



Terrorism and spatial disparities: Does interregional inequality matter?



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ABSTRACT

This article examines the relationship between interregional inequality and the incidence of domestic terrorism in a panel of 48 countries over the period 1990–2010. The results show that a high level of interregional inequality increases the number of domestic terror events in the sample countries. This finding is robust to the inclusion of additional explanatory variables that may affect both interregional inequality and domestic terrorism. Furthermore, the observed link between interregional inequality and terrorist activity does not depend on the choice of the specific measure used to quantify the degree of dispersion in the regional distribution of GDP per capita within the sample countries.

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1. Introduction

Terrorism has been responsible for an enormous share of casualties and hardship around the world throughout the last decades. According to the figures provided by the [Institute for Economics and Peace \(2014\)](#), since the beginning of the 21st century there has been over a five-fold increase in the number of deaths due to terrorist activity, rising from 3,361 in 2000 to 17,958 in 2013. Terrorism is now the most important national security risk for many countries. In addition to its direct consequences for victims and their relatives, terrorism often has a negative impact on economic outcomes through its effect on trade and capital flows ([Abadie and Gardeazabal, 2008](#); [Enders and Olson, 2012](#)). Terrorist activity can also represent a major threat to political stability and institutional order ([Gassebner et al., 2011](#); [Williams et al., 2013](#)), ultimately resulting in a loss of individual and collective life satisfaction ([Frey et al., 2009](#)). Furthermore, terrorism is likely to have important diffusion or contagion effects ([Neumayer and Plümper, 2010](#)), which may contribute to undermining regional stability and the relations between neighbouring countries. For all these reasons, preventing terrorist activity and reducing its intensity is crucial. Nevertheless, the design of prevention and management strategies requires a good comprehension of the causes of this type of violence, which explains the considerable efforts devoted in the literature to understanding the goals and motivations of terrorists.

Against this background, in recent years numerous scholars have examined the effects of various factors on the incidence of terrorism using cross-country data (for a review of this literature, see [Gassebner and Luechinger, 2011](#); [Krieger and Meierrieks, 2011](#)). However, to the best of our knowledge, no study has yet considered the role played in this context by interregional

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inequality, defined as income inequality across regions within a country. This omission may be potentially important, as there are various reasons to assume that interregional inequality should affect terrorism. Thus, a high level of interregional inequality may spark social unrest and grievances in the poorer regions of a country, which may eventually contribute to inspiring terrorist actions. Moreover, the existence of income disparities across the regions of a country may lead to redistributive conflicts (Bakke and Wibbels, 2006; Sambanis and Milanovic, 2014), thus undermining political stability and making terrorism more likely.

In order to fill this gap in the literature, this article investigates the relationship between interregional inequality and domestic terrorism for the first time. More precisely, our research aims to find out whether countries with higher levels of interregional inequality show a greater incidence of terrorist activity. In order to achieve this goal, we use data for 48 countries with different levels of economic development over the period 1990–2010. We focus our attention on domestic terrorism because the various arguments discussed below suggest that interregional inequality should affect domestic terrorism rather than international terrorism. Although international terrorism tends to be more visible in the media, domestic terrorist events are much more numerous (Abadie, 2006; Enders and Sandler, 2006; Kis-Katos et al., 2011). Furthermore, Enders et al. (2011) show that domestic terrorism can spill over to international terrorism. Therefore, unveiling the causes of domestic terrorism is especially important in order to formulate sound and effective policy recommendations.

The remainder of the article is organized as follows. After this introduction, Section 2 discusses from a theoretical perspective why interregional inequality should affect domestic terrorist activity. Section 3 describes the measures used in the article to quantify the level of interregional inequality and the incidence of domestic terrorism in the various countries. In turn, Section 4 presents the main results of the empirical analysis carried out to investigate the link between interregional inequality and domestic terrorism. The robustness of our findings is examined in Section 5. The main conclusions of the article are presented in the final section.

2. Why should interregional inequality affect the incidence of domestic terrorism?

The relationship between inequality, social unrest, and violence is one of the oldest concerns of political economy. In fact, the belief that an unequal distribution of resources and wealth can generate conflicts and violence in a society goes back at least to Plato and Aristotle, and is present in the works of many other major figures in the history of Western thought such as Machiavelli, Montaigne, de Toqueville, or Marx (Nagel, 1974; Cramer, 2005). The basic intuition behind the inequality–violence link is summarized in the so-called theory of the relative deprivation put forward by Gurr (1970). According to this theory, although absolute poverty may lead to apathy or inactivity, the existence of discrepancies between what individuals think they deserve and what they actually receive through the economic system creates collective discontent, and may inspire radical actions or even violence when the situation is perceived as a result of exploitation or discrimination. Thus, the potential for collective violence in a society ultimately depends on the magnitude of the gap between expected and achieved welfare.

Beginning with the seminal study by Russett (1964), in the last decades numerous scholars have attempted to empirically confirm the existence of a positive relationship between inequality and conflict (e.g. Midlarsky, 1988; Brockett, 1992; Fearon and Laitin, 2003; Collier and Hoeffler, 2004). Nevertheless, as Lichbach (1989) points out in his survey article, the results are generally ambiguous or statistically insignificant, and this conclusion is also applicable to studies examining the impact of inequality on terrorist activity (e.g. Li, 2005; Abadie, 2006; Kurrild-Klitgaard et al., 2006). In order to explain the causes of this apparent puzzle, it is necessary to determine previously how inequality matters for conflict. In fact, the vast majority of this empirical literature solely considers the role played in this context by the degree of interpersonal inequality across the whole population of individuals, quantified using Gini indices or other concentration measures. This standard approach is useful to measure *vertical inequality*, or inequality within a specific group of individuals or households. However, this type of analysis tends to ignore the degree of *horizontal inequality*, which refers to inequality between groups that coincide with identity-based cleavages (Stewart, 2000, 2002). The distinction between vertical inequality and horizontal inequality is particularly important in this context because the group dimension is a key aspect of human well-being and social stability (Sen, 1992). According to the evidence provided by a series of case studies, Stewart (2002) argues that horizontal inequality contributes to the strengthening of the sense of identity of individuals and the generation of group grievances, thus facilitating the mobilization for conflict.

Horizontal inequality can be based on various group identifiers, such as ethnicity and religion (Gurr, 1994; Alesina et al., 2015), gender (Caprioli, 2005; Melander, 2005), or urban–rural groups (Gurr, 1994; Sahn and Stifel, 2003). In this article, we are interested in the horizontal inequality brought about by the existence of various subnational regions within a country, since regional identity is especially relevant as a social cleavage with respect to distributional issues with a potential to foment social unrest and conflict (Herb and Kaplan, 1999; Østby et al., 2009). This implies that interregional inequality, defined as the degree of income inequality across the various regions within a country, may be one of the determinants of violence and civil conflicts. Given that terrorism is ultimately a particular form of violence, these arguments also suggest that terrorist activity may be more likely in countries with higher levels of interregional inequality.

According to Krieger and Meierrieks (2011, p. 4), terrorism can be defined “as the deliberate use of violence and intimidation directed at a large audience to coerce a community (government) into conceding politically or ideologically motivated demands”. Terrorism can be part of more widespread revolutionary movements, but it is different from other forms of political violence such as civil wars, guerrilla warfare, or riots because, among other reasons, the targets of terrorist attacks tend to be mainly civilian targets (non-military facilities and/or personnel) in order to achieve publicity and media attention, destabilize society, and damage the economy (Krieger and Meierrieks, 2011; Campos and Gassebner, 2013). Furthermore, unlike terrorist

organizations, rebel groups involved in civil wars and guerrilla activity tend to control some territory (Gurr, 1988). Terrorism is nowadays a global phenomenon and many more countries suffer its direct effects than those affected by civil wars, guerrilla warfare, or riots (Institute for Economics and Peace, 2014). Although the drivers of terrorist activity are often complex and multi-dimensional, the literature has highlighted the role played in this context by economic, political, institutional, demographic, and geographical factors (e.g. Gassebner and Luechinger, 2011; Kis-Katos et al., 2011; Krieger and Meierrieks, 2011). However, as far as we are aware, no study has thus far examined the potential impact of interregional inequality on the incidence of terrorism.

In many countries, particularly in the developing world, the boundaries of subnational regions often correspond to ethnic group demarcations, with each region frequently being dominated by a particular ethnic group (Stewart, 2002). This favours the existence of regional political parties with an ideology based on ethnic favouritism. In order to maximize their number of votes and acquire power, these parties use the animosity and distrust between the various groups to broadcast messages that target other ethnic groups (Horowitz, 1985). In a setting where the various ethnic groups are geographically clustered, a high level of interregional inequality may aggravate ethnic tensions (Bakke and Wibbels, 2006), thus increasing the likelihood of terrorist incidents.

Interregional inequality may also be related to terrorism even in countries with ethnically homogeneous societies. Thus, in a country characterized by high levels of interregional inequality, the central government should address the redistributive claims that poorer regions are likely to make. In this situation, and depending on the prospective costs of redistribution, the central government could decide to ignore these claims, which may cause grievances and collective discontent in the poorer regions of the country, therefore raising the risks of terrorist activity. On the contrary, if the central government chooses to satisfy the redistributive demands of poorer regions, richer regions may find themselves subsidizing the rest of the country (Alesina et al., 2000). Sambanis and Milanovic (2014) argue that in such a setting richer regions will tend to want more autonomy, and conflict may arise due to differences between desired and actual levels of sovereignty. As shown in the theoretical model proposed by Bolton and Roland (1997), this type of conflict is more likely when there is an unequal distribution of the costs and benefits of continued political integration among the various regions of a country. In any case, these sovereignty demands can ultimately give rise to the development of secessionist movements in the richer regions of the country (Sorens, 2005), which may be supported by terrorist organizations.

Faced with the risk of secession, the central government could choose to adopt a repressive policy, which may aggravate the conflict and have potentially important consequences in economic and political terms. An alternative option, used by numerous countries over the last decades, is to resort to decentralization to buy back the loyalty of separatist regions (Bakke and Wibbels, 2006; Anderson, 2014). However, this type of initiatives may worsen the relative situation of poorer regions. Moreover, decentralization may contribute to increasing the threat of secession by empowering subnational levels of government and regional parties, which may take advantage of the weakness of central authority to raise their demands (Brancati, 2006; Sambanis and Milanovic, 2014).

Taken together, the above arguments suggest the existence of a positive association between the level of interregional inequality and the number of domestic terror incidents. Accordingly, we propose the following hypothesis:

Hypothesis 1. Interregional inequality increases the incidence of domestic terrorism.

3. Measuring interregional inequality and domestic terrorism

Our research requires comparable and homogeneous data on the magnitude of interregional inequality within the various countries. To that end, we use the following measure proposed by Theil (1967):

$$T(0)_i = \sum_{j=1}^J p_j \log \left(\frac{\mu}{y_j} \right) \quad (1)$$

where y and p are, respectively, the GDP per capita and the population share of region j in country i , and $\mu = \sum_{j=1}^J p_j y_j$. $T(0)$ is known in the literature as Theil's second measure of inequality or mean logarithmic deviation. The advantage of this index over other potential alternative measures of inequality is that it is independent of scale and population size and fulfils the Pigou–Dalton transfer principle (Cowell, 1995). Moreover, as shown by Shorrocks (1980), this measure is additively decomposable by population subgroups, which explains its wide use in the literature. From a spatial perspective, it is worth noting that $T(0)$ is not sensitive to the number of regions within each country (Portnov and Felsentsein, 2005). Likewise, this measure takes into account the differences in population size across the various spatial units considered. This aspect has traditionally been overlooked by the literature on economic convergence developed since the seminal works of Barro and Sala-i-Martin (1991, 1992), despite the fact that, as noted by Petrakos et al. (2005), omitting population size may greatly alter our perceptions of interregional inequality (Ezcurra and Rodríguez-Pose, 2013, p. 94).

The calculation of $T(0)$ requires regional data on GDP and population. This is not an easy task if, as in our case, one aims to carry out a cross-country analysis. Although the OECD or Eurostat provide regional data for the majority of developed countries,

the situation is different in the case of developing countries. In these countries, regional data often tend to be scarce and must be obtained directly from national statistical offices and central banks. Faced with this problem of information availability, in our study we resort to the regional data collected by Ezcurra and Rodríguez-Pose (2013). This dataset allows us to calculate the measure of interregional inequality defined above for a total of 48 countries with different levels of economic development over the period 1990–2006 (see Appendix for further details). Data availability, however, is not the same for all countries included in the sample, which means that our panel dataset is unbalanced. The 48 countries included in our study account for nearly 70% of the world's population. Nevertheless, the lack of regional data on GDP and population implies that we have been forced to exclude from the analysis the least developed countries, as well as some countries with the highest levels of terrorist activity during the study period (e.g. Iraq, Afghanistan or Pakistan). This may give rise to a potential sample selection bias, which should be taken into account when interpreting our results.

In order to conduct the analysis, we also need information on the incidence of domestic terrorism in the sample countries. Nevertheless, most existing datasets cover only international terrorism (e.g. ITERATE, Country Reports on Terrorism by the US State Department) or are characterized by limited geographical or time coverage of domestic terrorism (e.g. MIPT, TWED). In view of this, we draw our data on domestic terrorism from the Global Terrorism Database (GTD) provided by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) of the University of Maryland. The GTD is an open-source database including information on more than 125,000 terrorist events around the world since 1970, which has been widely used in the recent literature (e.g. Freytag et al., 2011; Gassebner and Luechinger, 2011; Kis-Katos et al., 2011, 2014).¹

According to the GTD (2014, p. 8), a terrorist attack is defined as “the threatened or actual use of illegal force and violence by a non-state actor (...)” and that meets at least two of the following three criteria: (i) “The act must be aimed at attaining a political, economic, religious, or social goal; (ii) there must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) than the immediate victims; (iii) the action must be outside the context of legitimate warfare activities”. This database is especially useful for our purpose in this article, as it allows us to identify domestic terrorism incidents in the sample countries. In particular, an incident is classified as domestic terrorism when the nationality of the perpetrator group coincides with the location of the attack and with the nationalities of the targets (GTD, 2014, pp. 55–58). We also consider an attack as domestic terrorism when the nationalities of the perpetrator group and/or the targets are unknown. Using these criteria, we calculate the number of domestic terror events in the 48 countries with regional data on GDP and population.²

As mentioned above, in this article we are interested in the link between interregional inequality and domestic terrorism. As a first insight on this relationship, the sample countries are divided into two and three groups according to the average value of the measure of interregional inequality between 1990 and 2006. The definitions of the different groups are based on the median (classification into two groups) and the first and third quartiles (classification into three groups) of the distribution of $T(0)$. As can be seen in Fig. 1, countries with higher levels of interregional inequality tend, on average, to experience a greater number of domestic terror attacks. In contrast, the incidence of domestic terrorism is lower in countries characterized by a more equitable distribution of income across their regions. This is corroborated by the corresponding F-tests, which show that the differences between the groups in the average number of domestic terror incidents are statistically significant.

However, when interpreting the information provided by Fig. 1, it should be noted that this analysis is simply descriptive, and that the results discussed above may be ultimately sensitive to the specific number of groups used to classify the sample countries. More importantly, it is very likely that the incidence of domestic terrorism does not depend exclusively on the level of interregional inequality. This implies that the empirical evidence shown in Fig. 1 should be interpreted with caution because omitted variables may affect our perception on the connection between interregional inequality and domestic terrorism. In view of this, in the remainder of the article we carry out a more appropriate statistical analysis on this issue.

4. Is there a link between interregional inequality and domestic terrorism?

4.1. The model

In order to estimate the relationship between interregional inequality and the incidence of domestic terrorism, we now estimate different versions of the following model:

$$T_{i,t \rightarrow t+3} = \alpha + \beta I_{i,t-1} + \gamma' \mathbf{X}_{i,t-1} + \lambda_t + \varepsilon_{it} \quad (2)$$

where T is the number of domestic terror events in country i calculated over four-year periods, I is the measure of interregional inequality described above, and \mathbf{X} denotes a set of variables that control for additional factors that are assumed to influence terrorism, including continent dummies for North America, Latin America, Europe, Sub-Saharan Africa, and Asia. In turn, the model

¹ The data can be downloaded from <http://www.start.umd.edu/gtd/> (START, 2014). See LaFree and Dugan (2007) for a detailed description of this database.

² The GTD data for 1993 are missing. In order to overcome this potential problem, we follow Choi (2010) and Freytag et al. (2011) and interpolate the data for 1993 using the information of the previous and following years. However, the results of the paper remain unaffected when the analysis is performed excluding the interpolated 1993 data. We also examine whether our findings depend on the specific criteria adopted to classify an incident as domestic terrorism. To that end, we repeat the analysis using the data on domestic terrorism compiled by Enders et al. (2011) from GTD data. This robustness test shows that our results still hold when this alternative dataset on domestic terrorism is used.

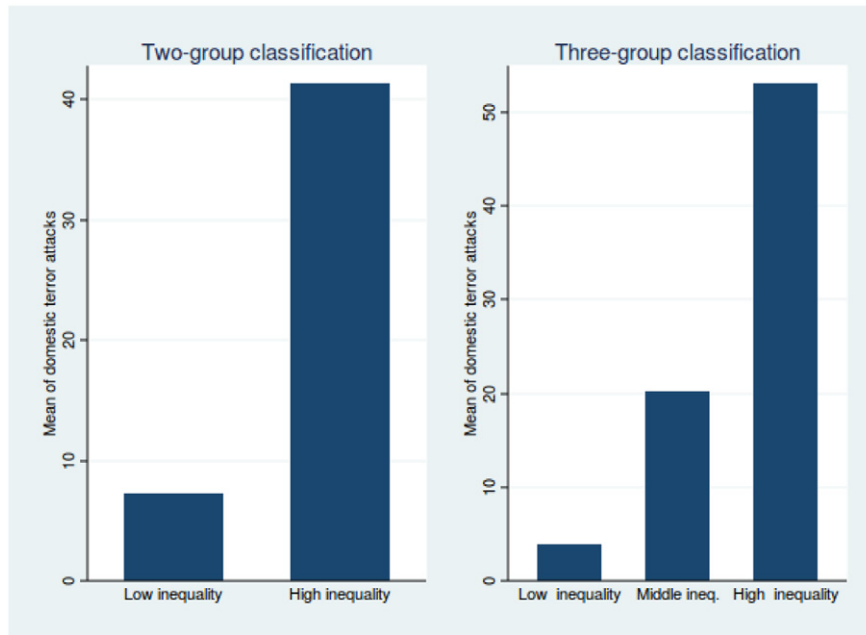


Fig. 1. Interregional inequality and domestic terrorism: Preliminary evidence.

also includes time-specific effects, λ , to control for shocks over time common to all countries and capture eventual changes in data encoding procedures. Finally, ε is the corresponding disturbance term. The periods used to calculate the dependent variable in model (2) are 1991–1994, 1995–1998, 1999–2002, 2003–2006, and 2007–2010, whereas the time-varying regressors are measured in the year preceding the beginning of each four-year period. Our main interest throughout the article lies on the coefficient β , which measures the impact of the level of interregional inequality on the incidence of domestic terrorism over the ensuing four years.

In view of the specification of model (2), one may consider the possibility of including country fixed effects. However, controlling for country fixed effects is not advisable in our case, as most of the variation experienced by the key independent variable, the measure of interregional inequality, is between countries rather than over time (Ezcurra and Rodríguez-Pose, 2013). The information provided by an ANOVA model shows that 94% of the variation in the interregional inequality data in our sample is due to variations across countries. As pointed out by Partridge (2005, pp. 371–372) and Lai (2007, p. 305), in this case fixed effect models may produce inaccurate results.

The control variables included in vector \mathbf{X} have been selected on the basis of a careful review of existing studies on the causes of terrorism.³ Our aim is to use an econometric specification that is representative of the literature to determine whether the relationship between interregional inequality and domestic terrorism is affected by the inclusion in the analysis of additional controls. Thus, numerous scholars tend to pay particular attention to the role played by the level of economic development in explaining terrorist activity (Krueger and Maleckova, 2003; Li, 2005; Abadie, 2006; Piazza, 2008a,b) and interregional inequality (Petraokos et al., 2005; Lessmann, 2014). As is common practice in the literature, we use GDP per capita to capture existing differences in development across the sample countries.⁴ On the one hand, 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). A higher state capacity should reduce the risks of open rebellion or civil war, but it may make terrorist activity more likely (Blomberg et al., 2004). On the other hand, the level of GDP per capita is positively related to the opportunity costs of violence (Freitag et al., 2011), which suggests that richer countries should experience less domestic terrorism. These countervailing effects raise the possibility that the relationship between the level of development and terrorist activity may be non-linear (Freitag et al., 2011; Enders and Hoover, 2012). For this reason, we include the GDP per capita of the various countries and its square in the list of controls.

Furthermore, the processes of economic integration and the opening of national borders to the world markets tend to produce winners and losers within the various countries. This may give rise to grievances and social discontent, making violence more likely, particularly in lower-income countries (Chua, 2003). However, other arguments stress that international trade and economic globalization can contribute to reinforcing the political and institutional order, which should discourage terrorist

³ For further details, see the survey paper by Krieger and Meierrieks (2011) and the extreme bound analysis performed by Gassebner and Luechinger (2011). Most of the literature focusses on international rather than domestic terrorism. However, in many cases the explanatory factors of international terrorism are also the determinants of domestic terrorism (Dreher and Fischer, 2011; Kis-Katos et al., 2011).

⁴ The Appendix provides detailed information on the definition and sources of the different controls.

activities (Kurrild-Klitgaard et al., 2006). In turn, the level of economic integration with the rest of the world is a potential determinant of changes in interregional inequality (Rodríguez-Pose and Ezcurra, 2010; Ezcurra and Rodríguez-Pose, 2013). In view of this, we add to the list of regressors the degree of international trade openness of the various countries, measured as the ratio between total trade (exports and imports) and GDP.

Additionally, domestic terrorism may be affected by the degree of dispersion in the income distribution across the whole population of individuals (i.e. interpersonal inequality), and not only by the average income (Li, 2005; Abadie, 2006; Krieger and Meierrieks, 2010). A high degree of interpersonal inequality is likely to spark grievances and discontent among individuals situated at the lower end of the income distribution, who may use violence to challenge the economic status quo (Ross, 1993). This implies that terrorism should become more attractive in those countries with a higher dispersion in the income distribution. Therefore, we control for the level of interpersonal inequality within the sample countries. To do this, we resort to the adjusted Gini indices compiled by the World Bank (Milanovic, 2014). Note that the inclusion of this additional control is particularly relevant in our context because interregional inequality is a component of interpersonal inequality (Milanovic, 2005). Indeed, there is a positive and statistically significant association between both types of inequality in our sample. Namely, interregional inequality alone explains around 12% of the variation in interpersonal inequality observed in the sample countries during the study period, which is in line with the findings of Lessmann (2014).

Population size is also important in this setting as the absolute number of terrorist incidents should be greater in more populous countries, which tend to have higher levels of demographic stress (Gassebner and Luechinger, 2011; Krieger and Meierrieks, 2011). Likewise, larger countries are often characterized by greater interregional inequality than smaller countries, which are in general more homogeneous (Ezcurra and Rodríguez-Pose, 2013).

Geographical factors may also be related to the incidence of domestic terrorism. Rough and mountainous terrain can be used by terrorist groups to hide from government forces (Abadie, 2006). Similarly, the existence of a territorial base separated geographically from the country's centre should favour insurgency and terrorism (Fearon and Laitin, 2003). In turn, the level of interregional inequality within any given country may depend on the presence of physical constraints to mobility, and countries with rougher surface tend to have a greater geographical concentration of economic activity (Ramcharan, 2009). For these reasons, we add to the list of regressors in model (2) an index of terrain ruggedness and a dummy variable to identify countries with non-contiguous territory.

Furthermore, the literature points out the potential effect on terrorism of the extent of civil liberties and political rights (Robison et al., 2006; Dreher and Fischer, 2010, 2011). Democratic states, characterized by the respect for civil liberties, offer non-violent means of voicing dissent, thus reducing the risks that discontented groups will resort to violence to achieve their goals (Li, 2005; Gassebner and Luechinger, 2011). However, the type of counter-terrorism measures that can be adopted by a democratic government is more limited than in autocratic regimes, which suggests that non-democratic states may be better able to combat terrorism (Lai, 2007). Taking these arguments into account, we include two dummy variables in our baseline model to identify the countries coded as 'Free' and 'Not Free' by Freedom House according to their political rights and civil liberties ratings.⁵

The incidence of domestic terror events may also be higher in politically unstable countries (Piazza, 2008b; Krieger and Meierrieks, 2011). Specifically, terrorist activity is expected to be more relevant in countries affected by civil war episodes (Freytag et al., 2011). As pointed out by Merari (1993), rebel groups could resort to terrorist attacks in urban areas, while adopting open guerrilla warfare tactics in less protected areas. In addition, civil wars may be more likely in countries with high levels of interregional inequality (Østby et al., 2009). In order to control for this potentially important factor, we follow the convention in the literature and employ a dummy variable defined according to the number of casualties caused by the internal armed conflict. In particular, in our analysis a country is recorded as having experienced a civil war in a year if a threshold of 1000 or more battle-related deaths has been met (Montalvo and Reynal-Querol, 2005).

Finally, when estimating model (2), it should be mentioned that the level of regional income disparities within each country may be affected by the average size of the territorial units used to compute the index of interregional inequality. This is particularly relevant in our analysis, as the average size of the territorial units used to calculate $T(0)$ differs considerably from one country to another. Hence, and although the values of the measure of interregional inequality have already been calculated taking into account the differences in population size across regions, we also control for the average size of regions in any given country as a way to minimize any potential bias emerging from the heterogeneity in territorial levels across countries.

4.2. Econometric methodology

Before estimating model (2), it is important to note that the number of domestic terrorist attacks is a count variable (non-negative integers). This implies that the OLS estimation of model (2) can be inefficient, inconsistent, and biased (Long, 1997). In order to overcome this problem, we should resort to a regression method that explicitly considers the count nature of our dependent variable. A first possibility would be to apply Poisson regression, which is the standard approach for dealing with count data (Greene, 2002). Poisson regression is based on the implicit assumption that the variance of the dependent variable is equal to the mean (equidispersion). However, the number of domestic terrorist attacks shows significant overdispersion, with

⁵ It is worth noting that the main results of the paper remain unaltered if we alternatively employ a democracy index based on data drawn from the Polity IV Project.

the variance being greater than the mean. For this reason, we use the negative binomial estimator, which is not affected by the inefficiency problems that may result from overdispersion (Cameron and Trivedi, 2001).

When examining the effect of interregional inequality on the incidence of domestic terror, it should be noted that terrorist activity may influence the spatial distribution of income within a country (Abadie and Gardeazabal, 2003). This implies that interregional inequality may affect the number of domestic terror incidents and, in turn, be affected by them, thus giving rise to a potential problem of reverse causality. In order to mitigate this concern, the measure of interregional inequality (like the remaining regressors in model (2)) is measured in the year preceding the beginning of each four-year period.⁶ It is worth noting that this approach is consistent with the strategy adopted in most of the existing empirical studies on the determinants of terrorism, in which lagged values of the explanatory variables are used to minimize reverse causality problems (e.g. Freytag et al., 2011; Kis-Katos et al., 2011, 2014; Campos and Gassebner, 2013).

Furthermore, in all the regression analyses performed in the paper, the standard errors are clustered at the country level, thus producing standard errors robust to both heteroskedasticity and serial correlation within the cross-sectional units (Li, 2005; Baum, 2006). Likewise, given that the negative binomial model should be interpreted as logarithmic in the dependent variable, all the regressors, except the dummy variables, are expressed in natural logs in order to interpret the coefficient estimates as elasticities (Cameron and Trivedi, 2001; Krueger and Maleckova, 2003).

4.3. Main results

Table 1 presents the results obtained when various versions of model (2) are estimated for the period 1991–2010 using the negative binomial estimator. Focussing on the aim of the article, the main finding is that the coefficient of the measure of interregional inequality is in all cases positive and statistically significant at the 1% level. Accordingly, our estimates show that a high level of interregional inequality increases the number of domestic terror events in the sample countries, which corroborates the preliminary evidence provided by Fig. 1 and is consistent with the hypothesis formulated in Section 2.⁷ In fact, this result is not affected by the inclusion of additional controls in the analysis, thus confirming its robustness and showing that the effect of interregional inequality on the number of domestic terror attacks within a country is not a spurious correlation resulting from the omission of relevant variables.

It should be noted that the measure of interregional inequality remains significantly correlated with domestic terrorist activity even when we control for the level of GDP per capita, trade openness, interpersonal inequality, population size, and the existence of a civil war. This is especially important given that, as mentioned above, various earlier studies have highlighted the existence of a relationship between these variables and interregional inequality (Petraikos et al., 2005; Østby et al., 2009; Ezcurra and Rodríguez-Pose, 2013; Lessmann, 2014). Therefore, our results show that interregional inequality makes a contribution in explaining the cross-country variation in the incidence of domestic terrorism, and is not simply capturing the effect of these covariates. Namely, the coefficient from our preferred specification in Table 1 (column 10) reveals that a 10% increase in the measure of interregional inequality is associated with an approximately 8% rise in the expected number of domestic terror events over the ensuing four years. To get a more accurate idea of the dimension of the impact of interregional inequality on domestic terrorism, let us consider the case of France. In 2006 France had a level of interregional inequality around the median ($T(0) = 0.029$). According to our estimates, if France had had a level of interregional inequality similar to that of Germany ($T(0) = 0.025$), then the number of domestic terror incidents experienced by France throughout the following four years would have decreased by around 11%.

With respect to the various control variables included in model (2), Table 1 shows that the number of domestic terror events is positive and significantly correlated with population size and the non-contiguity of the country's territory. The observed link between the dependent variable and population size can be interpreted as a scale effect: more populous countries tend to experience more terror events, all else equal. Our results also suggest the existence of a non-linear relationship between the level of GDP per capita and the incidence of domestic terrorism. Initially, advances in the economic development process seem to lead to a reduction in the number of domestic terror incidents. However, this relationship does not continue indefinitely. Beyond a threshold, our estimates show the presence of a positive correlation between both variables.⁸ Moreover, the analysis indicates that terrorist activity seems to increase with the degree of trade openness, terrain ruggedness, the level of political rights and

⁶ Ideally, this potential problem should be addressed by means of an instrumental variable approach. This would require an appropriate instrument for interregional inequality. Such an instrument must not be correlated with the error term in model (2), but account for the variation in interregional inequality observed in the sample. Finding an instrument that fulfils these conditions in the context of our study is not an easy task because the potential determinants of interregional inequality identified in the literature (e.g. GDP per capita, country size, trade openness, geographical factors) are expected to also be correlated with terrorist activity (Gassebner and Luechinger, 2011; Krieger and Meierrieks, 2011).

⁷ Although the various arguments laid down in Section 2 imply a (positive) linear relationship between interregional inequality and domestic terrorism, we also explore the possibility that the effect of regional disparities on domestic terrorism could be non-linear. To that end, we consider an alternative specification of model (2) that includes the square of $T(0)$ in the list of regressors. However, the estimates do not support the existence of a non-linear link between interregional inequality and the incidence of domestic terrorism.

⁸ When the level of GDP per capita is included in model (2) only in a non-squared form, we observe a positive but non-significant link between this variable and the incidence of domestic terrorism. However, the coefficient of the measure of interregional inequality continues to be positive and statistically significant.

Table 1
Interregional inequality and domestic terrorism: Main results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Interregional inequality	0.990*** (0.245)	0.680*** (0.174)	0.807*** (0.200)	0.871*** (0.180)	0.884*** (0.243)	0.699*** (0.239)	0.761*** (0.171)	0.842*** (0.184)	0.783*** (0.168)	0.774*** (0.170)
GDP per capita			-4.047* (2.130)	-1.133 (1.610)	-3.739* (2.173)	-6.362** (2.815)	-3.119* (1.691)	-2.797 (1.781)	-2.589 (1.760)	-3.536* (1.809)
GDP per capita squared			0.235** (0.119)	0.073 (0.092)	0.225* (0.121)	0.372** (0.164)	0.186* (0.096)	0.175* (0.101)	0.153 (0.098)	0.207** (0.102)
Trade openness		0.971** (0.449)		0.563 (0.447)	-0.127 (0.462)	-0.474 (0.801)	0.809* (0.449)	0.731 (0.498)	1.105** (0.449)	0.860* (0.460)
Interpersonal inequality		0.080 (0.582)	0.074 (0.574)		-0.040 (0.583)	0.523 (0.711)	0.224 (0.542)	-0.133 (0.481)	0.183 (0.542)	0.019 (0.550)
Population size		0.752*** (0.180)	0.511*** (0.173)	0.689*** (0.194)		1.055*** (0.309)	0.661*** (0.190)	0.520*** (0.185)	0.720*** (0.188)	0.702*** (0.192)
Ruggedness		0.574** (0.235)	0.536** (0.238)	0.456** (0.199)	0.420 (0.287)		0.619*** (0.239)	0.476* (0.280)	0.560** (0.240)	0.592** (0.253)
Non-contiguous territory		2.506*** (0.404)	2.085*** (0.440)	2.018*** (0.442)	2.660*** (0.428)		2.336*** (0.448)	2.371*** (0.441)	2.538*** (0.448)	2.305*** (0.439)
Free		0.734* (0.394)	0.655* (0.380)	-0.166 (0.436)	0.522 (0.355)	-0.130 (0.617)	0.449 (0.418)		0.681* (0.402)	0.666* (0.396)
Not Free		-1.858** (0.836)	-1.671* (0.952)	-2.723*** (0.810)	-0.330 (0.801)	-3.750*** (1.439)	-2.055** (0.952)		-2.501*** (0.767)	-1.873** (0.934)
Civil war		0.933** (0.433)	0.898** (0.449)	1.052*** (0.335)	0.552 (0.471)	1.615*** (0.479)		0.692 (0.565)	0.966* (0.517)	1.039* (0.537)
Average size of regions		-0.178 (0.196)	-0.422** (0.211)	-0.139 (0.178)	-0.349* (0.207)	-0.680* (0.391)	-0.293 (0.194)	-0.432** (0.182)		-0.307 (0.192)
Constant	9.192*** (1.671)	-8.638 (6.005)	20.316* (11.427)	0.177 (9.794)	26.392** (11.710)	25.605 (18.643)	8.039 (10.030)	12.404 (9.747)	-0.271 (8.836)	10.070 (10.238)
Continent dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Countries	48	46	46	48	46	46	46	46	46	46
Observations	210	145	145	202	145	145	145	147	145	145

Notes: The dependent variable is in all cases the number of domestic terror attacks calculated over four-year periods, whereas the time-varying regressors are measured in the year preceding the beginning of each period. Robust standard errors clustered at the country level are in parentheses.

* Significant at 10% level.

** Significant at 5% level.

*** Significant at 1% level.

civil liberties, and the existence of a civil war, whereas it decreases with the average size of regions.⁹ However, as occurs with GDP per capita and its square, the coefficients of these variables are not statistically significant consistently across the various regressions included in Table 1. Furthermore, our findings also reveal that the degree of interpersonal inequality does not exert a significant effect on the dependent variable. A comparison of the sizes of the coefficient estimates in the specification with the full set of controls (column 10 of Table 1) shows that the magnitude of the effect of interregional inequality is similar to that of other explanatory variables such as population size or the degree of trade openness.

In order to complement the results in Table 1, we now investigate the impact of interregional inequality on the intensity of domestic terrorism in the sample countries. To that end, we use the information provided by the GTD to differentiate between severe and less severe terror events. In particular, we follow Dreher and Fischer (2010, 2011) and Dreher et al. (2010) and classify a terror event as severe when at least one person has been injured or killed. The remaining terror incidents are considered as less severe events.¹⁰ Table 2 shows the results obtained when model (2) is estimated again using this classification of terror events to construct the dependent variable. As can be seen, the coefficient of the measure of interregional inequality remains positive and statistically significant in both cases. This confirms that higher levels of interregional inequality increase the number of attacks, regardless of the intensity of terrorist incidents. Nevertheless, the magnitude of the coefficient estimates in Table 2 suggests that the effect of interregional inequality appears to be greater in the case of severe events, which should be taken into account when considering the policy implications of our analysis.

5. Robustness checks

The analysis performed so far reveals that interregional inequality has a positive and statistically significant effect on the incidence of domestic terrorism. In this section we investigate the robustness of this finding.

⁹ When interpreting this latter result it is important to note that the average size of regions is positively correlated with a country's total population, which may cause multicollinearity problems. Nevertheless, as discussed in Section 4.1, its inclusion in model (2) is necessary because the average size of the spatial units used to calculate $T(0)$ differs considerably from one country to another.

¹⁰ Note that this classification does not take into account the economic impact of the various terror incidents, which is a potentially important aspect when quantifying the intensity of terrorist activity in the different countries (Abadie and Gardeazabal, 2008; Enders and Olson, 2012).

Table 2
Interregional inequality and the intensity of domestic terrorism.

	(1)	(2)	(3)	(4)
Dependent variable	Severe terrorism	Severe terrorism	Less severe terrorism	Less severe terrorism
Interregional inequality	1.243*** (0.369)	1.020*** (0.168)	0.774*** (0.230)	0.592*** (0.193)
Controls	No	Yes	No	Yes
Continent dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
Countries	48	46	48	46
Observations	210	145	210	145

Notes: See Section 4.3 for further details on the method used to differentiate between severe and less severe terror events. Even columns include the full set of control variables described in Section 4.1. Robust standard errors clustered at the country level are in parentheses.

*** Significant at 1% level.

5.1. Influential countries

As a first robustness test, we examine the impact of influential countries on the results described above. Thus, we check that our findings are robust to the exclusion of any particular country from the sample. In addition, we investigate the influence on the results of those countries where domestic terror events and interregional inequality are particularly relevant. To do this, we again estimate model (2) and remove from the sample the five countries with the highest levels of domestic terrorist activity and interregional inequality throughout the study period.¹¹ The observed relationship between interregional and domestic terrorism still holds when these countries are left out of the sample. We also repeat the analysis excluding the most conflictive regions of the world during the study period: Latin America, Sub-Saharan Africa, and Asia. Despite the reduction of the sample, the estimates indicate that the coefficient of the measure of interregional inequality continues to be positive and statistically significant in all cases. That said, it is interesting to note that the impact of interregional inequality on domestic terrorism increases (decreases) somewhat when countries in Latin America (Asia) are left out of the sample.

5.2. Alternative measures of interregional inequality

We now examine to what extent the results may be sensitive to the choice of the measure used to quantify the relevance of interregional inequality within our case countries. In this respect, it is well known that various inequality measures may actually yield different orderings of the distributions one wishes to compare, since each index has a different way of aggregating the information contained in the distribution under study (Ezcurra and Rodríguez-Pose, 2013, p. 99). For this reason, and in order to complement the information provided by $T(0)$, we calculate four additional indices of interregional inequality: Theil's first measure ($T(1)$), one member of the family of indices proposed by Atkinson (1970) ($A(1)$), the coefficient of variation (c), and the standard deviation of the logarithm of regional GDP per capita (s).¹² However, the employment of these alternative measures

¹¹ The countries with the largest number of domestic terror attacks between 1990 and 2010 are India, Colombia, Turkey, the Philippines, and Peru. In turn, the countries with the highest levels of interregional inequality over the study period are Thailand, Indonesia, the Philippines, Ecuador, and Peru.

¹² These measures of inequality can be expressed as follows:

$$T(1)_i = \sum_{j=1}^J p_j \left(\frac{y_j}{\mu} \right) \log \left(\frac{y_j}{\mu} \right)$$

$$A(1)_i = 1 - \prod_{j=1}^J \left(\frac{y_j}{\mu} \right)^{p_j}$$

$$c_i = \frac{\sqrt{\sum_{j=1}^J p_j (\log y_j - \mu)^2}}{\mu}$$

and

$$s_i = \sqrt{\sum_{j=1}^J p_j (\log y_j - \bar{\mu})^2}$$

where $\bar{\mu} = \sum_{j=1}^J p_j \log y_j$. In their non-weighted versions, c and s have been widely used in the convergence literature to capture the concept of sigma convergence (Barro and Sala-i-Martin, 1995). As is the case of Theil's second measure of inequality employed so far, all the indices selected are independent of scale and population size and, except for the standard deviation of the logarithm, they all fulfil the Pigou–Dalton transfer principle for the whole definition domain of income (Cowell, 1995).

of interregional inequality does not alter the results. This implies that the observed link between interregional inequality and the incidence of domestic terrorism does not depend on the specific measure used to quantify the degree of dispersion in the regional distribution of GDP per capita within the different countries included in our study.

5.3. Additional controls

As an additional sensitivity check, we now investigate the possibility that our results are driven by an omitted variable. We address this issue by controlling for different covariates that could plausibly be correlated with the incidence of domestic terrorism and interregional inequality, and checking whether the inclusion of these covariates affects our estimates.

According to this strategy, we begin by considering the role played in this context by the degree of decentralization of the various countries. The empirical evidence provided by [Dreher and Fischer \(2011\)](#) shows that fiscal decentralization can contribute to reducing the incidence of domestic terrorism, thus confirming the hypothesis put forward by [Frey and Luechinger \(2004\)](#). Likewise, various studies reveal that the transfer of powers and resources to subnational tiers of government may affect within-country interregional inequality ([Rodríguez-Pose and Ezcurra, 2010](#); [Lessmann, 2012](#)). Accordingly, we include in our baseline specification a standard measure of fiscal decentralization: the subnational share in total government expenditure. Despite its popularity in the literature, this measure provides no information about the degree of autonomy of subnational governments ([Rodríguez-Pose and Ezcurra, 2010](#)). For this reason, we also use an additional measure proposed by [Treisman \(2008\)](#) to capture decision-making decentralization, which takes into account if subnational legislatures have autonomy in certain specified areas not explicitly subject to central laws.

A traditional argument suggests that terrorism is fomented by the process of modernization associated with advances in the level of economic development. For example, the shift from agricultural to urban societies may give rise to grievances related to socio-economic and demographic strain, which in turn could lead to social unrest and violence ([Robison et al., 2006](#)). In fact, in urban areas it may be easier to organize and perform terrorist activities ([Campos and Gassebner, 2013](#)). Furthermore, the degree of urbanization is used in the literature to capture potential agglomeration effects, which may affect regional disparities ([Lessmann, 2014](#)). In view of this, and in order to complement the information provided by GDP per capita, we also include in our baseline specification the share of urban population in the various countries.

Furthermore, government size may be an important factor in this context. Thus, [Kirk \(1983\)](#) points out that larger governments can lead to more terrorist activity with the aim of capturing the economic and political rents controlled by the government. At the same time, government size is also related to the capacity of the state to redistribute financial resources across regions, which may be particularly relevant for interregional inequality ([Rodríguez-Pose and Ezcurra, 2010](#)). Taking these arguments into account, we add the level of public consumption of the various countries to the list of regressors of model (2) as a proxy for government size.

Political institutions in general, and the quality of government in particular, are also argued to affect terrorism. According to [Choi \(2010\)](#), the rule of law weakens citizens' willingness and opportunity to engage in political violence, thus contributing to protecting democracies from becoming victims of terrorism. Moreover, the quality of government may influence interregional inequality, as the way in which authority is exercised by governments plays a key role in shaping the spatial distribution of economic activity and in fostering regional development ([Acemoglu and Robinson, 2012](#); [Ezcurra and Rodríguez-Pose, 2014](#)). In view of these arguments, we test for the sensitivity of the estimates to the inclusion in model (2) of an aggregate indicator of government quality equal to the mean value of the ICRG variables 'law and order', 'corruption', and 'bureaucratic quality'.¹³ As an alternative, we also use two variables employed previously in the literature on the determinants of terrorism: an index of economic freedom ([Kurrild-Klitgaard et al., 2006](#); [Piazza, 2008a](#)), and a measure of the level of respect for human rights ([Walsh and Piazza, 2010](#); [Gries et al., 2015](#)).

Terrorism may also be related to the existence of ethnic, religious, and social divisions within a country. This argument is based on the belief that heterogeneous and diverse societies are characterized by lower social cohesion and greater violence ([Horowitz, 1985](#)). In order to take into account the link between ethnicity, religion, and terrorism, we follow [Gassebner and Luechinger \(2011\)](#) and include in our baseline specification two measures of the degree of ethnic and religious tensions in the sample countries.¹⁴ The information provided by these measures is complemented by the level of government fractionalization. The idea behind this variable is that the number of political parties in power can be considered as a proxy for social cleavages ([Piazza, 2006](#); [Dreher and Gassebner, 2008](#)). Fractionalized coalition governments tend to represent a greater number of social groups in comparison with single-party governments ([Lijphart, 1977](#)), thus decreasing the degree of social tension ([Dreher and Fischer, 2010](#)).

Moreover, domestic terrorism is often a persistent phenomenon and some countries experience its effects over long periods of time. Accordingly, the incidence of domestic terrorism in any given country may be positively affected by the existence of previous episodes of terrorist activity. We control for this path dependence effect by including the lag of the dependent variable

¹³ The results are very similar if we include each variable separately.

¹⁴ These measures have two important advantages over the fractionalization indices commonly used in the literature. First, most of the theoretical arguments linking ethnicity, religion, and terrorism are based on the degree of ethnic and religious tensions, which is different from the level of fractionalization observed in a society ([Basuchoudhary and Shughart, 2010](#)). Second, unlike the fractionalization indices, the measures of the degree of ethnic and religious tensions used in our analysis are time-varying, which is particularly useful in our econometric framework. In any case, it should be mentioned that the observed relationship between interregional inequality and domestic terrorism remains unaltered if we use different indices of ethnic, linguistic, and religious fractionalization.

as an additional control in model (2) (Li and Schaub, 2004; Dreher and Fischer, 2010). This is particularly important since if terrorism shows strong persistence over time, lagging the regressors might not be sufficient to address potential problems of reverse causality (Kis-Katos et al., 2011).

Table 3 presents the results obtained when model (2) is estimated again including these additional controls. As can be seen, the vast majority of these additional covariates are not statistically significant. The only exception is the physical integrity rights index, with a negative and statistically significant coefficient. In any case, the inclusion of these additional controls in our baseline specification has little effect on the main result of the paper, as they do not affect the estimates of the impact of interregional inequality on the incidence of domestic terrorism. Table 3 shows that the coefficient of the measure of interregional inequality continues to be positive and statistically significant in all cases, thus confirming the robustness of our findings.

5.4. Alternative estimation strategies

In the econometric analysis carried out so far, we have been working with a panel of countries divided into four-year periods. Taking into account that most of the variation experienced by interregional inequality is between countries rather than over time, it seems reasonable to perform an additional robustness test based on a cross-sectional approach. To do this, we use the number of domestic terror events in a country between 1995 and 2010 as dependent variable, whereas the data of all the time-varying regressors (including the measure of interregional inequality) are the average values over the period 1990–1994. This implies that the number of observations decreases considerably in comparison with our previous analyses, thus increasing the degree of multicollinearity among the explanatory variables. Despite this, columns 1 and 2 of Table 4 show that the positive

Table 3
Robustness analysis: Additional controls.

	(1)	(2)	(3)	(4)	(5)	(6)
Interregional inequality	1.114*** (0.251)	0.784*** (0.183)	1.470*** (0.277)	0.777*** (0.168)	0.748*** (0.174)	0.762*** (0.189)
Fiscal decentralization	0.748 (0.581)		0.542 (0.642)			
Political autonomy		−0.085 (0.277)	−0.518 (0.395)			
Urban population				0.068 (1.690)		
Government size					0.649 (0.726)	
Government quality						−0.335 (0.621)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Countries	36	45	35	46	46	46
Observations	78	141	77	145	145	139
	(7)	(8)	(9)	(10)	(11)	(12)
Interregional inequality	1.210*** (0.264)	0.760*** (0.162)	0.820*** (0.222)	0.767*** (0.198)	0.791*** (0.169)	0.885*** (0.179)
Economic freedom	1.291 (1.426)					
Physical integrity rights		−0.750** (0.335)				
Ethnic tensions			−0.244 (0.329)			
Religious tensions				0.014 (0.377)		
Government fractionalization					−0.671 (0.636)	
Prior domestic terror events						0.001 (0.000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Countries	44	46	46	46	46	46
Observations	93	143	139	139	145	123

Notes: The dependent variable is in all cases the number of domestic terror attacks calculated over four-year periods, whereas the time-varying regressors are measured in the year preceding the beginning of each period. All the regressions include the full set of control variables described in Section 4.1. Robust standard errors clustered at the country level are in parentheses.

** Significant at 5% level.

*** Significant at 1% level.

Table 4
Robustness analysis: Alternative estimation strategies.

	(1)	(2)	(3)	(4)
	Cross-section	Cross-section	Annual data	Annual data
Interregional inequality	1.044*** (0.377)	0.515*** (0.191)	0.903*** (0.249)	0.784*** (0.189)
Controls	No	Yes	No	Yes
Continent dummies	Yes	Yes	Yes	Yes
Time dummies	No	No	Yes	Yes
Countries	44	42	48	47
Observations	44	42	739	492

Notes: The dependent variable is in all cases the number of domestic terror attacks (see the main text for further details). Even columns include the full set of control variables described in Section 4.1. Robust standard errors are in parentheses.

*** Significant at 1% level.

and significant effect of interregional inequality on the incidence of domestic terrorism still holds. It is worth noting that in the estimation with the full set of controls the size of the coefficient of the measure of interregional inequality decreases somewhat in comparison with the estimates in Table 1, which suggests that the impact of regional disparities on the incidence of domestic terrorism decreases over time.

In order to maximize the number of degrees of freedom, we now repeat the analysis using annual data. This set-up has the advantage of being consistent with the usual approach used in the empirical literature on the determinants of terrorism (e.g. Dreher and Fischer, 2010, 2011; Freytag et al., 2011; Kis-Katos et al., 2011, 2014; Campos and Gassebner, 2013). The results of this analysis are presented in columns 3 and 4 of Table 4. As can be checked, the coefficient of the measure of interregional inequality continues to be positive and statistically significant, confirming, once again, the robustness of our findings.

6. Conclusions

With the goal of improving our understanding of the explanatory factors behind terrorist attacks, this article has examined the relationship between interregional inequality and the incidence of domestic terrorism in a panel of 48 countries with different levels of economic development over the period 1990–2010. Although the nature of the study implies that the conclusions should be treated with some caution, our results show that a high level of interregional inequality increases the number of domestic terror events in the sample countries. This finding is robust to the inclusion in the analysis of additional explanatory variables that may be correlated with interregional inequality and terrorist activity, such as GDP per capita, interpersonal inequality, population size, the degree of fiscal and political decentralization, or trade openness. We have also checked that our results are not driven by a specific group of influential countries. Furthermore, the positive link observed between interregional inequality and the incidence of domestic terrorism does not depend on the specific measure used to quantify the degree of dispersion of regional income within the various countries.

The results of the article raise potentially important policy implications. In particular, our findings show that the level of interregional inequality within a country can affect the terrorists' perceived benefits of attacks, modifying their cost-benefit calculations. This provides opportunities for public intervention in this context, which should be taken into account by policymakers at the national level and international organizations involved in the fight against terrorism. In fact, the analysis carried out in this article suggests that policies designed to decrease the magnitude of income disparities across regions within a country should contribute to reducing domestic terrorist activity, as long as they do not generate redistributive conflicts across regions. In view of the effects of terrorism identified in the literature, this type of measures would be beneficial not only in terms of public safety, but also for promoting economic growth and political stability.

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 regional data on GDP over the study period has prevented us from pursuing this issue, but addressing it may provide a more complete picture about the nature of the link between interregional inequality and domestic terrorism. Likewise, it would be interesting to determine whether the observed impact of regional disparities on domestic terrorism is related to the underlying ideology of terrorist groups. Further research will also have to pay special attention to the need to identify and study the various theoretical mechanisms which may ultimately explain the influence of interregional inequality on terrorist activity. Only by pursuing these strands will we be able to attain a more complete understanding of how interregional inequality affects terrorism.

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Appendix A

A.1. List of countries

Argentina	Germany	Poland
Australia	Greece	Portugal
Austria	Hungary	Romania
Belgium	India	Slovak Republic
Bolivia	Indonesia	Slovenia
Brazil	Ireland	South Africa
Bulgaria	Italy	Spain
Canada	Japan	Sweden
Chile	Korea, Rep.	Switzerland
China	Latvia	Thailand
Colombia	Lithuania	Turkey
Czech Republic	Mexico	United Kingdom
Denmark	Netherlands	United States
Ecuador	New Zealand	Venezuela
Estonia	Norway	
Finland	Peru	
France	Philippines	

A.2. Description and sources of control variables

GDP per capita: GDP per capita in constant 2005 U.S. dollars. Source: World Development Indicators (World Bank).

Trade openness: Sum of exports and imports of goods and services expressed as a percentage of GDP. Source: World Development Indicators (World Bank).

Interpersonal inequality: Adjusted Gini coefficients drawn from various original sources: Luxembourg Income Study (LIS), Socio-Economic Database for Latin America (SEDLAC), Eurostat Survey of Living Conditions (SILC), World Income Distribution (WYD), World Bank Europe and Central Asia dataset, World Institute for Development Research (WIDER), World Bank Povcal, and Ginis from individual long-term inequality studies. Source: World Bank project 'All the Ginis'(Milanovic, 2014).

Population size: Total population. Source: World Development Indicators (World Bank).

Ruggedness: Population-weighted terrain ruggedness index. Source: Nunn and Puga (2012).

Non-contiguous territory: Dummy variable that takes the value of one for countries with a territory holding at least 10,000 people and separated from the land area containing the capital city either by land or by 100 km of water, and zero otherwise. Source: Fearon and Laitin (2003).

Free: Dummy variable that takes the value of one if the country is classified as 'Free' by Freedom House, and zero otherwise. The status of 'Free' is based on the average value of political rights and civil liberties ratings, ranging from 1 to 7, where lower values reflect greater freedom. Countries whose ratings average 1.0 to 2.5 are considered 'Free'. Source: Freedom House.

Not Free: Dummy variable that takes the value of one if the country is classified as 'Not Free' by Freedom House, and zero otherwise. The status of 'Not Free' is based on the average value of political rights and civil liberties ratings, ranging from 1 to 7, where lower values reflect greater freedom. Countries whose ratings average 5.5 to 7 are considered 'Not Free'. Source: Freedom House.

Civil war: Dummy variable that takes the value of one if the country has experienced a civil war in any given year, and zero otherwise. A country is recorded as having experienced a civil war in any given year if a threshold of 1000 or more battle-related deaths has been met. Source: UCDP-PRIO.

Average size of regions: Average area of the regions in a country measured in square kilometres. Source: Ezcurra and Rodríguez-Pose (2013).

Fiscal decentralization: Subnational share in total government expenditure. Source: The World Bank Intergovernmental Relations and Subnational Finance Thematic Group. The data are based on the International Monetary Fund's Government Finance Statistics (GFS).

Political autonomy: Dummy variable that takes the value of one if, under constitution, subnational legislatures have autonomy in certain specified areas not explicitly subject to central laws, and zero otherwise. Source: Treisman (2008).

Urban population: Fraction of the total population living in urban areas. Source: World Development Indicators (World Bank).

Government size: Government consumption expenditures expressed as a share of GDP. Source: World Development Indicators (World Bank).

Government quality: Measure of government quality equal to the mean value of the ICRG variables 'corruption', 'law and order', and 'bureaucracy quality'. Higher values indicate higher government quality. Source: International Country Risk Guide (ICRG).

Economic freedom: Index of economic freedom based on ten factors: 'property rights', 'freedom from corruption', 'fiscal freedom', 'government spending', 'business freedom', 'labour freedom', 'monetary freedom', 'trade freedom', 'investment freedom', and 'financial freedom'. A country's overall score is derived by averaging these ten economic freedoms, with equal weight being given to each. Higher values indicate higher economic freedom. Source: Heritage Foundation.

Physical integrity rights: Index based on data on torture, extrajudicial killings, political imprisonments, and disappearances. Higher values indicate less human rights abuses. Source: Cingranelli et al. (2014).

Ethnic tensions: Index of the degree of tension within a country attributable to racial, nationality, or language divisions. We have rescaled the index in such a way that higher values indicate more tensions. Source: International Country Risk Guide (ICRG).

Religious tensions: Index of the degree of tension within a country attributable to religious divisions. We have rescaled the index in such a way that higher values indicate more tensions. Source: International Country Risk Guide (ICRG).

Government fractionalization: Probability that two deputies picked at random from among the government parties will be of different parties. Source: Beck et al. (2001).

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