainfall levels raises the probability of conflict onset in the following year by 7 percentage points. We use data from Ciccone (2008) to provide some descriptive evidence of this phenomenon in Sub-Saharan African Countries. However, due to data availability, we could only examine this question for the period 1980-2006, which is long enough to find some indicative evidence.

We compute the number of conflicts that start following the 10 years with lowest rainfall, and also the number of conflicts that start following the 10 years with highest rainfall during this period. Table 6 tabulates the number of civil conflict outbreaks for the 10 years with lowest rainfall, and the 10 years with the highest rainfall. If the probability of conflict did not depend on rainfall, then we should expect to have a similar number of cases in these two states of nature. However, the numbers in the table indicate that not only are there many more civil conflict outbreaks in the 10 years following the lowest rainfall than in the 10 years following the highest rainfall, but also that there are twice as many conflicts during the low rainfall years than during the high rainfall years. Two-thirds of civil wars start in the 10 years after droughts, and one-third after a period of high rainfall.

Table 6

	10 Years of Lowest Rainfall	10 Years of Highest Rainfall
No. of Civil Conflict Outbreaks	22	11
No. of Civil Conflict Country-Years	101	69

Source: Ciccone (2008)

But which countries are these? This is shown in Table 7 that the specific country-year episodes where the 10 years of lowest rainfall, and the 10 years of highest rainfall coincide with an outbreak of civil conflict.

Table 7: List of Country-Year Episodes with Low/High Rainfall and Civil War

Outbreak of Civil Conflict Following Years of Low Rainfall		Outbreak of Civil Conflict Following Years of High Rainfall	
Burundi	1994	Burundi	1991
Cameroon	1984	Ghana	1981
Central African Republic	2001	Kenya	1982
Central African Republic	2006	Lesotho	1998
Republic of Congo	1993	Liberia	1989
Republic of Congo	1997	Mali	1990
Republic of Congo	2002	Nigeria	2004
Ivory Coast	2002	Rwanda	1990
Djibouti	1991	Senegal	1990
The Gambia	1981	Senegal	1995
Ghana	1983	Togo	1986
Guinea	2000		
Liberia	2000		
Mali	1994		
Niger	1994		
Senegal	1992		
Senegal	2003		
Somalia	1981		
Somalia	2001		
The Sudan	1991		
Togo	1991		
Uganda	1981		
Uganda	1994		

Source: Ciccone (2008)

Some countries have civil wars both in low and high rainfall periods. However, there are many more countries that only have outbreaks of conflict following periods of low rainfall (droughts), than following periods of high rainfall (countries in bold type in the table). These are very descriptive numbers, but they do provide some evidence that conflict is more probable after droughts than after periods of high rainfall. Drought may, therefore, be one of the shocks that may bring fragile countries to violence.

The Republic of Congo is an example of a country that had three outbreaks of conflict between 1984 and 2006, all of which took place following drought.

4.1.2.2 *Agricultural Commodity price shocks and civil war in SSA*

The effect of shocks on the price of primary commodities may depend on the labour/capital intensity of the sector. The mechanism that may dominate, in the presence of shocks to prices of agricultural products, might well be the opportunity cost. If this is the case, one would expect that falls in the prices of an agricultural product might be followed by an increase in conflict. Using a sample of Sub-Saharan African countries, Bruckner and Ciccone (2008) found evidence that downturns in the price of international commodities increased the probability of civil wars. In particular, they found, using data on the prices of almost 20 commodities, that a 10% fall in income due to falling commodity prices raises the probability of civil war by 12%. This effect comes from the agricultural products, rather than from mineral or oil products.

We now consider how many civil wars break out following booms and following slumps. Booms are defined as a 30% increase in the export price index; slumps as a 30% decrease. Table 8 provides the results. It turns out that there were 5 times as many outbreaks of civil war during slumps than during booms. We obtain similar numbers with civil war incidence: 20 country-years of civil war occurred during a price crash, while only 9 occurred during a price boom.

Table 8: Booms and Crashes/Slumps in International Commodity Prices and Civil War in Sub-Saharan Africa

	30% Increase in Ex- port Price (Boom)	30% Decrease in Ex- port Price (Crash)
No. of Civil War Outbreaks	1	5
No. of Civil War Country-Years	9	20

Source: Bruckner and Ciccone (2008)

These five cases are in Burundi, Rwanda and Uganda. Table 9 lists the specific country-years in which there was an outbreak of civil war following a substantial drop in the price of coffee. Column (4) shows the share that coffee exports constitute in total exports.

Table 9: List of Country-Year Episodes with Coffee Price Crash/Slump and Civil War Outbreak

Country	Year Of Civil War Outbreak	Coffee Price Decline 3 Years Preceding Civil War Outbreak	Share of Coffee Exports in Total Exports
Burundi	2000	68%	75%
Rwanda	1991	40%	61%
Rwanda	2001	53%	61%
Uganda	1991	40%	74%
Uganda	2002	41%	74%

Source: Bruckner and Ciccone (2008)

The results that they found can be illustrated with the evidence from the timing of civil war in Uganda, Rwanda and Burundi, which appear to be related to a fall in the price of coffee, their biggest export product. Between 1997 and 2000, the international coffee price dropped by 50%. Uganda, Rwanda and Burundi, which are the three Sub-Saharan African countries most dependent on coffee exports, experienced an outbreak of conflict in 2002, 2000, and 2001 respectively. Clearly, in-depth analysis of these country cases would reveal that there were many factors driving these conflicts, and many other shocks that would probably coincide with the fall in the international coffee price. We fully agree with this, and, if we could check for all shocks, we could probably unravel what the particular shock that best explains the outbreak of conflict was. However, price shocks are easy to measure, and this is why we concentrate on how an economic shock is related to the outbreak of conflicts.

Figure 7: International Coffee Price 1980-2006

Source: Bruckner and Ciccone (2008)

Other micro-studies confirm this finding for the case of Burundi. Nillesen and Verwimp (2009), using data on Burundi communities, found that decreases in the producer price of coffee increases recruitment to rebel groups. They “exploit annual variation in coffee prices in the 1993-2007 period to infer the effect of (changes) in the economic environment (and therefore in the opportunity structure) on recruitment. They use the real producer price of coffee. They find that real producer prices are negatively associated with recruitment suggesting that reduced opportunity costs play a role.” Nillesen and Verwimp (2009: 3-4) The Burundi case is described in Box 1.

Box 1: “Rebel Recruitment in a Coffee Exporting Economy” - Nillesen and Verwimp (2009)

“Historical accounts claim that control of the state and its resources has been at the heart of Burundi’s conflicts, where access to the state, in the absence of formal viable institutions, was a source of potential rewards for some groups and deprivation for others (Lemarchand, 1994). Ngakuro and Nkurunziza (2000) write that the coffee sector has become a prime target of government predation. OCIBU (Burundi’s state-run coffee agency) set the producer price annually and was in control of marketing and exportation. The fact that Burundi is relatively poor in other natural resources affects how the predatory state is shaped. The state is built around the formation of wealth through the sale of resources to an external market and the use of controls and regulations to extract rents from this trade (Oketch and Polzer, 2002). The predatory nature of the state is directly related to conflict and rebellion, as the unequal access to the profits of the coffee economy is a major source of grievance. The army is regarded as the guarantor of the unequal allocation of wealth and has a vested interest in keeping the coffee producing regions under its control. In the period under study (1993-2007), on average, 70% of Burundi’s total export value came from the coffee, with a

peak of 87% in 1997 (Kimonyo and Ntirayibagira, 2007). Revenue from the coffee sales took on strategic importance, both politically and economically, because it could be used freely by the regime in power without attracting the attention of donors. Income from coffee is an important source of revenue for 600,000 farmers (half of the population) because they receive a substantial sum (20 to 30 per cent of a farmer's monetary income) once a year that can be used to cover expenses on durable goods, house construction, health and education. This sum is then injected into the local economy with effects far beyond the coffee sector. For years, however, Burundian farmers have received a bad deal from their government. Compared to neighbouring countries, Burundian coffee producers have received very low prices for their produce. The IMF (1997) writes that part of Burundi's coffee production is regularly being smuggled to neighbouring countries, especially during periods of relatively low producer prices. The average percentage of the world price that producers received was around 35%, whereas this was 76% for Ugandan farmers. Oketch and Polzer (2002) write that this amounts to the appropriation of peasant labour. The International Crisis Group (ICG) describes Burundi in similar terms: 'The lion's share of the profit from the coffee trade goes to the state and various intermediaries for which there can be no economic justification while the producer receives a little less than 35% [of the export price].' And, 'The interaction between an authoritarian regime and the accumulation of economic benefits has been characterised by the exploitation of the élite of income from primary, agricultural and mining resources.'

The coffee sector has been regarded as an instrument draining resources from the mass of the producer population to a tiny urban élite at the helm of the state. On top, farmers were not allowed to rip out coffee trees by law. The exploitative nature of the coffee economy was repeatedly denounced by opposition movements. Rebel activity began in the northern coffee-producing regions in the country and only gradually spread to the southern provinces. Nkurunziza and Ngaruka (2000) write that educational policies favoured the southern provinces. The province of Ngozi, a major producer of coffee, is the least equipped with educational infrastructure of all provinces. Given the scarcity of land as well as the dynamic internal market for bananas, producers neglected their trees, which led to a decrease in the quality of coffee. The government countered anti-coffee campaigns with pro-coffee propaganda. To this, it should be added that Burundi is one of the poorest countries in the world with almost 70% of the population living in poverty (Verwimp and Bundervoet, 2008), with very few job opportunities outside farming and with increasing land scarcity."

Source: Nillesen and Verwimp (2009: 6-8)

As we explained above, the shocks are unexpected phenomenon, often difficult to measure and predict. Rainfall and changes in the price of primary commodities are just two examples of shocks which are easy to measure, and which particularly affect African economies due to the characteristics of their economies, as mentioned above. But, can this help us to understand how the shock produced by financial crises will affect fragile countries? To date, little work has been done on this. Chen (2005) analysed the effect of financial crises on violence in Indonesia. This work provides very descriptive evidence of a particular example of how a shock, in this case financial crises, affects conflict differently in regions with different propagation mechanisms. Box 2 provides a description of this case.

Box 2: Islamic Resurgence and Social Violence During the Indonesian Financial Crises, Chen (2005)

"Indonesia experienced a dramatic financial crisis between 1997 and 1998. The exchange rate fell dramatically from 2,400 Rupiah to the US dollar to 16,000 Rupiah to the US dollar, while the CPI index for food increased from 100 to 261. In one year, asset values dropped by 91%. In contrast, it took three years for asset values to drop 87% during the US Great Depression (Friend 2003). Millions of people lost jobs or shifted to the informal sector (Irawan, *et al.*, 2000). The crisis reached a peak in early 1998 and led to riots and lootings in every province but one. Between 1990 and 2001, social violence led to more than 6,208

deaths in Indonesia, increasing sharply after the financial crisis of 1997 (Tadjoeddin 2002).

The variety of evidence presented in this paper indicates a strong relationship between religious intensity and social violence during the crisis. I use a unique dataset that tracks every incident of social violence in Indonesia reported by the national news agency and the national daily over a decade spanning the financial crisis. High religious intensity areas before the crisis have more social violence after the crisis. Stronger measures of religious intensity (potentially better at inculcating group identity) are more strongly associated with social violence. Social violence is negatively associated with other social activities. These results are unlikely to be driven by omitted environmental variables: social violence increases fastest where participation in Koran study also increases the fastest, and this is not true for state or industrial violence. Higher presence of faith-based groups is associated with higher levels of conflict reported by village heads after the financial crisis (Barron, *et al.*, 2004)."

Source: Chen (2005: 1-2)

Could all this indicative evidence tell us something about how international crises may affect Sub-Saharan African countries? The economic growth of Sub-Saharan African countries is highly dependent on export to the OECD countries. If OECD countries go into recession, then this will dramatically reduce exports from Sub-Saharan African countries. If this is the case, this implies a negative shock to the *per capita* income of SSA, generating similar effects to those explained above. Bruckner and Ciccone (2009) find evidence of this effect. Countries that are less resilience to shocks will have a higher risk of entering into a process of conflict after this type of shock, compared to countries with less propagation mechanisms (more resilience).

5 Conclusion and Policy Implications

In this report, we have described three basic elements in conflicts: shocks, propagation mechanisms and financing. Associated with each of these elements, we can think of a set of policies to reduce the probability of conflict: policies that try to reduce the internal effect of external shocks, such as export diversification policies, for example; policies that address the propagation mechanisms, such as improving the institutional set-up or reducing the intensity of social cleavages; and policies that try to dry the sources which finance combatants, such as the Kimberly process.

Since shocks are unexpected, and they are very difficult to predict, trying to find measures to prevent them is quite difficult, given the unexpected characteristics of these shocks. While diversification can protect countries against shocks related to the price of some raw materials, it is not possible to predict or avoid unexpected shocks, such as terrorist attacks like 9/11, for instance.

Furthermore, policies that attack the sources of finance of the parties in a conflict may have a very short-term effect because rebel groups look quickly for other alternative sources of finance. Some of this evidence is explained in the work of Michael Ross, who describes this phenomenon with the example of Angola:

"Before the end of the Cold War, successful rebel groups in the developing world were typically financed by one of the great powers. Since the Cold War ended, insurgent groups have been forced to find other ways to bankroll themselves; many have turned to the natural resources sector." (Keen 1998)

"In Angola, for example, UNITA (National Union for the Total Independence of Angola) was backed by the United States and South Africa for most of the 1970s and 1980s. But the end of the Cold War, and the end of the apartheid in South Africa, left UNITA with no outside sponsors; as a consequence, it began to rely much more heavily on diamond revenue to support itself." (Le Billon 2001).

Therefore, policy recommendations aim at cutting the sources of finance for combatants may generate only short-term effects.

Consequently, if we want to find measures to prevent conflict in the long run, we need to look for policies that address the propagation mechanisms of conflicts, in other words, policies that make countries resilient to conflict in the presence of shocks. But, what are the most important propagation mechanisms of conflicts that should be targeted in order to reduce the probability of conflict? Most of the attention has focused on the role of poverty. However, the idea that poverty is the main determinant of conflict is based upon weak empirical grounds. There is also the issue of how to promote economic development in poor and potentially conflictive countries. The general consensus in the economic literature indicates that external development assistance does not increase the growth rate of developing countries. Thus, even if poverty was an important determinant of the incidence of conflict, it would be very difficult to act on this determinant.

There is strong evidence that points to institutional development as a basic determinant of the resilience to conflict in the presence of shocks. Policies aimed at supporting the reform of institutions, in the sense of increasing the political inclusiveness of social groups in potentially conflictive countries, are more likely to be preventive measures. No minority should be left out of the decision-making process. The rule of law and the protection of human rights also have an important role to play. While they are not respected in periods of conflict, they should be strengthened during the process of peace, since they are key to protecting people from abuse and further violence. The ability of the government to provide law and order in the country, and to protect human rights, matter greatly if resilience to conflict is to be ensured in the presence of shocks. Institutional development in potentially conflictive countries is not a trivial issue, but opens up new possibilities for action.

Any institutional design that generates incentives for fighting should be modified in order to reduce the intensity of the propagation mechanism for conflict. Below, we list some potential policy reforms.

5.1 Provide appropriate incentives to political leaders

In order to implement all policies, it is essential that political leaders co-operate. If these leaders do not want to implement reforms, then, it would be impossible to increase the resilience of potentially conflictive countries in the presence of shocks. Thus, the crucial issue, apart from the specific policies that countries should implement in order to prevent violence and to escape from fragility, is to provide these leaders with the appropriate incentives to implement the appropriate policies. This question is not easy, and we are not sure whether any form of aid can help put this into effect.

However, what we know is that Europe has a comparative advantage, as a supranational entity, in coordinating many bilateral donors. For that reason Europe should take a key role in this process.

Europe should start with the new young African leaders, who are motivated, and the ones who are willing to change. Leaders that have been in power for longer time would feel more pressured if the continent was itself making the change.

5.2 Economic inclusiveness

Implementing drastic changes to political institutions in countries at high risk of conflict, or with low resilience, could be very difficult and might even generate more instability, before ever reaching the final goal.

Moreover, political inclusion may not solve all the problems of social exclusion. There are democratic countries that are theoretically inclusive but with heavy regulation, which makes it more difficult for people to participate in economic activity.

We therefore need to pay special attention to the role of economic institutions as an instrument that can reduce the level of exclusion of people from economic activity. These measures are “low cost”, and leaders are willing to implement them since they apparently do not represent any direct threat.

For example, we should help to implement measures that reduce the heavy regulation present in many developing countries in order to ensure an appropriate business environment with few economic and/or bureaucratic barriers. This is crucial in order to bring hope and future to the young generations of people, so that they will not see being a rebel as the only way to make progress.

Creating jobs for the young people is essential. This could be done by reducing the procedures to start businesses, making hiring easier, and other measures to reduce excess regulation.

5.3 Building trust

After periods of long conflicts, especially during ethnic conflicts and genocides, the feeling of revenge should be seriously addressed if we wish to ensure a successful peace-keeping process. It is probably one of the most difficult tasks, but it is not impossible.

It is towards this issue that governments should be most creative and ingenious.

One crucial issue is to focus on the overall fiscal framework. The distribution of resources after war could be used as an instrument to solve historical grievances among groups by balancing the distribution of resources among groups and providing services and infrastructure to all regions, without favouring one group to the detriment of the others.

But this requires a certain level of funding that has to be obtained by raising public revenues. Efforts to raise public revenues and to stabilise public finances must be designed to ensure that recovery is broad-based, so that the majority of people benefit and not just a narrow élite.

Another, less explored measure is to use the power of the mass media to build trust. In many conflicts, the mass media has played a critical role in building ethnic differences, and hate among ethnic groups. Well-constructed speeches from the leaders of ethnic groups, and governments which control the media, have manipulated the audience by building ethnic differences. In a peace-keeping process, we need to use the power of the media to build trust again. It is extremely easy to influence people through TV soap operas and radio programmes. TV soap operas influence the names that mothers decide to give their new born, they affect the decisions of young people as to what to study, and so on. They have been used, for example, to introduce contraceptive measures among women in developing countries.

So, why do we not use the media to build trust among ethnic groups? The idea would be to prepare soap operas in which people from different ethnic groups interact among themselves, co-operate, do business together and get married.

The power of the media has been neglected by many agencies, but the evidence of the influence that TV and Radio have on people’s behaviour is indisputable. It is an opportunity to build trust and co-operation among groups, which is crucial to ensure long-lasting peace.

5.4 Political inclusiveness

The evidence suggests that implementing democratic regimes is not enough to ensure peace. In some democratic regimes, it could be that a majority group is in power, leaving minority groups outside the decision-making process. We have several cases. Firstly, we may have democratic countries with ethnic heterogeneity and low political inclusiveness. Countries with multiple decision-makers may offer greater protection to individuals

and minorities from arbitrary government action. We need to ensure the political representation of all groups.

Secondly, we may have democratic countries with ethnic dominance. If one ethnic group contains more than 50% of the population, only a system with sufficient checks and balances will represent minorities. These societies could be at high risk of conflict if there are not enough checks and balances that could compensate for the political exclusion caused by standard political systems such as the plurality rule and proportional systems.

Thirdly, we may have democratic countries with geographically concentrated ethnic groups. In this case, other forms of inclusiveness, such as de-centralisation and federalism should be seriously considered.

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