Center for International Economics

Working Paper Series

Ties That Do Not Bind (Directly):
The Education Terrorism Nexus Revisited

Sarah Brockhoff, Tim Krieger, and Daniel Meierrieks

July 2010

Center for International Economics
University of Paderborn
Warburger Strasse 100
33098 Paderborn / Germany

WiWi

BUSINESS ADMINISTRATION & ECONOMICS
UNIVERSITY OF PADERBORN

Ties That Do Not Bind (Directly):
The Education–Terrorism Nexus Revisited[*]

Sarah Brockhoff[†], Tim Krieger[‡], and Daniel Meierrieks[§]

July 2010

Abstract

This contribution offers a comprehensive empirical analysis of the effects of education on terrorism for 118 countries for the period 1984 to 2007. We find that education and terrorism are not directly linked, so that education neither fosters nor retards terrorism on its own. Rather, our results suggest that education may fuel terrorist activity in the presence of poor political and socio-economic conditions, whereas better education in combination with favorable conditions decreases terrorism. Thus, the precise effect of education on terrorism depends on country-specific conditions. A successful anti-terrorism strategy should therefore focus on a country's political and socio-economic development, in addition to educational attainment.

JEL Classification: H56, D74, O15, H52, I2, N40

Keywords: education, terrorism, counter-terrorism, development strategies, conditional effects

What is it that seduces some young people to terrorism? It simplifies things. The fanatic has no questions, only answers. Education is the way to eliminate terrorism.

(Elie Wiesel, Nobel Peace Prize Laureate in 1986[1])

Born with a Silver Spoon (...) Bin Laden studied management and economics at King Abdul Aziz University in Jedda, Saudi Arabia.

(David Johnson[2])

1   Introduction

The 'war on terrorism' was among the major issues in the public and political discourse in the first decade of the new millennium, and still is. At the latest since the 9/11 attacks, there has been intense debate concerning the root causes of terrorism due to, for instance, the negative effects of terrorism on economic growth and development (e.g., Crain and Crain; Gaibulloev and Sandler, 2008) and on political stability (e.g., Gassebner et al., 2007). However, no consensus has been reached on this issue; rather, a multitude of possible explanations for the genesis of terrorism and corresponding strategies against it has been put forward and debated.

One important strand of this debate relates education to terrorism. At first glance, a plausible link seems to run from low educational attainment via economic deprivation to the decision to become a terrorist, an idea that has been put forward by several politicians, journalists and scholars, as the quote by Elie Wiesel indicates. However, the background of many terrorists runs counter to this idea. For instance, Osama bin Laden, is the son of a wealthy family, enjoyed – as David Johnson's quote suggests – an excellent education but nevertheless became a top terrorist. The same is true for many other terrorists.[3]

Given these inconsistencies as well as some ambiguous findings in the existing empirical literature, it will be the main goal of this paper to thoroughly revisit the *education-terrorism nexus*, thereby answering the question whether and if so, how precisely education affects terrorism. Our findings suggest that neither view – that education either reduces or fosters terrorism – is conclusive *on its own* for explaining the education-terrorism nexus. Rather, we argue that country-specific political and socio-economic factors are decisive when it comes to explaining why in some, but not all countries highly educated individuals turn into terrorists. We argue that the link between education and terrorism is most relevant when, for instance, an *educated revolutionary vanguard* exists that voices dissent (through terrorism) against existing poor socio-economic conditions in a country.

Let us first consider in more detail the *terrorism-reducing effect* of education. The rational-

---

[1]Cited from an article by Janet J. Jai at: `http://www.csmonitor.com/2001/1210/p7s1-wogi.html`.

[2]Cited from: `http://www.infoplease.com/spot/osamabinladen.html`.

[3]There are several instances of terrorists who are from wealthy families and/or highly educated. See Avihai (2010) for an extended list.

choice perspective on terrorism argues that terrorists choose their level of violent activity subject to the costs, benefits and opportunity costs of violent behavior (Sandler and Enders 2004). Given these cost-benefit considerations, the opportunity costs of terrorism may increase with education. This is because human-capital theory assumes that individual earnings rise with the level of education and so do the opportunity costs of paid employment. The costs of recruitment for terrorist organizations increase. Furthermore, with better education (especially at the university level) individuals are expected to change their attitudes towards extremist ideologies, the use of violence and its legitimization in ways that make terrorism less likely. At the same time, a higher education may lead to a different evaluation of the benefits of terror. For instance, better educated individuals may deem terrorist success less likely. In general, high levels of educational attainment may thus mean higher opportunity costs of terrorism, at the same time potentially increasing the costs and lowering the (perceived) benefits of terrorism, which – in combination – leads to a decline in violence. The empirical evidence by Santos Bravo and Mendes Dias (2006) and Azam and Thelen (2008) indicates that low levels of education are indeed associated with more terrorism. The immediate policy implication of these considerations is – in line with Elie Wiesel – to educate the poor to tackle the problem of terrorism. In fact, Azam and Thelen (2008) argue explicitly that foreign aid should be earmarked for education to curtail the emergence of (transnational) terrorism.

Unfortunately, there is no strong empirical evidence in favor of a beneficial effect of education on terrorism. Tavares (2004) provides evidence that education is a positive predictor of terrorist activity. Testas (2004) shows the same effect for the Muslim world. Furthermore, micro studies indicate that – in line with David Johnson's quote – individual terrorists are better educated than average population (e.g., Hassan, 2001; Krueger and Maleckova, 2003; Berrebi, 2007; Benmelech and Berrebi, 2007; and Krueger, 2008).

From a theoretical point of view, the *terror-enhancing effect* of education on terrorism may be explained, on the one hand, from the 'demand side': It should be more attractive for terrorist groups to recruit better educated individuals because terrorist success is positively related to human capital endowments (e.g., Krueger and Maleckova, 2003; Bueno de Mesquita, 2005). Here, 9/11 is a case in point, given that directing airplanes into the World Trade Center and the Pentagon was possible only with the cooperation of highly capable and well-trained terrorists. On the other hand, there is the 'supply side' argument: Better educated individuals are more often interested in politics and their socio-economic environment (as they are less concerned with economic subsistence). This above-average interest in political and socio-economic circumstances may make them more likely to act violently when such circumstances are poor. Economically speaking, high education levels may thus be positively related to terrorism by swaying the costs and benefits of terrorism (its 'supply' and 'demand') in ways that make violence more attractive.

There are theoretical arguments and empirical evidence in favor of both the terror-reducing and the terror-enhancing effect of education on terrorism. In addition, there are some

studies (Krueger and Maleckova, 2003; Kurrild-Klitgaard et al., 2006; and Drakos and Gofas, 2006a) that find no significant effect of education on terrorism. Possibly this is because positive and negative effects of education on terrorism just offset each other. However, the inconsistent evidence may also imply that the link between terrorism and education is not straightforward. Rather, the dynamics of the education-terrorism nexus may be *conditional upon country-specific factors* (see Shafiq and Sinno, 2010). Then these very factors determine whether the positive effects of education on terrorism outweigh the negative ones or vice versa.

More specifically, if well-educated young individuals experience poor political or socio-economic conditions, then terrorism may become more likely. That is, even if education generally changes the perception of terrorism (e.g., so that terrorism is deemed more costly and less beneficial), better education also makes it more likely that political and socio-economic disenfranchisement is recognized and that violence is chosen to change the unfavorable status quo.[4] And even if the well-educated do not face these conditions personally, they may feel sympathetic to those who do, and voice violent dissent in their name (this used to be an important aspect of Western European left-wing terrorism). This implies that an *educated revolutionary vanguard* may be a prerequisite for observing a relevant link between education and terrorism. In a country with poor conditions but without such a 'vanguard' (due to generally low levels of education), less terrorism should be observed compared to a country that exhibits a higher education level (and thus potentially a 'vanguard') but similar political and socio-economic conditions. At the same time, there is no need to act violently when high educational attainment meets good conditions.

An important example of such a conditional connection between education and terrorism is Palestine, where comparatively good education is coupled with poor conditions, such as demographic stress (e.g., high youth burden and high youth unemployment) and political problems (e.g., corruption). As speculated by Angrist (1995), this may have contributed to the intifada in the late 1980s. Similarly, Shafiq and Sinno (2010) argue that support for terrorism in some Muslim countries not only depends on educational attainment but also on the interaction between education and political dissatisfaction (which may, as detailed below, not only follow from the – slightly positively connoted – 'educated revolutionary vanguard' argument). Therefore, we will hypothesize in the following that the actual effect of education on terrorism may be conditional upon a set of socio-economic and political variables.

As a consequence, for instance, development strategies – particularly when they extend to the education system – should take these very conditions into consideration. Arguably, a more stable political environment in the target countries might help to foster growth, as emphasized in the upcoming 2011 World Development Report on 'Conflict, Security and

---

[4]Furthermore, better education also makes successful terrorist activity more likely. That is, once individuals choose violence, we may expect a self-energizing effect that depends on an individual's level of education.

4

Development' (see World Bank 2010). In this sense, the United Nations' *Millennium Development Goal* of cutting absolute poverty by half until 2015 (MDG #1) and the World Bank's and IMF's *Poverty Reduction Strategies* (PRS), both rather broad-based development strategies, might – at least as a byproduct – help to reduce terrorism when terror is rooted in poor socio-economic conditions and coupled with sufficiently high education.[5]

– Figure 1 here –

A first look at our data set gives some support for the idea that there is indeed an interacting, country-specific effect of education on terrorism (the data set used will be introduced in detail in the next section). In Figure 1, a three-dimensional plot is shown where university enrollment per capita (i.e., the proportion of students in the total population) is plotted against the x-axis, the youth burden (the proportion of those aged 10 to 29 in the total population) against the y-axis and the (logarithmized) number of terrorist attacks against the z-axis.[6] The dotted plane, which is based on a simple OLS estimate, indicates that a high level of education in combination with a high youth burden results in a particularly high number of terrorist attacks, while terrorism is less pronounced when the youth burden is low (for the same level of university enrollment). Figure 2 shows a non-linear relationship between school enrollment (primary to tertiary) and terrorist attacks. Given our previous discussion we would in fact expect the existence of an 'educated revolutionary vanguard' in countries with an intermediate education level. Clearly, Figures 1 and 2 provide only very rough estimates of the education-terrorism nexus because other relevant impact factors that could potentially explain terrorism are ignored.[7]

– Figure 2 here –

With this contribution we aim at obtaining a deeper understanding of the terrorism-education nexus, while thoroughly controlling for a variety of factors influencing terrorism and taking into account the potential interactions between these factors, education and the emergence of terrorism. We investigate this nexus for 118 countries for the period 1984 to 2007, using count data models and employing a variety of methodological modifications. We contribute to the existing literature as follows. First, we focus on homegrown (homeland) terrorism, that is all terrorist activity emerging from and taking place in one

---

[5]Similarly, development strategies that aim at reducing income inequality may also help to reduce terrorism rooted in inequality, in particular as inequality is also assumed to be detrimental to economic growth (see, e.g., Alesina and Rodrik 1994; or Ravallion 2005). Krieger and Meierrieks (2010a) show that lower inequality indeed leads to less terrorism.

[6]Note that the graph is slightly skewed for better presentation. Numbers on the x-axis are multiplied by factor 8 and numbers on the z-axis by factor 4.

[7]For instance, empirical studies have argued that terrorism is rooted in poor economic conditions (Blomberg and Hess, 2008), political repression (Krueger and Laitin, 2008)), ethnic conflict (Basuchoudhary and Shughart, 2010) or political instability (Piazza, 2008). We control for these factors in our empirical work. For a more comprehensive survey of the literature regarding the causes of terrorism, see Krieger and Meierrieks (2010b).

country, instead of on transnational terrorism (as previous studies have done). Second, we employ a variety of education proxies instead of only using only one related variable. This helps us to perform a robustness check, investigating whether the use of different education variables in the previous literature has actually led to the different results discussed above. Third, we specifically consider the interaction between education and country-specific conditions to control for the possibility that this interaction matters strongly to the terrorism-education nexus, as Figures 1 and 2 suggest.

As our main result, we find that there is little support for an unconditional terrorism-enhancing or terrorism-dampening effect of education on terrorism. Without considering country-specific political and socio-economic conditions, there seems to be no education-terrorism nexus. However, once we take into account the relationship between a country's education level and its specific socio-economic and political conditions (e.g., corruption, ethnic tensions) we find a conditional effect of education on terrorism. Our study thus advocates taking a 'holistic' policy approach towards the 'war on terror'. Instead of favoring education over other forms of development, we argue that the various dimensions of socio-economic and political underdevelopment (e.g., corruption, youth unemployment, political instability) that may prevail in a country should be given equal attention when forming sound strategies to curtail terrorism.

Our paper is organized as follows. In Section 2 we describe the data and methodology. In Section 3 we present our empirical findings. Section 4 concludes.

2 Data and Methodology

2.1 Data

To investigate the effects of education on terrorism (net of a variety of controls), we compile data on education, terrorism and the controls for 118 countries for the period 1984 to 2007. The summary statistics are given in Table 1. Detailed information on data sources and measurement issues for all employed variables is given in the appendix.

– **Table 1 here** –

2.1.1 Dependent Variables

The data for terrorist activity comes from the *Global Terrorism Database* (GTD) that is introduced by LaFree and Dugan (2007). Its main advantage is that it contains information on transnational and domestic terrorism, contrary to other datasets (most notably ITERATE) which focus on transnational terrorism only.[8] We are thus able to consider

---

[8]The academic literature commonly differentiates between domestic and transnational terrorism. The former involves only one country (i.e., the terrorists' homeland), whereas the latter involves at least two

all terrorist activity emerging from and taking place in one country which we refer to as *homeland terrorism.*

We use two distinct measures of homeland terrorist activity. First, we use the *number of homeland terrorist attacks.* This variable contains information on all attacks by known terrorist groups in their homeland, regardless of the victims' nationality. Second, we use the *number of victims of homeland terrorism* which represents the number of individuals killed or wounded (regardless of their nationality) in terrorist actions by known groups in their homeland. While the first measure is commonly used to indicate terrorism, one may argue that the number of terrorist victims more precisely indicates the threat of terrorism, while also reducing the risk of under-reporting (as violent terrorism should be more likely to gain media attention even when there is no freedom of the press).

This broader definition of terrorism offers specific benefits. First, we avoid a truncation of the sample of violence because we do not focus only on transnational terrorism (as most previous studies have done), in particular as transnational terrorism may follow other patterns than domestic terror and as domestic terrorism is a far more common phenomenon than transnational terrorism, substantially outnumbering transnational terrorism (Sanchez-Cuenca and De la Calle, 2009). Second, a link running from education to terrorism should matter to all kinds of terrorism emerging from a country, so there is no reason to assume that education should lead to attacks against either domestic or foreign targets. For instance, we do not want to exclude the possibility that in a country with an strong tourism industry domestic terrorist groups attack foreign tourists with the ultimate aim of putting their national government under pressure.[9]

2.1.2 Independent Variables

Contrary to previous studies (e.g., Krueger and Maleckova, 2003; Drakos and Gofas, 2006a) we use several variables to assess the effect of education on terror. While each education variable should roughly indicate the global differences in education, each indicator may also be differently related to terrorism as they display distinct concepts (cf. Krieger and Meierrieks, 2010b). That is, different results with regard to the education-terrorism nexus in the previous literature may be due to the use of different education variables. For instance, while higher school enrollment and literacy ought both to coincide with a higher level of education, they may differently affect terrorism. While the former only relates to the education of the young (thus possibly linked to the mechanisms of terror recruitment), the latter is an indicator of basic education among the entire population (thus with a potentially weaker connection to recruitment). At the same time, the literacy rate

---

countries (e.g., because terrorists strike outside their homeland or because foreign interests are targeted inside the homeland).

[9]As a robustness check, we also run regressions using only transnational terrorism (origin definition) or only domestic terrorism as the dependent variable. The findings resemble those for homeland terrorism and are available from the authors upon request.

as an indicator of educational attainment has a strong intergenerational component. In statistical terms, the literacy rate increases when either older, poorly educated cohorts are replaced with younger, better educated cohorts or when the latter cohorts are disproportionately large due to high fertility rates. A higher share of educated young people may, however, increase frustrations and thus encourage terrorism. For instance, the young may suffer when observing the fate of the deprived older generation (in line with the 'educated revolutionary vanguard' argument) or they may feel increased competition with other members of their cohort (the youth burden argument). In fact, several studies indicate that cohort size has a negative impact on cohort-specific earnings and a positive impact on cohort-specific unemployment rates (see, e.g., Welch, 1979; Wright, 1991; Korenman and Neumark, 2000; Brunello, 2010).

By using different education variables, we provide a more complete picture of the education-terrorism nexus. Finding that terrorism interacts uniformly with education regardless of the education proxy used should indicate a clear link between the two factors. By contrast, when findings vary according to the indicator this suggests that the links between terrorism and education are more complex. For this study we use a total of five education variables, namely per capita primary school enrollment (*primary*), per capita secondary school enrollment (*secondary*), per capita university enrollment (*university*), the total per capita primary, secondary and university enrollment (*schooling*) and the literacy rate (*literacy*).

2.1.3 Control Variables

As already argued in the introduction, a number of empirical studies have investigated the determinants of terrorism, some stressing the importance of education for terrorism, others denying it (cf. Krieger and Meierrieks, 2010b). We take into account a set of controls that potentially impact terrorist activity, thus avoiding spurious inferences on the education-terrorism nexus while also providing a broader view of the causes of terrorism.

First, we consider the effect of the economy on terrorism. *Per capita GDP* may influence the terrorists' calculus, albeit not in a clear-cut manner. Higher income may coincide with more economic opportunities, thus making violence less likely. However, higher levels of economic development usually mean higher state capacity. Given that other forms of insurgency (e.g., open rebellion) become more costly with state strength, terrorism may become a cost-efficient mode of insurgency (Blomberg et al., 2004; Sanchez-Cuenca and De la Calle, 2009). The propensity to trade (*trade openness*) may also affect terrorism. Li and Schaub (2004) argue that more trade can foster economic development, which in turn benefits state strength and the possibilities of economic participation which affects national levels of terrorist activity.

Terrorism may also be driven by political and institutional factors. When a country is a *democracy*, it may be less prone to terrorism because it offers non-violent opportuni-

ties to voice dissent (Li, 2005).[10] Stronger *economic rights* may mean more non-violent opportunities and thus less terrorism since the opportunity costs of terrorism increase (Basuchoudhary and Shughart, 2010). In the presence of *corruption*, it may become more attractive for terrorist groups (possibly comprising well-educated young cohorts with selfish attitudes) to attack in order to gain control over corruption rents (Kirk, 1983).

As to demographic factors, *population size* is expected to be a positive predictor of terrorism. As summed up by Krieger and Meierrieks (2010b), several empirical studies on the roots of terrorism have detected this very relationship, given that larger countries are expected to experience more terrorism in absolute terms. As argued above, we expect a positive influence of a *youth burden* on terrorism, given that more (economic) competition among the young ought to make it more likely that some of the economically disenfranchised young (or their better educated sympathizers) resort to violence to change their economic status quo. *Ethno-religious tensions* ought to make violence more likely as terrorist groups may find it easier to recruit new members and find support when such tensions abound. Possibly, there is an interaction with education variables, since we expect frustrations in society's subgroups to increase when ethnic or religious characteristics matter more than educational attainment in a tight labor market. Empirical evidence by Basuchoudhary and Shughart (2010) suggests that ethnic tensions contribute to the genesis of terrorism.

We also include a *lagged terrorism variable* in our statistical model to account for the self-energizing nature of terrorism. For example, as a terrorist campaign is expected to be more beneficial than a single attack, past terrorism should predict present terrorism (Krieger and Meierrieks, 2010b). Given that terrorism has also been linked to the dynamics of the *Cold War* (e.g., as a tool of foreign policy; cf. O'Brien, 1996), we include a dummy variable for the Cold War period. We expect it to have a positive effect on terrorism, for instance, as left-wing terrorism is expected to be more pronounced in this era. Lastly, given that terrorism is often used as an insurgency strategy and is generally more likely in times of political instability (e.g., Piazza, 2008), we also include a dummy variable indicating the occurrence of a *civil war*. Generally, we expect that terrorism becomes more likely during civil wars, either because it is employed by insurgent groups (as a strategy of civil war) or because terrorist groups use the power vacuum that a civil war creates to forward their agenda.

2.2 Methodology

We run a panel analysis to investigate the effects of education on terrorism, so we can capitalize on cross-sectional information reflecting differences between countries and on

---

[10]Being a democracy may also make a country more prone to violence, given that democratic governments are less able to enforce 'hard' counter-terrorism measures (Li, 2005). Note also that any positive relationship between democracy and terrorism may be due to the fact that democracies are more likely to have a free press and are thus more likely to report terrorism which creates a reporting bias (Drakos and Gofas, 2006b).

time-series information reflecting dynamics within countries over time. Using a panel approach, we are better prepared to control for heterogeneity effects, reduce problems of collinearity and deliver more efficient econometric estimations.

As noted before, the dependent variables of our empirical model are count variables (i.e., the number of terrorist attacks and terrorism victims). These variables only assume discrete, non-negative values. Given that standard regression models require that the dependent variable be continuous and random (a requirement our variables violate) and that the variances of our dependent variables are larger than their means (as shown in Table 1), we employ a negative binomial count model. For a more in-depth discussion of count data models we refer to, for instance, Winkelmann and Zimmermann (1995).

For all specifications, we let the independent variable and control variables enter the model with *(t-1)* lagged values, as we assume that any changes in these parameters will affect terrorism only after some time. At the same time, we avoid potential reverse causation by lagging all explanatory variables, eliminating the correlation between the explanatory variables and the error term. While a lagged dependent variable takes into account the self-energizing nature of terrorism (i.e., the temporal contagion of terrorism), it also accounts for serial correlation and the omitted variable bias. To increase the robustness of our findings, we include time dummies in all specifications to factor in time and trending effects. Similarly, we include the Cold War dummy to control for the time and trending effects specific to the international system during the Cold War era. Finally, we include regional dummies (e.g., for sub-Saharan Africa and Latin America) to account for region-specific effects.

3 Empirical Results

3.1 Unconditional Effects of Education on Terrorist Activity

In the first part of our empirical analysis we investigate how different education variables affect homeland terrorist activity without considering any potential interaction of education with political or socio-economic conditions. Hence our analysis is *unconditional* and will serve as a benchmark for further investigations. Tables 2 and 3 provide the results for our two dependent variables, namely terrorist attacks and terrorism victims.

– **Table 2 here** –

As reported in Tables 2 and 3, several education variables (*primary*, *secondary*, *university*, *schooling*) have no statistically significant effect on the number of either terrorist attacks or terrorism victims.[11] Only secondary school enrollment has a weakly significant negative

---

[11]We summarize these results because there is – hardly surprisingly – a strong positive correlation between the enrollment measures, ranging from 35 to 71%.

effect on terrorist attacks. In general, these findings – like previous studies (e.g., Krueger and Maleckova, 2003) – suggest that education does not matter to terrorism. In particular, our findings do not imply that education is dangerous or beneficial per se. This also holds for those parts of the population who are attractive for terrorist recruitment in the first place (as indicated by the insignificant university enrollment variables in column (3)).

Turning to the literacy rate, the results are different. It has a significant positive effect of the literacy rate on both the attacks and the victims variable. In fact, literacy and school enrollment seem to measure quite different aspects, as discussed before. The literacy rate is a proxy for very basic education and is related to the whole population; also, there is an intergenerational component. A noticeable increase in the literacy rate always implies a substantial change in the education system as enrollment must increase strongly to have any effect on the measured literacy rate. Accordingly, the positive sign is not that surprising. For instance, a strong rise in enrollment may lead to strong competition among young people if the labor market responds only slowly to the change in supply. Alternatively, well-educated young people may consider themselves a 'vanguard' aiming at a rapid change of the existing order. This issue invites further research.

In the following, we will direct our focus on university enrollment, given that it should be most strongly and *directly* connected to the education-terrorism nexus (see the discussion below). By contrast, the literacy rate is the education proxy least suited to indicating the education-terrorism nexus we have in mind. In particular, the literacy rate should be far less connected to the recruitment of and the active support for terrorist groups than variables indicating the education of population groups in the terrorists' pool of potential recruits and supporters, that is, the young, manipulable and disaffected.

Considering the controls, our findings suggest that terrorist attacks are more likely in wealthy and democratic countries with a history of violence (past terrorism and civil war), a large and young population and ethno-religious tensions. Homeland terrorist attacks are less likely when countries are open to trade and offer means of economic participation. While corruption has no statistically significant effect, terrorist attacks were likely during the Cold War (implying that, e.g., left-wing terrorism waned after 1992).

– **Table 3 here** –

When it comes to terrorism victims (Table 3) our findings are very similar, with the exception of trade openness which no longer has a significant effect. Overall, these results are consistent with the empirical mainstream (cf. Krieger and Meierrieks, 2010b), for instance with respect to the beneficial influence of economic freedom on terrorism (Basuchoudhary and Shughart, 2010) and the negative effects of population size and ethno-religious tensions (e.g., Krueger and Maleckova, 2003; Basuchoudhary and Shughart, 2010).[12] Like

---

[12]We interpret the positive effect of income on terrorism following Blomberg et al. (2004). That is, higher income indicates that governments are more capable, so that terrorism (instead of open rebellion) becomes

11

Enders and Sandler (2005) and Piazza (2008), we find that past terrorist activity and severe political instability (e.g., civil war) are associated with more terrorism, presumably because a prolonged terrorist campaign and the power vacuum of a civil war make terrorism more beneficial (and less costly). Similarly, terrorist violence becomes more likely when society has a high youth burden, as in Tavares (2004). As argued before, a youth burden may mean fewer economic opportunities which makes violence a likelier option.

3.2 Conditional Effects of Education on Terrorist Activity

Our previous results imply that education does not matter strongly – if at all – to the genesis of homeland terrorism and to the extent of violence. This may simply indicate that other determinants (e.g., ethno-religious tensions or a country's institutional environment) are more important. However, our findings also imply that the connection between education and terrorism is not straightforward, but driven by country-specific conditions. For instance, Shafiq and Sinno (2010) argue that political and socio-economic variables may have a mediating role in the education-terrorism nexus. When favorable conditions abound, education should further reduce terrorism, so that the effect of, for instance, better non-violent opportunities more than offsets the negative demand-side and supply-side effects of education. By contrast, in poor political and socio-economic conditions education may favor the emergence of terrorism. Given that the well-educated are often considered potential recruits by terrorist groups (due to their greater likelihood of terrorist success; cf., e.g., Krueger and Maleckova, 2003; Benmelech and Berrebi, 2007), they could constitute the 'educated revolutionary vanguard' that is typical of many underground movements.

In the following, we thus consider the *conditional* effects of education on terrorism. We use university enrollment per capita as our education variable. University enrollment is expected to be most closely linked to the 'educated revolutionary vanguard' argument. Also, the immediate effects of this variable on terrorism are highly plausible (in contrast to, e.g., the literacy rate). We interact this variable with national youth burdens, degrees of corruption and ethno-religious tensions to investigate how country-specific conditions affect terrorist activity through the intermediary variable 'education'. As discussed above, we choose youth burdens because large, well-educated cohorts may experience negative effects on the labor market (low earnings, high youth unemployment), leading to frustrations and ultimately violent protest. Corruption may yield similar negative labor market effects and can cause distributional struggle when the educated younger generation tries to participate in rent-generating activities, which is not in the interest of those (older)

---

the likely choice of violent dissent. We interpret the positive effect of democracy on homeland terrorism as in Drakos and Gofas (2006b), i.e., as evidence of the existence of a reporting bias. Democratic countries (with a free press) are more likely to report terrorism, so that the positive link between democracy and terrorism does not necessarily imply that democratic systems are more vulnerable than non-democratic ones.

groups of society who currently enjoy those rents. Ethno-religious tensions may interact with education when, for instance, ethnic or religious characteristics matter more than educational attainment when seeking employment. In addition to the interaction terms, we include university enrollment per capita in the normal and quadratic form (*university2*), so as to detect potential non-linear effects of education (university enrollment) on terrorism. The empirical results for these specifications are reported in Table 4.

– **Table 4 here** –

Considering the interaction between university enrollment and poor political and socio-economic conditions, we find convincing evidence – in line with our suggestive stylized facts in Figure 1 – that such couplings translate into more terrorism. Specifically, we find that high levels of university enrollment coupled with corruption and ethno-religious tensions lead to significantly more terrorist attacks (columns (2) and (3) in Table 4). Our findings also indicate that terrorist violence is likelier in countries where high university enrollment per capita is coupled with a high youth burden, prevalent corruption and strong ethno-religious tensions (columns (5) through (7)). Only the connection between university enrollment and youth burden for the case of homeland terrorist attacks is found to be insignificant (column (1)).

These findings provide considerable support for the hypothesis that there is a country-specific dimension to the education-terrorism nexus. That is, in a poor socio-economic and political environment education exacerbates the problem of homeland terrorism. Better educated groups within a population may, inter alia, recognize their own or their fellow citizens' economic and political disenfranchisement more easily and decide to change this unfavorable – from their point of view 'unjust', 'forced' or 'heteronomous' – status quo by means of violence. At the same time, their education can help them, for instance, to organize and strike more effectively. Economically speaking, the presence of good education plus poor political and socio-economic conditions is very likely to fuel terrorism by making it more beneficial (meaning that the pay-off in case of terrorist success is high) while rendering non-violent alternatives less attractive (e.g., because youth unemployment abounds).

Columns (4) and (8) in Table 4 provide evidence of a significant non-linear relationship between university enrollment and terrorism, as suggested in Figure 2. This also supports the previously described view on the education-terrorism nexus. With a higher (national) level of university education, its effect on terrorism becomes positive (off-setting the potential negative effects). That is, the amplifying effect of education on terrorism is strongest at intermediate levels of national university enrollment per capita. Put simply, we can identify three cases. First, when university enrollment is low, its effect on terrorism is negligible, that is, there is no 'educated revolutionary vanguard' able to voice and organize dissent even when poor political and socio-economic conditions abound. Second,

when university enrollment is high, its effect on terrorism is again negligible (but potentially negative). That is, the well-educated parts of the population does not suffer from poor country-specific conditions and thus have little reason to rebel. For such countries the education-terrorism nexus works to their benefit and reduces terrorism. Third – and this is the most interesting case – when education is at intermediate levels, its effect on terrorism is positive. In other words, there is an 'educated revolutionary vanguard' able to voice and organize dissent *and* poor political and socio-economic conditions are in fact perceived as poor. This is the situation in many developing and emerging countries, for instance in the Middle East.

Regardless of whether measured via an interaction or quadratic term, conditioning the effects of education on terrorist activity upon country-specific factors generally seems to imply that precisely these factors matter to the characteristics of the education-terrorism nexus. When an educated populace faces poor country-specific conditions they are more likely to resort to terrorism. Once again, reconsider the situation in Palestine where a young and fairly educated population faces youth unemployment, corruption and the ongoing political conflict with Israel. In line with Angrist (1995) and Krueger and Maleckova (2003), our findings indeed suggest that the simultaneous presence of education and poor conditions may have contributed *on its own* to the emergence of terrorism. However, Palestine is just an example. It should be clear from our previous discussion that it is impossible to generalize. In other words, education does not necessarily foster terrorism globally. Rather, this relationship is very much country-dependent.

Briefly considering the controls, we again find that homeland terrorist attacks and terrorist violence are more likely in prosperous, democratic and populous economies with low levels of economic freedom and openness which suffer from ethno-religious tensions, youth burdens and a history of violence. Our results for the controls are thus very much in line with our previously reported findings and the empirical mainstream. That is, even when controlling, for instance, for the interaction between university education and social tensions (which amplifies terrorism) there is an independent and significant effect of ethno-religious tensions on terrorist activity (which is also positive).

3.3 Robustness

Having used two different measures of terrorist activity and several indicators for education, we run further robustness checks to see whether our results hold to changes in the data and/or methodology.[13] First, running the analyses as above without a lagged dependent variable yields similar results. Second, when we abstain from employing time and/or regional dummies our empirical results again do not change substantially. Third, introducing further control variables for economic growth, government size and political stability does not produce significant changes. While we do not find that growth and government

---

[13]The results are available from the authors upon request.

size matter strongly to terrorism, we do find that regime stability is (as expected) negatively related to terrorism. Fourth, letting democracy enter our empirical specifications in the normal and quadratic form shows that the relationship between democracy and terrorism is non-linear as, for instance, in Kurrild-Klitgaard et al. (2006). However, the latter modification does not change our findings for the education-terrorism nexus. The findings reported in the previous subsections are thus robust to a variety of methodological modifications.

4   Conclusions

In this contribution we investigated the effect of education on the emergence of terrorism for 118 countries for the period 1984 to 2007. Generally, we find no strong support for either a terrorism-enhancing or terrorism-dampening (unconditional) global effect of education. Rather, we find that the effect of education on terrorism is conditional upon country-specific political and socio-economic conditions. That is, education matters to a (potential) terrorist, but not in a straightforward way. Education coupled with *positive* country-specific conditions is found to make terrorism less likely (e.g., as terrorism is deemed rather costly, particularly in the face of plentiful non-violent opportunities). Education coupled with *poor* country-specific conditions is anticipated to lead to more terrorism (e.g., as alternatives to violence are rare and this lack of opportunities is recognized). This notion is also consistent with the dynamics of terrorism production in many countries where at least some parts of the population are rather well-educated but poor conditions prevail. Arguably, an 'educated revolutionary vanguard' may be seen as a prerequisite for a relevant education-terrorism nexus. Our empirical findings are robust to several empirical modifications.

Our findings have important policy implications. It may not be enough to raise the general levels of education through, for instance, foreign aid for terror-producing countries, as Azam and Thelen (2008) advocate. Rather, we argue in favor of a 'holistic' policy approach which explicitly considers various dimensions of socio-economic and political underdevelopment (e.g., corruption, poor ethno-religious conflict management) which may produce a dangerous amalgam when coupled with sufficiently high levels of education. From an international perspective (cf., e.g., UN or World Bank development strategies), foreign assistance should focus not only on education but also on other dimensions of underdevelopment (e.g., socio-economic and political stabilization). Internally, countries facing terrorism may similarly try to reduce this activity by managing underdevelopment properly. In the light of our findings, potential policies could include, for instance, corruption control, a focus on youth employment, a sound ethno-religious conflict management, the opening up of economic opportunities and increased economic integration.

Our empirical study offers a first comprehensive insight into the education-terrorism nexus,

suggesting that a more thorough, country-specific view on the education-terrorism nexus is needed that recognizes that the effect of education on terrorism is likely to be a conditional one. Our study aimed at unveiling the complex interactions between education, terrorism and political and socio-economic conditions, but also opens up new interesting avenues for future research on the education-terrorism nexus. For instance, attention could be given to religiously motivated terrorism. It would be interesting to see whether the interaction between education and arguably poor country-specific conditions has contributed to the emergence of this kind of terrorism in particular (as existing evidence indirectly indicates). In addition, the role of the 'educated revolutionary vanguard' in terrorism should be investigated in more detail, as this could also have important implications for anti-terrorism strategies. For instance, an anti-terrorism policy that seeks to integrate violent but well-educated individuals into democratic structures may turn out to be a viable strategy.

References

Alesina, A. and D. Rodrik (1994). Distributive Politics and Economic Growth. Quarterly Journal of Economics 109, 465-490.

Angrist, J.D. (1995). The Economic Returns to Schooling in the West Bank and Gaza Strip. American Economic Review 85, 1065-1087.

Avihai, H. (2010). Poverty or Lack of Education and Terrorism: Between Theory and Practice. URL: `http://www.skyjack.co.il/documentsandreports-poverty-lack-of-education-and-terrorism.htm`.

Azam, J.-P. and V. Thelen (2008). The Roles of Foreign Aid and Education in the War on Terror. Public Choice 135, 375-397.

Banks, A.S. (2007). Cross-National Time-Series Data Archive (CNTS) 1815-2007. Databanks International.

Basuchoudhary, A. and W.F. Shughart (2010). On Ethnic Conflict and the Origins of Transnational Terrorism. Defence and Peace Economics 21(1), 65-87.

Benmelech, E. and C. Berrebi (2007). Human Capital and the Productivity of Suicide Bombers. Journal of Economic Perspectives 21(3), 223-238.

Berrebi, C. (2007). Evidence About the Link Between Education, Poverty and Terrorism among Palestinians. Peace Economics, Peace Science and Public Policy 13(1), available at `http://www.bepress.com/peps/vol13/iss1/2`.

Blomberg, S.B. and Hess, G.D. (2008). From (No) Butter to Guns? Understanding the Economic Role in Transnational Terrorism. In P. Keefer and N. Loayza (Eds.), Terrorism, Economic Development, and Political Openness, New York: Cambridge University Press, 83-115.

Blomberg, S.B., G.D. Hess and A. Weerapana (2004). An Economic Model of Terrorism. Conflict Management and Peace Science 21(1), 17-28.

Brunello, G. (2010). The Effects of Cohort Size on European Earnings. Journal of Population Economics 23(1), 273-290.

Crain, N.V. and W.M. Crain (2006). Terrorized economies. Public Choice 128, 317-349.

Bueno de Mesquita, E. (2005). The Quality of Terror. American Journal of Political Science 49(3), 515-530.

Drakos, K. and A. Gofas (2006a). In Search Of The Average Transnational Terrorist Attack Venue. Defence and Peace Economics 17(2), 73-93.

Drakos, K. and A. Gofas (2006b). The Devil You Know but Are Afraid to Face: Underreporting Bias and its Distorting Effects on the Study of Terrorism. Journal of Conflict Resolution 50(5), 714-735.

Enders, W. and T. Sandler (2005). Transnational Terrorism 1968-2000: Thresholds, Persistence, and Forecasts. Southern Economic Journal 71(3), 467-482.

Heston, A., R. Summers and B. Aten (2009). Penn World Table Version 6.3. Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, August 2009.

International Country Risk Guide (2009). International Country Risk Guide, The PRS Group, Inc.

Gaibulloev, K. and T. Sandler (2008). Growth Consequences of Terrorism in Western Europe. Kyklos 61(3), 411-424.

Gassebner, M., R. Jong-A-Pin and J.O. Mierau (2007). Terrorism and Electoral Accountability: One Strike, You're Out! Economics Letters 100, 126-129.

Gleditsch, N. P., P. Wallensteen, M. Eriksson, M. Sollenberg, H. Strand (2002). Armed Conflict 1946–2001: A New Dataset. Journal of Peace Research 39(5), 615-637.

Hassan, N. (2001). An Arsenal of Believers. The New Yorker, November 19, 36-41.

Kirk, R.M. (1983). Political Terrorism and the Size of the Government: A Positive Institutional Analysis of Violent Political Activity. Public Choice 40(1), 41-52.

Korenman S. and D. Neumark (2000). Cohort Crowding and Youth Labor Markets: A Cross-Sectional Analysis. In: Blanchflower, D.G. and R.B. Freeman (Eds). Youth Employment and Joblessness in Advanced Countries. NBER Chicago University Press, 57-105.

Krieger, T. and D. Meierrieks (2010a). Does Income Inequality Lead to Terrorism? Mimeo.

Krieger, T. and D. Meierrieks (2010b). What Causes Terrorism? Public Choice (forthcoming), DOI: 10.1007/s11127-010-9601-1.

Krueger, A.B. (2008). What Makes a Homegrown Terrorist? Human Capital and Participation in Domestic Islamic Terrorist Groups in the U.S.A. Economics Letters 101(3), 293-296.

Krueger, A.B. and D.D. Laitin (2008). Kto Kogo?: A Cross-Country Study of the Origins and Targets of Terrorism. In P. Keefer and N. Loayza (Eds.), Terrorism, Economic Development, and Political Openness, New York: Cambridge University Press, 148-173.

Krueger, A.B. and J. Maleckova (2003). Education, Poverty and Terrorism: Is There a Causal Connection? Journal of Economic Perspectives 17(4), 119-144.

Kurrild-Klitgaard, P., M.K. Justesen and R. Klemmensen (2006). The Political Economy of Freedom, Democracy and Transnational Terrorism. Public Choice 128, 289-315.

LaFree, G. and L. Dugan (2007). Introducing the Global Terrorism Database. Terrorism and Political Violence 19, 181-204.

Li, Q. (2005). Does Democracy Promote or Reduce Transnational Terrorist Incidents? Journal of Conflict Resolution 49(2), 278-297.

Li, Q. and D. Schaub (2004). Economic Globalization and Transnational Terrorism: A Pooled Time-Series Analysis. Journal of Conflict Resolution 48(2), 230-258.

Marshall, M.G. and K. Jaggers (2008). Polity IV Project: Political Regime Characteristics and Transitions, 1800-2008. George Mason University and Colorado State University.

O'Brien, S.P. (1996). Foreign Policy Crises and the Resort to Terrorism: A Time-Series Analysis of Conflict Linkages. Journal of Conflict Resolution 40(2), 320-335.

Piazza, J.A. (2008). Incubators of Terror: Do Failed and Failing States Promote Transnational Terrorism? International Studies Quarterly 52(3), 469-488.

Ravallion, M. (2005). Inequality is Bad for the Poor. World Bank Policy Research Working Paper No. 3677.

Sanchez-Cuenca, I. and De la Calle, L. (2009). Domestic Terrorism: The Hidden Side of Political Violence. Annual Review of Political Science 12, 31-49.

Sandler, T. and W. Enders (2004). An Economic Perspective on Transnational Terrorism. European Journal of Political Economy 20, 301-316.

Santos Bravo, A.B. and C.M. Mendes Dias (2006). An Empirical Analysis of Terrorism: Deprivation, Islamism and Geopolitical Factors. Defence and Peace Economics 17(4), 329-341.

Shafiq, M.N. and A.H. Sinno (2010). Education, Income, and Support for Suicide Bombings: Evidence from Six Muslim Countries. Journal of Conflict Resolution 54(1), 146-178.

Tavares, J. (2004). The Open Society Assesses its Enemies: Shocks, Disasters and Terrorist Attacks. Journal of Monetary Economics 51, 1039-1070.

Testas, A. (2004). Determinants of Terrorism in the Muslim World: An Empirical Cross-Sectional Analysis. Terrorism and Political Violence 16(2), 253-273.

U.S. Census Bureau (2009). Population Division.

Welch, F. (1979). Effects of Cohort Size on Earnings: The Baby Boom Babies' Financial Bust. Journal of Political Economy 87(5), S65-S97.

Winkelmann, R. and K.F. Zimmermann (1995). Recent Developments in Count Data Modelling: Theory and Application. Journal of Economic Surveys 9(1), 1-24.

Wright, R.E. (1991). Cohort Size and Earnings in Great Britain. Journal of Population Economics 4(4), 295-305.

World Bank (2010). Concept Note on the World Development Report 2011. URL: http://siteresources.worldbank.org/EXTWDR2011/Resources/6406082-1256239015781/WDR_2011_Concept_Note_0207.pdf.

Appendix A. Data

popsize *Source*: Penn World Table 6.3. *Definition*: Variable's original name: Population size (POP). *Unit*: In thousands, logged.

gdp *Source*: Penn World Table 6.3. *Definition*: RGDPL. Real GDP per capita in constant prices (Laspeyres). Variable's original name: Real GDP per capita, Laspeyres (RGDPL). *Unit*: Constant 2005 International US Dollar, logged.

openness *Source*: Penn World Table 6.3. *Definition*: Exports plus imports divided by real GDP per capita (Laspeyres), i.e., total trade as percentage of GDP. Variable's original name: Openness (OPENK). *Unit*: Ratio.

democracy *Source*: Marshall and Jaggers (2008). *Definition*: Revised combined polity score of institutionalized democracy score minus institutionalized autocracy score with converted instances of 'standardized authority scores' to conventional polity scores. Variable's original name: polity2. *Unit*: Score in $[-10, 10]$.

youthburden *Source*: US Census Bureau (2009). *Definition*: Percentage of the population aged 10-14, 14-19, 20-24, 25-29. *Unit*: Ratio.

civilwar *Source*: Gleditsch et al. (2002). *Definition*: Dummy variable that indicates whether there was a civil war (defined as at least 1,000 battle-related casualties in a given year) in a country in a given year. *Unit*: Dummy variable.

economicrights *Source*: International Country Risk Guide (2009). *Definition*: An assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. Risk rating assigned as the sum of three subcomponents (contract viability/expropriation, profits repatriation, payment delays). Variable's original name: Investment Profile. *Unit*: Score, rescaled to values in $[0, 1]$.

corruption *Source*: International Country Risk Guide (2009). *Definition*: Measures actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favors for favors', secret party funding, and close ties between politics and business. Variable's original name: Corruption. *Unit*: Score, rescaled to values in $[0, 1]$.

tensions *Source*: International Country Risk Guide (2009). *Definition*: Assessment of the degree of tension within a country attributable to religious, ethnic or linguistic divisions. Variable's original name: Religious Tensions and Ethnic Tensions. *Unit*: Score, rescaled to values in $[0, 1]$.

coldwar *Definition*: Dummy variable that indicates the Cold War era (1984-1992). *Unit*: Dummy variable.

primary *Source*: Banks (2009). *Definition*: Primary school enrollment per capita (of total population). *Unit*: Ratio.

secondary *Source*: Banks (2009). *Definition*: Secondary school enrollment per capita (of total population). *Unit*: Ratio.

university *Source*: Banks (2009). *Definition*: University enrollment per capita (of total population). *Unit*: Ratio.

schooling *Source*: Banks (2009). *Definition*: Primary, secondary and tertiary enrollment per capita (of total population). *Unit*: Ratio.

literacy *Source*: Banks (2009). *Definition*: Literate population over total population. *Unit*: Ratio.

Appendix B. Figures
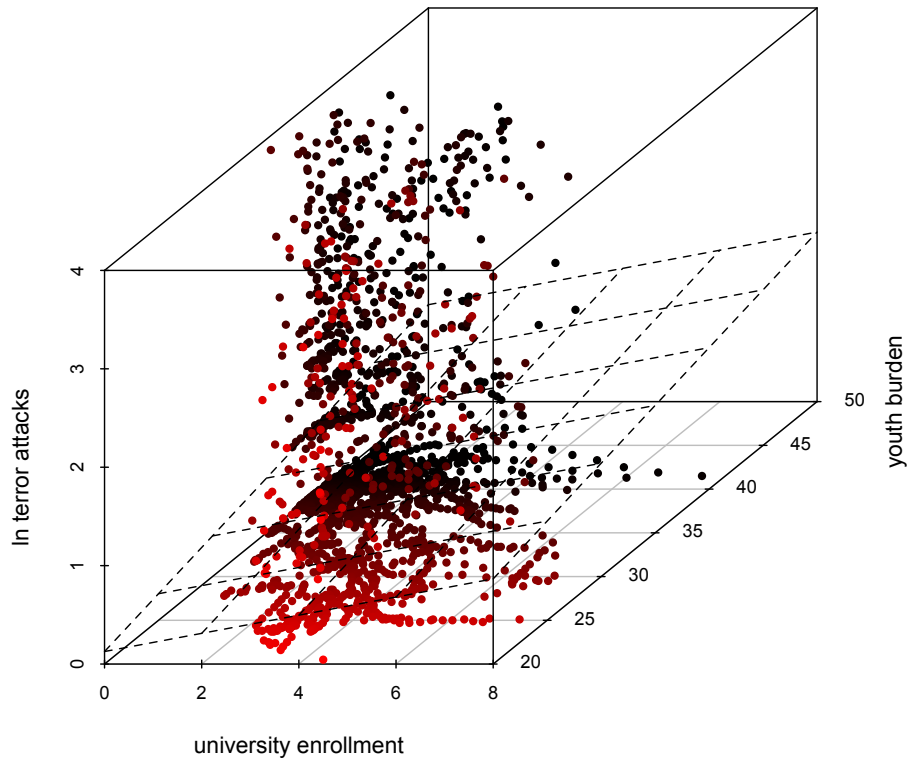
Figure 1: Combined Effect of University Education (p.c.) and Youth Burden on the Number of Terrorist Attacks (118 Countries, 1984-2007)
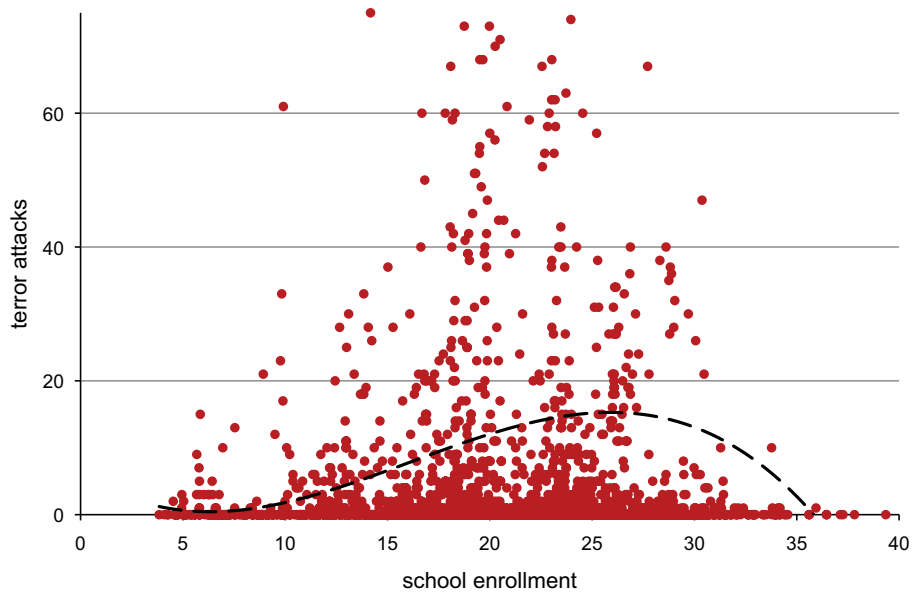
Figure 2: Non-linear Relationship between School Enrollment (p.c., all levels) and the Number of Terrorist Attacks (118 Countries, 1984-2007)

Appendix C. Tables

	Obs.	Mean	Std. Dev.	Min.	Max.
homeland attack	2832	11.200	45.402	0.000	602.000
homeland victims	2832	59.969	257.196	0.000	5517.000
popsize	2832	4.018	0.722	1.845	6.121
gdp	2831	3.778	0.529	2.186	4.946
openness	2831	73.601	47.253	1.090	456.560
democracy	2691	2.472	7.155	-10.000	10.000
youthburden	2527	37.020	5.355	20.500	47.000
civilwar	2832	0.056	0.231	0.000	1.000
economicrights	2809	0.583	0.207	0.000	1.000
corruption	2809	0.480	0.235	0.000	1.000
tensions	2809	0.296	0.204	0.000	1.000
primary	2801	12.583	4.792	2.940	35.710
secondary	2801	6.491	3.164	0.330	16.600
university	2826	1.654	1.471	0.000	11.670
schooling	2800	20.732	5.685	3.840	39.350
literacy	2775	76.263	23.402	8.400	110.700

Table 1: Summary Statistics

	(1)	(2)	(3)	(4)	(5)
primary	-0.003				
	(-0.21)				
secondary		-0.039			
		(-1.84)*			
university			0.071		
			(1.19)		
schooling				-0.011	
				(-1.02)	
literacy					0.014
					(3.16)***
homeland attack	0.004	0.004	0.004	0.004	0.003
	(8.50)***	(8.53)***	(8.48)***	(8.51)***	(8.05)***
popsize	0.614	0.616	0.572	0.625	0.513
	(4.58)***	(4.61)***	(4.35)***	(4.67)***	(3.78)***
gdp	0.872	1.037	0.745	0.954	0.373
	(3.68)***	(4.09)***	(3.09)***	(3.81)***	(1.35)
openness	-0.005	-0.005	-0.006	-0.005	-0.006
	(-2.85)***	(-2.84)***	(-3.06)***	(-2.80)***	(-3.25)***
democracy	0.035	0.036	0.033	0.035	0.032
	(3.80)***	(3.94)***	(3.56)***	(3.86)***	(3.48)***
youthburden	0.074	0.081	0.073	0.080	0.065
	(3.96)***	(4.47)***	(4.18)***	(4.24)***	(3.65)***
economicrights	-1.316	-1.338	-1.338	-1.303	-1.284
	(-4.79)***	(-4.92)***	(-4.93)***	(-4.76)***	(-4.73)***
civilwar	0.354	0.381	0.341	0.362	0.288
	(3.22)***	(3.43)***	(3.13)***	(3.28)***	(2.62)***
corruption	-0.227	-0.241	-0.267	-0.241	-0.219
	(-0.80)	(-0.85)	(-0.96)	(-0.85)	(-0.78)
tensions	1.442	1.431	1.453	1.442	1.495
	(4.73)***	(4.7)***	(4.81)***	(4.73)***	(4.92)***
coldwar	1.012	0.993	1.041	1.002	1.060
	(4.36)***	(4.28)***	(4.42)***	(4.32)***	(4.59)***
Number of obs	2258	2258	2277	2258	2254
Wald chi2(40)	938.88***	938.89***	950.89***	936.66***	957.57***
Prob chibar2	0.000***	0.000***	0.000***	0.000***	0.000***

Notes. Dependent variable: homeland terrorist attacks. All independent variables lagged for one time period. All specifications with time and region dummies (not reported). Significance levels: (***) significance at 1% level, (**) significance at 5% level, (*) significance at 10% level.

Table 2: Education and Homeland Terrorist Attacks

	(1)	(2)	(3)	(4)	(5)
primary	-0.016				
	(-1.17)				
secondary		0.010			
		(0.49)			
university			-0.027		
			(-0.41)		
schooling				-0.009	
				(-0.77)	
literacy					0.010
					(2.45)**
homeland victims	0.000	0.000	0.000	0.000	0.000
	(4.55)***	(4.45)***	(4.48)***	(4.58)***	(4.25)***
popsize	0.453	0.441	0.461	0.446	0.435
	(3.62)***	(3.53)***	(3.75)***	(3.57)***	(3.55)***
gdp	0.790	0.712	0.829	0.816	0.428
	(3.49)***	(3.00)***	(3.49)***	(3.41)***	(1.61)
openness	-0.002	-0.002	-0.002	-0.002	-0.002
	(-0.91)	(-1.09)	(-0.95)	(-0.95)	(-1.23)
democracy	0.036	0.036	0.037	0.037	0.035
	(3.69)***	(3.63)***	(3.70)***	(3.73)***	(3.52)***
youthburden	0.129	0.117	0.119	0.126	0.111
	(6.08)***	(5.95)***	(6.20)***	(5.86)***	(5.68)***
economicrights	-1.016	-1.056	-1.049	-1.037	-1.021
	(-3.07)***	(-3.21)***	(-3.20)***	(-3.15)***	(-3.12)***
civilwar	0.701	0.707	0.726	0.716	0.675
	(5.35)***	(5.39)***	(5.60)***	(5.49)***	(5.19)***
corruption	-0.496	-0.459	-0.437	-0.489	-0.351
	(-1.58)	(-1.46)	(-1.41)	(-1.55)	(-1.13)
tensions	2.246	2.250	2.241	2.246	2.214
	(7.29)***	(7.30)***	(7.29)***	(7.29)***	(7.19)***
coldwar	0.736	0.742	0.731	0.717	0.806
	(2.78)***	(2.78)***	(2.74)***	(2.70)***	(3.04)***
Number of obs	2258	2258	2277	2258	2254
Wald chi2(40)	702.70***	705.39***	708.45***	702.07***	721.92***
Prob chibar2	0.000***	0.000***	0.000***	0.000***	0.000***

Notes. Dependent variable: homeland terrorism victims. All independent variables lagged for one time period. All specifications with time and region dummies (not reported). Significance levels: (***) significance at 1% level, (**) significance at 5% level, (*) significance at 10% level.

Table 3: Education and Homeland Terrorist Victims

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
uniyouth	-0.004				0.045			
	(-0.55)				(4.16)***			
unicorrupt		0.440				1.041		
		(2.84)***				(5.68)***		
unitensions			0.371				1.276	
			(2.13)**				(6.51)***	
university	0.232	-0.128	-0.035	0.307	-1.682	-0.511	-0.396	0.754
	(0.78)	(-1.38)	(-0.45)	(2.07)**	(-4.13)***	(-4.64)***	(-4.42)***	(4.58)***
university2				-0.042				-0.146
				(-1.72)*				(-4.99)***
homeland attacks	0.004	0.004	0.003	0.004				
	(8.49)***	(8.41)***	(8.13)***	(8.41)***				
homeland victims					0.000	0.000	0.000	0.000
					(4.79)***	(4.85)***	(4.72)***	(4.34)***
popsize	0.570	0.601	0.612	0.567	0.481	0.519	0.563	0.473
	(4.34)***	(4.61)***	(4.62)***	(4.31)***	(3.92)***	(4.24)***	(4.53)***	(3.81)***
gdp	0.759	0.761	0.734	0.610	0.763	0.852	0.812	0.512
	(3.12)***	(3.17)***	(3.06)***	(2.43)**	(3.24)***	(3.62)***	(3.45)***	(2.15)**
openness	-0.006	-0.006	-0.006	-0.006	-0.002	-0.002	-0.003	-0.002
	(-3.03)***	(-3.18)***	(-3.10)***	(-3.08)***	(-1.21)	(-1.24)	(-1.39)	(-1.04)
democracy	0.033	0.032	0.032	0.030	0.034	0.038	0.029	0.030
	(3.59)***	(3.55)***	(3.51)***	(3.27)***	(3.36)***	(3.79)***	(2.96)***	(2.95)***
youthburden	0.083	0.076	0.065	0.069	0.031	0.122	0.101	0.119
	(3.27)***	(4.37)***	(3.67)***	(3.91)***	(1.10)	(6.36)***	(5.17)***	(6.26)***
economicrights	-1.355	-1.336	-1.392	-1.325	-0.960	-1.068	-1.113	-1.009
	(-4.96)***	(-4.93)***	(-5.11)***	(-4.87)***	(-2.91)***	(-3.28)***	(-3.41)***	(-3.06)***
civilwar	0.341	0.316	0.338	0.333	0.700	0.624	0.710	0.677
	(3.13)***	(2.93)***	(3.13)***	(3.07)***	(5.42)***	(4.83)***	(5.59)***	(5.28)***
corruption	-0.263	-0.955	-0.254	-0.291	-0.458	-1.785	-0.376	-0.512
	(-0.94)	(-2.58)**	(-0.91)	(-1.04)	(-1.48)	(-4.53)***	(-1.22)	(-1.65)*
tensions	1.448	1.581	1.006	1.449	2.219	2.458	0.814	2.140
	(4.79)***	(5.20)***	(2.73)***	(4.80)***	(7.24)***	(7.94)***	(2.14)**	(6.98)***
coldwar	1.052	1.097	1.053	1.018	0.763	0.875	0.797	0.737
	(4.45)***	(4.63)***	(4.48)***	(4.33)***	(2.89)***	(3.24)***	(2.99)***	(2.77)***
Number of obs	2277	2277	2277	2277	2277	2277	2277	2277
Wald chi2(40)	948.59***	957.33***	959.11***	961.37***	721.02***	757.07***	760.83***	746.55***
Prob chibar2	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Notes. Dependent variable: homeland terrorist attack in models (1) to (4), homeland terrorism victims in models (5) to (8). All independent variables lagged for one time period. All specifications with time and region dummies (not reported). Significance levels: (***) significance at 1% level, (**) significance at 5% level, (*) significance at 10% level.

Table 4: Conditional Effects in the Education-Terrorism Nexus

Appendix D. Additional information

Albania	Ecuador	South Korea	Romania
Algeria	Egypt	Kuwait	Saudi Arabia
Angola	El Salvador	Lebanon	Senegal
Argentina	Ethiopia	Liberia	Sierra Leone
Australia	Finland	Libya	Singapore
Austria	France	Madagascar	Somalia
Bahamas	Gabon	Malawi	South Africa
Bahrain	Gambia	Malaysia	Spain
Bangladesh	Germany	Mali	Sri Lanka
Belgium	Ghana	Malta	Sudan
Bolivia	Greece	Mexico	Sweden
Botswana	Guatemala	Mongolia	Switzerland
Brazil	Guinea	Morocco	Syria
Brunei	Guinea-Bissau	Mozambique	Tanzania
Bulgaria	Guayana	Netherlands	Thailand
Burkina Faso	Haiti	New Zealand	Togo
Cameroon	Honduras	Nicaragua	Trinidad
Canada	Hungary	Niger	Tunisia
Chile	Iceland	Nigeria	Turkey
China	India	Norway	Uganda
Colombia	Indonesia	Oman	UAE
Congo (Zaire)	Iran	Pakistan	UK
Congo (Republic)	Iraq	Panama	USA
Costa Rica	Ireland	Papua New Guinea	Uruguay
Ivory Coast	Israel	Paraguay	Venezuela
Cuba	Italy	Peru	Vietnam
Cyprus	Jamaica	Philippines	Zambia
Denmark	Japan	Poland	Zimbabwe
Dominica	Jordan	Portugal	
Dominican Republic	Kenya	Qatar	

Table 5: Country Sample

Recent discussion papers

2010-02	Sarah Brockhoff TimKrieger Daniel Meierrieks	Ties That Do Not Bind (Directly): The Education Terrorism Nexus Revisited
2010-01	Claus-Jochen Haake, Tim Krieger, Steffen Minter	On the institutional design of burden sharing when financing external border enforcement in the EU
2009-06	Tim Krieger, Stefan Traub	Wie hat sich die intragenerationale Umverteilung in der staatlichen Säule des Rentensystems verändert? Ein internationaler Vergleich auf Basis von LIS-Daten
2009-05	Karin Mayr, Steffen Minter, Tim Krieger	Policies on illegal immigration in a federation
2009-04	Tim Krieger, Daniel Meierrieks	Terrorism in the Worlds of Welfare Capitalism *[forthcoming in: Journal of Conflict Resolution]*
2009-03	Alexander Haupt, Tim Krieger	The role of mobility in tax and subsidy competition
2009-02	Thomas Gries, Tim Krieger, Daniel Meierrieks	Causal Linkages Between Domestic Terrorism and Economic Growth *[forthcoming in: Defense and Peace Economics]*
2009-01	Andreas Freytag, Jens J. Krüger, Daniel Meierrieks, Friedrich Schneider	The Origin of Terrorism - Cross-Country Estimates on Socio-Economic Determinants of Terrorism
2008-11	Thomas Gries, Magarete Redlin	China's provincial disparities and the determinants of provincial inequality *[published in: Journal of Chinese economic and business studies 7 (2009), 2, 259-281]*
2008-10	Thomas Gries, Manfred Kraft, Daniel Meierrieks	Financial Deepening, Trade Openness and Economic Growth in Latin America and the Caribbean
2008-09	Stefan Gravemeyer, Thomas Gries, Jinjun Xue	Discrimination, Income Determination and Inequality – The case of Shenzen
2008-08	Thomas Gries, Manfred Kraft, Daniel Meierrieks	Linkages between Financial Deepening, Trade Openess and Economic Development: Causality Evidence from Sub-Saharan Africa *[published in: World Development 37 (2009), 1849-1860]*
2008-07	Tim Krieger, Sven Stöwhase	Diskretionäre rentenpolitische Maßnahmen und die Entwicklung des Rentenwerts in Deutschland von 2003-2008 *[forthcoming in: Zeitschrift für Wirtschaftspolitik]* *[published in: Zeitschrift für Wirtschaftspolitik 58 (2009), 1, 36-54]*
2008-06	Tim Krieger, Stefan Traub	Back to Bismarck? Shifting Preferences for Intragenerational Redistribution in OECD Pension Systems

2008-05	Tim Krieger, Daniel Meierrieks	What causes terrorism? *[forthcoming in: Public Choice]*
2008-04	Thomas Lange	Local public funding of higher education when students and skilled workers are mobile *[published in: Finanzarchiv 65 (2009), 2, 178-199]*
2008-03	Natasha Bilkic, Thomas Gries, Margarethe Pilichowski	Stay at school or start working? - Optimal timing of leaving school under uncertainty and irreversibility
2008-02	Thomas Gries, Stefan Jungblut, Tim Krieger, Henning Meier	Statutory retirement age and lifelong learning
2008-01	Tim Krieger, Thomas Lange	Education policy and tax competition with imperfect student and labor mobility
2007-05	Wolfgang Eggert, Tim Krieger, Volker Meier	Education, unemployment and migration
2007-04	Tim Krieger, Steffen Minter	Immigration amnesties in the southern EU member states - a challenge for the entire EU? *[forthcoming in: Romanian Journal of European Studies]*
2007-03	Axel Dreher, Tim Krieger	Diesel price convergence and mineral oil taxation in Europe *[forthcoming in: Applied Economics]*
2007-02	Michael Gorski, Tim Krieger, Thomas Lange	Pensions, education and life expectancy
2007-01	Wolfgang Eggert, Max von Ehrlich, Robert Fenge, Günther König	Konvergenz- und Wachstumseffekte der europäischen Re- gionalpolitik in Deutschland *[published in: Perspektiven der Wirtschaftspolitik 8 (2007), 130-146.]*
2006-02	Tim Krieger	Public pensions and return migration *[published in: Public Choice 134 (2008), 3-4, 163-178.]*
2006-01	Jeremy S.S. Edwards, Wolfgang Eggert, Alfons J. Weichenrieder	The measurement of firm ownership and its effect on mana- gerial pay *[CESifo Working Paper No. 1774]*