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**FISCAL DECENTRALIZATION AND INTERNAL CONFLICT:
AN EMPIRICAL INVESTIGATION**

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An empirical investigation

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Abstract

This paper examines the relationship between fiscal decentralization and internal conflict in 77 countries during the period 1972-2000. The results show that the devolution of fiscal power to subnational tiers of government reduces the incidence of civil conflict. This finding is robust to the inclusion in the analysis of the degree of political decentralization and of a number of control variables commonly employed in the literature. Likewise, the observed relationship does not depend on the estimation strategy or the specific measures used to quantify the degree of fiscal decentralization and the incidence of civil conflicts within the various countries.

Keywords: Fiscal decentralization, political decentralization, internal conflict.

1 Introduction

Internal armed conflicts account for an enormous share of deaths and hardship around the world. In addition to the direct impact on battle-related deaths, within-country conflicts give rise to an important number of indirect deaths due to disease and malnutrition, as well as the forced displacements of numerous people, causing massive human suffering (Brown, 1996; Lacina and Gleditsch, 2005). Intrastate conflicts have also a negative impact on political stability and economic development. In particular, intrastate violence tends to aggravate existing economic problems by reducing the productive capacity and hampering growth. Furthermore, civil conflicts often have important diffusion or contagion effects, which can contribute to undermine regional stability and the relations between neighbouring countries (Sambanis, 2001). For all these reasons, preventing internal conflicts and reducing their intensity is crucial. Nevertheless, the design of prevention and management strategies requires a good understanding of the causes of this type of violence. This explains the considerable efforts devoted over the last decades to investigating the explanatory factors of civil conflicts (see Sambanis (2002) or Blattman and Miguel (2010) for a review of this literature).

The transfers of powers and resources to subnational tiers of government have been the subject of special attention in the debates about how to reduce the incidence of internal conflicts. As an example, one might mention the cases of countries such as Afghanistan, Angola, Bosnia, Cyprus, Indonesia, Mozambique, Nigeria, South Africa, or Sri Lanka, where policy makers have resorted in recent years to some form of decentralized governance in order to manage the conflict between the central government and subnational groups (Hale, 2004; Bakke and Wibbels, 2006). According to the tra-

ditional discourse, decentralization can help to reduce intrastate conflicts by bringing the government closer to the people, increasing the opportunities of local groups to participate in government, and providing them with institutional channels for voicing their demands (Oates, 1972; Gurr, 2000; Hechter, 2000). Nevertheless, there are also arguments that cast doubts on the effectiveness of decentralization for promoting internal stability. Thus, some scholars point out that decentralization contributes to promote and reinforce regional identities, increasing the cohesion of local groups, and their willingness and capacity to act against the central government (Bunce, 1999; Snyder, 2000; Cornell, 2002). Therefore, decentralization may increase the risks of internal conflict and secessionism.

Most existing analyses on the link between intrastate conflict and decentralization are based on single-country case studies (e.g. Horowitz, 1991; Lijphart, 1996; Diprose, 2009). While this approach provides undoubtedly useful information about the effectiveness of devolution initiatives in reducing conflict in specific countries, it does not allow one to extrapolate the conclusions to other countries. In contrast to the number of single-country case studies, there are few cross-country analyses to date addressing the link between decentralization and civil violence (see, for example, Bermeo (2002), Bakke and Wibbels (2006) or Brancati (2006)). Nevertheless, these studies tend to focus mainly on the impact of political decentralization, while the fiscal dimension of decentralization has received considerably less attention (Tranchant, 2010). Against this background, the present paper aims to extend this literature by examining the effect of fiscal decentralization in the incidence of internal armed conflicts. To that end, I use data on 77 developed and developing countries over the period 1972-2000 (see the Appendix for further details), making the coverage of countries substantially greater than in previous cross-country studies on the link between fiscal decentralization and

intrastate conflict.

It is worth noting that this type of analysis is particularly relevant in the context of the global trend towards decentralization currently underway (Rodríguez-Pose and Gill, 2003, 2005). In contrast to the situation in the early 1970s, when most countries had centralized systems of government, today “some 95 percent of democracies [...] have elected subnational governments, and countries everywhere –large and small, rich and poor– are devolving political, fiscal, and administrative powers to subnational tiers of government” (World Bank, 2000, p. 107). The trend towards decentralization has been relentless and widespread among numerous countries in the world, regardless of their level of development.

The remainder of the paper is organized as follows. After this introduction, section 2 discusses from a theoretical perspective why fiscal decentralization may affect intrastate conflict. Section 3 describes the measures used in the paper to quantify the level of decentralization and the incidence of internal conflict in the various countries. In turn, section 4 presents the empirical analysis carried out to investigate the link between fiscal decentralization and civil violence. The final section offers the main conclusions from the paper.

2 The relationship between fiscal decentralization and internal conflict

The number of countries transferring authority and resources to subnational tiers of government has increased considerably over the past decades (Rodden, 2002; Rodríguez-

Pose and Gill, 2003). Although recently the proponents of devolution tend to emphasize its economic benefits, the political rationale for decentralization has been historically based on cultural, ethnic, linguistic and religious factors (Rodríguez-Pose and Gill, 2005; Rodríguez-Pose and Sandall, 2008). Following the traditional discourse, decentralization is envisioned as a way to safeguard regional cultures and identities and to increase the sustainability and viability of ethnically heterogeneous states (Horowitz, 1985). For example, in Spain during the framing of the 1978 Constitution, decentralization was used to increase the degree of territorial cohesion in a state where regions and nationalities with strong political identities coexisted (Greer, 2010). Similarly, in India the period after the independence from the United Kingdom was characterized by a high degree of decentralization, as a reflection of its ethnic, linguistic and religious heterogeneity (McCarten, 2003). Likewise, in Irak the 2005 Constitution established a model of decentralized government through the devolution of authority and resources to subnational tiers of government (Bakke and Wibbels, 2006). Many other nations around the world have carried out similar processes during the last forty years in order to manage the potential conflicts between the central government and subnational groups (Hale, 2004; Brancati, 2006). Bearing this in mind, and in a quest for empirically well-founded, stylized facts, this paper examines whether fiscal decentralization can be an effective way to prevent internal conflict.

From a theoretical perspective, there are several reasons to believe that fiscal decentralization and intrastate armed conflicts may be related. Nevertheless, this is a complex relationship, as attempting to explain how the devolution of fiscal power from central to regional and local governments affects internal stability implies to take into account multiple factors and mechanisms that often work in opposite directions.

A first argument to support the positive role played by fiscal decentralization in reducing the incidence of violence within national boundaries can be drawn from the public finance literature. Thus, the so-called “fiscal decentralization theorem” (or “diversification hypothesis”) explains that subnational tiers of government are more capable than central governments to tailor the provision of public goods to the needs of the local population due to the existence of informational advantages and a better insight into the preferences of citizens (Tibeout, 1956; Oates, 1972). Accordingly, in the absence of interjurisdictional spillover effects and large scale economies, fiscal decentralization can lead to efficiency gains in the allocation of resources (Rodríguez-Pose et al., 2009). These potential benefits of fiscal decentralization are directly related to the distance between the level of provision of public goods decided by central government and the true preferences of local citizens. This means that the advantages of fiscal decentralization are theoretically greater in larger and more heterogeneous countries, where a uniform level of provision of public goods tends to be inefficient. This reasoning suggests that fiscal centralization can lead to social unrest whether the treatment granted by the central government to a specific region is perceived as unfair or discriminatory by the local population, thus increasing the risk of internal conflict and secessionism (Hechter, 2000).

This potentially negative consequence of centralized systems of government on within-country stability may be aggravated due to the existence of political parties with an ideology based on ethnic favouritism (Bakke and Wibbels, 2006). In order to maximize their number of votes, ethnic parties use the animosity and distrust between the various ethnic groups to broadcast messages that target a particular ethnic group (Glaeser, 2005). When these political parties whose basis is mostly ethnic come to power at the national level, their main aim is to design government policies that

allow them to adopt redistributive initiatives to improve the relative situation of their ethnic base, which is often geographically concentrated in a specific area of the country. Likewise, these ethnic parties have incentives to limit the production of public goods in the country as a whole to prevent those outside of their own ethnic group from also benefiting and getting stronger (La Porta et al., 1999). In such a setting, fiscal centralization may exacerbate ethnic tensions, posing a threat to peace and internal stability.

Nevertheless, the processes of fiscal devolution contribute to reduce the potential risks of internal conflict and secessionism by giving regional and local tiers of government greater control over their economic affairs, and providing them the opportunity to design and implement policies of their own that take into account the preferences of their citizens (Tranchant, 2010; Sambanis and Milanovic, 2011). Therefore, fiscal decentralization can be used as a mechanism to avoid the permanent tyranny of the minority by the majority and thus to enhance the viability of the state (Kyriacou, 2000; Alesina and Spolaore, 2003). In fact, decentralized countries tend to be characterized generally by a higher degree of political and administrative stability (Frey and Luechinger, 2004).

Taken together, these ideas seem to indicate that the transfer of fiscal power from central to subnational governments should reduce the incidence of internal violence. Nevertheless, in the literature there are also arguments that pose that fiscal devolution can have a negative impact on intrastate conflict. For example, it should not be overlooked that fiscal decentralization contributes to reinforce regional identities by giving them a sense of legitimacy, which increases the relevance of regional parties with a nationalist ideology and political movements based on claims for self-determination

and independence (Bunce, 1999; Brancati, 2006). Indeed, a decentralized system of government provides these groups greater opportunities to collect financial resources and to create channels through which to mobilize the local population to engage in conflict and secessionism. Consequently, fiscal decentralization can lead to increasing demands for sovereignty and self-rule (Hechter, 2000), which is particularly important in explaining the onset of internal armed conflicts. In fact, demands for sovereignty and self-rule by groups seeking greater policy independence have caused more than a third of all civil wars around the world since the end of the Second World War (Sambanis and Milanovic, 2011). Moreover, fiscal decentralization can be used by policy elites in the subnational governments to discriminate against local ethnic minorities, thus increasing ethnic tension (Horowitz, 1991; Tranchant, 2010). In addition, it is not obvious that national security policies designed to fight against potential insurgents are more effective in decentralized countries. In fact, decentralization may cause coordination problems between the different tiers of government, which may lead in turn to an underprovision and underfinancing of public safety (Strumpf, 2002).

Furthermore, several studies show that the existence of high levels of interregional inequality within countries (i.e. spatial inequality) increases the risk of internal armed conflict (Bakke and Wibbels, 2006; Østby et al., 2009; Deiwiks et al., 2012). This is particularly relevant in our context, as fiscal decentralization may affect regional disparities. It is however difficult to specify a priori the final effect of fiscal devolution on interregional inequality. On the one hand, fiscal decentralization can contribute to undermine the power of central government to play an equalization role between the various regions, thus giving rise to a more uneven distribution of resources across space and greater spatial inequality (Prud'homme, 1995). Accordingly, the transfer of fiscal power to subnational tiers of government mainly benefits the most prosper-

ous regions, which are characterized in general by better socio-economic endowments and higher institutional quality (Cheshire and Gordon, 1998). In view of this argument, the literature has tended to emphasize the spatial regressive effects of fiscal decentralization.

There are, however, various reasons to suppose that decentralization may contribute to reduce spatial inequality (McKinnon, 1997; Ezcurra and Pascual, 2008). In the framework of the second generation models of fiscal federalism, for example, Weingast (1995) and Qian and Weingast (1997) stress the role played in this context by the incentive effects of regional competition following fiscal devolution. Given that the ability of regional governments to stay in power depends decisively on their performance in attaining a level of development and economic growth similar to that registered by the rest of the country, the policy makers in poorer regions might attempt to reduce their development gaps by offering more flexible labour markets and/or less generous welfare provisions than richer regions. It is worth noting also that in centralized systems of government an important share of total investment often tends to be located in the capital regions where political decision-making takes place. Nevertheless, fiscal decentralization is characterized by a downsized central government (Jin and Zou, 2002), which has the effect of drawing political power away from the capital and its surrounding region. This contributes to the spatial spread of economic activity, thus reducing regional disparities (Ezcurra and Pascual, 2008).

As can be observed, the various arguments laid down above do not allow us to determine a priori the final impact of the devolution of fiscal power from central to subnational governments on the incidence of within-country conflict. In these circumstances empirical research is key to shed light on this issue. For this reason the rest

of the paper is devoted to investigating the effect of fiscal decentralization on internal conflict in a large cross-section of countries. At this point it is important to recall that, as discussed in the introduction, there are few cross-country analyses to date addressing the link between fiscal decentralization and intrastate conflict. Most of the literature focuses on the role played in this context by political decentralization (e.g. Gurr, 2000; Hechter 2000; Bermeo, 2002). Although some indicators of fiscal decentralization are sometimes used (Brancati 2006), the conceptual and empirical discussion is mainly centred on political decentralization. Nevertheless, there are some exceptions. Thus, Bakke and Wibbels (2006) and Tranchant (2010) examine why the effects of fiscal decentralization on civil violence may vary in different countries. In particular, Bakke and Wibbels (2006) show in a sample of 22 federal states that the impact of fiscal decentralization depends ultimately on the interactions between the federal institutions, regional disparities and the degree of ethnic diversity in the society. In particular, these authors find that fiscal decentralization leads to ethnic violence in countries with high levels of interregional inequality, while copartisanship between central and subnational tiers of government reduces the risk of conflict. In turn, Tranchant (2010), using data on 50 minority groups, highlights the relevance in this context of institutional quality, and the different effect of fiscal decentralization on local majorities and local minorities.¹

¹In a recent study, Farzanegan et al. (2013) investigate how the abundance of natural resources affects the risk of internal conflict and how the federal structure of the state influences on this relationship. Although the analysis of the connection between fiscal decentralization and conflict is not the main aim of these authors, their findings suggest that the link between fiscal devolution and internal stability is not robust.

3 Measuring decentralization and internal conflict

Our research requires comparable and homogeneous data on the degree of fiscal decentralization in the various countries. It should be recalled, however, that the devolution of fiscal power from central to regional and local governments is a complex and multidimensional process (Martinez-Vazquez and McNab, 2003; Rodríguez-Pose and Ezcurra, 2010), and that no single indicator is able to adequately capture the real level of fiscal decentralization of a country (Ebel and Yilmaz, 2002). In order to maximize the number of countries and the study period, I use two standard measures of fiscal decentralization: the subnational share in total government expenditure, and the subnational share in total government revenue. The dataset compiled by the World Bank and based on the IMF's Government Finance Statistics provides information on these indicators for a maximum of 105 countries over the period 1972-2000.² Using average values, expenditure (revenue) decentralization in this sample ranges from 1.53% (1.10%) to 61.23% (66.14%), which confirms that the degree of fiscal devolution varies considerably across the different countries.

Despite the fact that these measures are the most widely used indicators in the literature on the effects of fiscal decentralization (e.g. Davoodi and Zou, 1998; Fisman and Gatti, 2002; Enikolopov and Zhuravskaya, 2007), they are not free of criticisms. Thus, these measures fail to differentiate between tax and non-tax revenue sources, and for their inability to capture the proportion of intergovernmental transfers that are discretionary or conditional. Most importantly, these indicators are based exclusively on the distribution of expenditure and revenue responsibilities, but they provide no information about the degree of autonomy of subnational governments (Ebel and

²See <http://www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm> (May 2013).

Yilmaz, 2002). For large cross-country comparisons, as Rodríguez-Pose and Ezcurra (2010) acknowledge, there is nevertheless a lack of reliable alternatives, making these measures the best available quantitative indicators on the level of fiscal decentralization (see also Rodríguez-Pose and Gill (2004)).

In order to overcome some of the problems of using these measures as our proxies for the level of fiscal decentralization of the various countries, and to provide a more comprehensive picture of the actual powers of subnational governments, I introduce in the analysis an indicator of the level of political decentralization. In particular, I employ a measure proposed by Treisman (2008) to capture decision-making decentralization and based on the degree of autonomy of subnational governments in certain areas. This is a binary variable that takes the value one if, under constitution, subnational legislatures have autonomy in certain specified areas not explicitly subject to central laws, zero otherwise. Using the information provided by national constitutions, Treisman (2008) compiles this indicator for a total of 129 countries around the mid 1990s. The correlation coefficients between this measure of political autonomy and the two indicators of fiscal decentralization described above are respectively 0.199 (p-value = 0.068) and 0.149 (p-value = 0.171), which suggests that the correspondence is far from being perfect. In any case, the relatively low values of the correlation coefficients between political and fiscal decentralization observed in our sample should allow us to identify the individual effects on internal stability of our proxies for fiscal and political decentralization.

In order to conduct the analysis, I also need to quantify the incidence of civil conflicts in the various countries. To that end I resort to the information provided by the UCDP/PRIODAT dataset. This dataset is the result of a collaborative project

between the Department of Peace and Conflict Research at Uppsala University and the Centre for the Study of Civil War at the International Peace Research Institute located in Oslo.³ The UCDP/PRIO data, which are described in detail by Gleditsch et al. (2002), have been frequently used in recent years by numerous researchers and policy makers (e.g. Østby et al., 2009; Deiwiks et al., 2012; Esteban et al., 2012). Armed conflicts are defined according to this source as “a contested incompatibility that concerns government or territory or both, where the use of armed force between two parties results in at least 25 battle-related deaths in a year. Of these two parties, at least one has to be the government of a state” (Harbom and Wallensteen, 2010, p. 508).

Ideally, one would like to have data on the total number of deaths per year in order to capture the degree of intensity of civil conflicts. However, available information about the number of death tolls is quite limited and unreliable. For this reason, I follow the convention in the literature and employ a yearly binary indicator defined according to a threshold based on the number of casualties. Given the nature of the study, I am interested in all conflicts included in the UCDP/PRIO dataset. Therefore, I take as baseline a variable which reports all conflicts with 25 or more battle-related deaths in a year (PRIO25). That is, in our analysis a country is recorded as having experienced a civil armed conflict in a given year if this threshold of death tolls has been met. This allows us to include in the study small and intermediate conflict episodes.

Figure 1 shows the number of civil conflicts that fulfil the above criterion between 1972 and 2000. The graph shows clearly that the global trend in within-country

³For further details see <http://www.prio.no/Data/Armed-Conflict/> (May 2013).

conflicts has not been uniform throughout the study period. The maximum number of civil conflicts was reached at the beginning of the 1990s and was the result of the steady and gradual accumulation of conflicts since the mid 1970s. Coinciding with the end of the Cold War, the incidence of civil conflicts decreased slightly. This seems to suggest that the increase in the incidence of internal violence in some countries associated with the Soviet collapse was offset by improved management strategies by states and international organizations (Gurr, 2000). In any case, Figure 1 reveals that in 2000 there were still 26 ongoing conflict events all over the world, which implies that around one in seven countries was affected by internal conflict.⁴

[INSERT FIGURE 1 AROUND HERE]

4 Empirical analysis

4.1 The model

In this section I investigate the relationship between the devolution of fiscal power from central to subnational governments and the incidence of internal armed conflicts in 77 countries over the period 1972-2000. To that end, I estimate different versions of the following model:

$$C_{it} = \alpha + \beta FD_{i,t-1} + \gamma PD_{i,t-1} + \delta' \mathbf{X}_{i,t-1} + \varepsilon_{it} \quad (1)$$

⁴It is interesting to note that the basic pattern in Figure 1 is observed in a broad range of other data sets on civil wars (e.g. Sambanis, 2002; Fearon and Laitin, 2003).

where C is a binary variable that takes a value of one if a civil armed conflict occurred in country i during year t and zero otherwise, FD and PD are respectively the measures of fiscal and political decentralization, \mathbf{X} is a set of variables that control for additional factors that are assumed to have an influence on internal conflict, and ε is the corresponding disturbance term. The main interest throughout the paper lies on the coefficient β , which measures the impact of the degree of fiscal decentralization on the incidence of intrastate conflict.

The control variables included in vector \mathbf{X} have been selected on the basis of existing studies on the explanatory factors of civil conflict (e.g. Collier and Hoeffler, 1998, 2004; Doyle and Sambanis, 2000; Fearon and Laitin, 2003; Montalvo and Reynal-Querol, 2005; Esteban et al., 2012). Considering the findings of this literature, I take as the baseline specification of model (1) the following set of controls: GDP per capita, population size, degree of fractionalization and ethnic polarization, percentage of mountainous terrain, non-contiguity of country territory, natural resource abundance, democracy, a time dummy for the Cold War period, and the existence of episodes of internal conflict in preceding years.⁵

According to economic theories of conflict and civil war, the level of development plays a key role in this context (Newman, 1991). As is usual, I use GDP per capita to capture existing differences in development across the sample countries. This variable can be interpreted as a proxy for “a state’s overall financial, administrative, police and military capabilities” (Fearon and Laitin, 2003, p. 80). This suggests that rebels can expect a greater probability of success in low income countries. Moreover, a higher level of GDP per capita implies a greater opportunity cost of engaging in a civil conflict

⁵The Appendix provides detailed information on the definitions and sources of the different control variables.

(Collier and Hoeffler, 2004).

Population size is also important in this context because the number of potential rebels that can be recruited by the insurgents is greater in larger countries, whereas the government of these countries must face more difficulties to exercise its authority and keep the control at the local level (Montalvo and Reynal-Querol, 2005). Furthermore, as is usual in the literature, the threshold used to define the dependent variable of model (1) is not normalized by the population of the country in question, which tends to bias civil conflicts in favour of larger countries (Esteban et al., 2012). The inclusion of the population control in the list of regressors of model (1) allows one to overcome this problem. In addition, this variable is positively associated with the level of spatial inequality registered within the various countries (Rodríguez-Pose and Ezcurra, 2010). This is potentially important in our context because, as discussed in section 2, spatial inequality may be correlated with both internal conflict and fiscal decentralization (Østby et al., 2009; Deiwiks et al., 2012).

Ethnic cleavages are commonly perceived as an important cause of internal conflict. This is based on the belief that ethnically diverse societies often register a greater degree of violence (Horowitz, 1985; Esteban et al., 2012). In order to capture the degree of ethnic heterogeneity within the sample countries I use two complementary measures. Following the usual approach in the literature, I include in vector \mathbf{X} a standard index of ethnic fractionalization. However, some scholars suggest that there is less ethnic violence in highly homogeneous and highly heterogeneous societies, whereas the intensity of internal conflict is greater in those societies where a large ethnic minority must face an ethnic majority (Elbadawi and Sambanis, 2000). This means that an index of polarization may capture the risk of potential ethnic conflict better than

traditional indices of fractionalization (Montalvo and Reynal-Querol, 2005; Esteban et al., 2012). For this reason, I include in the list of regressors of model (1) a measure of ethnic polarization proposed by Esteban et al. (2012).⁶

Furthermore, geographical factors may also be related to the incidence of internal conflict. Rough and mountainous terrain can be used by rebel groups to hide from government forces. Likewise, the existence of a territorial base separated geographically from the country's centre should favour insurgency and internal conflict (Fearon and Laitin, 2003; Montalvo and Reynal-Querol, 2005).

Model (1) also includes a measure of the degree of natural resource abundance based on Esteban et al. (2012). Numerous studies have highlighted the link between natural resource abundance and violent civil conflicts (e.g. Ross, 2006; Brunnschweiler and Bulte, 2009) Resource-rich countries are often characterized by land expropriation, inadequate job opportunities and labour migration, which may breed social unrest in different sectors of the society. Natural resource abundance may also increase the potential gains of those officials who are in charge of the exploitation of such resources, which may give rise to more corruption and poor governance (Ades and Di Tella, 1999). In addition, natural resources may provide an important source of funding for rebel forces, although the presence of resource rents may also increase the probability of foreign intervention.

⁶The indices of fractionalization and polarization do not take into account the geographical distribution of ethnic groups within a country, which may be particularly important in the relationship between ethnic cleavages and conflict (Bakke and Wibbels, 2006). In view of this, I also considered the role played in this context by ethnic segregation. To do so, I resorted to the two measures of ethnic segregation calculated by Alesina and Zhuravskaya (2011). Unfortunately, these measures are not available for an important number of countries included in our analysis. As a robustness test, I checked using a reduced sample that their inclusion in the list of regressors of model (1) does not affect the core results of the paper. Indeed, none of these measures of ethnic segregation is significantly associated with internal conflict.

Furthermore, democracy may be related to the presence of internal conflict. Democratic states are generally characterized by less repression of minority groups and by the observance and respect of civil and political rights of their citizens (Fearon and Laitin, 2003). This suggests that in democratic societies, ethnopolitical groups are more likely to adopt other strategies of protest rather than rebellion (Gurr, 2000). Therefore, democratic regimes are less likely to produce grievance and violence. By contrast, autocracies tend to be less stable than democracies. In fact, in non-democratic states the regime transitions can increase the risk of conflict. Although the relationship between democracy and conflict is complex (Collier and Rohner, 2008), these arguments suggest that one should distinguish between democratic and non-democratic countries in the sample.

Moreover, the information provided by Figure 1 seems to indicate that the number of internal armed conflicts was greater during the Cold War. In view of this, I also include in the list of regressors a time dummy to capture the potential effects of the Cold War on the dependent variable. Finally, the incidence of civil conflicts is usually affected by the existence of previous episodes of violence, so I follow Fearon and Laitin (2003) or Esteban et al. (2012) and use lagged conflict as an additional control.

4.2 Results

I begin by examining the relationship between the subnational share in total government expenditure and intrastate conflict. To do so I consider different ways of estimating model (1). Thus, given the binary nature of the dependent variable, the first two columns of Table 1 show the results obtained when the conflict equation is estimated using respectively probit and logit regression. In turn, in the third column

I employ the procedure suggested by King and Zeng (2001) to correct for the bias created in a logit model for the reduced number of conflict observations relative to the total.⁷ In all cases the corresponding p-values (in parentheses) are calculated using robust standard errors adjusted for clustering at the country level.

[INSERT TABLE 1 AROUND HERE]

The information provided by Table 1 reveals that the relationship between the subnational share in total government expenditure and internal conflict does not depend on the specific method used to estimate model (1). In particular, the coefficient of the measure of fiscal decentralization is negative and statistically significant in all cases, regardless of the estimation strategy. This means that a higher degree of expenditure decentralization is associated with a lower risk of civil armed conflict. It should be noted that this result is not affected by the inclusion in the analysis of the level of political autonomy of subnational governments. In fact, although the coefficient of our proxy for the degree of political decentralization is also negative, it is far from being statistically significant at conventional levels. This seems to suggest that the level of regional autonomy does not affect conflict.⁸ Nevertheless, this result should be treated with some caution because we cannot rule out the possibility that the statistical insignificance of this variable is caused by a constitution-based definition of political autonomy which may have little relevance in a real-life political economy context.

⁷The number of conflict observations in the sample is around 17%.

⁸I also considered the role played in this context by an alternative, weaker measure of political autonomy of subnational governments proposed by Treisman (2008) that captures if subnational governments have powers to legislate in areas not explicitly assigned to other levels (“residual autonomy”). The results obtained when this variable is included in the conflict equation are very similar to those just described.

Overall the estimates in Table 1 reveal a negative correlation between fiscal decentralization and internal conflict. Nevertheless, it is important to recall that the presence of an internal conflict may lead countries to modify their degree of decentralization (Brancati, 2006; Tranchant, 2010). Consequently, the processes of fiscal decentralization may affect intrastate conflicts and, in turn, be affected by them, giving rise to a reverse causality problem. This issue is potentially important from an econometric perspective, but it could be solved if we had a suitable instrument for fiscal decentralization. Such an instrument must not be correlated with the disturbance process in model (1), but at the same time must be an important factor in accounting for the variation in the dependent variable. Finding instruments that fulfil these conditions in the context of our study is not easy. The standard instruments for fiscal decentralisation employed in the literature are country size or the degree of ethnolinguistic fractionalization (Arikan, 2004; Enikolopov and Zhuravskaya, 2007; Sepulveda and Martinez-Vazquez, 2011). Nevertheless, as discussed above, these factors are expected to be directly correlated with the incidence of internal conflict. For this reason, model (1) already includes these variables in the list of regressors. Faced with this difficulty, I follow Rodríguez-Pose and Ezcurra (2010) and use two year lagged values of the measure of fiscal decentralization as instrument.⁹ This allows us to estimate the conflict equation using an instrumental variable probit model based on a conditional maximum-likelihood estimator (Miranda and Rabe-Hesketh, 2006).

The results obtained when this estimation strategy is applied to investigate the link between decentralization and conflict are presented in the fourth column of Table

⁹I also repeated the estimations using longer lags, since longer lags should reduce any potential correlation between fiscal decentralization and the disturbance term in model (1). Nevertheless, the results were in all cases very similar to those discussed in the paper. For further details on the employment of lagged values of the explanatory variables as instruments, see Barro (2000).

1. Focussing on the aim of the paper, it is important to note that the coefficient of the measure of fiscal decentralization continues to be negative and statistically significant. This confirms that fiscal decentralization reduces the incidence of internal conflict, which constitutes the main empirical finding of the paper. To get an idea of the quantitative importance of the impact of fiscal decentralization on intrastate conflict, we can use the estimates in the last column of Table 1 to compute the corresponding marginal effect. This marginal effect shows that a 20% increase in the subnational share of total government expenditure from the average of 21.66% is associated with a 4% decrease in the risk of internal conflict. Although in principle this impact might seem modest, it should be taken into account by policy makers in designing and developing effective conflict prevention strategies.

With respect to the control variables included in model (1), the information provided by Table 1 reveals that the results are in general consistent with the findings of the existing literature on the determinants of internal armed conflicts. Thus, the estimates show that civil violence is more likely in larger countries. Likewise, the index of fractionalization has a positive and significant effect on the dependent variable, thus indicating that ethnic diversity is a relevant factor in explaining the existence of intrastate conflicts. Furthermore, the non-contiguity of a country territory is also related to higher rates of civil conflict. Additionally, the analysis shows that internal violence is more likely in those countries affected in the past by a civil conflict. The coefficients of the remaining controls are not statistically significant consistently across the various regressions included in Table 1, which may have to do with the employment in the analysis of clustered standard errors.

In order to examine whether the negative link between fiscal decentralization and civil conflict is robust, the analysis presented in Table 1 is repeated using the subnational share in total government revenue as the proxy for the degree of fiscal decentralization in the sample countries. The results are shown in Table 2. In all cases the existence of intrastate violence is less likely in countries with relatively high levels of revenue decentralization, while the coefficient of the measure of political autonomy is not statistically significant in any of the regressions. Likewise, the effects of the remaining explanatory variables included in our baseline specification are very similar to those described above.

[INSERT TABLE 2 AROUND HERE]

I now check to what extent these results are sensitive to the inclusion of regional dummies. To that end, I add to the list of regressors of model (1) four dummies for countries in the most conflictual regions of the world during the study period: Sub-Saharan Africa, Middle East, Asia and Latin America. As reported in the first column of Tables 3 and 4, the inclusion of these regional dummies does not affect the observed relationship between fiscal decentralization and internal conflict. In addition, columns 2-5 of Tables 3 and 4 show the results obtained when different estimations of model (1) are carried out excluding the countries in these regions in turn. This exercise allows us to investigate whether the results are driven by particular countries that can be considered more conflictual. The estimates indicate that the coefficients of the measures of fiscal decentralization continue to be negative and statistically significant in all cases, corroborating the previous findings.

[INSERT TABLE 3 AROUND HERE]

[INSERT TABLE 4 AROUND HERE]

As mentioned above, the dependent variable in model (1) is a binary variable that reports all conflicts with more than 25 battle-related deaths in a year (PRIO25). The observed negative association between fiscal decentralization and internal conflict, however, may be contingent on the choice of this specific threshold of deaths. For this reason, as an additional robustness check, I now examine to what extent the results in Table 1 depend on the definition of civil conflict used to construct the dependent variable in model (1). To this end, I employ an alternative indicator based on UCDP/PRIO data that takes into account whether the conflict has exceeded 1,000 battle-related deaths throughout its course (PRIOCW). More specifically, a conflict is coded as zero as long as it has not resulted over time in more than 1,000 battle-related casualties. Once a conflict reaches this threshold is coded as one. Unlike the dependent variable used so far, PRIOCW allows us to focus our attention exclusively on intermediate and high-intensity conflicts (i.e. civil wars). Columns 1 and 2 of Table 5 show the results obtained when PRIOCW is used to quantify the incidence of civil conflict in model (1). As can be checked, this change has little effect on the main findings of the paper. More specifically, the estimates reveal that the coefficients of the measures of fiscal decentralization remain negative and statistically significant.

[INSERT TABLE 5 AROUND HERE]

At this point it should be recalled that the information to construct the two dependent variables employed in the analysis performed so far were drawn from the UCDP/PRIO dataset. In view of this, one may wonder if the results could be affected by the use of this particular dataset. In order to investigate this issue, I resort to the data employed by Doyle and Sambanis (2000) and Fearon and Laitin (2003), who constructed two alternative lists of conflicts based on the information provided by the Correlates of War (COW) project and other sources.¹⁰ Doyle and Sambanis (2000) report conflicts that: “(a) it caused more than 1,000 deaths; (b) it challenged the sovereignty of an international recognized state; (c) it occurred within the recognized boundary of that state; (d) it involves the state as a principal combatant; (e) it included rebels with the ability to mount organized armed opposition to the state; and (f) the parties were concerned with the prospects of living together in the same political unit after the end of the war”. In turn, the definition of conflict proposed by Fearon and Laitin (2003) is based on the following criteria: (a) it should involve “the fighting between agents of (or claimants to) a state and organized, non-state groups who sought either to take control of a government, take power in a region, or use violence to change government policies; (b) the conflict killed or has killed at least 1,000 over its course, with a yearly average of at least 100 deaths; (c) at least 100 were killed on both sides (including civilians attacked by rebels)”. Columns 3-6 of Table 5 report the results obtained when the baseline model is estimated again using the data provided by Doyle and Sambanis (2000) and Fearon and Laitin (2003) to construct the dependent variable. The estimates reveal that the main results of the paper remain unaltered. In particular, the coefficients of the measures of fiscal decentralization still hold negative and statistically significant, thus corroborating the robustness of our

¹⁰See Sambanis (2004) for further details about the COW civil war data.

findings.

5 Concluding remarks

This paper has examined the relationship between fiscal decentralization and internal armed conflict in a panel of 77 countries during the period 1972-2000. The results show that the devolution of fiscal power to subnational tiers of government reduces the incidence of civil conflict. This finding is robust to the inclusion in the analysis of the degree of political decentralization and of a number of control variables commonly employed in the literature. Likewise, the observed relationship does not depend on the estimation strategy or the specific measures used to quantify the degree of fiscal decentralization and the incidence of civil conflicts within the various countries.

In the context of the global trend towards decentralization currently underway, an important number of countries located in some of the most conflictual regions in the world have undergone in recent years different transformations increasing the levels of autonomy of subnational tiers of government (Rodríguez-Pose and Gill, 2003; Rodríguez-Pose and Ezcurra, 2010). This is, for example, the case of Asian countries such as China, Indonesia, the Philippines or Vietnam. This trend can also be observed in Latin America, where many of the countries that were decentralized on paper have experienced important changes in the relations between the central government and the various regions. Even in Sub-Saharan Africa, considered traditionally as a strong bastion of centralism, numerous countries have undertaken different transfers of powers and resources to subnational tiers of government (Ndegwa, 2002). Against this background, our results provide empirical evidence on the importance of fiscal

decentralization for managing intrastate conflict, which should be taken into account by policy makers at the national level and by regional and international organizations. Nevertheless, the nature of our analysis implies that any policy implication should be treated with caution. In particular, the results of the paper should not be used to justify the idea that fiscal decentralization can be a one-size-fits-all solution to the different forms of intrastate conflict.

Additional extensions to our work are not difficult to conceive. Some relate directly to the enlargement of the number of countries included in the sample. Lack of adequate data on decentralization has prevented us from pursuing this issue, but addressing it may provide a more complete picture about the nature of the link between fiscal devolution and internal conflict. Likewise, it would be important to have alternative measures of fiscal decentralization available for large cross-country comparisons in order to capture adequately the multidimensional nature of the processes of decentralization. Further research will also have to pay special attention to the need to identify and study the various theoretical mechanisms which explain in the final instance the influence of fiscal devolution on civil conflict. Only by pursuing these strands we will be able to attain a more complete understanding about how fiscal decentralization affects intrastate violence.

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References

- Ades A, Di Tella R, 1999, "Rents, competition, and corruption" *American Economic Review* **89** 982-993
- Alesina A, Spolaore E, 2003, *The Size of Nations* (MIT Press, Cambridge, MA)
- Alesina A, Zhuravskaya E, 2011, "Segregation and the quality of government in a cross-section of countries" *American Economic Review* **101** 1872-1911.
- Arikan G G, 2004, "Fiscal decentralization: A remedy for corruption?" *International Tax and Public Finance* **11** 175-195
- Bakke K M, Wibbels E, 2006, "Diversity, disparity and civil conflict in federal states" *World Politics* **59** 1-50
- Barro R, 2000, "Inequality and growth in a panel of countries" *Journal of Economic Growth* **5** 5-32
- Bermeo N, 2002, "The imports of institutions" *Journal of Democracy* **13** 96-110
- Blattman C, Miguel E, 2010, "Civil war" *Journal of Economic Literature* **48** 3-57
- Brancati D, 2006, "Decentralization: Fueling the fire or dampening the flames of ethnic conflict and secessionism?" *Internal Organization* **60** 651-685
- Brown M, 1996 *International Dimensional of Internal Conflict* (MIT Press, Cambridge, MA)

- Brunnschweiler C N, Bulte E H, 2009, "Natural resource and violent conflict: Resource abundance, dependence and the onset of civil wars" *Oxford Economic Papers* **61** 651-674
- Bunce V, 1999 *Subversive Institutions: The Design and the Destruction of Socialism and the State*. (Cambridge University Press, Cambridge, UK)
- Cheshire P C, Gordon I R, 1998, "Territorial competition: Some lessons for policy" *Annals of Regional Science* **32** 321-346
- Collier P, Hoeffler A, 1998, "On economic causes of civil war" *Oxford Economic Papers* **50** 563-573
- Collier P, Hoeffler A, 2004, "Greed and grievance in civil war" *Oxford Economics Papers* **56** 563-595
- Collier P, Rohner D, 2012, "Democracy, development and conflict" *Journal of the European Economic Association* **6** 531-540
- Cornell S E, 2002, "Autonomy as a source of conflict: Caucasian conflicts in theoretical perspective" *World Politics* **54** 245-276
- Davoodi H, Zou H, 1998, "Fiscal decentralization and economic growth: a cross country study" *Journal of Urban Economics* **43** 244-257
- Deiwiks C, Cederman L, Gleditsch K, 2012, "Inequality and conflict in federations" *Journal of Peace Research* **49** 289-304
- Diprose R, 2009, "Decentralization, horizontal inequalities and conflict management

in Indonesia” *Ethnopolitics* **8** 107-134

Doyle M W, Sambanis N, 2000, “International peacebuilding: A theoretical and quantitative analysis” *American Political Science Review* **94** 779-801

Ebel R D, Yilmaz S, 2002, “On the measurement and impact of fiscal decentralization” Policy Research Working Paper 2809, World Bank, Washington DC

Elbadawi I, Sambanis N, 2000, “Why are there so many civil wars in Africa? Understanding and preventing violent conflict” *Journal of African Economies* **9** 244-269

Enikolopov R, Zhuravskaya E, 2007, “Decentralization and political institutions” *Journal of Public Economics* **91** 2261-2290

Esteban J, Mayoral L, Ray D, 2012, “Ethnicity and conflict: An empirical study” *American Economic Review* **102** 1302-1342

Ezcurra R, Pascual P, 2008, “The link between fiscal decentralization and regional disparities: Evidence from several European Union countries” *Environment and Planning A* **40** 1185-1201

Farzanegan M R, Lessmann C, Markwardt G, 2013, “Natural-resource rents and internal conflicts. Can decentralization lift the curse?” CESifo Working Paper 4180, Center for Economic Studies and Ifo Institute, Munich

Fearon J, Laitin D, 2003, “Ethnicity, insurgency, and civil war” *American Political Science Review* **97** 75-90

Fisman R, Gatti R, 2002, “Decentralization and corruption: evidence across countries”

Journal of Public Economics **83** 325-345

Frey B S, Luechinger S, 2005, "Decentralization as a disincentive for terror" *European Journal of Political Economy* **20** 590-615

Glaeser E L, 2005, "The political economy of hatred" *Quarterly Journal of Economics* **120** 45-86

Gleditsch N P, Wallensteen P, Eriksson M, Sollenber M, Strand H, 2002, "Armed conflict 1946-2001: A new dataset" *Journal of Peace Research* **39** 615-637

Greer S, 2010, "Territorial politics in hard times: the welfare state under pressure in Germany, Spain and the United Kingdom" *Environment and Planning C: Government and Policy* **28** 405-419

Gurr T R, 2000 *People Versus States: Minorities at Risk in the New Century* (United States Institute of Peace Press, Washington DC)

Hale H E, 2004, "Divided we stand. Institutional sources of ethnofederal state survival and collapse" *World Politics* **56** 165-193

Harbom L, Wallensteen P, 2010, "Armed conflict, 1946-2009" *Journal of Peace Research* **47** 501-509

Hechter M, 2000 *Containing Nationalism* (Oxford University Press, Oxford)

Horowitz, D.L, 1985 *Ethnic Groups in Conflict* (University of California Press, Berkeley, CA)

Horowitz D L, 1991 *A Democratic South Africa? Constitutional Engineering in a*

Divided Society. (University of California Press, Berkeley, CA)

- Jin J, Zou H, 2002, "How does fiscal decentralization affect aggregate, national, and subnational government size?" *Journal of Urban Economics* **52** 270-293
- King G, Zeng L, 2001, "Logistic regression in rare events data" *Political Analysis* **9** 137-163
- Kyriacou A, 2000, "An ethnically based federal and bicameral system: The case of Cyprus" *International Review of Law and Economics* **20** 261-268
- La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R, 1999, "The quality of government" *Journal of Law, Economics and Organization* **15** 222-279
- Lacina B, Gleditsch N P, 2005, "Monitoring trends in global combat: A new dataset of battle deaths" *European Journal of Population* **21** 145-166
- Lijphart A, 1996, "Puzzle of Indian democracy" *American Political Science Review* **90** 258-268
- Martinez-Vazquez J, McNab R M, 2003, "Fiscal decentralization and economic growth" *World Development* **31** 1597-1616
- McCarten W J, 2003, "The challenge of fiscal discipline in the Indian states" in *Fiscal Decentralization and the Challenge of Hard Budget Constraints* Eds J Rodden, J Eskeland, J Litvack (MIT Press, Cambridge, MA) pp 249-286
- McKinnon R, 1997, "Market-preserving fiscal federalism in the American Monetary Union" in *Macroeconomic Dimensions of Public Finance: Essays in Honour of*

- Vito Tanzi* Eds M Blejer, T Ter-Minassian (Routledge, London) pp. 73-93
- Miranda A, Rabe-Hesketh S, 2006, "Maximum likelihood estimation of endogenous switching and sample selection models for binary, ordinal, and count variables" *Stata Journal* **6** 285-308
- Montalvo J G, Reynal-Querol M, 2005, "Ethnic polarization, potential conflict and civil war" *American Economic Review* **95** 796-816
- Ndegwa N, 2002, "Decentralization in Africa: A stocktaking survey" Africa Region Working Paper Series 40, World Bank, Washington DC
- Newman S, 1991, "Does modernization breed ethnic conflict?" *World Politics* **43** 451-478
- Oates, W, 1972 *Fiscal Federalism* (Harcourt Brace Jovanovich, New York)
- Østby G, Nordås R, Rød J K, 2009, "Regional inequalities and civil conflict in Sub-Saharan Africa" *International Studies Quarterly* **53** 301-324.
- Prud'homme R, 1995, "On the dangers of decentralization" Policy Research Working Paper 1252, World Bank, Washington DC
- Qian Y, Weingast B, 1997, "Federalism as a commitment to preserving market incentives" *Journal of Economic Perspectives* **11** 83-92
- Rodden J, 2002, "The dilemma of fiscal federalism: grants and fiscal performance around the world" *American Journal of Political Science* **46** 670-687
- Rodríguez-Pose A, Ezcurra R, 2010, "Does decentralization matter for regional dis-

- parities? A cross-country analysis” *Journal of Economic Geography* **10** 619-644
- Rodríguez-Pose A, Gill N, 2003, “The global trend towards devolution and its implications” *Environment and Planning C: Government and Policy* **21** 333-351
- Rodríguez-Pose A, Gill N, 2004, “Is there a global link between regional disparities and devolution?” *Environment and Planning A* **36** 2097-2117
- Rodríguez-Pose A, Gill N, 2005, “On the ‘economic dividend’ of devolution” *Regional Studies* **39** 405-420
- Rodríguez-Pose A, Sandall R, 2008, “From identity to the economy: analysing the evolution of the decentralisation discourse” *Environment and Planning C: Government and Policy* **26** 54-72
- Rodríguez-Pose A, Tijmstra S, Bwire A, 2009, “Fiscal decentralisation, efficiency, and growth” *Environment and Planning A* **41** 2041-2062
- Ross M, 2006, “A closer look at oil, diamonds and civil war” *Annual Review of Political Science* **9** 265-300
- Sambanis N, 2001, “Do ethnic and non-ethnic civil wars have the same causes? A theoretical and empirical inquiry (part 1)” *Journal of Conflict Resolution* **45** 259-282
- Sambanis N, 2002, “A review of recent advances and future directions in the quantitative literature on civil war” *Defence and Peace Economics* **13** 215-243
- Sambanis N, 2004, “What is a Civil War? Conceptual and empirical complexities of

an operational definition” *Journal of Conflict Resolution* **48** 814-858

Sambanis N, Milanovic B, 2011, “Explaining the demand for sovereignty” Policy Research Working Paper 5888, World Bank, Washington DC

Sepulveda C F, Martinez-Vazquez J, 2011, “The consequences of fiscal decentralization on poverty and income equality” *Environment and Planning C: Government and Policy* **29** 321-343

Snyder J L, 2000 *From Voting to Violence: Democratization and Nationalist Conflict* (Norton, New York)

Strumpf K S, 2002, “Does government decentralization increase policy innovation?” *Journal of Public Economic Theory* **4** 207-243

Tiebout C M, 1956, “A pure theory of local expenditures” *Journal of Political Economy* **64** 416-424

Tranchant J P, 2010 *Essays on fiscal decentralization, institutions and ethnic conflict* Ph.D. Thesis, Université d’Auvergne Clermont I, Clermont Ferrand

Treisman D, 2008, “Decentralization dataset” available at: <http://www.sscnet.ucla.edu/polisci/faculty/treisman/> (May 2013)

Weingast B, 1995, “The economic role of political institutions: Market-preserving federalism and economic growth” *Journal of Law, Economics and Organization* **11** 1-31

World Bank, 2000 *World Development Report 1999/2000. Entering the 21st Century.*

(World Bank, Washington, DC)

Appendix

List of countries

| | | |
|-------------------|------------|-----------------|
| Albania | Denmark | Malawi |
| Argentina | Estonia | Malaysia |
| Australia | Ethiopia | Mauritius |
| Austria | Fiji | Mexico |
| Azerbaijan | Finland | Morocco |
| Bahrain | France | Netherlands |
| Bangladesh | Germany | New Zealand |
| Belarus | Greece | Norway |
| Belgium | Hungary | Pakistan |
| Benin | India | Paraguay |
| Bolivia | Indonesia | Peru |
| Brazil | Iran | Philippines |
| Bulgaria | Ireland | Poland |
| Cameroon | Israel | Portugal |
| Canada | Italy | Romania |
| Chile | Japan | Russia |
| China | Jordan | Senegal |
| Congo-Brazzaville | Kenya | Slovak Republic |
| Costa Rica | Kyrgyzstan | Slovenia |
| Croatia | Lithuania | South Africa |
| Cyprus | Madagascar | South Korea |

| | | |
|-------------|----------------|-----------|
| Spain | Trinidad | Uruguay |
| Swaziland | Tunisia | Venezuela |
| Sweden | Turkey | Zambia |
| Switzerland | Uganda | Zimbabwe |
| Thailand | United Kingdom | |

Control variables: Definitions and sources

GDP per capita: Natural log of GDP per capita expressed in constant 2005 international dollars. Source: Penn World Tables 7.0.

Population: Natural log of total population (thousands of people). Source: Penn World Tables 7.0.

Fractionalization: Index of ethnic fractionalization defined as $F = \sum_{i=1}^m n_i(1 - n_i)$, where n_i is the population share of group i . Source: Esteban et al. (2012).

Polarization: Index of ethnic polarization defined as $P = \sum_{i=1}^m \sum_{j=1}^m n_i^2 n_j k_{ij}$, with $k_{ij} = 1 - s_{ij}^{0.05}$. n_i is the population share of group i , and s_{ij} is the degree of similarity between two languages, given by the ratio of the number of common branches to the maximum possible number for the entire tree. Source: Esteban et al. (2012).

Mountainous terrain: Percentage of mountainous terrain. The variable is expressed in natural logs as $\log(1 + mount)$. Source: Fearon and Laitin (2003).

Non-contiguous state: Dummy variable that takes the value one for those countries with territory holding at least 10,000 people and separated from the land

area containing the capital city either by land or by 100 kilometers of water, zero otherwise. Source: Fearon and Laitin (2003).

Democracy: Institutionalized democracy. Democracy ranges from zero (low) to ten (high) (Polity IV Project). Using this information a dummy variable is constructed to identify those countries where the democracy score is higher than or equal to four (Montalvo and Reynal-Querol, 2005). Source: Esteban et al. (2012).

Natural resources: Oil-diamond dummy, which takes the value one if the country is “rich in oil” or produces (any positive quantity of) diamonds, zero otherwise. A country is “rich in oil” if the average value of its oil production in a period is greater than 100 US dollars in 2000 constant dollars. Source: Esteban et al. (2012).

Figures and Tables

Figure 1: Number of internal conflicts from 1972 to 2000.

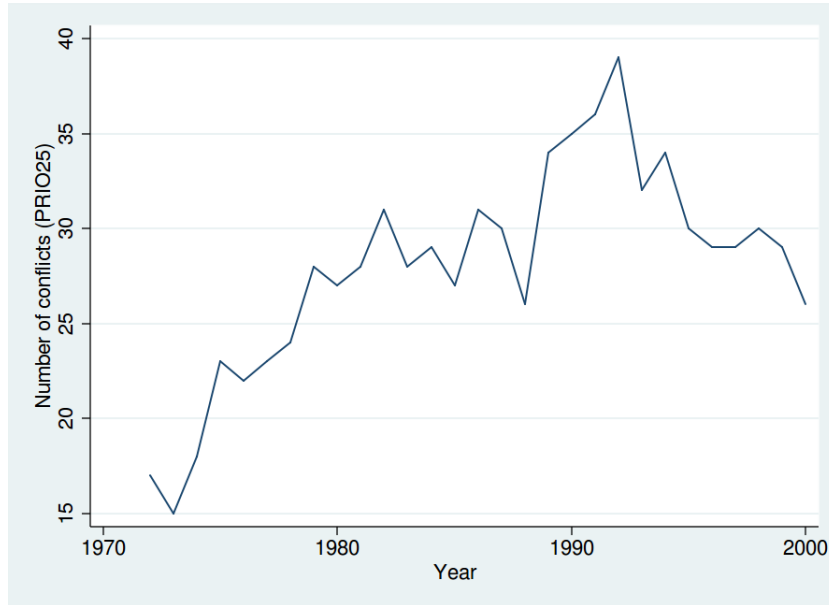


Table 1: The relationship between expenditure decentralization and internal conflict.

| | (1) | (2) | (3) | (4) |
|------------------------------|----------------------|----------------------|----------------------|----------------------|
| Method | Probit | Logit | RE-Logit | IV-Probit |
| Expenditure decentralization | -0.023*** (0.003) | -0.051*** (0.004) | -0.048*** (0.006) | -0.027*** (0.002) |
| Political autonomy | -0.130 (0.516) | -0.411 (0.332) | -0.368 (0.380) | -0.184 (0.403) |
| GDP per capita | -0.102 (0.253) | -0.205 (0.221) | -0.188 (0.256) | -0.027 (0.776) |
| Population | 0.340*** (0.000) | 0.710*** (0.000) | 0.670*** (0.000) | 0.377*** (0.000) |
| Fractionalization | 0.999** (0.017) | 2.409*** (0.004) | 2.352*** (0.004) | 1.504*** (0.002) |
| Polarization | -0.600 (0.636) | -1.597 (0.588) | -1.360 (0.641) | 0.300 (0.817) |
| Mountainous terrain | -0.085 (0.219) | -0.203 (0.209) | -0.206 (0.198) | -0.102 (0.129) |
| Non-contiguous state | 0.293* (0.076) | 0.612* (0.065) | 0.593* (0.071) | 0.343** (0.037) |
| Natural resources | 0.181 (0.523) | 0.495 (0.383) | 0.510 (0.364) | -0.080 (0.759) |
| Democracy | 0.179 (0.297) | 0.464 (0.195) | 0.430 (0.225) | 0.208 (0.276) |
| Cold War | 0.220 (0.174) | 0.443 (0.161) | 0.425 (0.174) | 0.383** (0.018) |
| Prior conflict | 2.806*** (0.000) | 5.080*** (0.000) | 4.795*** (0.000) | 2.791*** (0.000) |
| Constant | -4.464*** (0.000) | -9.033*** (0.000) | -8.610*** (0.000) | -5.829*** (0.000) |
| Pseudo-R2 | 0.732 | 0.731 | . | . |
| Countries | 76 | 76 | 76 | 73 |
| Observations | 1155 | 1155 | 1155 | 1062 |

Notes: The dependent variable is in all cases PRIO25. p-values are reported in parentheses. Robust standard errors adjusted for clustering at the country level have been employed to compute z-statistics. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level. See the main text for further details on the estimation methods.

Table 2: The relationship between revenue decentralization and internal conflict.

| | (1) | (2) | (3) | (4) |
|--------------------------|----------------------|----------------------|----------------------|----------------------|
| Method | Probit | Logit | RE-Logit | IV-Probit |
| Revenue decentralization | -0.023** (0.013) | -0.053** (0.013) | -0.050** (0.017) | -0.029*** (0.001) |
| Political autonomy | -0.153 (0.457) | -0.470 (0.282) | -0.420 (0.330) | -0.184 (0.411) |
| GDP per capita | -0.130 (0.168) | -0.272 (0.133) | -0.248 (0.165) | -0.063 (0.525) |
| Population | 0.313*** (0.000) | 0.665*** (0.000) | 0.629*** (0.000) | 0.346*** (0.000) |
| Fractionalization | 0.928** (0.029) | 2.220*** (0.009) | 2.175** (0.010) | 1.393*** (0.005) |
| Polarization | -0.561 (0.653) | -1.968 (0.494) | -1.771 (0.534) | 0.371 (0.768) |
| Mountainous terrain | -0.063 (0.350) | -0.163 (0.295) | -0.165 (0.283) | -0.070 (0.281) |
| Non-contiguous state | 0.248 (0.157) | 0.499 (0.162) | 0.479 (0.176) | 0.284* (0.100) |
| Natural resources | 0.254 (0.357) | 0.669 (0.220) | 0.671 (0.214) | 0.016 (0.949) |
| Democracy | 0.166 (0.316) | 0.479 (0.173) | 0.440 (0.205) | 0.225 (0.226) |
| Cold War | 0.230 (0.152) | 0.469 (0.130) | 0.453 (0.139) | 0.405** (0.010) |
| Prior conflict | 2.799*** (0.000) | 5.057*** (0.000) | 4.775*** (0.000) | 2.785*** (0.000) |
| Constant | -4.094*** (0.000) | -8.237*** (0.000) | -7.894*** (0.000) | -5.355*** (0.000) |
| Pseudo-R2 | 0.730 | 0.729 | . | . |
| Countries | 77 | 77 | 77 | 74 |
| Observations | 1159 | 1159 | 1159 | 1062 |

Notes: The dependent variable is in all cases PRIO25. p-values are reported in parentheses. Robust standard errors adjusted for clustering at the country level have been employed to compute z-statistics. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level. See the main text for further details on the estimation methods.

Table 3: Robustness analysis: Regional dummies and influential regions (I). Instrumental variable probit.

| | (1) | (2) | (3) | (4) | (5) |
|----------------------|----------------------|-------------------------|----------------------|----------------------|----------------------|
| Expenditure decen. | -0.024** (0.010) | -0.024** (0.011) | -0.021** (0.009) | -0.025*** (0.008) | -0.033*** (0.011) |
| Political autonomy | -0.001 (0.223) | -0.432* (0.250) | 0.002 (0.251) | -0.227 (0.286) | -0.108 (0.287) |
| GDP per capita | -0.303*** (0.111) | -0.139 (0.104) | -0.193*** (0.073) | 0.145 (0.153) | -0.061 (0.097) |
| Population | 0.469*** (0.090) | 0.310*** (0.080) | 0.476*** (0.071) | 0.295*** (0.087) | 0.436*** (0.088) |
| Fractionalization | 1.126* (0.583) | 2.664*** (0.808) | 0.868* (0.471) | 1.930*** (0.651) | 1.457*** (0.480) |
| Polarization | 0.901 (1.632) | -2.069 (1.924) | 2.030 (1.257) | -0.639 (1.962) | -1.556 (1.283) |
| Mountainous terrain | -0.132 (0.084) | -0.131 (0.082) | -0.079 (0.087) | -0.045 (0.074) | -0.101 (0.088) |
| Non-contiguous state | 0.690*** (0.229) | 0.429** (0.217) | 0.577*** (0.179) | 0.239 (0.262) | 0.235 (0.184) |
| Natural resources | -0.769* (0.422) | -0.251 (0.306) | -0.295 (0.393) | -0.175 (0.317) | 0.434 (0.270) |
| Democracy | 0.159 (0.188) | 0.097 (0.194) | 0.032 (0.191) | 0.035 (0.214) | 0.580* (0.302) |
| Cold War | 0.350* (0.205) | 0.372* (0.202) | 0.459** (0.201) | 0.291 (0.218) | 0.528*** (0.188) |
| Prior conflict | 2.614*** (0.239) | 2.581*** (0.285) | 2.548*** (0.239) | 2.871*** (0.327) | 2.741*** (0.325) |
| Constant | -4.355*** (1.240) | -4.177*** (1.285) | -5.532*** (1.079) | -6.688*** (1.179) | -6.238*** (1.022) |
| Regional dummies | Yes | No | No | No | No |
| Excluded region | None | Sub-Saha- ran Africa | Middle East | Asia | Latin America |
| Countries | 73 | 61 | 67 | 62 | 62 |
| Observations | 1062 | 921 | 992 | 927 | 887 |

Notes: The dependent variable is in all cases PRIO25. p-values are reported in parentheses. Robust standard errors adjusted for clustering at the country level have been employed to compute z-statistics. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Table 4: Robustness analysis: Regional dummies and influential regions (II). Instrumental variable probit.

| | (1) | (2) | (3) | (4) | (5) |
|----------------------|----------------------|-------------------------|----------------------|----------------------|----------------------|
| Revenue decen. | -0.030** (0.012) | -0.025** (0.011) | -0.028*** (0.009) | -0.021** (0.010) | -0.033*** (0.011) |
| Political autonomy | 0.012 (0.221) | -0.401 (0.258) | 0.016 (0.249) | -0.257 (0.288) | -0.168 (0.285) |
| GDP per capita | -0.371*** (0.115) | -0.158 (0.103) | -0.236*** (0.077) | 0.120 (0.160) | -0.092 (0.107) |
| Population | 0.457*** (0.085) | 0.278*** (0.077) | 0.468*** (0.062) | 0.253*** (0.087) | 0.378*** (0.083) |
| Fractionalization | 1.031* (0.590) | 2.531*** (0.806) | 0.748 (0.479) | 1.884*** (0.661) | 1.413*** (0.480) |
| Polarization | 1.087 (1.642) | -1.963 (1.954) | 2.195* (1.201) | -0.937 (1.921) | -1.112 (1.157) |
| Mountainous terrain | -0.106 (0.082) | -0.092 (0.078) | -0.056 (0.085) | -0.011 (0.071) | -0.041 (0.084) |
| Non-contiguous state | 0.641*** (0.221) | 0.375* (0.212) | 0.522*** (0.185) | 0.213 (0.277) | 0.181 (0.200) |
| Natural resources | -0.712* (0.423) | -0.188 (0.316) | -0.170 (0.378) | -0.070 (0.307) | 0.506* (0.269) |
| Democracy | 0.228 (0.194) | 0.100 (0.181) | 0.094 (0.196) | -0.018 (0.216) | 0.571** (0.281) |
| Cold War | 0.373* (0.207) | 0.378* (0.194) | 0.498** (0.199) | 0.325 (0.209) | 0.525*** (0.187) |
| Prior conflict | 2.584*** (0.239) | 2.577*** (0.291) | 2.516*** (0.236) | 2.888*** (0.331) | 2.776*** (0.330) |
| Constant | -3.743*** (1.173) | -3.866*** (1.235) | -5.172*** (1.056) | -6.269*** (1.194) | -5.673*** (1.037) |
| Regional dummies | Yes | No | No | No | No |
| Excluded region | None | Sub-Saha- ran Africa | Middle East | Asia | Latin America |
| Countries | 74 | 61 | 68 | 63 | 63 |
| Observations | 1062 | 917 | 994 | 927 | 889 |

Notes: The dependent variable is in all cases PRIO25. p-values are reported in parentheses. Robust standard errors adjusted for clustering at the country level have been employed to compute z-statistics. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Table 5: Robustness analysis: Alternative measures of conflict. Instrumental variable probit.

| Dep. variable | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------|----------------------|----------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| | PRIOCW | PRIOCW | Doyle-Sambanis (2000) | Doyle-Sambanis (2000) | Fearon-Laitin (2003) | Fearon-Laitin (2003) |
| Exp. decen. | -0.034** (0.014) | | -0.044*** (0.017) | | -0.058*** (0.022) | |
| Rev. decen. | | -0.046*** (0.016) | | -0.053** (0.021) | | -0.053** (0.022) |
| Pol. autonomy | -0.313 (0.332) | -0.321 (0.330) | 0.004 (0.316) | -0.043 (0.329) | 0.580 (0.358) | 0.521 (0.340) |
| GDP per capita | -0.080 (0.075) | -0.149* (0.088) | -0.249** (0.121) | -0.319* (0.165) | -0.450*** (0.169) | -0.506*** (0.183) |
| Population | 0.379*** (0.083) | 0.370*** (0.072) | 0.320*** (0.105) | 0.261*** (0.087) | 0.641*** (0.215) | 0.579*** (0.195) |
| Fractionalization | 1.230*** (0.475) | 1.061** (0.463) | 1.427** (0.580) | 1.241** (0.502) | 0.448 (0.784) | 0.068 (0.678) |
| Polarization | 0.039 (1.538) | -0.148 (1.429) | -1.332 (1.652) | -1.676 (1.573) | 0.851 (2.375) | 1.086 (2.317) |
| Mount. | -0.108 (0.091) | -0.079 (0.085) | -0.064 (0.096) | -0.032 (0.081) | -0.188 (0.160) | -0.171 (0.155) |
| Non-contig. | 0.201 (0.173) | 0.116 (0.193) | 0.232 (0.229) | 0.244 (0.248) | 0.150 (0.358) | 0.201 (0.348) |
| Nat. resources | 0.103 (0.258) | 0.283 (0.273) | 0.066 (0.297) | 0.206 (0.311) | 0.841* (0.499) | 1.065** (0.474) |
| Democracy | 0.376* (0.227) | 0.487** (0.248) | 1.036*** (0.378) | 1.002*** (0.388) | 1.006** (0.449) | 0.804** (0.394) |
| Cold War | 0.437* (0.236) | 0.442* (0.237) | 0.352** (0.179) | 0.387* (0.210) | 0.388** (0.196) | 0.496* (0.268) |
| Prior conflict | 3.492*** (0.268) | 3.478*** (0.266) | 3.751*** (0.283) | 3.674*** (0.251) | 4.110*** (0.436) | 3.859*** (0.308) |
| Constant | -5.620*** (1.186) | -5.029*** (1.121) | -4.043*** (1.050) | -2.975** (1.230) | -5.084*** (1.489) | -4.125*** (1.394) |
| Countries | 73 | 74 | 73 | 74 | 73 | 74 |
| Observations | 1062 | 1062 | 1038 | 1038 | 1038 | 1038 |

Notes: p-values are reported in parentheses. Robust standard errors adjusted for clustering at the country level have been employed to compute z-statistics. * Significant at 10% level, ** significant at 5% level, *** significant at 1% level.