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for transnational terror?

An empirical analysis

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# Government decentralization as a disincentive for transnational terror?

## An empirical analysis\*

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### *Abstract*

Using panel data for a maximum of 109 countries over the years 1976-2000, we empirically analyze the impact of decentralization on the occurrence of transnational terror. Our results show that expenditure decentralization reduces the number of transnational terror events in a country, while political decentralization has no impact. These results are robust to the choice of control variables and method of estimation.

**Keywords:** Terrorism, Decentralization, Federalism, Governance quality, Government effectiveness

**JEL-Codes:** D74; H70; H40

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## 1. Introduction

Following the 9/11 attacks on the World Trade Center the latest, transnational terrorism became subject to intense academic research. Still, what determines the terrorists' choice of target countries is not yet fully understood. Previous research shows that political institutions are important. It has been suggested, among others, that the target countries' degree of democracy, electoral system, or institutional constraints to the central government are determinants of terror (Li and Schaub 2004, Frey and Luechinger 2004, Li 2005, Abadie 2006).<sup>2</sup>

In this paper, we propose an additional institutional determinant of transnational terror: a target country's degree of decentralized governance structure. According to the analysis in Bjørnskov, Dreher and Fischer (2008), decentralization increases individuals' subjective well-being.<sup>3</sup> Arguably, one channel by which decentralization can increase well-being might be its impact on terrorism: it has been shown in Frey, Luechinger and Stutzer (2007) that terrorism reduces subjective well-being. On the other hand, Frey and Luechinger (2004) argue that the occurrence of terrorism is likely to be reduced by a country's degree of decentralization. Consequently, one channel by which decentralization can contribute to people's well-being might be its impact on terrorism.

The theoretical arguments that explain the relation between government decentralization and transnational terrorism are mainly based on the system stability argument developed by Frey and Luechinger (2004), but also draw from the traditional public finance literature. According to Frey and Luechinger (2004), terrorists pursue three main goals: get the attention of the media, destabilize the target country's polity, and impose damage on the

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<sup>2</sup> Regarding the determinants of terror in the terrorists' countries of origin see Freytag, Krüger and Schneider (2006). See Krieger and Meierrieks (2008) for a recent survey on the causes of terrorism.

<sup>3</sup> For an exhaustive analysis of the transmission channels of fiscal decentralization – including measures of political and social stability – on subjective well-being in OECD countries, see Fischer (2009).

country's economy. Frey and Luechinger (2004) argue that to the extent that decentralized countries are politically and administratively more stable than more centralized states, have more efficient markets, and provide less valuable symbolic targets for terrorist acts, terrorists' perceived benefits of attacks decrease with government decentralization. In addition, according to traditional public choice arguments (Brennan and Buchanan 1980, Tiebout 1961), decentralization might yield efficiency gains in government activities and make the deterrence of terror through national security policies more effective. As a consequence, the marginal costs of terrorism are increased, and less terrorist activities should occur in more decentralized countries.

However, the beneficial impact of decentralization on terror prevention is not as obvious as it might look at first sight. The public finance literature also suggests that decentralization may harm the production of public safety. For example, decentralization may create coordination problems, lead to an underprovision and underfinancing of public safety, less policy innovation (Rose-Ackerman 1980, Strumpf 2002), and cause understaffing of security forces and other inefficiencies in fighting terrorism. In consequence, decentralization may make countries more vulnerable to terrorist attacks, as the marginal costs of committing terror are reduced, and we should expect transnational terrorism to be more frequent in such decentralized countries.

Surprisingly, the hypothesized effects of government decentralization on terror have not yet been empirically tested. This omission is most likely due to the lack of adequate data on terrorism and political decentralization until most recently. Clearly, answering the question whether decentralization deters or attracts terrorists bears important policy implications. Answering this question is the aim of this paper.

Specifically, the paper fills the gap in the literature by testing empirically whether and to what extent decentralized governance structures reduce or promote transnational terror, based on a panel of 109 countries over the period 1976-2000. To anticipate our main results,

we find that fiscal decentralization reduces the occurrence of transnational terrorist events, while decentralization of political-decision-making across government tiers does not appear to affect them. We also provide a preliminary test of a particular channel – improvements in government efficiency – by which fiscal decentralization might decrease terror.

The paper is organized as follows. The next section derives our hypotheses. Section 3 describes our measures of terrorism and decentralization, while the method of estimation is outlined in section 4. The fifth section presents the empirical results and the final section concludes.

## **2. Hypotheses**

Following the theory of rational choice, we assume that rational terrorists maximize the expected net benefits of their acts (see Lichbach 1987).<sup>4</sup> As Frey and Luechinger (2003, 2004) point out, the incentives of prospective terrorists depend on the (expected) costs, including direct and opportunity costs, and (expected) benefits of committing a terrorist act. Direct costs comprise, e.g., material resources needed to commit terror acts as well as time and effort needed in order to prepare the attack, while opportunity costs refer to alternative legal activities (e.g., regular employment or political engagement) potential terrorists may derive utility from. According to Frey and Luechinger (2004), terrorists' expected benefits relate to three main goals (that serve their long-term political intentions): get the attention of the media, destabilize the target country's polity, and impose damage on the target country's

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<sup>4</sup> Enders and Sandler (1995) provide evidence in favour of this argument. See Schnellenbach (2006) for a recent discussion of terrorists' motives.

economy.<sup>5</sup> We discuss these goals below, focusing on how decentralization affects the marginal costs and benefits of achieving them.

From the terrorists' point of view, the optimal number of attacks is determined by the equilibrium in which the (expected) marginal benefits are equal to the (expected) marginal costs of an additional terror act. The optimal number of terrorist acts decreases in the marginal costs and increases in the marginal benefits. In order to understand the impact of decentralization on terror, we have to understand the determinants or components of such direct costs, opportunity costs and benefits, and to what extent they are influenced by government structures.

In principle, policies aiming at combating terror may well focus on increasing opportunity costs. By making terror less attractive as compared to alternative legal activities, government policies could well reduce the amount of terror. However, a target country's degree of government decentralization with its political participation possibilities is unlikely to directly affect the opportunity costs of potential transnational, mostly foreign country-based terrorists. In what follows we therefore focus only on the direct costs and benefits of committing transnational terrorist acts.<sup>6</sup>

Starting with the expected benefits from committing terrorist acts, media response might be lower in more decentralized countries (Frey and Luechinger 2004). Media response arguably depends on the symbolic value of potential targets, such as government buildings or embassies. To the extent that decentralization reduces the symbolic value of a single target by

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<sup>5</sup> According to the formal model and empirical results in Rohner and Frey (2007), media attention indeed increases terrorism. Gassebner et al. (2007, 2008) show that terrorists are at least to some extent successful in destabilizing the political system, as terror attacks increase the probability of cabinet dissolutions.

<sup>6</sup> Relating decentralized decision-making in target countries to opportunity costs of political participation rather applies to domestic terrorism (Li 2005). See Schnellenbach (2006) for a recent treatment.

increasing the number and availability of such targets, the benefits from committing a single terror act are reduced.

Regarding the terrorists' goal of damaging the economy, Frey and Luechinger (2004) argue that in decentralized countries a destabilization of the market economy is more difficult to achieve. Arguably, the market (competition-) preserving effect of decentralization (Weingast 1995) may lead to larger numbers of competing suppliers, preventing monopolization of goods and service production. One example may be the banking system: the whole financial system may be at stake when a dominating financial intermediary is successfully attacked by terrorists, which is less likely to be the case if a sufficient number of competitors exist that can take over the functions of the eliminated bank. Similarly, the attack on the World Trade Center did have a substantial impact on the worldwide Internet traffic, as a main highway ran underneath the two destroyed towers. However, due to the rather decentralized organization of the World Wide Web, exchange of information was re-established within few hours.

With respect to destabilization of the polity and the political system, Frey and Luechinger (2004, p.511) argue that "when the government loses power, and more importantly, when the political system's legitimacy is eroded, the terrorists' chances of achieving their goal improve." In principle, attacks suitable for destabilizing the politico-administrative system may be the elimination of political key persons, attacking targets with a high symbolic value to undermine government's authority, and killings of government and administrative personnel.<sup>7</sup>

In general, any governance structure that stabilizes the polity in a functional-systemic sense should decrease the marginal benefits of terrorist acts in terrorists' cost-benefit analyses, reducing the levels of terrorist activities. Specifically, linking this hypothesis to

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<sup>7</sup> Examples for such targets are governors, police personnel, parliament and supreme court buildings.

decentralization, the authors argue that “a polity with many different centers of decision-making and implementation is difficult, if not impossible, to destabilize” (ibidem, p.512).

For illustration of the system-stabilizing effect of decentralization, one may think of a biological entity that is composed of a multitude of cells expanding into all three dimensions. In such multi-cell entity, the destruction of one cell does not endanger the entity as a whole, as the remaining cells can take over the functions of the dysfunctional one. This may be observable not only at the horizontal level (namely across cells at the same level), but also in the vertical (across layers of cells). Applying this idea to countries' institutional settings, Frey and Luechinger (2004) analogously argue that lower-tier governments and administrations can take over responsibilities of dysfunctional – either higher-tier or other lower-tier – institutions. In contrast, in unitary countries non-functioning and destroyed (political and administrative) centers are likely to lead to country-wide collapse. As examples, Frey and Luechinger (2004) compare the situation in the centralized country Armenia in 1999 to that of the decentralized Swiss state Zug in 2001. In both entities a substantial number of members of the executive and the legislating body were killed by terrorists. While in centralized Armenia a “political vacuum” was created that threatened the “internal and external security of the state” (p.513), in decentrally organized Zug the heads of the quite autonomous lower-tier communes were able to take over some of the state parliaments' functions.

Thus, decentralization may stabilize the polity by reducing the damage terror may exert on a country's ability to govern its affairs, letting decentralized countries recover more quickly. This feature of a decentralized governance structure decreases terrorists' expected benefits with respect to targeted political destabilization. Consequently, Frey and Luechinger (2004) argue that ‘spatial decentralization’ – that relates to some kind of vertical division between various tiers of government, both of ‘decision-making’ power – but equally of ‘implementation’ power – deters terror.



In addition, decentralization is also likely to affect the marginal costs of terrorism. Supporters argue that decentralization of the politico-administrative system makes governments more efficient and more effective in the provision of public goods – one of the governments' core responsibilities (Musgrave 1959). The economic theory of bureaucracy and the literature on institutional competition demonstrate that competition among public agencies reduces bureaucratic waste (e.g., Niskanen 1971), improves respect for regional differences in societal conditions of generating public safety (Tiebout 1961), serves as an information discovery procedure (Hayek 1968), strengthens democratic control over government spending activities ("voice"), and protects the interests of local minorities by facilitating "exit" (Hirschman 1970). Decentralization forces politicians to compete, leading to stronger local democracy, political accountability, and thus, citizens' control over the provision of public goods (Betz 1996). Decentralization thus permits dissenting residents to escape local security policies they do not agree to by moving to a different jurisdiction in a Tiebout fashion (Tiebout 1961), inducing incentives for competing local governments to innovate, to work efficiently and to target their security policies effectively (Brennan and Buchanan 1980).<sup>8</sup>

Taken all together, these arguments suggest that decentralization improves security policies, lets media attention become more difficult to achieve, and stabilizes the market economy and the political system. Hence, we expect decentralization to make terrorists' activities more costly and to decrease their benefits (in expected terms), reducing the optimal level of terror. Taken together, these considerations lead to our first hypothesis.

*Hypothesis 1: Decentralization reduces the number of terrorist incidents.*

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<sup>8</sup> Kotsogiannis and Schwager (2006) show that policy innovation might occur more frequently in decentralized systems once politicians' electoral motives are taken into account.

The impact of decentralization on the occurrence of transnational terror is, however, not as obvious as it might look at first sight. Applying alternative public choice arguments that relate to the quality of public safety, decentralization might create coordination problems which may delay or prevent reforms, thus making terror prevention less effective.<sup>9</sup> Moreover, institutional constraints imposed by the division of powers in decentralized countries might significantly weaken the federal and local governments' ability to fight terror. More specifically, horizontal information externalities might imply the underprovision of policy innovation, preventing sensible institutional reforms that may aggravate these coordination problems and inefficiencies (Rose-Ackerman 1980, Strumpf 2002). This argument is familiar from the literature on crisis resolution: referring to the consequences of hurricane "Katrina" in New Orleans in August 2005, e.g., Congleton (2006) stresses the role of decentralized structures. According to Congleton (p. 14), "it is clear that in practice the overlapping fiscal and production responsibilities of national, state, and local agencies also create new coordination and free-rider problems within the flood control and emergency response systems as a whole." Consequently, the marginal costs of destabilizing and damaging a country's political system and economy decrease.<sup>10</sup>

In a similar vein, it is argued that competition between jurisdictions might cause a "race to the bottom," driving local tax rates below the level necessary to sufficiently finance public safety, leading to its underprovision. In general, small-sized jurisdictions might prevent internalization of positive externalities across jurisdictions created by locally produced public

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<sup>9</sup> Prud'homme (1995) and Sewell (1996) provide empirical support for this view.

<sup>10</sup> Admittedly, the argument that decentralization may cause coordination failures and thereby undermines security provision is hard to tackle empirically. Even in decentralized countries security may be provided by the central government. Moreover, even if security is provided by the central government, there may be a multitude of different agencies providing security services with associated coordination problems. Examples are the various intelligence agencies in the U.S., the U.K. and France.

safety and, thus, lead to understaffing of security forces. Consequently, decentralized governance structures might allow foreign terrorists to organize and manoeuvre more easily, so that destabilizing the economy and the political system becomes easier. As damage is easier to achieve, the marginal costs of transnational terrorist activity are reduced.<sup>11</sup>

In addition, according to Li (2005), the abundance of suitable targets for terrorist acts makes it potentially easier for terrorists to threaten a country's population: when a country's number and availability of 'symbolic' targets increase in its degree of political and fiscal decentralization, such country may become a more attractive target for foreign terrorists, as targets with lower direct costs of attack can be chosen. Moreover, media attention might be easier to get: as argued above, on the one hand, the value of each particular target is likely to decrease with the number of available targets, lowering media response. However, on the other hand, the number of targets might be larger in decentralized countries. When the effect of the latter exceeds that of the former, decentralization might not decrease media attention, but might even increase it.

Taken together, decentralization may make countries more vulnerable to foreign terrorists' activities, reducing (increasing) their expected marginal costs (benefits) of committing an additional terror act. Hence, we should expect transnational terror to be more frequent in such decentralized countries. We thus hypothesize:

*Hypothesis 2: Decentralization increases the number of terrorist incidents.*

Overall, the main arguments suggesting that decentralization might affect terror can be summarized under two headings: the first set of arguments relate to the stability of the target

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<sup>11</sup> As one example, one might think of the coordination failure between the various state and federal institutions in the U.S. that prevented an early detection of the World Trade Center attacks in the planning phase.

country's polity, and how it may deter terror ('system stability hypothesis'), whereas the second set builds on government efficiency and effectiveness arguments regarding the provision of public safety ('efficiency hypothesis'). While the main part of our empirical analysis below aims to test the relation between decentralization and the occurrence of transitional terror, the second part provides a preliminary attempt to determine the reasons for this linkage by testing whether it can be attributed to the government efficiency channel.

### 3. Measuring Decentralization and Terror

Frey and Luechinger (2004, p.512) discuss the effects of two forms of decentralization – decentralization of 'policy implementation' and of 'political decision-making'. Thus, their notion of decentralization captures the two separate, but inseparable dimensions of '*federalism*' as defined by, e.g., Keman (2000) or Brennan and Buchanan (1980). According to Keman (2000), federalist structures comprise decentralization with respect to "the right to act," on the one hand, and "the right to decide," on the other.<sup>12</sup> In general, political scientists seem to agree that federal structures include "a set of jurisdictional arrangements for allocating policy responsibilities between different levels of government; this refers to both *policy-making* and *policy implementation*." (Italics by us) (Obinger et al., 2005, p.9).

In contrast, Frey and Luechinger (2004) argue that decision-making and policy implementation constitute two separate dimensions of a well-functioning decentralized system. Thus, our analysis accounts for these two types of decentralization separately. Specifically, we distinguish between *decentralization in government spending* and *local political autonomy*. The first most closely reflects the implementation of government policies

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<sup>12</sup> Similarly, Brennan and Buchanan (1980) define 'federalism' to comprise the two dimensions: (i) joint assignment of functions and (ii) taxing power of lower levels of government.

through executing administrations and public goods creation (“the right to act”), while ‘local political autonomy’ refers to the presence of political decision- and law-making power at the local level (“the right to decide”). In political science, this latter concept is also referred to as ‘decision decentralization’ or ‘local autonomy’ (e.g., Treisman 2002).

We employ two measures of decentralization obtained from Treisman (2008), a collection of various indicators of decentralization. Fiscal decentralization is measured employing data from the IMF’s Government Finance Statistics (GFS), as presented in a dataset compiled by the World Bank.<sup>13</sup> The numerator of this measure is total expenditure of sub-federal government tiers, while the denominator is total spending by all levels of government.<sup>14</sup> Data are employed for the period 1976-2000 for a maximum of 109 countries.<sup>15</sup> Among the countries in our sample, expenditure decentralization is in the range of 1.65 to 55.62 percent. On average, 21.48 percent of government spending takes place at the sub-federal level (median: 20.27 percent).

As proxy for political autonomy at the sub-federal level, we employ a dichotomous time-invariant indicator that takes the value ‘one’ if second tier governments “have autonomy in certain specified areas – i.e., *constitutional authority to legislate* – not explicitly subject to central laws,” [Italics by us] equally collected around 1996-2000 and obtained from the Treisman cross-sectional dataset (Treisman 2002, 2008). In other words, political autonomy is assumed to exist when the federal constitution stipulates that laws of the second tier cannot be overruled or constrained by framework legislation by the federal government (Riker

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<sup>13</sup> See <http://www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm> (July 6, 2007).

<sup>14</sup> The Treisman data provide an alternative measure of fiscal decentralization, often employed in the literature on federalism that relates to decentralization of revenue. Revenue decentralization is highly correlated with expenditure decentralization ( $\rho = 0.91$ ). Inclusion of both measures of fiscal decentralization shows the dominance of expenditure decentralization over revenue decentralization.

<sup>15</sup> Selection of countries and years is driven by data availability.

1964).<sup>16</sup> In the dataset, prominent examples of such autonomous sub-federal entities are the Indian states, the Canadian provinces and the Swiss ‘cantons’, in contrast to the German ‘Laender’, where only policing and schooling are truly independent state responsibilities. Notably, this measure of political autonomy is based on the mere reading of constitutional stipulations, does not differentiate by area of policy-making, and, thus, may not necessarily reflect its importance in actual political decision-making (Treisman 2002). Among our sample of countries, about 16 percent are coded as federal with politically autonomous sub-federal tiers.

However, note that despite the fact that our measure of expenditure decentralization seems to be those used most widely in empirical cross-national studies on the effects of fiscal centralization (e.g., Lijphart 1977, Fisman and Gatti 2002),<sup>17</sup> it is not free of problems. Kessing, Konrad and Kotsogiannis (2006) provide a summary: first, the sources of the revenues, intergovernmental transfers, and other grants are not taken into account. Second, our measure of fiscal decentralization does not account for the extent to which the jurisdictions’ tax bases overlap.<sup>18</sup> Third and most importantly, it reflects only the distribution of spending responsibilities but does not contain information about the distribution of political power among the central and sub-national governments. It is for this reason we add a measure of political autonomy separately to our model.

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<sup>16</sup> The Treisman (2002) data provides an alternative, weaker measure of local political autonomy, which only includes cases of so-called ‘residual’ autonomy, where political decisions at the local level fill the legal gaps in national framework laws, and may be overruled by national legislation. We test for the impact of modifying our measure of political decentralization in the robustness section below.

<sup>17</sup> While this is true for cross-country studies, other political institutions such as direct democracy may be more important for the provision of public goods at the state level within a country. For example, Fischer (2005) investigates whether direct democracy restricts the Leviathan-like behavior of bureaucracies using an index of direct democracy developed in Stutzer (1999).

<sup>18</sup> See Treisman (2002) and Ebel and Yilmaz (2002) for a more detailed discussion.

Turning to our measure of terrorist activity, we employ data provided in the MIPT *Terrorism Knowledge Base*.<sup>19</sup> The Terrorism Knowledge Base integrates data from the RAND Terrorism Chronology and RAND-MIPT Terrorism Incident databases, the Terrorism Indictment database, and DFI International's research on terrorist organizations.<sup>20</sup>

The Terrorism Knowledge Base defines terror rather broadly as (the threat of) violence aimed at creating fear and alarm.<sup>21</sup> Most of these terrorist acts are directed against civilian targets; unlike for other types of crime, terrorists usually claim credits for their acts. All terrorist acts, both domestic and transnational, are included in the database irrespective of the identity of the committing group or their long-term goals. In this paper, we focus on incidences of transnational terrorism. According to MIPT, transnational terror events are defined according to (1) the provenience of the terrorist or their group, or (2) the nature of the terrorists' targets. Thus, transnational terrorism involves either terrorists acting in a foreign country, domestic targets that are associated with a foreign country (such as embassies), or targets of an international character (such as airplanes or UN-related entities). According to this definition, attacks committed by local residents against their own governments are only defined as transnational terror events in case they occur in the name of an internationally working network of terrorists, such as, e.g., Al Qaeda. In contrast, attacks by foreigners would always be counted as 'transnational' incidences.<sup>22</sup>

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<sup>19</sup> Available at: <http://www.mipt.org> (20 Feb 2009).

<sup>20</sup> There are several sources for terrorism data. We choose MIPT because it combines various sources and thus provides extensive country and yearly coverage. For a detailed discussion on the measurement of terrorism see Frey and Luechinger (2005).

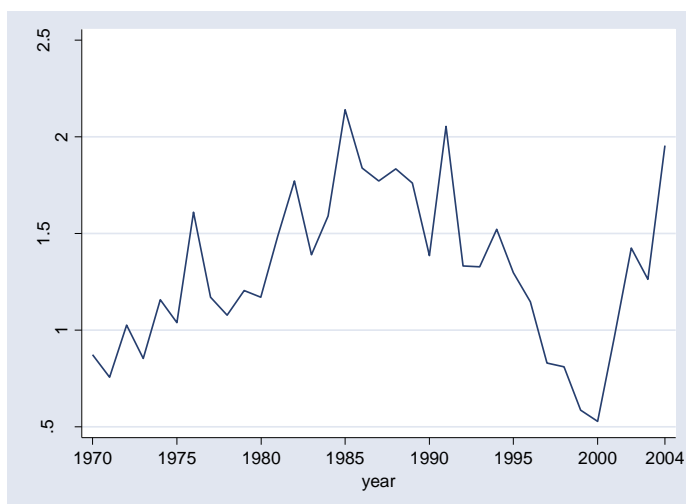
<sup>21</sup> See the glossary that accompanies the MIPT database for a detailed definition. See also Enders and Sandler (1999, 2002).

<sup>22</sup> The definition of MIPT for transnational events is close to that of Sandler and Enders (2004), who base it on either the terrorist group's international ramifications or its foreign interest as target.

We extract the number of transnational terror events for each country and year.<sup>23</sup> Given that the database covers the whole world, we assign ‘zeros’ to all countries and years with no recordings. According to our sample of 109 countries from 1976-2000, the number of terrorist events per country during the total sample period varies from 0 to 50 with an average of about 1.70 (or 4.57 for those country-year observations with positive values). Altogether, there were 710 country-years with actual incidences of transnational terror in our panel (and 1911 country-year observations altogether).

Figure 1 shows how the world average of terror events has evolved over time.<sup>24</sup> As can be seen, the average number of transnational terror events fluctuates around the mean from 1971 to roughly the early nineties, then slightly declines, and rises sharply again after 2000. We have to restrict our sample to the period prior to the year 2001 because data for our focal determinant, fiscal decentralization, is only available until 1999/2000.

**Figure 1: Development of Transnational Terror over time**



<sup>23</sup> Territories are assigned to the country formally governing the territory; if no assignment is possible, the observations are excluded from the sample (e.g. Kashmir and the Persian Gulf).

<sup>24</sup> For time-series studies on the occurrence and distribution of terrorism see Enders and Sandler (2005, 2006).



#### 4. Method

We estimate random effects panel regressions for non-negative count data. The data extend to a maximum of 109 countries and cover the years 1976-2000. Since some of the data are not available for all countries or years, the panel data are unbalanced and the number of observations depends on the choice of explanatory variables. As our data on terror events are strongly skewed to the right (with an accumulation of observations at zero) and display significant overdispersion (with the variance being greater than the mean), we estimate our regressions employing the Negative Binomial estimator.

We estimate the following relationship:

$$(1) \quad \text{terror}_{i,t} = F(\text{decent}_{ji,t-1}, X_{i,t-1}, \lambda_t),$$

where  $\text{terror}_{i,t}$  represents the number of recorded transnational terror events in country  $i$  in period  $t$ , and  $\text{decent}_{ji,t-1}$  is our  $j^{\text{th}}$  (lagged) measure of decentralization.  $X_{i,t-1}$  is the vector of (lagged) control variables, and  $\lambda_t$  are time fixed effects. The low correlation between political autonomy and fiscal decentralization should allow to identify their individual effects when jointly included.<sup>25</sup> As the local autonomy measure shows no time series variation, the model is estimated with random effects. Note that the Hausman test favours this model over pooled Negative Binomial Regressions. When employing country fixed effects (and omitting local autonomy) as test for robustness, the main results for expenditure decentralization are unchanged, as shown below (in the section on robustness, Table 2).

Note that our analysis focuses on the target countries of transnational terrorism rather than its countries of origins. In choosing our control variables, we thus follow Dreher and Gassebner (2008) who equally aim at analyzing terror in target countries.<sup>26</sup> We employ GDP per capita (measured in constant 2000 US\$). On the one hand, richer countries are more

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<sup>25</sup> The correlation coefficient between political autonomy and fiscal decentralization is 0.4.

<sup>26</sup> The Appendix reports all variables employed with their sources and descriptive statistics.

attractive targets for terrorists, as terror creates more media attention. On the other hand, richer countries can afford more effective police and intelligence agencies, potentially being better able to prevent terror. The impact of per capita GDP is thus not obvious a priori.

A second variable suggested to be important for terror is the extent of civil liberties, comprising political participation possibilities and aspects of economic and social freedom (see Freedom House 2005). In the context of transnational terrorism, civil liberties most likely increase terror. Strongly democratic, economically liberal, mostly Western countries may attract transnational terrorist activities as they symbolize such ‘civil liberties’. In addition, politically free countries are frequently also allies of the United States and are thus brought in association with its propagated values. Before 1990, democratic countries would have been chosen as preferred targets particularly by pro-communist groups, while, nowadays, after the breakdown of communist regimes, mainly violent anti-Western, pro-Islamic or anti-globalization groups may choose them as preferred targets.<sup>27</sup>

However, repressive states might be better able to suppress terror, e.g., through constraining the media echo or generating high levels of public safety (a prominent example is China).<sup>28</sup> On the other hand, transnational terror may even be attracted by the absence of political rights, possibly being correlated with being in a state of political system transition or decay, with dysfunctioning government administrations and less effective public safety

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<sup>27</sup> Our model does not include a squared term of civil liberties, following Dreher and Gassebner (2008). When we include the squared term of the civil liberties variable in addition, the level and squared term are not individually significant at conventional levels. While this is contrary to Abadie (2006), our results regarding the effect of fiscal and political decentralization on terrorism do not depend on whether or not we include a quadratic term.

<sup>28</sup> There is also literature relating political participation to the local residents’ willingness to support terror groups. Arguably, this argument is more likely to hold for domestic terrorism, interpreting terror as form of ‘expressive’ voting (see, e.g., Frey and Luechinger 2003, 2004, Li 2005, Li and Schaub 2005).

provision. Decreasing the costs of terror acts, such countries are more likely to become preferred targets, particularly if, despite the institutional decay, considerable media response can be expected (a prominent example is Iraq).<sup>29</sup> In line with Piazza (2006) and Dreher and Gassebner (2008), we include both the level of and changes in political freedom.

Third, we include population size, as in larger countries transnational attacks might attract greater international media attention. Furthermore, the costs of state surveillance and policing arguably rise with population size, leading to lower levels of public safety (Piazza 2006).

Fourth, we include government fractionalization. According to Piazza (2006), to some extent the number of parties in power proxies for “social cleavage,” potentially giving rise to terror: domestic social cleavages and lesser social cohesion, lowering social capital such as careful neighborhood watching and social control (Putnam 2000), might reduce the costs of transnational terrorism. On the other hand, fractionalized coalition governments may represent a larger number of social groups compared to a single party government (Lijphart 1977), decreasing social tensions in society and, thus, contributing to system stability which reduces transnational terrorists’ expected benefits.

Finally, we include data on voting coincidence with the U.S. in the United Nations General Assembly as provided by Voeten (2004). As shown in Dreher and Gassebner (2008), countries voting more frequently in line with the U.S. in the Assembly are more likely to become victims of terror. This effect may be particularly strong for transnational terror, where foreign terrorists may attack the more vulnerable allied countries as substitute for the better

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<sup>29</sup> Sandler (1995) provides an excellent discussion of the early literature on the relationship between democracy and (domestic) terror. Iraq is a present-time example of the relation between missing political freedom and ‘imported’ transnational terrorism. The occupation by the USA guarantees considerable media attention in a country apparently serving as battle field for neighboring countries’ terror groups fighting for regional hegemony.

protected and less accessible USA. We follow Thacker (1999), coding votes in agreement with the U.S. as 1, votes in disagreement as 0, and abstentions or absences as 0.5. The resulting numbers are then divided by the total number of votes in each year. This results in a variable ranging from 0 to 1, with 0 indicating total disagreement with the U.S., and 1 showing full agreement.

Data for GDP per capita and population size are taken from the World Bank (2006). Government fractionalization is from Beck et al. (2001) and measures the probability that two randomly drawn members from among the government are of different parties. Level and change in political freedom are based on the average of the two political rights and civil liberties indices from Freedom House (2005), with levels measured on a scale from -7 (low) to -1 (high).

## **5. Results**

### **5.1 Baseline Model**

Table 1 shows the results. We first include fiscal decentralization and political autonomy separately (columns 1 and 2), while column 3 includes them jointly. All models include dummies for each year, which are always jointly significant at the one percent level. Overall, our results for the control variables mirror those reported in Piazza (2006) and Dreher and Gassebner (2008). As can be seen, the number of terror events increases with larger population, possibly reflecting greater social and ethnic cleavages but also larger international media response. (However, it may well reflect a simple scale effect, as larger countries experience more terror events, c.p.) The coefficient of population size is significant at least at the five percent level, while the impact of government fractionalization is marginally

insignificant according to the full model of column 3, but significant at the five percent level at least in columns 1 and 2. In two of the three specifications, terror also rises with the level of civil liberties and greater voting coincidence with the U.S. in the UN General Assembly, at least at the ten percent level of significance. As argued before, both may capture the proximity of a country's democratic value system and foreign policy to that of the U.S., making the country a 'substitute target', but with possibly lower 'entry' costs. GDP per capita is not consistently significant at conventional levels, which is in line with Krueger and Malečková (2003) and Abadie (2006). Changes in political freedom have no significant impact on terror according to all specifications.

Turning to our variables of primary interest, the results show a significant effect of expenditure decentralization on transnational terror, at the ten percent level of significance in column 1, and at the one percent level according to the full model of column 3. Our results show that more spending responsibilities for local governments reduce the number of terror events in the target country. This result is in line with our a priori hypothesis regarding the division of administrative and executing responsibilities across government tiers. Calculating the marginal effect of fiscal decentralization for the full model (column 3), the results show that, evaluated at the sample mean, the number of terror events declines by 0.03 events with an increase in decentralization by one percentage point.<sup>30</sup> To illustrate the quantitative impact, we also calculate the effect of raising the share of sub-federal spending from 20% to 50% (which is realistic given the variation in our regression sample from 1.5% to 55.6%).

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<sup>30</sup> Note that the coefficients of the non-linear Negative Binomial Regression model do not correspond to the marginal effects. While incidence ratios can directly be calculated as the exponential value of the respective coefficient, rather than reporting incidence ratios, we use the `mfx` command of Stata 10.1 to calculate the marginal effects of decentralization, at the mean of all explanatory variables and assuming the random effects to be zero. To calculate the predicted number of terror attacks for varying degrees of decentralization, the remaining determinants are equally fixed at their mean values.

Calculating the predicted number of terror events with a value for decentralization of 20% (at the mean of all other variables) results in 1.49 attacks. Calculating the predicted number for a share of sub-federal spending of 50% reduces this number by almost half to 0.76 attacks. Clearly, this impact is quantitatively relevant and bears important welfare implications.<sup>31</sup>

The results of columns 2 and 3 also show that local political autonomy in its strong form does not affect the number of terror events, neither when included separately nor jointly with fiscal decentralization.<sup>32</sup> This conclusion holds when applying a definition of political autonomy of a weaker type, as shown in the robustness section below. Our findings contradict the hypothesis that more political autonomy deters terrorism. Potentially, the insignificance of political autonomy might be caused by two opposing effects: on the one hand, local political decision-making power might well decrease terrorists' expected net benefits through increased political stabilization, or enhancements of local public safety provision, as discussed above (Frey and Luechinger 2004); on the other hand, a politically decentralized government may also reduce terrorists' costs, e.g., by providing more numerous potential symbolic-bearing targets for terrorist attacks, as Li (2005) argues. Both effects may neutralize each other, but, unfortunately, cannot be disentangled. Notably, we cannot rule out the explanation that the insignificance is caused by a constitution-based definition of political autonomy which bears little importance in a real-life political economy context.

In summary, we find strong support for the hypothesis that fiscal decentralization is negatively associated with the occurrence of transnational terror events, while there is no effect of decentralized political decision-making.

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<sup>31</sup> See Frey, Luechinger and Stutzer (2009) for an attempt to measure the welfare costs of terrorism.

<sup>32</sup> Results are qualitatively identical when a Tobit model is estimated or a dichotomous variable of the occurrence of transnational terror is analyzed with Logit estimation. Results are available on request.

**Table 1: Decentralization and Terror, NBR, 1976-2000**

	(1)	(2)	(3)	(4)	(5)
Fiscal decentralization (t-1)	-0.015* [1.82]		-0.022*** [2.65]	-0.040*** [4.12]	0.007 [0.71]
Political autonomy		0.321 [1.43]	0.139 [0.49]	-0.378 [1.29]	0.214 [0.71]
(log) GDP per capita (t-1)	0.219** [2.13]	0.104 [1.44]	0.174 [1.59]	0.132 [1.01]	0.187 [1.32]
(log) Population (t-1)	0.462*** [4.98]	0.160** [2.48]	0.407*** [3.85]	0.625*** [5.24]	0.099 [0.91]
Political freedom (t-1)	0.104* [1.71]	0.034 [0.81]	0.151** [2.25]	0.216*** [2.61]	-0.051 [0.49]
Political freedom, change	-0.002 [0.01]	-0.102 [1.31]	0.013 [0.10]	0.065 [0.34]	0.037 [0.18]
Government fractionalization (t-1)	0.538** [2.27]	0.548*** [3.20]	0.418 [1.62]	0.601* [1.77]	-0.162 [0.41]
Voting with U.S. (t-1)	1.458** [2.05]	0.557 [1.03]	1.524** [2.04]	2.399** [2.50]	-0.714 [0.62]
Constant	-10.735*** [5.34]	-3.223** [2.31]	-9.220*** [3.99]	-12.962*** [4.84]	-5.720** [2.26]
Observations	934	1911	826	826	826
Dependent variable	all terror	all terror	all terror	severe terror	less severe terror
Number of countries	76	109	63	63	63
Wald test (Prob>chi2)	0.00	0.00	0.00	0.00	0.00

Notes:

The dependent variable is the number of transnational terror events in a particular year and country.

Column 4 (5) focuses on severe (less severe) events. A terror event is defined as severe when at least one person has been injured or killed.

All regressions include year fixed effects.

Absolute value of z statistics in brackets.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Columns 4 and 5 of Table 1 provide further analyses of the baseline model by distinguishing terror events that can be considered to be marginal from those which are severe. For the latter, we count all terrorist events in which at least one person was physically harmed – namely all events in which the number of persons killed or injured was greater than zero. Of course, it is debatable which threshold constitutes a severe event. Following Dreher, Gassebner and Siemers (2010), we choose the lowest threshold possible. While this may be the most simple/intuitively appealing choice from our point of view, we are clearly aware that even ‘less severe’ events

may still have a major psychological or economic impact on the population as, e.g., the London bombings of July 21, 2005.

Splitting up the type of terror events by severe and less severe incidences may allow us to draw preliminary conclusions with respect to whether the ‘efficiency hypothesis’ or the ‘system stability hypothesis’ of decentralization drives our results. Arguably, the severity of the terrorist attack is to some extent under terrorists’ control.<sup>33</sup> When decentralization increases government efficiency in combating terror acts – raising terrorists’ marginal costs – both severe and less severe terror acts should be reduced more or less equally. However, with respect to politico-administrative stability, system destabilization is most likely be triggered by severe attacks – particularly assassinations of political leaders and killings of government personnel, as Frey and Luechinger (2004)’s examples of Zug and Armenia suggest. From this viewpoint, the system-stabilizing effect of decentralization should only affect the marginal benefits derived from severe attacks, but not that from less severe terrorist acts.

Columns 4 and 5 of Table 1 suggest that the overall results observed for all types of terror events in columns 1 and 3 are entirely driven by severe events. Significant at the 1 percent level, fiscal decentralization reduces the number of severe terror events, but does not affect less severe events at conventional levels of significance. While this result might thus be interpreted to be more in favour of the ‘system stability’ rather than the ‘government efficiency’ hypothesis, in principle, other interpretations are also possible. We will return to an attempt to directly address the ‘efficiency hypothesis’ below.

According to the marginal effects corresponding to the results of column 4 (again calculated at the mean of the explanatory variables), an increase in fiscal decentralization by 1 percentage point reduces the number of severe terror events by 0.15 events, which is

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<sup>33</sup> Of course, this does not imply that terrorists can always choose the degree of damage resulting from their attack. For example, an attempted severe bombing might have no physical and, thus, destabilizing effect when the bomb is deactivated early enough. In this case, such attempt would be counted as less severe terror event.



quantitatively about 5 times larger as compared to the effect for the overall sample. Predicting the number of attacks following a simulated rise in the degree of expenditure decentralization from 20% to 50%, predicted severe terror would decrease by roughly 2.7 events, from 3.9 events down to 1.2 events. Compared to the effect of fiscal decentralization on all terror events (column 3), the impact on severe events is more than quadruple in size (-0.63 versus -2.7).

Table 2 tests for the robustness of our results to the inclusion of additional variables that have been proposed as determinants of terror in the previous literature or are intuitively appealing as such. As in Piazza (2006) and Dreher and Gassebner (2008), we test for the sensitivity of the estimates to the inclusion of population growth and GDP growth. According to Piazza (2006), the first puts pressure on a countries' economic and political system, increasing the destructive impact of an attack on the polity, thereby increasing terrorists' expected benefits. However, GDP growth may equally well be correlated with reductions in poverty, potentially increasing terrorists' costs through improved government effectiveness. We will turn to the role of governance quality below. In addition to government fractionalization that is included in the main regression, we also test for the impact of four alternative measures of 'social cleavage' that make the polity more vulnerable to attacks: ethnic fractionalization, language fractionalization, religious fractionalization, and fractionalization of the parliamentary opposition. Similarly, recently founded states might have still weak and ineffective institutions, contributing to their system instability and insufficient public goods provision. We therefore add an index for 'new states'.<sup>34</sup> We also include a dichotomous variable that takes the value 'one' if the country is in a state of internal or external war. Again, in analogy to the previous argument, we can expect government institutions to not work well and basic human rights to be severely constrained at times of

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<sup>34</sup> Following Gallup et al. (2001) the index is '0' for states not existing before 1914, '1' when created between 1914 and 1945, '2' when created between 1946 and 1989, and '3' when created after 1989.

war, giving rise to system instability, promising greater damage and decreasing costs of terror acts. We also test for the hypothesis that inertia may play a role by adding the lagged dependent variable on the right hand side of the equation.<sup>35</sup>

The Treisman data provides an alternative index of weaker political local autonomy, which measures so-called ‘residual’ autonomy, where political decisions at the local level fill the legal gaps in national laws, and may be overruled by national legislation.<sup>36</sup> In order to capture both strong and weak forms of local political autonomy, we combine this index with the one on strong political autonomy already used above to obtain a more general local autonomy indicator. We replace the (strong) local autonomy dummy used in Table 1 with this variable to test for the robustness of our results.

As final test for robustness, we estimate our original specification of column 1 in Table 1 employing a fixed rather than a random effects model.<sup>37</sup>

As can be seen from columns 1-8 of Table 2, most of the additional variables are completely insignificant. The exceptions are the war dummy and the index for new states that are significant at the five percent level, with a positive and, respectively, a negative coefficient. Column 9 includes the lagged dependent variable as measure of inertia, which is significant at the 1 percent level, with a positive coefficient.<sup>38</sup> Column 10 reports the results replacing the previously employed strong ‘political autonomy’ with the combined measure

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<sup>35</sup> Note that the bias detected by Hurwicz (1950) is sufficiently small to justify non-instrumentation of the lagged dependent variable with a time-series dimension of about 30 years.

<sup>36</sup> A prominent example of such political autonomy is the German Laender. For other examples see Bjørnskov, Dreher and Fischer (2008).

<sup>37</sup> Note that we use the unconditional Negative Binomial Regression estimator with dummy variables to represent the fixed country effects. Unlike for Logit estimations, e.g., there is no incidental parameter bias in the coefficients of the Negative Binomial Regression (Allison and Waterman 2002).

<sup>38</sup> This result holds when OLS is applied.

that also accounts for weaker forms of local political autonomy, as described above. It is not significant at conventional levels.

As shown in column 11, the effect of decentralization on terror prevails when the model is estimated employing country fixed effects rather than random effects.<sup>39</sup> Moreover, in all specifications of Table 2 the negative impact of expenditure decentralization on terror stays significant at least at the five percent level. Its coefficient is of similar size across all estimated models, including the country fixed effects specification, which shows that decentralization is not strongly correlated with any of these new determinants added to the model or other, unobserved, country characteristics. The main findings equally prevail when, alternatively, Tobit and Logit estimators are applied (not reported).<sup>40</sup>

We conclude that fiscal decentralization robustly decreases terror, independent of the choice of control variables and method of estimation.<sup>41</sup>

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<sup>39</sup> Note that this holds for all models of Table 1, including and excluding fiscal decentralization.

<sup>40</sup> Tobit models do not take account of the (count) structure of the data, while Logit cannot use information contained in the frequency of attacks but reduces this information to a binary dependent variable, indicating the occurrence of terror instead.

<sup>41</sup> We also replicated the analysis for a sample of countries without political autonomy. The results are not affected.

**Table 2: Decentralization and Terror, NBR, 1976-2000**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Fiscal decentralization (t-1)	-0.022*** [2.64]	-0.022*** [2.62]	-0.023*** [2.77]	-0.019** [2.25]	-0.021** [2.48]	-0.025*** [2.95]	-0.023*** [2.65]	-0.025*** [2.75]	-0.020** [2.52]	-0.022*** [2.59]	-0.031** [1.96]
Political autonomy	0.139 [0.49]	0.139 [0.49]	0.172 [0.58]	0.266 [0.96]	0.095 [0.32]	0.226 [0.79]	0.131 [0.46]	0.259 [0.83]	0.275 [1.01]		
Strong or residual autonomy										0.047 [0.16]	
(log) GDP per capita (t-1)	0.185* [1.68]	0.174 [1.58]	0.056 [0.47]	0.165 [1.57]	0.196 [1.63]	0.099 [0.83]	0.177 [1.59]	0.064 [0.53]	0.194* [1.84]	0.18 [1.58]	0.715 [1.38]
(log) Population (t-1)	0.411*** [3.90]	0.407*** [3.85]	0.331*** [3.02]	0.356*** [3.41]	0.413*** [3.87]	0.441*** [4.15]	0.409*** [3.85]	0.363*** [2.94]	0.379*** [3.78]	0.419*** [3.86]	0.364 [0.41]
Political freedom (t-1)	0.150** [2.23]	0.151** [2.24]	0.159** [2.35]	0.191*** [2.80]	0.159** [2.29]	0.130* [1.89]	0.153** [2.25]	0.155* [1.89]	0.130** [1.99]	0.154** [2.30]	0.221** [2.51]
Political freedom, change	0.019 [0.14]	0.013 [0.10]	-0.025 [0.19]	0.010 [0.07]	0.019 [0.14]	0.012 [0.09]	0.014 [0.10]	-0.034 [0.24]	0.014 [0.10]	0.013 [0.10]	0.059 [0.46]
Government fractionalization (t-1)	0.413 [1.60]	0.417 [1.62]	0.377 [1.45]	0.373 [1.48]	0.406 [1.57]	0.448* [1.74]	0.420 [1.63]	0.530* [1.88]	0.292 [1.15]	0.413 [1.60]	0.311 [1.13]
Voting with U.S. (t-1)	1.519** [2.03]	1.524** [2.04]	1.674** [2.18]	0.996 [1.33]	1.510** [2.02]	1.933** [2.45]	1.491* [1.93]	1.583* [1.93]	1.220* [1.68]	1.529** [2.04]	0.054 [0.06]
GDP growth (t-1)	0.005 [0.40]										
Population growth (t-1)		0.000 [0.01]									
New state, index			-0.269** [2.24]								
War, dummy				0.694** [2.30]							
Ethnic fractionalization					0.268 [0.44]						
Language fractionalization						-0.834 [1.62]					
Religious fractionalization							0.092 [0.17]				
Opposition fractionalization								-0.085 [0.28]			
Dependent variable (t-1)									0.035*** [5.70]		
Constant	-9.390*** [4.06]	-7.544*** [3.31]	-5.019** [2.04]	-8.350*** [3.70]	-9.582*** [3.91]	-9.010*** [3.90]	-9.279*** [3.96]	-5.645** [2.22]	-8.89*** [4.05]	-9.441*** [3.93]	-6.215 [0.42]
fixed/ random effects	re	re	re	re	re	re	re	re	re	re	fe
Observations	823	826	767	767	826	826	826	717	826	826	934
Number of countries	63	63	60	60	63	63	63	54	63	63	76
Wald test (Prob>chi2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes:

The dependent variable is the number of transnational terror events in a particular year and country.

All regressions include year fixed effects.

Absolute value of z statistics in brackets.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

## 5.2 A potential transmission channel of fiscal decentralization

As shortly described in the theory section above, decentralization may reduce terror because it makes the political system and the polity more stable ('system stability hypothesis') and thus more immune against the negative effects of transnational terrorist acts, decreasing terrorists' expected benefit. Alternatively, decentralization may simply yield efficiency gains and improve effectiveness in the provision of 'public safety', increasing the terrorists' expected

costs, so that our measure of general decentralization only approximates the cost structure of providing public goods ('efficiency hypothesis').

In Table 3, we provide a preliminary test for the second potential transmission channel of the beneficial impact of fiscal decentralization, augmenting our baseline model with two measures of government production efficiency and effectiveness: first, we employ an indicator of bureaucratic quality, obtained from the International Country Risk Guide's (ICRG) Political Risk database, for the years 1984 to 2005. Second, we use a measure of government effectiveness, available from the year 1996 onwards, and constructed by Kaufman et al. (2004). The first measure is based on information on subjective evaluations of "autonomy from political pressure," "strength and expertise to govern without drastic changes in policy or interruptions in government services" when governments change, and "established mechanisms for recruiting and training" (PRS Group 1998). Government effectiveness measures the competence of the bureaucracy and the quality of public service delivery, based on a substantial number of perceptions-based indicators from various surveys on government swiftness of response, efficiency and effectiveness in meeting local and national demands, mostly based on information collected from internationally working businessmen and managers (Kaufman et al. 2004).<sup>42</sup> For both measures, higher values indicate better bureaucratic control or more government effectiveness, respectively.

If the 'efficiency hypothesis' holds, the inclusion of either direct measure of government efficiency would arguably reduce the effects of fiscal decentralization – in terms of coefficient size and/or its statistical significance. Clearly, however, our measures of

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<sup>42</sup> The public goods production evaluated by Kaufman et al. (2004) includes, for example, tax collection, effective implementation of national policies and government decisions, coordination between government tiers, civil service and quality of bureaucracy, and national infrastructure (telecommunication, electricity, transportation), response to natural disasters, government personnel quality, issues of institutional rigidity, government stability and policy consistency, trust in police, and quality of public schools.

government quality are crude, so the deck is stacked against the effectiveness hypothesis. As such, the results that follow are preliminary and have to be interpreted with caution.

Table 3 shows the baseline regressions of columns 1 and 2 of Table 1, augmented with the two measures of government effectiveness and reduction of bureaucratic waste. For comparison, Table 3 also contains the baseline model excluding measures of government efficiency, estimated for the identical regression subsample (columns 2, 4 and 6, 8). This subsample is substantially smaller than the one used for the original model of Table 1 above, due to missing data. Again, in all models fiscal decentralization is negatively related to the occurrence of transnational terror events. Columns 1 and 3 show that improved government quality measured by the ICRG index significantly reduces transnational terror (at the five percent level). The insignificance of the Kaufman index of government effectiveness in columns 5 and 7 might be due to the substantially smaller regression sample, excluding all observations prior to 1996 (and thus most of our original sample). As in Table 1, the inclusion of local political autonomy, which itself is not significant at conventional levels, does not qualitatively alter these main results throughout (columns 3, 4 and 7, 8).

Turning to the effect of fiscal decentralization, the coefficients of our decentralization measures become marginally insignificant when the Kaufmann index is included (columns 5 through 8). However, in all regressions shown in Table 3 the negative sign remains. Obviously, the smaller sample size is an obstacle to identifying significant effects. In contrast, for the ICRG index, in the somewhat larger samples with about 500 observations (columns 1 through 4), the impact of fiscal decentralization is either significant at conventional levels or only marginally insignificant. In addition, the coefficients of decentralization are similar across models including and excluding government effectiveness. Calculating the marginal effects for fiscal decentralization reveals the same picture. Also note that the levels of significance are not substantially lower as compared to the original model in Table 1 above.

**Table 3: Potential transmission channel of decentralization, NBR, 1976-2000**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bureaucratic quality (t-1)	-0.116** [2.47]		-0.116** [2.30]					
Gov. effectiveness (t-1)					-0.501 [0.95]		-0.65 [1.03]	
Political autonomy			0.106 [0.33]	0.034 [0.10]			0.061 [0.08]	0.03 [0.04]
Fiscal decentralization (t-1)	-0.017 [1.50]	-0.021* [1.84]	-0.024** [2.02]	-0.029** [2.42]	-0.031 [1.42]	-0.035 [1.58]	-0.033 [1.23]	-0.038 [1.45]
<i>marginal effect</i> <i>fiscal decentralization</i> (log) GDP per capita (t-1)	-0.02 [1.87]	-0.026 [1.02]	-0.026 [1.99]	-0.034 [1.25]	-0.01 [1.09]	-0.011 [0.58]	-0.01 [1.09]	-0.012 [0.46]
(log) Population (t-1)	0.626*** [5.43]	0.604*** [5.07]	0.614*** [4.64]	0.599*** [4.37]	0.754*** [3.54]	0.735*** [3.52]	0.790*** [3.08]	0.781*** [3.09]
Political freedom (t-1)	0.104 [1.20]	0.098 [1.12]	0.105 [1.12]	0.11 [1.18]	-0.036 [0.16]	-0.068 [0.32]	-0.01 [0.04]	-0.016 [0.06]
Political freedom, change	-0.209 [1.27]	-0.19 [1.19]	-0.234 [1.37]	-0.209 [1.25]	-0.913 [1.49]	-0.996 [1.64]	-0.899 [1.38]	-1.007 [1.54]
Government fractionalization (t-1)	0.886*** [2.85]	0.930*** [2.97]	0.680** [2.05]	0.690** [2.03]	0.5 [0.61]	0.469 [0.57]	0.179 [0.19]	0.048 [0.05]
Voting with U.S. (t-1)	2.320** [2.42]	1.533* [1.67]	2.614** [2.57]	1.861* [1.89]	4.457* [1.74]	4.811* [1.94]	4.766 [1.52]	5.292* [1.76]
Constant	-11.529*** [4.59]	-10.682*** [4.23]	-13.267*** [4.57]	-10.909*** [3.70]	-3.967 [0.01]	-1.539 [0.00]	-3.028 [0.00]	-1.416 [0.00]
Observations	517	517	463	463	149	149	136	136
Number of countries	58	58	49	49	48	48	43	43
Wald test (Prob>chi2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes:

The dependent variable is the number of transnational terror events in a particular year and country.

Regressions in columns 2, 4, 6, 8 are based on the regression samples in regressions 1, 3, 5 and 7, respectively.

All regressions include year fixed effects.

Absolute value of z statistics in brackets.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

In summary, to the extent that our crude measures of governance reflect governments' effectiveness in the provision of public safety, we do not find that the impact of decentralization on terror is mediated by effectiveness. While these estimates have to be interpreted with some caution, our results are not in favour of the 'government efficiency hypothesis'. While the persisting beneficial effects of decentralization might thus be due to the 'system stability hypothesis' proposed by Frey and Luechinger (2004), we lack the data to directly test for this transmission channel.

## 6. Summary and Conclusion

This paper empirically analyzes the impact of decentralization on the occurrence of transnational terror using panel data for a maximum of 109 countries over the years 1976-2000. We find that expenditure decentralization reduces the number of terror events in a target country, while political decentralization has no impact. In the words of Keman (2000), we find the ‘power to act (= spend)’ to matter more than the ‘power to decide’ for the occurrence of transnational terrorism.

Distinguishing decentralization of policy implementation from decentralization of political decision-making – as suggested by Frey and Luechinger (2004) – our empirical analysis suggests that effective local government administrations (potentially taking over responsibilities from other dysfunctioning local or supra-local administrations) are more important in stabilizing a country than the dispersion of actual decision-making authority at the local level. Local spending autonomy may simply increase competition among jurisdictions, thereby improving the quality of ‘security’. Our preliminary attempt to empirically control for government quality shows no support for the ‘efficiency hypothesis’. However, given the lack of more reliable data, these additional results have to be interpreted with caution.

Our main results bear important policy implications. Since the seminal work of Becker (1968), economists view undertaking criminal acts as the outcome of rational decision-making. Applying this rational choice model of criminal behavior to terrorists’ decisions, additional terror will occur when the expected benefit of an additional terrorist act outweighs its costs. Indeed, it has been shown that the propensity to commit terrorist acts can be influenced by changes in external costs and benefits (Enders and Sandler 1995). Traditional strategies for combating terror aim at raising the direct or opportunity costs of committing such acts. In contrast, particularly in light of failing deterrence strategies, more recent



approaches focus on reducing the (expected) benefits of terrorist activity (Lichbach 1987, Frey 1988, Wilkinson 2002, Sandler and Enders 2004).

In this paper, we have shown that greater expenditure decentralization might be one instrument to influence terrorists' costs-benefit-calculus, reducing the occurrence of transnational terror. Previous research has argued that decentralized spending competences lead to inefficient overspending and create problems of coordination, thereby preventing effective security and potentially making a country more attractive for terrorist activity. As we have shown in this paper, on average, the opposite is true: decentralization reduces transnational terror. We conclude that decentralizing government spending might be beneficial to public safety, positively contributing to individual welfare, so that some policy makers' calls for greater *centralization* in the 'fight against terrorism' should be treated with caution.

## Appendix

### Descriptions and sources

Variable	Definition	Source
Number of terror events	Number of transnational terror events for each country and year, defined as “violence, or the threat of violence, calculated to create an atmosphere of fear and alarm.”	MIPT Terrorism Knowledge Base
Fiscal decentralization	Total expenditure of sub-national government tiers divided by total spending by all levels of government.	IMF’s Government Finance Statistics
Political autonomy	Under the constitution, subnational legislatures have autonomy in certain specified areas--i.e. constitutional authority to legislate--not explicitly subject to central laws.	Treisman (2008)
Strong or residual autonomy	Under the constitution, subnational governments have residual powers (to legislate on areas not explicitly assigned to other levels).	Treisman (2008)
(log) GDP per capita	Gross domestic product divided by midyear population. Data are in constant U.S. dollars.	World Bank (2006)
(log) Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship, except for refugees not permanently settled in the country of asylum.	World Bank (2006)
Political freedom	Average value of political rights and civil liberties, ranging from -7 to -1, where higher values reflect greater freedom.	Freedom House (2005)
Political freedom, change	Yearly change in index ranging from 1 to 7, where higher values reflect greater freedom.	Freedom House (2005)
Government fractionalization	Probability that two deputies picked at random from among the government parties will be of different parties( low(0)-high(1)).	Beck et al. (2001)
Voting with U.S.	Votes in agreement with the US are coded as 1, votes in disagreement as 0, and abstentions or absences as 0.5. The resulting numbers are then divided by the total number of votes in each country and year.	Dreher and Sturm (2006)
GDP growth	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2000 U.S. dollars.	World Bank (2006)
Population growth	Annual population growth rate, based on the de facto definition of population.	World Bank (2006)
New state, index	The timing of national independence (0 if before 1914; 1 if between 1914 and 1945; 2 if between 1946 and 1989; and 3 if after 1989).	Gallup et al. (2001)
War, dummy	Dummy for countries that had external war over the period 1960-85.	Gallup et al. (2001)
Ethnic fractionalization	Fractionalization <sub>j</sub> = $1 - \sum_{i=1}^n s_{ij}^2$ with $s_{ij}$ being the share of group $i$ in country $j$ .	Alesina et al. (2003)
Language fractionalization	Fractionalization <sub>j</sub> = $1 - \sum_{i=1}^n s_{ij}^2$ with $s_{ij}$ being the share of group $i$ in country $j$ .	Alesina et al. (2003)
Religious fractionalization	Fractionalization <sub>j</sub> = $1 - \sum_{i=1}^n s_{ij}^2$ with $s_{ij}$ being the share of group $i$ in country $j$ .	Alesina et al. (2003)
Opposition fractionalization	Probability that two deputies picked at random from among the opposition parties will be of different parties( low(0)-high(1)).	Beck et al. (2001)
Bureaucratic quality	Index of bureaucratic quality on a scale of 1-12, with higher values indicating higher quality. Includes aspects of autonomy from political pressure, ability to govern without interruptions in government services when governments change, and established mechanisms for recruiting and training of personnel.	PRS Group (1998)
Government effectiveness	‘Government effectiveness’ component of the Kaufman governance quality indicator of 1998. According to Kaufman et al. (2003), this indicator is based on a regression with data from various distinct sources and reflects the quality of public service provision and of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government’s commitment to policies. The main focus of this index is on “inputs” required for the government to be able to produce and implement good policies and deliver public goods. The value of the index ranges from -2.5 to 2.5.	Kaufman et al. (2004)

**Descriptive Statistics**

Variable	Mean	Std. Dev.	Min	Max
Number of terror events	1.70	4.59	0.00	50.00
Fiscal decentralization	20.84	13.48	1.45	55.62
Political (strong) autonomy (1911 obs)	0.15	0.36	0.00	1.00
Residual autonomy (1886 obs)	0.12	0.33	0.00	1.00
Strong or residual autonomy (1911 obs)	0.19	0.39	0.00	1.00
(log) GDP per capita	7.51	1.53	4.31	10.64
(log) Population	15.95	1.61	12.29	20.95
Political freedom	-3.66	1.97	-7.00	-1.00
Political freedom, change	0.03	0.46	-4.00	3.50
Government fractionalization	0.20	0.29	0.00	1.00
Voting with U.S.	0.30	0.15	0.06	0.84
GDP growth	3.08	5.79	-51.03	38.20
Population growth	1.73	1.44	-16.55	18.71
New state, index	1.25	1.03	0.00	3.00
War, dummy	0.14	0.35	0.00	1.00
Ethnic fractionalization	0.43	0.26	0.00	0.93
Language fractionalization	0.39	0.29	0.00	0.92
Religious fractionalization	0.41	0.25	0.00	0.86
Opposition fractionalization	0.49	0.29	0.00	1.00
Bureaucratic quality	8.71	2.99	2	12
Government effectiveness	0.68	0.89	-0.965	2.16

Note: Statistics are based on the estimation sample of Table 1, column 2.

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