

Essays on Economics of Terrorism and Armed Conflict

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Declaration of Authorship

I, Piotr Lis, hereby declare that this thesis and the work presented in it is entirely my own.

Where I have consulted the work of others, this is always clearly stated.

Signed: Piotr Lis

Date: 14 February 2012

Abstract

This thesis comprises of three essays intended to enhance our understanding of socio-economic implications of terrorism and armed conflict. Chapter 1 applies time series methods to establish whether income-based transference of international terrorism took place in reaction to the selected historical events. The analysis shows that the rise of fundamentalist terrorism in 1979 brought increases across all countries, while the post-Cold War era reduced incidents in all but the poorest countries. The September 11 attacks had no long lasting impact on the distribution of terrorism, while the Iraq war seemed to have reduced terrorism in rich states. Chapter 2 investigates the fatality sensitivity of public opinion in coalition countries that participate in war efforts but are not a leading force. The analysis is based on the opinion polls from the United Kingdom, Poland and Australia. The study recognizes the dynamic nature of the analyzed relationship and employs the error correction model. Overall, the data does not provide a clear evidence of sensitivity to soldier casualties. However, the public appears sensitive to the intensity of terrorism in Iraq. The results also show that news of success has a power to reduce war opposition, while scandals are costly in terms of public support. Chapter 3 explores the impact of armed conflict and terrorism on allocation of foreign aid. The study employs two-way panel data estimation on a dataset that includes observations for 161 recipient countries over the period from 1973 to 2007. The results show that armed conflict has a strongly negative effect on both bilateral and multilateral assistance, while the impact of terrorism is somewhat mixed. Namely, international terrorism tends to increase bilateral aid, while domestic terrorism reduces multilateral aid.

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Introduction

Terrorism and armed conflict, whether internal or external, are forms of violence that affect human lives on many levels. They may force individuals to alter their behaviour in search of safety. They may energize, unite in struggle or divide entire societies. They may move groups of people or nations that are not directly affected by the violence but nonetheless wishing to help, either by pressurizing their governments to react, or by contributing to humanitarian ventures. Also businesses are likely to be forced to change their ways of conduct when their insurance premiums increase or supply chains and markets become disrupted. Finally, governments, or multilateral organizations, may be involved in conflict or attacked by terrorists. In this case they may have to adjust their policies and shift resources appropriately. Even authorities that have not been directly affected may be expected to take some steps. Obviously, such a wide array of potential effects could not have skipped the attention of researchers in various disciplines, including economics.

Attributes of Terrorism and Conflict

Before proceeding to a brief review of economic aspects of terrorism and armed conflict, this introduction will discuss the nature of the two phenomena. The definition of terrorism used in this thesis is adopted from Enders and Sandler (2006), who see terrorism as:

“the premeditated use or threat of use of violence by individuals or subnational groups to obtain a political or social objective through intimidation of a large audience beyond that of the immediate victims”.

Thus, an act of terrorism requires interaction of three parts: perpetrators, victims and audience. Typically, the datasets used in the subsequent chapters see a victim as a non-combatant target and exclude assaults on members of occupying armies, but include attacks against peacekeeping forces. The definition leaves out state terror, where a government employs violence to achieve its goals, but admits state-sponsored terrorism, where a government provides assistance to a terrorist group. Finally, an act of terrorism needs to reach its audience and therefore is designed to attract maximum publicity. This way terrorists induce fear within or even beyond the attacked society (see Chapters 1 and 2).

Depending on national identity of the involved elements, terrorism can be divided into two variants: domestic and international. The former requires the perpetrators, victims, audience, as well as financial and logistical support to come only from the host country. Consequently, the repercussions of a domestic attack do not go beyond the borders of this country. If any of these conditions is not met, then an attack is considered to be international (Sandler, Arce et al. 2008). For example, the 1995 bombing in Oklahoma City was an act of domestic terrorism, because the perpetrator, victims and audience were all U.S. citizens (LaFree and Dugan 2008). In contrast, the bombing of the Islamabad Marriott Hotel on 20 September 2008 is an example of international terrorism, since the blast killed foreigners, including a Czech ambassador (Hussain 2008). As argued in Chapter 1, the distinction between a domestic and international incident may become blurred. This is because in the increasingly interconnected world, individuals and nations may define their interests in a global context. In addition, there is a risk that a domestic incident may turn into international if a foreigner becomes an unintentional casualty. However, such accidents are rare and randomness of victims should not be a concern (Enders and Sandler 2002).

The Uppsala Conflict Data Program (UCDP) describes conflict as (Gleditsch, Wallensteen et al. 2002):

“a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths”.

Similarly to terrorism, conflicts may be divided into different types, depending on the origin or nationality of concerned parties. Thus, when violence is confined within one country’s borders, conflict is internal and typically involves domestic opposition fighting against the home government. Occasionally, when there is intervention from other states, such a conflict may become internationalized internal. In contrast, an external, or interstate, armed conflict occurs between two or more states.

Conflicts have accompanied us since the beginning of the human kind and unquestionably have contributed to shaping the world we know today. In fact, they keep actively doing so. In 2001 more than 12 per cent of countries were in a state of war (Collier, Elliott et al. 2003). Over the last half a century, a third of all nations were affected by civil wars, many of them lasting ten years or more (Blattman and Miguel 2009). Terrorism, which is a less intensive form of violence, also has been around for centuries (Sandler, Arce et al. 2008), but it was the September 11 attacks, henceforth 9/11, and the ensuing War on Terror that boosted public and researchers’ interest in this form of violence. The attacks demonstrated how a complicated, unpredictable and dangerous problem the world is facing. It made people realize that a terrorist incident can result in a large scale damage to both human and physical capital (Becker and Murphy 2001; OECD 2002). By exposing the vulnerability to terrorism of the most advanced global power, 9/11 seemed to have made

the need to understand patterns governing wars and terrorism more pressing in the eyes of the Western world. This has resulted in an increased research, whose trends and main findings are summarized in the following section.

On Terrorism and Conflict Research in Economics

The economic research on conflict and terrorism focuses on the four main aspects: (1) causes, (2) consequences, (3) prevention and resolution, and (4) governing patterns. The first branch pays considerable attention to factors such as poverty and economic deprivation. The findings indicate that armed conflicts are more likely to occur in poor countries with weak governments (Miguel, Satyanath et al. 2004; Elbadawi and Hegre 2007; Collier and Rohner 2008; Blattman and Miguel 2009). Consequently, the prevalence of conflict is particularly high in the developing countries of Africa and Asia (Collier, Elliott et al. 2003). Similarly, the incidence of terrorism is likely to depend on the country's development level. However, it is argued that this relationship runs in the opposite direction. A micro-level study by Krueger and Maleckova (2003) shows that individual's education and economic status are positively correlated with participation in terrorist activities. Furthermore, democracy and openness make terrorism more difficult to control and therefore more likely to occur (Hamilton and Hamilton 1983; Mirza and Verdier 2008). This could help to explain why the rich democracies of Western Europe and the United States experience high frequency of terrorist incidents (Blomberg, Hess et al. 2004; Clauset and Young 2005; Mickolus, Sandler et al. 2008).

The studies on economic consequences of violence emphasize the role of increased uncertainty, which affects consumer behaviour, raises risks and costs of doing business, reduces investment and may lead to a capital flight (Abadie and Gardeazabal 2003; 2008;

Drakos 2004; Eckstein and Tsiddon 2004; Nitsch and Schumacher 2004). A direct consequence is destruction of human and physical capital, which together with increased government expenditure on security may effectively depress economic growth (Collier, Elliott et al. 2003; Gupta, Clements et al. 2004). From the global perspective, the economic impact of terrorism on growth is limited and much smaller than that of armed conflict (Blomberg, Hess et al. 2004; Gaibullov and Sandler 2008; 2009). Nonetheless, the effects may be severe for specific industries (Drakos 2004), or countries, which experience long-lasting terrorist campaigns, e.g. the Basque Country and Israel (Abadie and Gardeazabal 2003; Eckstein and Tsiddon 2004). Typically, large and diversified economies find it easier to put up with terrorism because economic activities can shift to less risky sectors. Moreover, rich states can afford monetary and fiscal tools to reduce the impact (Gaibullov and Sandler 2008; Sandler, Arce et al. 2008). Thus, although development does not guarantee protection from political violence, it can help to mitigate its effects.

Finally, the last two branches focus on analyzing prevention and resolution methods, as well as patterns governing conflicts. The literature cited above underlines the importance of the promotion of economic and social development as a way to prevent conflict. Numerous studies analyze specific tools such as foreign aid (see Chapter 3, Mandler and Spagat 2003; Azam and Thelen 2008; Bandyopadhyay, Sandler et al. 2010), and third-party interventions (e.g. Regan 1996; Elbadawi 2000; Amegashie 2010). Cost-benefit comparisons are conducted to evaluate the effectiveness of prevention techniques and determine the optimal amount of resources that a government should dedicate to security (Enders and Sandler 1993; Crain and Crain 2006). The research on conflict and terrorism is complemented with studies of statistical patterns of events and casualty

accumulation (O'Loughlin 1986; Johnson, Spagat et al. 2006; Bohorquez, Gourley et al. 2009).

Although the research output has considerably expanded in the last two decades, there are still many aspects that have not received enough scrutiny. The importance of continuous research is reinforced by the constantly changing nature of conflict and terrorism. For instance, new communication technologies have led to an evolution of new models of organizations. Terrorists have developed new ways of financing their operations and become able to launch global campaigns (Jenkins 2006). At the same time they have managed to increase the destructive power and lethality of their attacks (Hoffman 1999; Clauset and Young 2005). The following section contains a thesis outline and identifies some of the gaps in current knowledge that this thesis intends to fill.

Thesis Outline

The thesis comprises of three essays, each offering a study of economic and political aspects of terrorism and/or armed conflict. Relevant tables and figures are presented at the end of each chapter.

Chapter 1 applies time series analysis to establish whether income-based transference of international terrorism took place in reaction to four shifts in global politics and terrorism. It offers several extensions over existent work, for instance it uses two independent datasets and presents an alternative approach to the Iraq war. It shows that the rise of fundamentalist terrorism in 1979 brought an increase in the number of attacks across all countries, while the end of the Cold War resulted in a reduction in terrorism in high and medium income countries. 9/11 appeared to have had no long lasting impact on distribution

of terrorism, while the 2003 Iraq invasion seemed to have reduced international terrorism in rich states.

The findings of Chapter 2 may be of a particular interest to governments considering military endeavours abroad. It studies fatality sensitivity of public opinion in coalition countries, i.e. those that participate in war efforts but are not a leading military force. The opinion polls from the United Kingdom, Poland and Australia do not provide conclusive evidence on the sensitivity to soldier casualties. However, they support a claim that the public is sensitive to the intensity of terrorism in the occupied country. The results also show that news of success, such as the end of the invasion and the capture of Saddam Hussein, have a power to significantly reduce war opposition, while scandals, such as the torture at Abu Ghraib, appear to be very costly in terms of public support.

Chapter 3 studies the impact of armed conflict and terrorism on allocation of foreign aid. Although political violence may constitute a hindrance for development and disturb interests of foreign donors, aid may serve as a reimbursement for making counter-terrorist efforts that benefit the donor country. The empirical strategy is based on the two-way panel data estimation on a dataset comprising of observations for 161 recipient countries over the period of 35 years. The results indicate that armed conflict has a large and negative effect on both multilateral and bilateral aid. However, bilateral donors seem to turn a blind eye on violence in oil exporting countries. Although international terrorism tends to increase bilateral aid, bilateral donors are not sensitive to domestic terrorism and tend to penalize the poorest countries affected by this form of violence. At the same time, multilateral aid does not react to international terrorism, but reacts to its domestic variant.

Chapter 1

Impact of Selected Historical Events on the Income-Based Distribution of Terrorism¹

From the Rise of Fundamentalist Terrorism to the Iraq War

1.1. Introduction

This chapter seeks to answer whether four major historical events induced changes in the distribution of international terrorism among countries by income class. It also explores the effects of discrepancies between two terrorism datasets – MIPT and ITERATE – on the obtained results. I start by attempting to replicate the work of Enders and Sandler (2006) and find that although some of their results hold up, their unclear income classification prevents me from reproducing many of their estimates. Similarly to the two authors, I divide countries into three categories: high-, medium- and low-income countries (HICs, MICs and LICs, respectively), and apply time series analysis to evaluate whether terrorists have altered their target locations categorized by countries' income in response to the rise of religious fundamentalism, the end of the Cold War and the September 11 attacks, henceforth 9/11. Subsequently, I move beyond the replication exercise and introduce several extensions, which can be seen as an advance over the existent work. First, I analyze the MIPT Terrorism Knowledge Database (2008) in addition to the ITERATE dataset used by Enders and Sandler (2006). Second, I follow the World Bank's income classification

¹ This chapter has been published in the September 2011(55) issue of the International Studies Quarterly.

more closely. Third, I offer more efficient analysis in cases where there are few events. Fourth, I scrutinize the effects of the 2003 Iraq invasion and its aftermath. Finally, I suggest an expanded analysis of the recent Iraqi conflict by incorporating domestic events under the presumption that they have an international audience and affect foreign interests.

I base my considerations on the assumption that terrorists act rationally and adapt to changes in constraints (see Atkinson, Sandler et al. 1987; Anderton and Carter 2005). As Enders and Sandler (2006) show, this implies that terrorists choose venues that promise a higher ratio of expected benefits to expected costs. This framework allows for a substitution between targets. For instance, in a situation when one state manages to raise the cost of terrorism relative to other countries, assuming unchanged expected benefits, one may expect a shift of attacks away from the more costly place. Such a process is income-based if changes are dependent on the wealth of the considered nations. A good example here are security upgrades – wealthy nations can afford more effective measures than their poorer counterparts. Thus, in periods of increased threat, when countries tend to boost their security, we may observe transference of terrorism to less developed states that are unable to afford widespread counterterrorism measures².

I analyze four major historical developments which may have affected the distribution patterns of international terrorism among countries. The first three events are discussed by Enders and Sandler (2006) and include: (i) the emergence of fundamentalist-based terrorism in the last quarter of 1979, (ii) the end of the Cold War in the end of 1991, and (iii) the September 11 attacks in 2001. Additionally, the developments after the 2003

² Tighter security measures may not work if they increase expected benefits to terrorists, for example through raising a perceived value of a target or causing new grievances. In this case, terrorists may carry out even more attacks.

invasion of Iraq give rise to a fourth breaking point, which is not accounted for in Enders and Sandler (2006). The war has intensified the grievances of the Muslim world against the United States and increased opportunities for terrorists to target foreigners arriving in Iraq. It also inflicted the feeling of humiliation, which was further inflamed by the events in Abu Ghraib and the Guantanamo Bay. Overall, the number of all international incidents globally grew from 814 during 18 quarters before the war to 1,311 in the analogous period after the invasion (MIPT). Remarkably, Iraq was a stage to 45 per cent of all international attacks between May 2003 and December 2007 (MIPT). A brief description of the events associated with the four breaking points and their potential importance is offered in the appendix at the end of this chapter.

In spite of applying a framework similar to that in Enders and Sandler (2006), I obtain somewhat different results. I find that the rise of fundamentalism in 1979 increased terrorism across all income groups and as such its effect was income insensitive, while Enders and Sandler (2006) ascribe it entirely to LICs. The end of the Cold War coincided with transference of terrorism to LICs, which is in contrary to Enders and Sandler's (2006) finding of a significant decline across all income groups. In spite of the heightened frequency with which terrorism has appeared in news services since 2001, there is no evidence of a permanent increase in the number of incidents following 9/11. However, I find immediate transference of all casualty and U.S. casualty incidents to rich countries. The Iraq war seemed to have reduced terrorism in rich countries and it did not increase the vulnerability of U.S. interests outside Iraq. When I look at the wider range of Iraq incidents, the data suggests transference of terrorism from HICs to this Middle Eastern country.

The remainder of this chapter is organized as follows. Sections 1.2 and 1.3 present the data sources and descriptive statistics. Sections 1.4 and 1.5 briefly describe the theoretical model as well as present estimation results. Section 1.6 suggests an alternative approach to terrorism in Iraq. Finally, Section 1.7 offers concluding remarks.

1.2. Data

In order to study the distribution of international terrorism across countries by income class, one needs two sorts of data: records listing actual incidents, and information on income in each state at respective time. The latter is published annually in the *World Development Reports*³ (World Bank 1978-2008). Based on their gross national income (GNI) per capita, states are divided into three income categories: low, medium and high income countries – LICs, MICs and HICs, respectively⁴. Using income classes as proxies of countries' development levels circumvents, at least partially, the problem of reporting bias and lower reliability of data that could surface in some cases, typically for the poorest states or those with autocratic regimes. Importantly, I follow the income taxonomy more strictly than Enders and Sandler (2006), whose interpretation of the World Bank's classification is somewhat confusing. The World Bank distinguishes two subgroups of MICs – Lower Middle Income and Upper Middle Income Countries. From the example given by Enders and Sandler (2006:372-373), one concludes that they treat the two sub-groups as one class. But they also say that Mexico moved from LICs to MICs, while Poland shifted in the opposite direction. In fact none of these countries was ever classified as LIC and the only

³ I use data for every year, while Enders and Sandler (2006) base their considerations only on five volumes: 1978, 1980, 1990, 1995 and 2000.

⁴ In 2006 LICs had GNI per capita of \$905 or less, MICs between \$906 and \$11,115, while HICs of \$11,116 or more. As economies' growth rates change over time, countries happen to switch between classes. Last two decades have brought an increase in the number of HICs and a decrease in the number of LICs.

moves they made were between lower and upper middle income classes, thus, staying within the MIC group all the time.

The data on international terrorist attacks is drawn from two independent sources: the MIPT Terrorism Knowledge Base⁵, which was managed by the Oklahoma City National Memorial Institute for the Prevention of Terrorism (MIPT 2008), and the International Terrorism: Attributes of Terrorist Events (ITERATE), which has been developed by Mickolus, Sandler et al. (2008). Both sources define terrorism as violence for political purposes by sub-national actors, designed to induce an atmosphere of fear and anxiety, and as a result influence behaviour of an audience beyond that of the immediate victims (see MIPT 2002; Mickolus, Sandler et al. 2008). Importantly, both datasets draw from open sources, such as news services, and concentrate on actions against non-combatant targets. Since this study focuses on international events, which include perpetrators, targets, victims or interests from more than one country, it dismisses any domestic attacks that are recorded in MIPT (an exception is Section 1.6). Overall, MIPT records 10,237 international incidents between 1 January 1968 and 31 December 2007, while ITERATE reports 12,975 events over the same period. This difference is partially caused by the fact that MIPT dismisses any hoaxes, foiled plots or bombs that detonate as a perpetrator is building them (MIPT 2002), while ITERATE is more inclusive and incorporates a wider range of events including hoaxes, and those aborted by terrorists or authorities at any stage of planning or execution (Mickolus, Sandler et al. 2008). When we

⁵ The MIPT dataset consists of two sub-sets: the *RAND Terrorism Chronology* which covers years from 1968 to 1997 and the *RAND-MIPT Terrorism Incident Database* that records incidents from 1998 to 2007. The Terrorism Knowledge Base (TKB) ceased its operations on 31 March 2008. The RAND Corporation still keeps on collecting new data, but this is no longer available through the MIPT's website. The TKB's dataset with information on terrorist groups can be accessed through START at <http://www.start.umd.edu/start/data/tops/>.

look only at ITERATE's executed attacks, then the number decreases to 10,312 which is very similar to MIPT's count. Unfortunately, the data is not complete with some observations missing. For example, ITERATE records no location of 47 incidents, which consequently are excluded from the further analysis. Moreover, it does not state a month of incident for 108 observations, which makes it impossible to establish to which quarter an accident belongs. This problem is particularly noticeable for year 1999 when nearly 25 per cent of all attacks have no specified month. Since deleting these observations would greatly affect the time series, I allocate one-fourth of them to each quarter of the year. MIPT in turn is not free from errors of geographical misallocation, for instance several attacks were mistakenly assigned to the German Democratic Republic while they took place in West Germany.

Using the described datasets, I aggregate the observations over three-month periods. Working on quarterly data minimizes the risk of having intervals with zero or near-zero observations, which would violate the normality assumptions underlying the inferential procedures used in this chapter. Similarly to Enders and Sandler (2006), I generate four time series. First, "all incidents" includes quarterly totals for all types of international attacks. Second, the "casualty" series lists only attacks with either a death and/or injury. The next two series are subsets of the first two and contain only incidents against U.S. targets. These allow me to examine whether the efforts to improve homeland security in the United States after 9/11 resulted in transference of incidents against U.S. interests to other countries.

1.3. Descriptive statistics

This section discusses patterns in transnational terrorism through a descriptive statistics analysis and highlights some discrepancies between the two terrorism databases. Figure 1.1 depicts numbers of terrorist events per quarter and by income class between 1968 and 2007. In each panel the vertical axes measure the quarterly totals while the time scale is marked on the horizontal axes. The plots in the bottom of each panel present differences between the two datasets computed by deducting the MIPT counts from the ITERATE totals. All panels of Figure 1.1 give the impression of an increase in terrorist activity with the advent of fundamentalist violence. The end of the Cold War seems to be associated with a noticeable decline in the number of incidents in Panels 1, 3 and 4. However, LICs suffer from a further escalation of terrorism and their number of attacks doubles. The post-9/11 period seems to bring immediate increases across all series. Subsequently, the Iraq invasion is likely to benefit particularly HICs, where the average quarterly number of incidents drops by two-thirds. At the same time, Panel 3 suggests a drastic expansion of terrorism in the MIC group which includes Iraq. The difference plots in the bottom of each panel show that the ITERATE totals are typically higher until the mid-1990s, when the two series become fairly similar. Once again, its counts are higher in 1998 and 1999, when MIPT was not collecting data and its records were completed a number of years later (Sandler and Enders 2008). Discrepancies in recent years, when the MIPT totals exceed those of ITERATE, can be largely contributed to the way the databases handle attacks in Israel, Iraq and Afghanistan. Table 1.1 shows that MIPT totals are on average 2.5 times higher than those reported by ITERATE. The MIPT's record of 351 attacks in rich countries is largely influenced by events in Israel that constitute 62 per cent of all HIC incidents. In contrast,

ITERATE lists only 33 attacks that took place in Israel during this period⁶. MIPT also seems to be more efficient when reporting incidents in Iraq. It lists nearly three times more international attacks than the rival dataset. When I match the ITERATE's records of all attacks that took place in Iraq in 2005 with the MIPT's content, I find that only nine incidents shown in ITERATE are not included in MIPT. At the same time ITERATE omits tens of incidents which are undoubtedly international and shown in MIPT⁷. This may imply either a violation of ITERATE's classification rule or inadequate resources to deal with the overwhelming rise of terrorism in the Middle Eastern country.

Quarterly totals for events with casualties and attacks against U.S. citizens and/or property are displayed in Figure 1.2 and Figure 1.3, respectively. Notably, casualty incidents seem to affect mostly MICs, which contradicts Enders and Sandler's (2006) finding that mainly LICs suffer from this type of attacks. Figure 1.3 indicates that U.S. citizens and property appeared to benefit largely from the end of the Cold War as the average number of attacks against them decreased from 22 to 11 per quarter (MIPT). Although this is true for the MIC and HIC groups, the changes in LICs follow an opposite direction and again contradict the suggestion of Enders and Sandler (2006).

⁶ Undoubtedly, Israel was a stage to more than 33 terrorist incidents reported by ITERATE over the seven years period, which also included the Second Intifada. I assume that a large portion of those events was treated as domestic and consequently not included in ITERATE. However, since the dataset perceives Palestine and Israel as two separate states, it should include those attacks, as MIPT does.

⁷ A common perception is that a large portion of attacks in Iraq is aimed at military targets. Nonetheless, MIPT and ITERATE list, respectively, only one and 26 such incidents after the beginning of the invasion. Examples of attacks included in MIPT but omitted by ITERATE are: a kidnapping of a Japanese engineer on 19 January 2005 in Baiji, a kidnapping of U.S. firm's employees in Kirkuk on 9 March 2005, a shooting of foreign contractors (Australian, American and Canadian) on 21 April 2005.

Although the descriptive statistics analysis gives some useful insights to the problem of distribution of terrorism among countries, it is only an introduction to the formal inferential analysis conducted in the following sections.

1.4. Estimation method

All of the terrorist series recorded numerous increases and declines throughout the entire sample period. To answer the question of the significance of these changes, I employ an autoregressive process of order p , $AR(p)$, augmented by adding five intervention variables⁸:

$$y_t = a_0 + \sum_{i=1}^p a_i y_{t-i} + \alpha_1 FUND + \alpha_2 POST + \alpha_3 SEPT + \alpha_4 IRAQ + \alpha_5 D_p + \varepsilon_t, \quad (1.1)$$

where y_t is the number of attacks of a particular type in period t , a_0 is a constant and ε_t is an error term. The intervention variables represent the historical events and take the following values:

- rise of fundamentalist-based terrorism: $FUND = 1$ for $t \geq 1979:4$ and 0 otherwise,
- the end of the Cold War: $POST = 1$ for $t \geq 1992:1$ and 0 otherwise,
- 9/11 (permanent effect): $SEPT = 1$ for $t \geq 2001:3$ and 0 otherwise,
- 9/11 (pulse dummy): $D_p = 1$ if $t = 2001:3$ and 0 otherwise,
- the Iraq war: $IRAQ = 1$ for $t \geq 2003:3$ and 0 otherwise.

There are two variables associated with the effects of 9/11: $SEPT$ allows for a long lasting change in the incident series, while D_p tests for a temporary effect, which would

⁸ This is a modified form of the model introduced by Enders and Sandler (2006).

materialize if 9/11 was only an isolated incident. The order p of the AR process for each time series is determined by the Bayesian Information Criterion (BIC).

Although the ordinary least squares (OLS) method gives estimates whose interpretation is intuitive, such models do not guarantee the best fit for count data. The issue becomes particularly visible for “thin” series (with a number of observations near the lower zero bound), where OLS estimates, although consistent, may result in a biased inference. To circumvent this problem, I obtain maximum likelihood estimates based on the negative binomial (NB) distribution. I model its conditional mean as:

$$\mu_t = \exp \left[a_0 + \sum_{i=1}^p a_i \ln (y_{t-i}^*) + \alpha_1 FUND + \alpha_2 POST + \alpha_3 SEPT + \alpha_4 IRAQ + \alpha_5 D_p \right], \quad (1.2)$$

where y_{t-i}^* is a strictly positive transformation of y_{t-i} , such as y_{t-i}^* equals y_{t-i} if $y_{t-i} > 0$ and c if $y_{t-i} = 0$. The parameter c is obtained using a grid search over the interval $0.01 \leq c \leq 0.99$ ⁹.

The NB model also offers an improvement over the Poisson model used by Enders and Sandler (2006). The Poisson distribution assumes equality between the mean and variance which is not the case for the terrorism time series. Although such a model can give consistent coefficients, its standard errors are likely to be downward biased, resulting in spuriously large z -values (Long 1997). The NB model overcomes this limitation by allowing for a larger dispersion and outperforms the Poisson process for all the terrorist

⁹ See Cameron and Trivedi (1998) for more details on the NB model specification.

time series. The estimation results are presented in the following section. For the reasons mentioned above, I report NB estimates when a time series contains numerous zero values.

1.5. Results

Regression results are presented in Figure 1.4 and Figure 1.5. Each bar represents a 95 per cent confidence interval (CI) for an estimate, which is marked with a horizontal line. The Ljung – Box Q test indicates that residuals are white noise in all regressions. Showing CIs enables a visual inspection of the degree of similarity or divergence between the estimates based on the two datasets and those obtained by Enders and Sandler (2006). I also mark cases of non-overlapping pairs of CIs or where coefficients have opposing signs. In addition, Table 1.2 facilitates discussion by summarizing the effects found by Enders and Sandler (2006) and stating whether my results confirm (“yes”) or contradict (“no”) their findings. Cases where Enders and Sandler (2006) report significant effects, but my estimates are not statistically different from zero are coded as “maybe”. In such situations, I cannot reject their results completely because the discrepancy may be caused by the fact that the datasets I use overlook some incidents. Such a modest approach is likely to understate my findings as in many cases “maybes” could have been coded as “no’s”. This is most evident with ITERATE, which is also used by Enders and Sandler (2006); here the differences are caused purely by the more careful application of the World Bank’s income classification in this chapter. The instances where I obtain the same effect with both MIPT and ITERATE, but it is different from that in Enders and Sandler (2006) are marked in bold. As already mentioned, whenever a time series contains a large number of zeros, I base the inference on more efficient NB estimates. A full set of OLS and NB estimates as well as the information on the number of quarters with zero attacks in each series can be found in

Table 1.4 to Table 1.7. Importantly, both methods of estimation give similar results with consistent signs¹⁰.

The first of the historical developments, the advent of the religious fundamentalism (*FUND*), raised the overall level of terrorism by around 20 attacks per quarter, but it seemed to affect neither the casualty incidents nor the attacks against U.S. interests. This is in line with the findings of Enders and Sandler (2006). However, I do not find any evidence to support their claim of the decline in all incidents in MICs, and transference of terrorism from this group to LICs. In contrary, I show that the effect of fundamentalist terrorism spreads across all income groups (ITERATE's coefficient for HICs is positive and significant at 10 per cent confidence level). Furthermore, ITERATE does not show any significant results for the casualty incidents or attacks against U.S. targets, while MIPT returns increases in these series only for HICs. The significant autoregressive coefficients included in Table 1.4 to Table 1.7 confirm the intertemporal correlation of the terrorist series. They also enable me to compute the long run effects of the rise of the fundamentalist terrorism. For instance, the steady-state value of all attacks worldwide increased by 34.94 [=22.01/(1-0.37)] incidents per quarter according to MIPT, and 32.04 [=17.62/(1-0.17-0.14-0.14)] according to ITERATE. This increase appeared to be equally large among MICs (15.02 for MIPT, 16.4 for ITERATE) and HICs (15.47 for MIPT, 12.53 for ITERATE).

The estimates of the effect of the end of the Cold War (*POST*) on global terrorism series confirm Enders and Sandler's (2006) finding of the decline in incidents of all types and casualty incidents against U.S. targets. At the same time, there was no impact on the

¹⁰ The only exception seems to be the ITERATE estimates for all types of attacks in MICs, where the coefficients on *FUND* and *SEPT* are significant in the OLS model but insignificant in the NB model.

remaining incident types. The long run effects appear to be much stronger for ITERATE, with an overall drop of 53.96 incidents, compared to MIPT's 32.35 attacks per quarter. The same pattern is observed for the remaining time series. On the income group level, my results back the drops across the MIC and HIC samples. Nonetheless, I reject the claim of reduced number of attacks in LICs. In fact, I find evidence of transference of terrorism from MICs and/or HICs to the poorest countries for all of the series (MIPT does not support this only for the casualty incidents). This effect can perhaps be attributed to the fact that both sides of the Iron Curtain lost their interest in destabilizing each other, and therefore, the support for terrorists was reduced. This was accompanied by the emergence of new LICs¹¹ and diminished efforts to maintain the Soviet or Western influence in peripheral countries, which deprived of resources and assistance in the field of security became unable to control internal tensions and ethnic hatreds. It is also likely that the atmosphere of global changes might have been exploited by insurgents in underdeveloped states who demanded reforms also in their countries.

My estimates do not show permanent changes in the distribution of terrorism following the events of 9/11 (*SEPT*). However, the two datasets do not agree on the effects on incidents of all types for MICs and HICs. The rise of terrorism in HICs shown by MIPT is attributed to the dataset's much higher number of incidents in Israel. It should not be generalized for the entire HIC sample as the regression does not return any change when attacks in Israel are excluded (not shown). Notably, I do not find evidence to support the rise of terrorism targeted at the U.S. interests, which is claimed by Enders and Sandler (2006).

¹¹ According to *the World Development Reports* there were 49 LICs in 1989, 59 in 1993 and 63 in 2000.

The picture gets more complicated when it comes to the immediate effect of 9/11 (D_p). My ITERATE estimates validate most of the results of Enders and Sandler (2006). Overall, I confirm their result of transference of casualty incidents from LICs to HICs, but unlike them, I also find a decline in MICs. An analogous transference appeared in the series representing casualty incidents with a U.S. target, which is also confirmed by the MIPT estimates. The rise in terrorism in rich countries could be attributed to the increase of perceived marginal benefits, as well as an ease of causing anxiety immediately after 9/11, which in turn decreased the marginal cost of terrorism. In the long run, however, security upgrades in rich countries seem to have managed to raise the marginal cost enough to deter terrorist activity.

The war in Iraq is not taken into account by Enders and Sandler (2006), and therefore its effect is not shown in Table 1.2. The relevant estimates are displayed in Figure 1.4 and Figure 1.5. The invasion and its aftermath did not seem to have any noticeable impact on the global, LIC and MIC series. This outcome is somewhat unexpected taking into account the heightened number of events in Iraq, which is classified as a medium income country. Furthermore, negative coefficients for the incidents against U.S. targets suggest that the war did not increase the vulnerability of the U.S. interests. The MIPT estimates reveal a considerable decline of 16.67 and 6.48 attacks per quarter in the numbers of all incidents and casualty incidents in HICs, respectively. These are associated with the long run declines of 23.15 and 12.46 events, respectively. ITERATE returns a similar result for the all incident series. This suggests that the increased presence of the Western forces in terrorists' homelands could have engaged them enough to keep them away from launching

attacks in rich countries. It may also suggest that further advance in security measures in HICs have paid off.

This section demonstrates that MIPT and ITERATE give fairly similar results, with the largest discrepancies concentrated in the immediate effect of 9/11. The reason behind this lies mostly in the databases' different handling of incidents in recent years. The comparison of the ITERATE estimates presented in this chapter with those of Enders and Sandler (2006) shows comparable coefficients for HICs and the worldwide series. The considerable differences in estimates for MICs and LICs are an outcome of discrepancies between the used income classifications, which have been addressed earlier.

1.6. Iraq – an alternative approach

This section looks closer at terrorism in Iraq after the 2003 invasion. I argue that attacks in which only Iraqi nationals are directly involved are “weakly” international because they are likely to affect audiences beyond the host country. Since terrorist incidents in Iraq occupy international news nearly every day, the Western public opinion must be somewhat influenced by those events (Livingston 1997; Aday 2010; Lee 2011; Chapter 2). By spreading violence terrorists try to convince the citizenry of the coalition countries that the war cannot be won, and therefore the international forces should be withdrawn. This message is expected to reduce public support for the war (see Chapter 2), which is crucial for democratic governments to carry out their operations, particularly foreign military missions, which may be perceived as unnecessary loss of resources and lives. In addition, prolonged instability is associated with greater human costs paid by the coalition armies, larger expenditures for the coalition states' budgets, and prevents their businesses from reaping expected benefits (Krepinevich 2005; Bilmes and Stiglitz 2006). Furthermore,

unpopularity of operations in Iraq may reduce general support for some governments and as such hinder internal reforms (Gelpi, Feaver et al. 2006; Klarevas, Gelpi et al. 2006). The developments in Iraq also influence the perception of the West, particularly the United States, among the Middle Eastern and Muslim nations (Pew Global Attitudes Project 2005; Zogby 2007). Although the analysis and arguments presented in this section may overestimate the number of international terrorist attacks in Iraq, taking into account only those incidents that MIPT or ITERATE classify as international underestimates the problem. Ultimately, the real impact of the Iraq war on international terrorism is likely to lie somewhere between these two extremes, and the results presented here should be read with caution.

Based on the above arguments, I extend the terrorism series by taking the MIPT dataset¹² with only international events and adding 9,063 attacks that took place in Iraq after 1 May 2003 and did not involve foreign targets directly. The time series obtained through this exercise are plotted in Figure 1.6. Since the violence generating process in Iraq is unique and different from other countries, I separate Iraq from the MIC group and display events recorded only in this country in Panel 2. All other MIC incidents (without Iraq) are shown in Panel 4. As expected, there seems to be a dramatic rise of terrorism in Iraq following the 2003 invasion, which is also reflected in the worldwide totals. Notably, the MIC series that exclude incidents in Iraq seems to be unaffected by the invasion and its aftermath.

¹² This section uses only the MIPT database which, unlike ITERATE, provides also information about domestic terrorist incidents (since 1998).

The formal analysis relies on testing for structural breaks in time series at unknown date τ_m . As before, I use an AR(p) process, and estimate the following model:

$$y_t = \left(a_{10} + \sum_{i=1}^p a_{1i} y_{t-i} \right) I(t \leq \tau_m) + \left(a_{20} + \sum_{i=1}^p a_{2i} y_{t-i} \right) I(t > \tau_m) + \varepsilon_t, \quad (1.3)$$

where y_t is the number of incidents in period t , a_{10} and a_{20} are constants and ε_t is an error term. The indicator function, $I(\cdot)$, takes the value of zero before the tested break date, τ_m , and $I(\cdot) = 1$ otherwise. I follow the procedure described by Bai (1997) to find the unknown break points¹³. The expected location of structural changes near to the end of the time series forces me to trim the data by 7.5 per cent, and consider break dates in the central 85 per cent of the sample.

Table 1.3 reports the identified break dates along with estimated coefficients based on Equation 1.3 for all countries and Iraq. I do not show results for the “MIC without Iraq” sample as it does not experience any significant structural changes related to the Iraq war¹⁴. Table 1.3 draws a picture considerably different from that in Figure 1.4 and Figure 1.5. All the series experience breaks in the second quarter of 2004. The long-run mean of all incidents worldwide rises from 65.9 before the break to 184.5 after. This is largely caused by the events in Iraq, where the corresponding measure soars from zero to 149 attacks per quarter. A similar development is present in the casualty series, where long-run mean rises

¹³ An estimate of a break is the value of τ_m that minimizes the sum of squared residuals. I employ the sup-Wald statistic for which under the null hypothesis of no break, $a_{20} = a_{21} = \dots = a_{2p} = 0$ (see Bai 1997). The critical values are extrapolated from Andrews (1993). To rule out serial correlation in estimated residuals, I perform Ljung-Box Q test.

¹⁴ I also drop the series representing incidents with U.S. targets as based on the above logic all attacks in Iraq after the invasion affect the American audience.

to 96.7 incidents per quarter for Iraq and 115, or nearly four-fold, for all countries¹⁵. Importantly, the remarkable escalation of violence in Iraq combined with the decline of attacks in HICs, which is shown in the previous section, suggests a possibility of transference of terrorism from the latter to the former.

The formal analysis shows structural changes in the terrorism series a year after the invasion. There may be several explanations for this delay. First, terrorists needed time to come up with a strategy, organize resources and people. Second, scandals such as the abuse at the Abu Ghraib prison (came to light in April 2004), and Mukaradeeb killings (the U.S. forces bombed and killed 42 civilians during a wedding party in May 2004) could have further aroused insurgents' determination to fight the U.S.-controlled regime. Moreover, the outrage caused by these events among the Iraqi public could have increased the support for the insurgency among some individuals. Third, terrorists started to target the newly forming Iraqi police and military, as well as people who wanted to join them¹⁶ (MIPT 2008). By making the Iraqi security forces appear weak and unable to defend themselves, terrorists were sending a message that the coalition's efforts to bring stability to the country were failing (Pape 2006).

1.7. Concluding remarks

I apply time series analysis to identify income-based changes in patterns of international terrorism in response to the rise of religious fundamentalism, the end of the Cold War, 9/11

¹⁵ Figure 1.6 shows that the number of terrorist events in Iraq seemed to be decreasing in 2006. However, it cannot be confirmed in the above analysis as it is unfeasible to find structural breaks at dates so near to the end of time series.

¹⁶ Attacks against the Iraqi police and military, which are not a part of the occupying forces, constitute terrorism. However, only 0.6% of all terrorist attacks in Iraq after the invasion were against military targets. Analogously, attacks on civilians waiting to volunteer for these services constitute terrorism.

and the invasion of Iraq. Since ITERATE and MIPT are likely to undercount international incidents in the latter country, I expand the series by adding incidents that took place in Iraq after May 2003 and did not involve foreign victims, but presumably affected international audiences. The results reported in this paper do not confirm all findings of Enders and Sandler (2006), whose paper I am initially trying to replicate. I show that the effect of fundamentalist terrorism spreads across all income groups, while the two authors ascribe it entirely to LICs. They also find a significant decline across all groups following the end of the Cold War, while I reject this claim and find transference of terrorism to LICs. I confirm Enders and Sandler's (2006) finding that 9/11 did not have as large impact on international terrorism as the two previous events. The Iraq war, which is not accounted for in Enders and Sandler (2006), coincided with a reduction of terrorism in rich countries and did not increase the vulnerability of U.S. interests outside Iraq. Additionally, the analysis of the wider range of Iraq incidents suggests a possibility of transference of terrorism from HICs to this Middle Eastern country. Based on that, one could draw a naive conclusion that it is beneficial to invade another country in order to engage terrorists in combat abroad and keep them away from the homeland. However, such reasoning does not take into consideration costs of military operations in Iraq, which are likely to be much higher than the damage inflicted by potential terrorist incidents at home.

The discrepancies between this paper and Enders and Sandler (2006) lie mainly in results for MICs and LICs and are attributable mostly to the fact that I follow the World Bank's income classification in a more strict and consistent way. Furthermore, I suggest using negative binomial distribution, which allows for overdispersion in the data, and therefore offers more efficient results than the Poisson model used by Enders and Sandler

(2006). In addition to the extant work, I explore the effects of discrepancies between MIPT and ITERATE on the obtained results, which concentrate mostly in different approaches to coding incidents in Afghanistan, Iraq and Israel, as well as the fact that, unlike MIPT, ITERATE includes hoaxes and foiled plots in its records. Although the two datasets give fairly similar results, I argue that MIPT's methodology is somewhat more sensible when it comes to recording incidents in Iraq and Israel. Overall, this paper exposes the sensitivity of findings in Enders and Sandler (2006) and provides a caveat against the dangers of using cross-national income data in time series analysis.

Appendix: Selected historical events

The emergence of fundamentalist-based terrorism was marked by the attack on the U.S. embassy in Teheran on 4 November 1979 and the Soviet invasion of Afghanistan launched on 25 December 1979. These two events were followed by an increase in the number of religious terrorist organizations that are characterized by more dispersed structure than their earlier counterparts and employ value systems that allow them to perceive violence as a sacramental act (Hoffman 1999).

The second historical event that could influence the terrorist patterns is the end of the Cold War era which coincided with the Gulf War, the capturing of left-wing terrorists by Western European states and the enhanced cooperation in combating crime and terrorism within the European Union. The collapse of the Soviet dominion meant disappearance of some state sponsors and lesser resources available to terrorists. Hence, it was likely to decrease the amount of terrorism. Nevertheless, the peace dividend was endangered by the call of the Iraqi leader for terrorists to target the nations involved in the Gulf War. The breakup of the U.S.S.R. and democratization of Eastern Europe created new space for old ethnic hatreds. Furthermore, the Maastricht Treaty opened intra-European borders also for terrorists (Enders and Sandler 1999).

The attacks of 9/11 were characterized by unprecedented death toll, which amounted to 2,982 fatalities (World Trade Organization 2006) and equalled all cumulative deaths from international terrorism between 1988 and 2000 (Enders and Sandler 2002). In response, the Western countries made efforts to increase security at home, thus, raised the price of executing a terrorist attack on their territories. Simultaneously, the United States declared the Global War on Terrorism, which by many fundamentalists has been perceived

as a Western crusade against the Muslim world. Furthermore, sending troops to Afghanistan, and later to Iraq, have brought “infidels” directly to the terrorists’ homelands, hence reduced the cost and increased the ease with which they can be targeted.

The invasion of Iraq officially ended on 1 May 2003 and gave grounds for further raise of terrorism in the Arab world. Justifying the operation by a faulty premise that Iraq possessed weapons of mass destruction not only did cause cracks in the Western cooperation in combating terrorism, but also boosted the hatred of fundamentalist terrorists against the West. The impotence to swiftly bring security to Iraqi people and restore the ruined economy increased the grievances of the Muslim world against the United States.

Table 1.1. Incidents in Iraq, Israel and Afghanistan (2001 - 2007)

Year	All incidents		Iraq		Afghanistan		Israel	
	MIPT	ITERATE	MIPT	ITERATE	MIPT	ITERATE	MIPT	ITERATE
2001	205	52	0	0	2	1	79	4
2002	298	130	0	0	13	5	106	13
2003	276	164	46	25	33	12	52	7
2004	395	234	246	133	24	12	6	4
2005	311	109	177	45	30	13	4	0
2006	241	83	75	12	30	8	55	3
2007	149	91	48	6	11	15	49	2
Total	1875	863	592	221	143	66	351	33

Table 1.2. Comparison of findings in Enders and Sandler (2006) with my results

Incident type and country class		E&S (2006)	Result confirmed		E&S (2006)	Result confirmed		
			ITERATE	MIPT		ITERATE	MIPT	
		<u>Fundamentalist terrorism (FUND)</u>				<u>The end of the Cold War (POST)</u>		
All incidents	World	rise	yes*	yes	decline	yes	yes	
	LIC	rise	yes*	yes	decline	no	no	
	MIC	decline	no	no	decline	yes	yes	
	HIC	no effect	yes	no (↑)	decline	yes	yes	
Casualty incidents	World	no effect	yes	yes	no effect	yes	yes	
	LIC	no effect	yes	no (↑)	no effect	no (↑)	yes	
	MIC	decline	maybe	maybe	no effect	no (↓)	yes	
	HIC	no effect	yes	no (↑)	no effect	yes	no (↓)	
With a U.S. target	World	no effect	yes	yes	no effect	yes	yes	
	LIC	rise	maybe	maybe	decline	no	no	
	MIC	decline	maybe	maybe	decline	maybe	yes	
	HIC	no effect	yes	no (↑)	decline	yes	yes	
Casualty incidents with a U.S. target	World	no effect	yes	no (↑)	decline	yes	yes	
	LIC	no effect	yes	yes	no effect	no (↑)	no (↑)	
	MIC	decline	maybe	no	decline	yes	yes	
	HIC	no effect	yes	no (↑)	decline	maybe	yes	
		<u>Permanent effect of 9/11 (SEPT)</u>				<u>(D_p)</u>		
All incidents	World	no effect	yes	yes	decline	yes	maybe	
	LIC	no effect	yes	yes	decline	yes	maybe	
	MIC	no effect	no (↓)	yes	decline	yes	maybe	
	HIC	no effect	yes	no (↑)	no effect	yes	yes	
Casualty incidents	World	no effect	yes	yes	no effect	yes	no (↑)	
	LIC	no effect	yes	yes	decline	yes	maybe	
	MIC	no effect	yes	yes	no effect	no (↓)	yes	
	HIC	no effect	yes	yes	rise	yes	yes	
With a U.S. target	World	no effect	yes	yes	decline	yes	maybe	
	LIC	rise	maybe	maybe	decline	yes	maybe	
	MIC	rise	maybe	maybe	no effect	no (↓)	yes	
	HIC	rise	maybe	maybe	no effect	yes	yes	
Casualty incidents with a U.S. target	World	rise	maybe	maybe	no effect	yes	no (↑)	
	LIC	rise	maybe	maybe	no effect	no (↓)	yes	
	MIC	rise	maybe	maybe	no effect	no (↓)	no (↓)	
	HIC	rise	maybe	maybe	rise	yes	yes	

* significant at 10 per cent confidence level, ↑ / ↓ denotes rise / drop in the series

Table 1.3. Estimated break dates and coefficients

Time series	p	Break date	Sup-Wald	5 per cent crit. value	R^2	a_{10}	a_{11}	a_{12}	a_{20}	a_{21}	a_{22}	a_{23}	Long-run mean	
													before break	after break
<u>All countries (extended series)</u>														
All incidents	4	2004:2	17.69	17.27	0.93	21.74*** (4.39)	0.39*** (3.76)	0.28*** (3.98)	180.76*** (2.60)	0.4* (1.68)	-0.01 (-0.06)	-0.37*** (-2.62)	65.88	184.45
Casualty incidents	4	2004:2	18.33	17.27	0.94	2.83* (1.81)	0.64*** (4.92)	0.27** (2.52)	130.76*** (2.67)	0.3 (1.20)	-0.44** (-1.93)		29.34	114.76
<u>Iraq (extended series)</u>														
All incidents	5	2004:2	54.83	19.27	0.96	0.24 (1.08)	1.85*** (11.67)	-0.89*** (-3.61)	183.04*** (2.54)	-1.02*** (-3.75)	0.80** (2.52)		5.61 ⁺	149.34
Casualty incidents	4	2004:2	19.15	17.27	0.95	0.13 (0.88)	1.95*** (7.36)	-0.86* (-1.89)	127.31*** (2.57)	-0.98*** (-2.84)	0.67 (1.33)		-1.54 ⁺	96.67

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. ⁺ Value not different from zero.

Note: p - number of coefficients allowed to change when testing for breaks; all regressions are run on the 1968:1 - 2007:4 sample; t-statistics based on robust standard errors in parentheses; a_{10} is the intercept before the change and a_{20} is the post-change intercept; a_{1i} denotes pre-change coefficients; a_{2i} relates to post-change coefficients; Ljung – Box Q test is applied to rule out serial correlation in estimated residuals.

Table 1.4. OLS and NB estimates for all incidents

Time Series	Dataset		<i>FUND</i>	<i>POST</i>	<i>SEPT</i>	<i>D_p</i>	<i>IRAQ</i>	<i>a₀</i>	<i>a₁</i>	<i>a₂</i>	<i>a₃</i>	Periods with 0 attacks
All countries	MIPT	OLS	22.01 (3.77)	-20.38 (-3.57)	15.72 (1.67)	7.26 (0.78)	-8.05 (-0.68)	31.39 (5.63)	0.37 (3.54)			0
		NB	0.23 (2.70)	-0.20 (-2.39)	0.19 (1.40)	0.26 (2.10)	-0.12 (-0.72)	1.72 (5.43)	0.57 (6.87)			
	ITERATE	OLS	17.62 (1.90)	-29.68 (-2.58)	-10.70 (-1.16)	-23.72 (-3.66)	-8.72 (-1.19)	47.52 (4.54)	0.17 (1.36)	0.14 (1.54)	0.14 (1.63)	0
		NB	0.13 (1.51)	-0.26 (-2.28)	-0.02 (-0.08)	-0.89 (-4.77)	-0.29 (-1.49)	1.76 (3.75)	0.36 (3.58)	0.24 (3.03)	0.02 (0.20)	
LICs	MIPT	OLS	1.56 (2.12)	2.25 (1.98)	1.18 (0.58)	1.96 (0.97)	-2.17 (-0.92)	0.99 (2.96)	0.39 (4.62)	0.22 (2.71)		14
		NB	0.48 (3.10)	0.27 (2.21)	0.10 (0.75)	0.14 (1.05)	-0.17 (-1.01)	0.76 (5.97)	0.24 (3.86)	0.18 (3.21)		
	ITERATE	OLS	2.98 (1.30)	8.37 (2.91)	-5.77 (-1.52)	-9.53 (-3.74)	-4.02 (-1.45)	3.72 (1.72)	0.11 (1.39)	0.23 (1.88)		6
		NB	0.42 (1.87)	0.67 (3.22)	-0.48 (-1.64)	-2.33 (-11.21)	-0.35 (-1.49)	1.55 (3.12)	-0.02 (-0.10)	0.17 (2.26)		
MICs	MIPT	OLS	8.26 (2.36)	-12.65 (-3.39)	3.19 (0.89)	-2.43 (-0.71)	7.47 (1.11)	16.67 (3.96)	0.45 (3.45)			0
		NB	0.17 (2.07)	-0.31 (-3.14)	0.11 (0.73)	0.01 (0.12)	0.17 (0.90)	1.62 (8.65)	0.54 (9.98)			
	ITERATE	OLS	11.97 (2.10)	-28.25 (-4.16)	-8.87 (-2.32)	-8.51 (-3.61)	4.01 (0.93)	34.94 (5.31)	0.18 (1.27)	0.09 (1.10)		0
		NB	0.13 (1.42)	-0.42 (-3.89)	-0.06 (-0.24)	-1.31 (-7.59)	-0.09 (-0.35)	1.72 (5.55)	0.39 (4.36)	0.17 (2.23)		
HICs	MIPT	OLS	11.14 (4.35)	-10.87 (-4.09)	12.57 (2.14)	9.63 (1.72)	-16.67 (-2.34)	12.12 (5.66)	0.28 (2.50)			3
		NB	0.44 (4.24)	-0.38 (-3.09)	0.43 (2.34)	0.31 (2.07)	-0.59 (-1.73)	1.93 (8.02)	0.33 (3.78)			
	ITERATE	OLS	7.14 (1.97)	-15.10 (-2.45)	-2.15 (-0.47)	-2.15 (-0.89)	-5.17 (-2.02)	17.27 (4.64)	0.12 (1.45)	0.31 (4.98)		1
		NB	0.12 (1.01)	-0.35 (-1.33)	-0.03 (-0.13)	0.10 (0.37)	-0.51 (-1.53)	1.44 (3.96)	0.25 (3.16)	0.36 (4.29)		

Note: *t* and *z* statistics based on robust standard errors in parentheses. *FUND* indicates the rise of fundamental terrorism; *POST* denotes the post-Cold War era; *SEPT* indicates the post-9/11 period; *D_p* is a pulse dummy for 9/11; *IRAQ* denotes the end of the invasion of Iraq.

Table 1.5. OLS and NB estimates for casualty incidents

Time Series	Dataset		<i>FUND</i>	<i>POST</i>	<i>SEPT</i>	<i>D_P</i>	<i>IRAQ</i>	a_0	a_1	a_2	a_3	a_4	Periods with 0 attacks
All countries	MIPT	OLS	3.68 (1.74)	-2.26 (-1.23)	5.53 (1.29)	10.82 (2.52)	-3.41 (-0.66)	4.16 (3.47)	0.48 (5.14)	0.23 (2.60)			0
		NB	0.14 (1.30)	-0.10 (-1.37)	0.22 (1.65)	0.54 (4.07)	-0.12 (-0.73)	0.88 (4.44)	0.44 (4.60)	0.26 (3.13)			
	ITERATE	OLS	2.78 (1.23)	-2.87 (-1.17)	-0.26 (-0.10)	-0.56 (-0.26)	-1.43 (-0.50)	6.77 (3.77)	0.35 (4.57)	0.34 (3.62)			0
		NB	0.08 (0.93)	-0.08 (-1.00)	0.02 (0.14)	0.02 (0.87)	-0.13 (-0.70)	0.97 (4.97)	0.40 (6.17)	0.30 (4.14)			
LICs	MIPT	OLS	0.78 (1.99)	0.97 (1.52)	1.06 (0.80)	2.16 (1.69)	-1.06 (-0.68)	0.39 (2.80)	0.37 (4.28)	0.27 (3.33)			32
		NB	0.60 (3.03)	0.17 (1.16)	0.14 (0.81)	0.60 (3.43)	-0.13 (-0.67)	-0.20 (-1.55)	0.37 (4.14)	0.34 (3.65)			
	ITERATE	OLS	1.18 (1.56)	2.79 (2.37)	-1.57 (-1.05)	-2.73 (-2.22)	-0.99 (-0.83)	0.82 (2.40)	0.27 (1.72)	0.24 (1.56)			16
		NB	0.65 (3.47)	0.63 (4.06)	-0.40 (-2.00)	-1.37 (-7.62)	-0.16 (-0.79)	0.50 (3.59)	0.21 (3.86)	0.03 (0.84)			
MICs	MIPT	OLS	1.39 (1.07)	-1.45 (-1.36)	2.46 (1.08)	-1.52 (-0.68)	1.43 (0.39)	2.63 (2.79)	0.56 (4.79)	0.14 (1.33)			3
		NB	0.10 (0.80)	-0.14 (-1.52)	0.23 (1.12)	-0.14 (-0.69)	0.08 (0.31)	0.84 (5.24)	0.46 (5.68)	0.19 (2.63)			
	ITERATE	OLS	2.40 (1.50)	-4.01 (-2.43)	-0.18 (-0.10)	-3.35 (-2.39)	1.57 (0.71)	5.53 (4.69)	0.30 (3.32)	0.24 (2.47)			2
		NB	0.16 (1.58)	-0.28 (-2.31)	0.03 (0.09)	-0.98 (-4.21)	0.05 (0.17)	1.17 (5.54)	0.33 (4.86)	0.22 (2.77)			
HICs	MIPT	OLS	3.57 (3.53)	-2.99 (-3.17)	4.50 (1.70)	7.23 (2.81)	-6.48 (-2.37)	2.11 (4.33)	0.37 (4.23)	0.11 (1.35)			15
		NB	0.34 (2.23)	-0.28 (-2.49)	0.37 (1.87)	0.85 (4.44)	-0.93 (-2.82)	0.65 (4.62)	0.35 (4.42)	0.25 (3.01)			
	ITERATE	OLS	0.22 (0.18)	-1.44 (-1.09)	-0.01 (-0.01)	4.26 (5.48)	-0.75 (-0.87)	2.19 (2.59)	0.29 (3.40)	0.15 (1.48)	0.13 (1.37)	0.18 (1.53)	12
		NB	0.03 (0.22)	-0.20 (-1.06)	0.13 (0.42)	1.25 (3.82)	-0.52 (-1.56)	1.03 (6.86)	0.17 (3.29)	0.19 (3.46)	0.09 (1.27)	0.12 (1.75)	

Note: t and z statistics based on robust standard errors in parentheses. *FUND* indicates the rise of fundamental terrorism; *POST* denotes the post-Cold War era; *SEPT* indicates the post-9/11 period; *D_P* is a pulse dummy for 9/11; *IRAQ* denotes the end of the invasion of Iraq.

Table 1.6. OLS and NB estimates for incidents against a U.S. target

Time Series	Dataset		<i>FUND</i>	<i>POST</i>	<i>SEPT</i>	<i>D_p</i>	<i>IRAQ</i>	a_0	a_1	a_2	a_3	a_4	a_5	Periods with 0 attacks	
All countries	MIPT	OLS	4.23 (1.80)	-10.38 (-3.85)	3.95 (1.49)	1.90 (0.81)	-3.51 (-1.17)	10.79 (3.72)	0.05 (0.51)	0.14 (2.03)	-0.10 (-1.07)	0.16 (2.09)	0.20 (1.45)	2	
		NB	0.11 (1.24)	-0.34 (-2.71)	0.25 (1.29)	0.50 (2.64)	-0.31 (-1.35)	1.01 (3.38)	0.21 (2.53)	0.25 (3.18)	-0.09 (-1.05)	0.16 (2.46)	0.15 (1.92)		
	ITERATE	OLS	-4.32 (-1.01)	-8.39 (-2.33)	3.85 (0.97)	-11.82 (-3.20)	-8.35 (-2.19)	23.21 (4.16)	0.15 (1.07)	0.20 (1.78)				0	
		NB	-0.03 (-0.21)	-0.32 (-2.27)	0.23 (1.19)	-1.02 (-5.82)	-0.57 (-2.86)	1.84 (4.88)	0.19 (1.94)	0.30 (4.22)					
	LICs	MIPT	OLS	0.07 (0.24)	1.21 (2.72)	0.26 (0.34)	0.21 (0.32)	-1.03 (-1.34)	0.81 (3.34)	0.06 (0.64)	0.14 (1.47)				56
			NB	0.07 (0.28)	0.74 (3.02)	0.09 (0.34)	0.06 (0.31)	-0.44 (-1.37)	-0.05 (-0.27)	0.06 (0.46)	0.17 (1.23)				
ITERATE		OLS	0.18 (0.33)	2.15 (2.58)	3.07 (1.28)	-7.46 (-3.33)	-5.09 (-2.19)	1.43 (1.48)	0.02 (0.28)	0.20 (2.21)				34	
		NB	0.13 (0.47)	0.76 (2.88)	0.46 (1.42)	-19.04 (-18.21)	-1.04 (-3.10)	0.59 (3.14)	0.06 (0.81)	0.02 (0.27)					
MICs	MIPT	OLS	1.75 (0.98)	-6.45 (-3.73)	3.33 (1.69)	-1.42 (-0.83)	-2.01 (-0.84)	5.57 (2.42)	0.13 (1.08)	0.23 (3.07)	-0.14 (-1.33)	0.20 (2.45)	0.22 (1.47)	5	
		NB	0.06 (0.61)	-0.34 (-2.52)	0.41 (1.82)	0.15 (0.65)	-0.37 (-1.47)	0.71 (3.14)	0.31 (4.18)	0.31 (4.29)	-0.20 (-2.33)	0.21 (3.17)	0.15 (2.26)		
	ITERATE	OLS	-3.92 (-1.14)	-4.90 (-2.21)	-0.23 (-0.13)	-6.80 (-4.77)	-1.60 (-1.02)	13.44 (2.97)	0.29 (1.51)	0.19 (2.04)				2	
		NB	-0.11 (-0.83)	-0.32 (-2.00)	0.14 (0.61)	-18.09 (-17.68)	-0.48 (-2.04)	1.62 (5.70)	0.25 (3.44)	0.26 (4.33)					
HICs	MIPT	OLS	2.21 (2.36)	-3.13 (-3.00)	0.59 (0.53)	2.41 (2.17)	-1.57 (-1.38)	2.60 (3.54)	0.13 (1.00)	0.07 (0.80)	0.10 (1.06)			22	
		NB	0.48 (2.78)	-0.75 (-3.04)	0.25 (0.65)	0.55 (1.37)	-0.88 (-1.82)	1.07 (6.65)	0.07 (0.85)	0.05 (0.66)	0.10 (1.20)				
	ITERATE	OLS	0.23 (0.17)	-3.89 (-2.62)	1.73 (1.49)	0.60 (0.46)	-2.32 (-1.92)	5.17 (2.84)	-0.01 (-0.13)	0.21 (2.07)	0.17 (1.37)			16	
		NB	0.05 (0.32)	-1.09 (-4.57)	0.56 (1.99)	0.37 (1.00)	-0.93 (-2.77)	1.94 (11.70)	-0.03 (-0.71)	0.07 (1.41)	0.05 (1.21)				

Note: t and z statistics based on robust standard errors in parentheses. *FUND* indicates the rise of fundamental terrorism; *POST* denotes the post-Cold War era; *SEPT* indicates the post-9/11 period; *D_p* is a pulse dummy for 9/11; *IRAQ* denotes the end of the invasion of Iraq.

Table 1.7. OLS and NB estimates for casualty incidents with a U.S. target

Time Series	Dataset		<i>FUND</i>	<i>POST</i>	<i>SEPT</i>	<i>D_p</i>	<i>IRAQ</i>	<i>a₀</i>	<i>a₁</i>	<i>a₂</i>	<i>a₃</i>	<i>a₄</i>	<i>a₅</i>	Periods with 0 attacks
All countries	MIPT	OLS	1.61 (2.49)	-1.72 (-2.64)	1.55 (1.70)	2.66 (3.08)	0.49 (0.38)	2.02 (4.16)	0.14 (1.47)	0.23 (2.43)				16
		NB	0.40 (2.88)	-0.49 (-3.35)	0.39 (1.99)	0.38 (2.34)	0.19 (0.92)	1.10 (9.90)	0.10 (2.64)	0.07 (1.75)				
	ITERATE	OLS	0.62 (0.80)	-2.15 (-2.55)	2.66 (1.39)	-1.05 (-0.55)	-0.67 (-0.35)	4.54 (5.61)	0.06 (0.81)	0.19 (2.15)				4
		NB	0.10 (0.90)	-0.42 (-2.55)	0.52 (1.76)	-0.15 (-0.49)	-0.14 (-0.51)	1.45 (8.24)	0.09 (1.30)	0.13 (1.67)				
LICs	MIPT	OLS	-0.04 (-0.33)	0.65 (2.68)	0.73 (1.79)	0.22 (0.543)	-0.59 (-1.26)	0.36 (3.82)	0.09 (0.89)					93
		NB	-0.11 (-0.30)	1.05 (2.87)	0.46 (1.60)	0.10 (0.54)	-0.36 (-1.14)	-0.80 (-3.25)	0.05 (0.99)					
	ITERATE	OLS	0.10 (0.48)	0.97 (2.44)	0.84 (1.11)	-2.54 (-3.51)	-1.32 (-1.80)	0.38 (2.04)	0.02 (0.40)	0.12 (1.82)	0.13 (0.61)			73
		NB	0.20 (0.62)	1.07 (3.34)	0.34 (1.12)	-17.52 (-16.69)	-0.70 (-2.58)	-0.58 (-1.89)	-0.01 (0.06)	-0.05 (-0.56)	0.13 (1.20)			
MICs	MIPT	OLS	0.82 (1.80)	-1.26 (-2.62)	1.11 (1.56)	-1.58 (-2.37)	0.26 (0.27)	1.09 (2.95)	0.27 (2.40)	0.28 (3.41)				26
		NB	0.39 (2.73)	-0.67 (-3.40)	0.38 (1.30)	-0.99 (-4.14)	0.40 (1.43)	0.83 (7.10)	0.09 (2.22)	0.10 (2.22)				
	ITERATE	OLS	0.19 (0.34)	-1.84 (-3.25)	1.29 (1.34)	-2.78 (-2.89)	0.33 (0.28)	2.36 (3.69)	0.15 (1.63)	0.13 (1.61)	-0.03 (-0.33)	0.20 (2.55)		19
		NB	0.04 (0.33)	-0.70 (-3.37)	0.64 (1.75)	-19.43 (-18.32)	0.00 (-0.01)	0.89 (5.05)	0.13 (1.67)	0.12 (1.52)	0.03 (0.31)	0.17 (2.14)		
HICs	MIPT	OLS	0.88 (3.22)	-0.79 (-2.78)	0.09 (0.41)	3.39 (15.95)	-0.15 (-0.48)	0.43 (4.04)	-0.03 (-0.36)					94
		NB	1.18 (3.92)	-0.98 (-3.13)	0.15 (0.37)	1.91 (6.07)	-0.26 (-0.43)	-0.88 (-3.80)	-0.24 (-0.76)					
	ITERATE	OLS	0.03 (0.10)	-0.45 (-1.53)	0.50 (1.22)	3.83 (9.47)	-0.52 (-1.11)	0.71 (2.65)	0.00 (-0.01)	0.11 (1.43)	0.15 (1.62)	0.03 (0.44)	0.23 (2.07)	66
		NB	-0.03 (-0.16)	-0.45 (-1.54)	0.66 (1.85)	1.23 (3.66)	-0.59 (-1.48)	0.64 (3.60)	0.00 (-0.06)	0.05 (1.43)	0.11 (3.01)	0.05 (1.34)	0.06 (1.45)	

Note: *t* and *z* statistics based on robust standard errors in parentheses. *FUND* indicates the rise of fundamental terrorism; *POST* denotes the post-Cold War era; *SEPT* indicates the post-9/11 period; *D_p* is a pulse dummy for 9/11; *IRAQ* denotes the end of the invasion of Iraq.

Figure 1.1. Incidents by Income Class (quarterly totals)

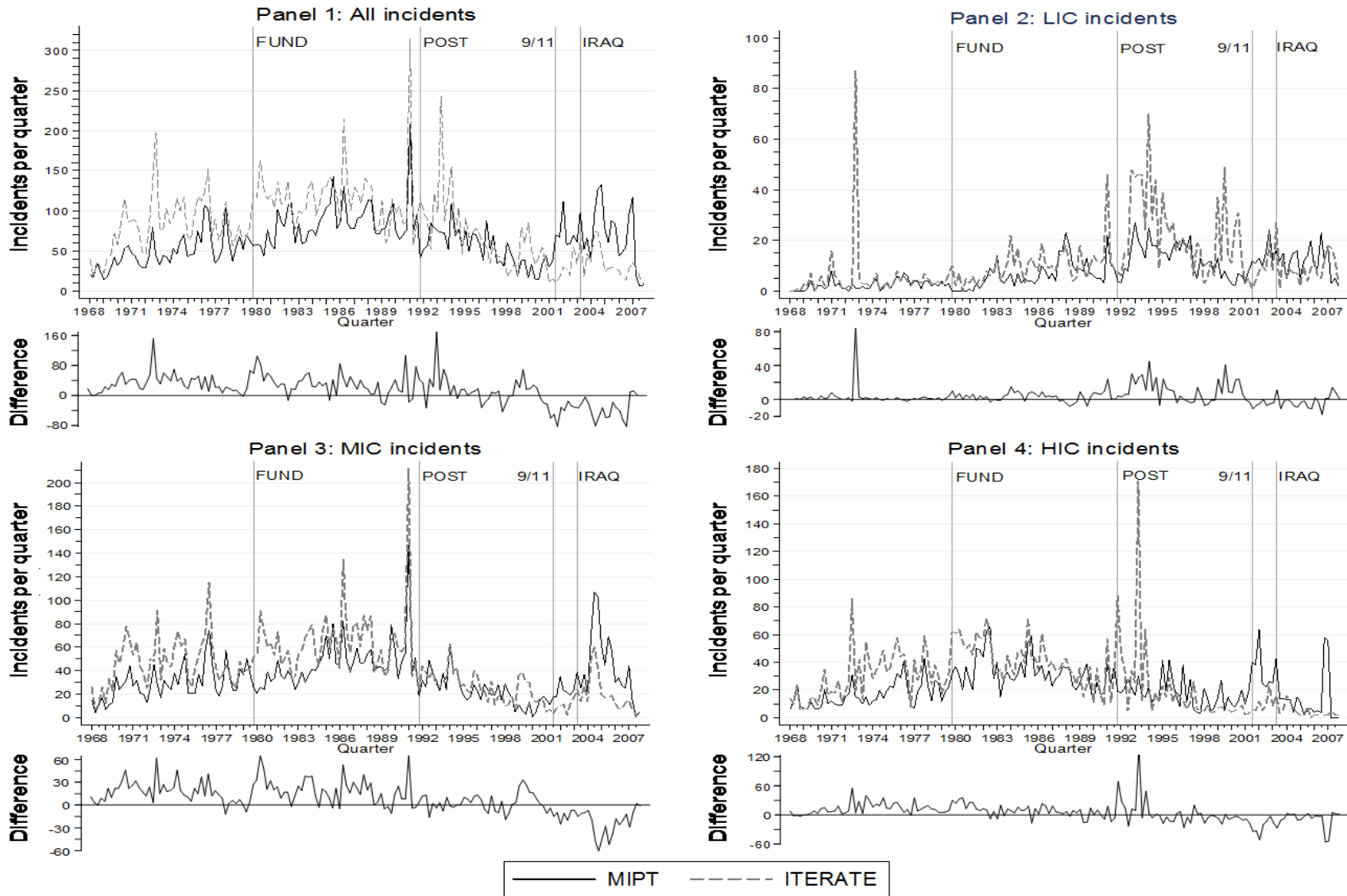


Figure 1.2. Casualty incidents by Income Class

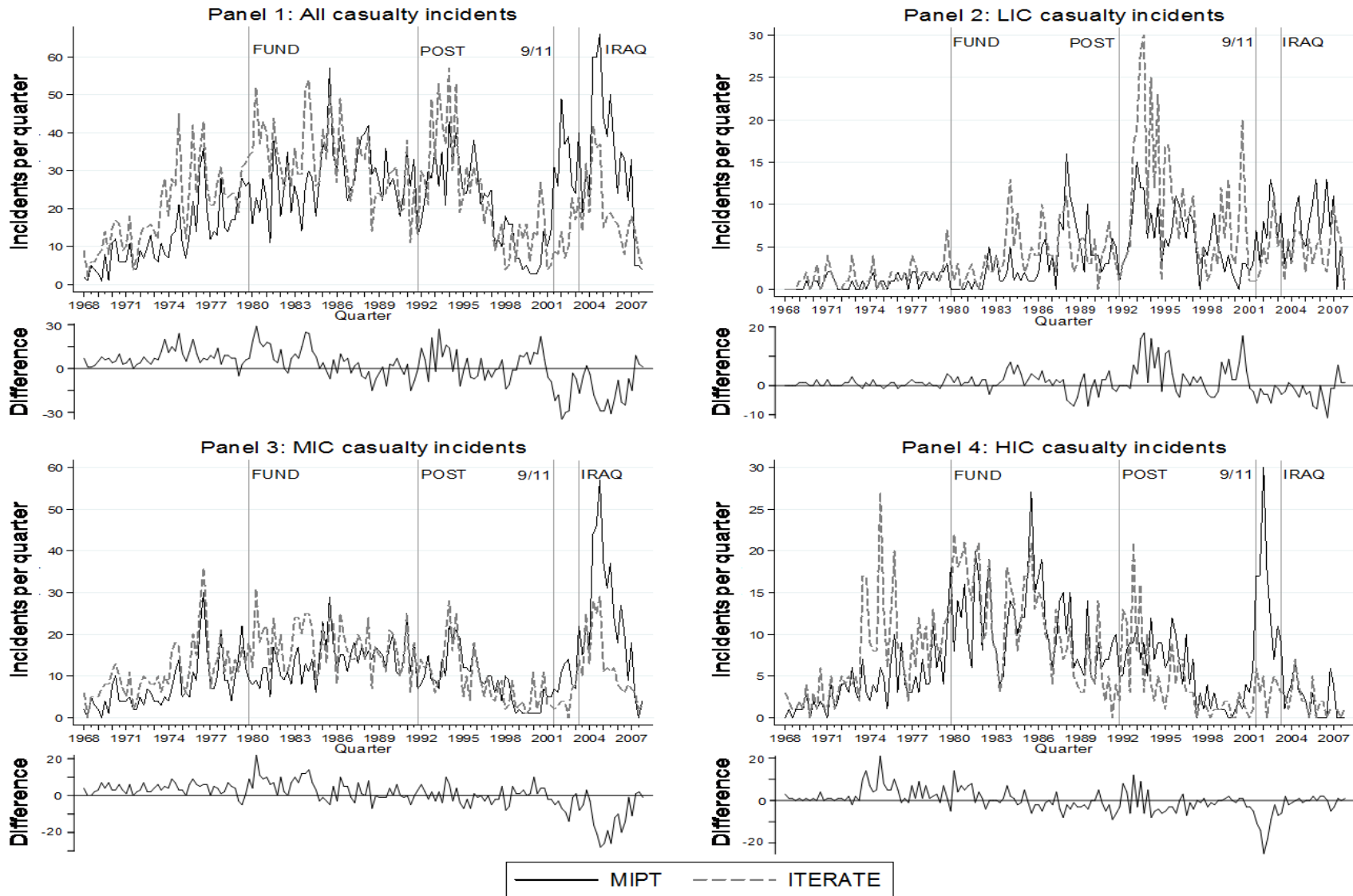


Figure 1.3. Incidents against a U.S. target by Income Class

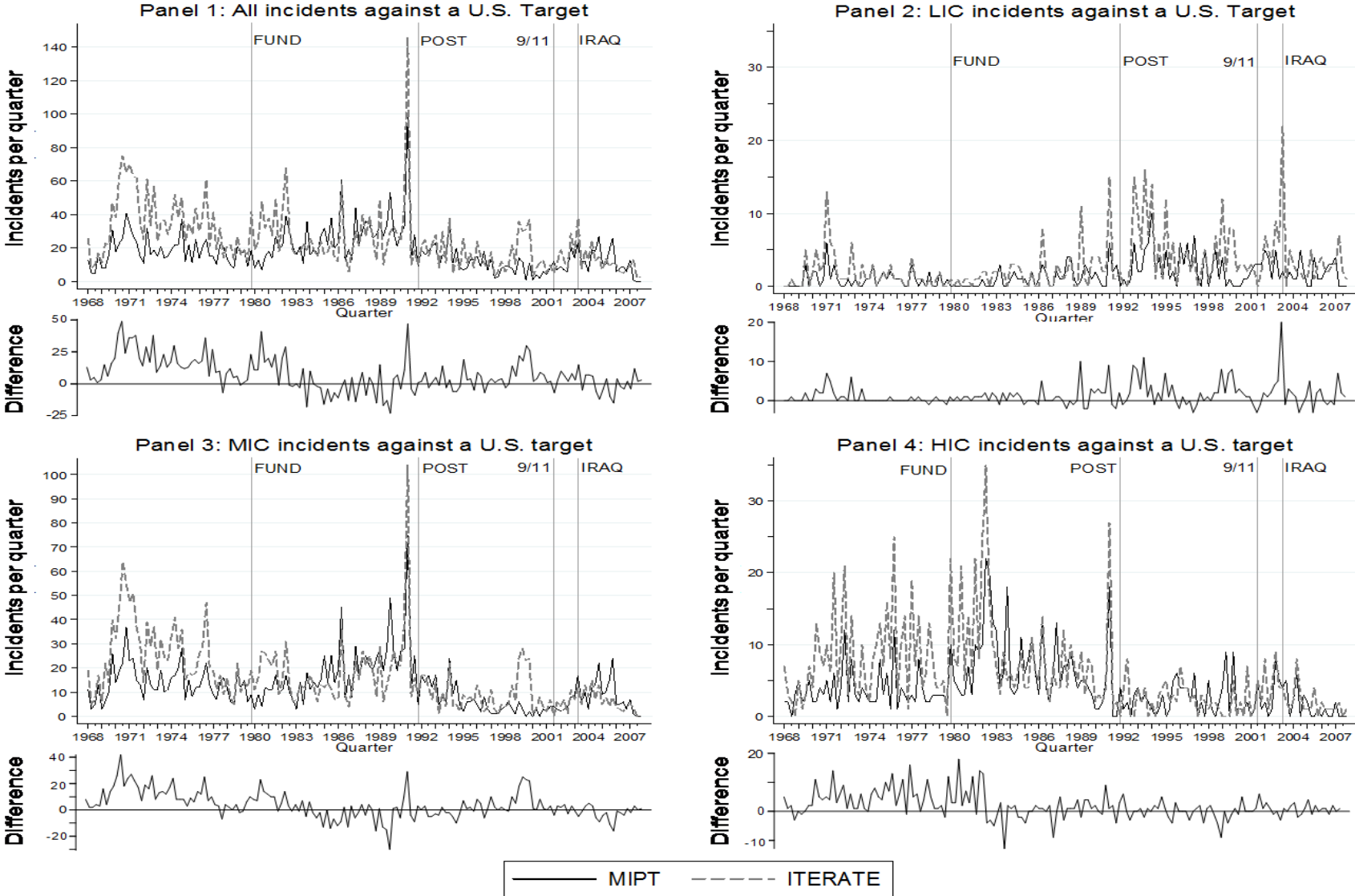


Figure 1.4. OLS estimates and 95% confidence intervals for all incidents and casualty incidents

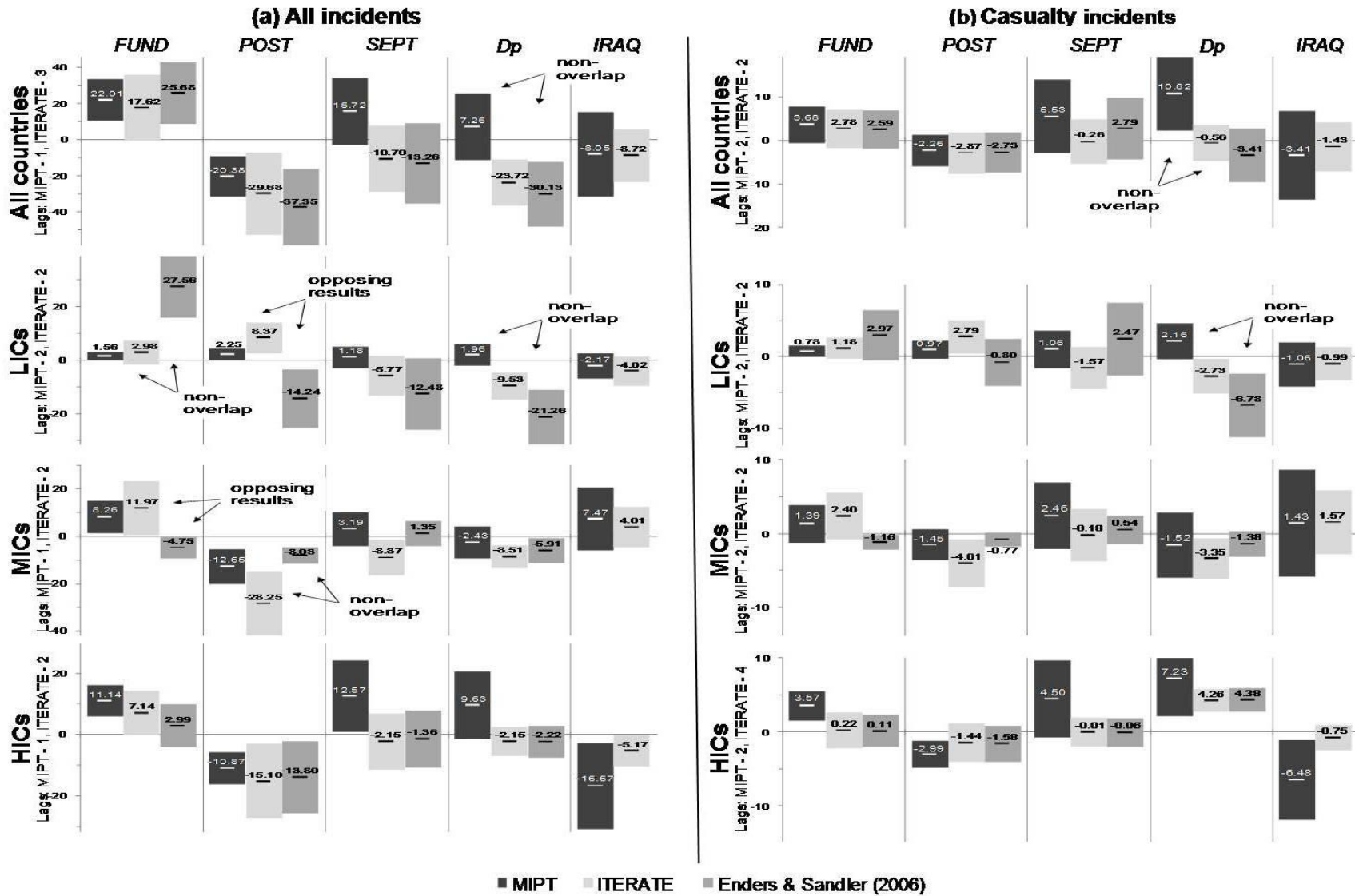
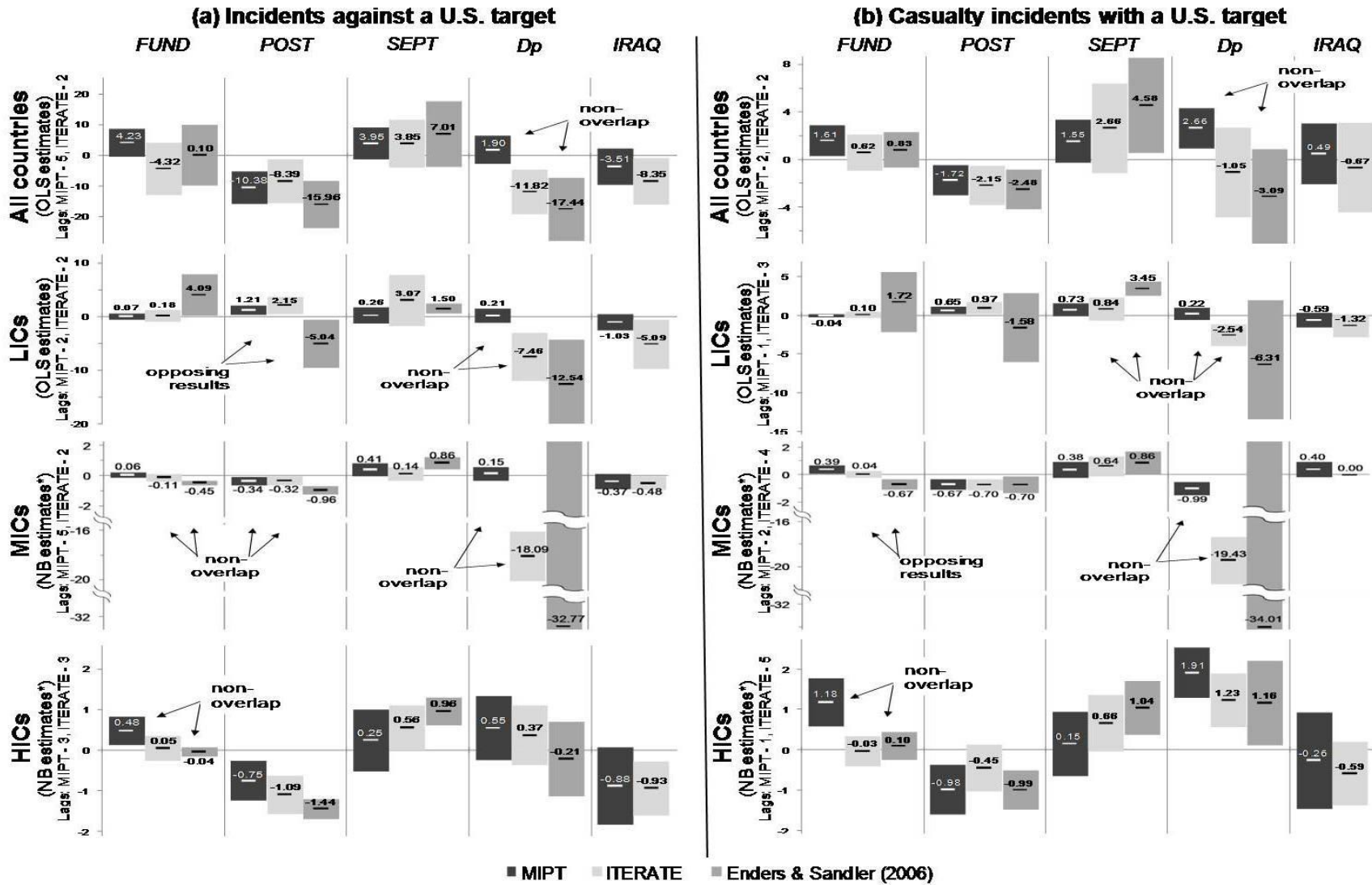
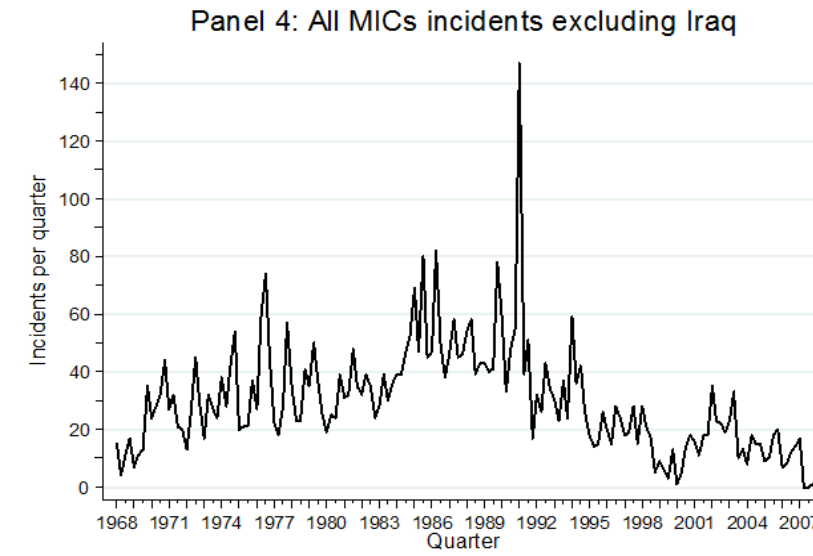
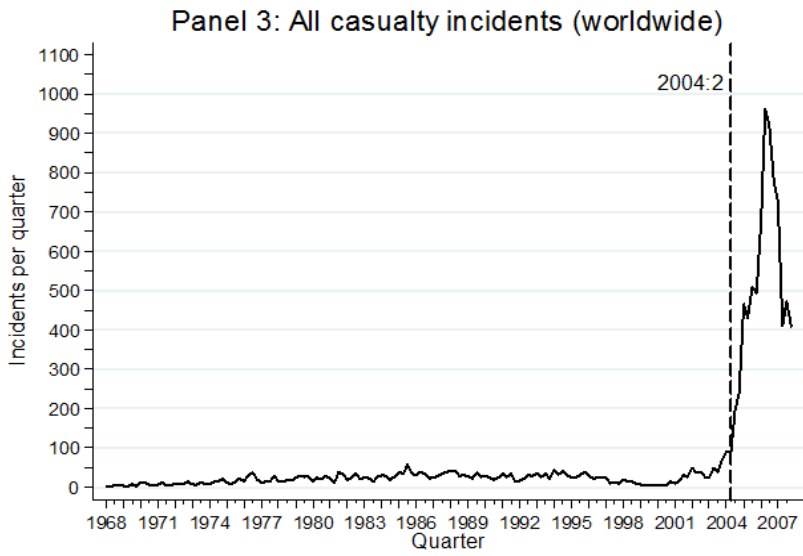
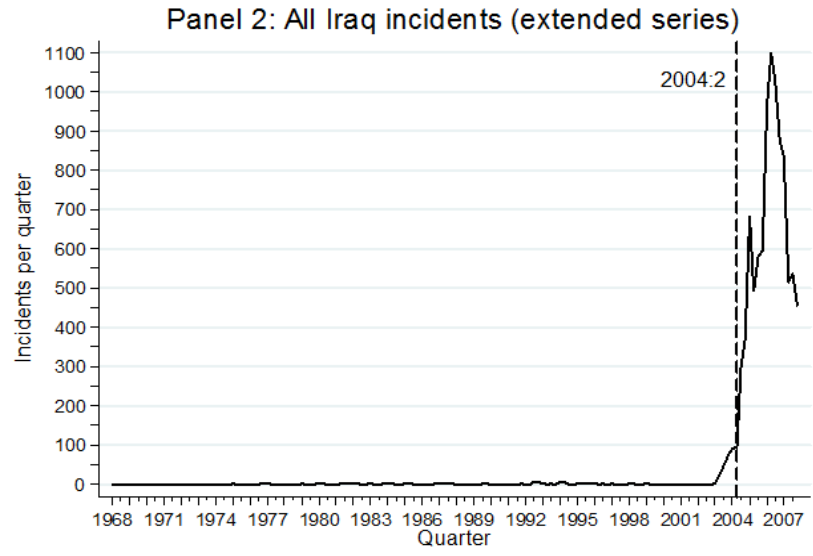
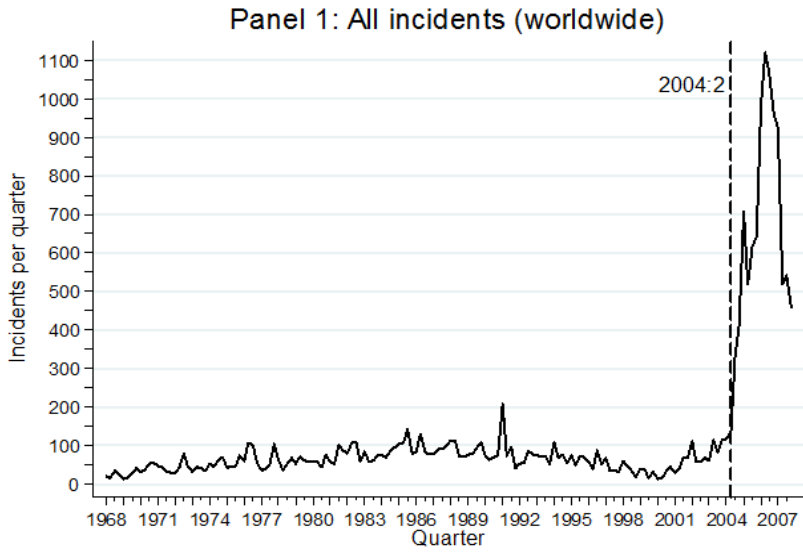


Figure 1.5. Estimates and 95% confidence intervals for incidents involving U.S. targets



* Enders and Sandler (2006) obtain their estimates using a Poisson model

Figure 1.6. Extended terrorism series and estimated break periods



Chapter 2

Fatality Sensitivity in Coalition Countries

A study of British, Polish and Australian Public Opinion on the Iraq War

2.1. Introduction

Within the past several years the war in Iraq, which began on 20 March 2003, has occupied news services and national agendas of many countries. The invasion led by the United States was justified by, what later appeared to be misguided, claims of Iraq's alleged possession of weapons of mass destruction (WMD) and perceived threat of Saddam Hussein's regime to America and her allies. The swift and triumphant invasion had rid the world of a gory dictatorship, however it was soon followed by a bloody insurgency which within seven years claimed lives of over 100,000 civilians (Iraq Body Count 2010) and 4,700 coalition soldiers (iCasualties.org 2010). The Multi-National Force, henceforth MNF, which became responsible for military operations in the country after the initial invasion, included troops from nearly 40 countries and at its peak during the 2007 surge comprised of 176,000 personnel (Lanza 2010). However, only four countries participated directly in the major combat phase, the United States, the United Kingdom, Australia and Poland, and as such were active in Iraq from March 2003. The public opinion in the latter three countries and its reaction to violence in Iraq constitutes the subject of this chapter.

The decision to commit armed forces to war belongs to the most vital decisions any government or nation can make. Military operations require public support, which is particularly important in democracy. It is the citizenry who pays the price of war with their lives, health and taxes, hence, knowledge of factors influencing public opinion is central to providing and sustaining support for government's actions. It gives policy makers indications into what is permissible and what is intolerable from a political point of view. As a result, a study of public opinion regarding armed conflict is important from both academic and political perspective.

Although there is a vast body of literature on attitudes of the American public to the use of military force (e.g. Mueller 1971; Gartner and Segura 1998; Gelpi, Feaver et al. 2006), few studies analyze war-related opinion in other countries. To my best knowledge, there has been no research dedicated to the reactions of public opinion in coalition countries to violence associated with their involvement in external conflicts. In this chapter, I refer to coalition countries as those that are not a core force behind military operations, but nonetheless send their troops to support a combat mission initiated by another state. Consequently, I concentrate on three countries, United Kingdom, Poland and Australia, that committed their troops to the invasion of Iraq under the American command from its very beginning and remained there for subsequent years. Their forces, although only a fraction of the numbers deployed by the United States, were among the largest sent by the MNF members (Blanchard and Dale 2007). Their role was further emphasized by granting them command of two multinational divisions: the South-East to Great Britain and Central-South to Poland. The choice of the countries for the study was also influenced by the availability of opinion polls conducted regularly among those countries' citizenry.

There is a need for a study into determinants of public mood in coalition countries concerning their engagement in armed conflict as the patterns governing opinion here may differ from those typical for coalition leaders. The possible reasons behind dissimilar reactions to events in the theatre of war stem from the very different degree of political and military involvement. Those countries only support the ongoing operations and therefore their responsibility and risks are lesser than those of the coalition leader. Their withdrawal from a combat mission is unlikely to have any pivotal impact on the overall outcome of the war and the consequences of such a move would be mostly limited to a more strained relationship with the United States. Irrespective of the performance of the supporting forces, international condemnation in an event of failure is most likely to concentrate on the coalition leader. This way, even if the Iraq war was lost, the blame would be limited largely to the United States, not other MNF members. Being in such a “comfortable” situation, governments and citizenry of the supporting states may see a bigger divergence between their national interests and the war operations. Not being a super-power, smaller countries are unlikely to feel and act like a “world’s policeman” and their interest in the global politics may be of a narrower scope than that of the United States. For instance, Poland and Australia do not have traditions of large combat missions aimed at conquering remote regions or regime changes. Furthermore, the two countries are not exposed to international terrorism as much as the United States and Great Britain (see MIPT 2008), therefore their gains from toppling a terrorism supporting regime are proportionately smaller. The need for a research into the public opinion of war supporting states is further aggravated by the fact that previous studies characterize conflicts by the patterns of accumulation of U.S. soldier deaths (e.g. Mueller 1971; Gartner and Segura 1998). Because of a smaller size and a different nature of deployment, the pattern of casualty accumulation is likely to be different

among the coalition troops. For instance, the death toll among American soldiers amounted to 2.5 per cent of the country's maximum deployment in the post-invasion period. The corresponding number for the United Kingdom and Poland was approximately 1 per cent, and it was negligible for Australia (Blanchard and Dale 2007; iCasualties.org 2010). This difference is an outcome of the fact that soldiers from the countries in question were likely to participate in less dangerous operations, and Australian troops were kept away from life threatening actions (Lalor 2007).

I employ an error correction model (ECM) to analyze how the war opinion is influenced by combat deaths and a magnitude of terrorism in Iraq. This method offers two considerable advantages over the extant work. First, it tackles the problems of nonstationarity which plague opinion and fatality series. Second, it has a long memory and a shock in one period is allowed to affect time series throughout subsequent periods. It is expected that an increased fatality rate at one period results in a rise of war opposition. Although in subsequent periods the death toll may be much lower, the public may be influenced by the memory of earlier events and unwilling to scale down their opposition to the level suggested by the smaller death rate in the most recent time interval. In other words, an effect of a jump in fatality series on war opinion is likely to take more than one period to die out. This property of ECM is particularly desirable and not present in non-dynamic models used in previous papers (e.g. Mueller 1971; Gartner and Segura 1998; Gelpi, Feaver et al. 2006).

Since governments are chiefly concerned with avoiding political sanctions for their military endeavours, and less with maintaining war support (Klarevas 2002), I use opposition scores as a dependent variable. This way, the obtained results should be of more

use for policy makers. Soldier deaths and deaths in terrorist attacks along with dummies representing selected events are used as explanatory variables. I distinguish between fatalities and casualties. Fatalities refer to soldiers killed in action or individuals slaughtered in terrorist attacks. Casualties are a broader measure and consist of soldiers either killed or injured in action. I expect the public to be sensitive to losses of their national troops and the frequency and severity of terrorist incidents in Iraq. The former represents a direct cost of the war to a nation, while the intensity of terrorism may be considered as a measure of war progress, where more violence signals failing efforts. Such reasoning is in line with the cost-benefit decision making framework, where the public is supposed to consider both sides of the equation before forming their opinion. I do not expect total deaths suffered by all coalition nations to have a significant impact on war opinion. Members of the public are unlikely to base their views on such information because news services do not report it on regular basis. Similarly, I do not expect the public to have a precise knowledge of the number of people killed by terrorists. However, news services provide frequent information on terrorist attacks in Iraq and thus create a perception of the intensity of terrorism.

The empirical analysis returns results consistent with the expectations. However, I confirm a significant negative impact of soldier deaths only for the United Kingdom. The lack of a corresponding effect in Poland should be attributed to a small number of soldier fatalities, which left the opinion dominated by other factors, including terrorism in Iraq. This aspect of sensitivity could not be tested for Australia because only one soldier died in a non-hostile accident during the polling period. The public in all three countries appears to be sensitive to the information on the number of people killed in terrorist attacks, which

confirms the line of reasoning in Chapter 1. The Poles, who were highly antagonistic to the war at its onset, significantly reduced their opposition after the invasion ended in May 2003. This could have been helped by the fact that the country did not incur any human losses during the first two months of the war and the benefit of defeating the brutal dictatorship seemed to have been achieved at a small cost. The British public responded in a similar manner after the capture of Saddam Hussein, which again must have been perceived as a war success. The opposition in both countries sharply increased after the release of the torture pictures from Abu Ghraib. Here however, part of the effect may have come from the Madrid bombings of March 2004, which happened in the same polling period. Surprisingly, I do not find any significant effect of the London bombings of 7 July 2005 on the British war opposition.

The results presented in this study can be interpreted as a policy-relevant guidance for governments considering contribution of troops to a multinational war coalition. In particular, it identifies the channels that affect the war-related views of the citizenry, and therefore should become a focus of policy makers' attention. For example, it confirms that scandals such as torture in Abu Ghraib prison are very costly in terms of public attitude and their effect is difficult to reverse. It also shows that public is responsive to deaths of Iraqis suffered from terrorism. Hence, maintaining war support requires an effective counter-terrorist strategy as a part of the war effort. This implication is important also for the coalition leader, the United States, in whose interest it is to maintain positive war attitudes among the public across coalition countries in order to keep those states committed to the military intervention.

The reminder of this chapter is organized as follows. The next section offers a literature review, which is followed by a short discussion of the rationale provided by the coalition governments to support their involvement in the war. Sections 2.4 and 2.5 present data sources and properties. Sections 2.6 and 2.7 discuss the estimation method and results. Discussion and concluding remarks are offered in Sections 2.8 and 2.9.

2.2. Literature review

As already mentioned, the literature on the subject pays most attention to reactions of the American public to the use of armed forces. In his pioneering work, Mueller (1971) uses log of cumulative soldier deaths to analyze public attitudes to the Korean and Vietnam wars. His main finding is that the support for the war dropped in proportion to the log of cumulative casualties. He concludes that Americans are sensitive to relatively small losses in the early stages of war, but only to large losses in later stages. A study by Gartner and Segura (1998) disagrees with Mueller's findings. They point out that Mueller (1971) does not control for time and therefore his model is unable to account for war weariness (a duration-based opposition). They argue that the level of marginal casualties has a better explanatory power than cumulative casualties when marginal casualties are increasing; when they are decreasing – log of cumulative casualties gives better results.

Numerous studies seek explanation to changes in war support in factors other than accumulating casualties. Jentleson (1998) explains the public support for the use of military force using the principal policy objectives for which the military force is being used. He suggests that the public may be less sensitive to casualties in certain types of military interventions. In his study, Berinsky (2007) considers the “elite cue theory” according to

which opinion is shaped not by events such as cumulative casualties, but by a degree of consensus or divergence in elites' opinions regarding the war. He suggests that when political leaders share their support for the conflict, the public tends to support it too. A lack of consensus brings the polarization effect which is demonstrated by a split in the public opinion. The influences of the principal policy objectives and elite cues are also investigated by Klarevas (2002), who additionally considers the nature of media coverage of a conflict. He concludes that Americans are more likely to support military actions if they are a part of a multilateral operation.

There have been several studies into the determinants of the American public opinion during the recent Iraq war. For instance, Mueller (2005) argues that the drop in the American public support for the Iraq war was faster than during the wars in Vietnam and Korea. He attributes the higher sensitivity to war casualties to the fact that the public perceives the stakes in Iraq as less important than during the former conflicts¹. Gelpi, Feaver and Reifler (2006) analyze the influence of American casualties on the presidential rating. They consider log of cumulative casualties separately for different phases of the conflict and find that the impact of deaths on the presidential approval varies between the stages of the war. Overall, they suggest that casualties are not as important as expectations of success of the military mission. Gelpi et al. (2006) is an early study and covers only the period until November 2004, therefore its results should be taken with caution when

¹ Several explanations to the problem of higher casualty sensitivity in recent years have been suggested. Luttwak (1995) attributes it to the decreasing birth rate. Sapolsky and Shapiro (1996) suggest that casualty intolerance has urged changes in military technology, which consequently have strengthened casualty phobia by cultivating not viable expectations of the possibility of low human cost of conflict. Another likely culprit is the real-time television reporting of military operations. Livingston (1997) argues that vivid pictures and time proximity of reports make deaths more shocking, and therefore increase the degree of public casualty sensitivity. This finding is not fully supported by Aday (2010), who argues that media exert significant influence only in conjunction with elite consensus.

generalizing for the whole duration of the war. There are at least two more problems associated with this study. Since news services tend to report the cumulative death counts from the beginning of the war, it is unreasonable to expect the public to form their opinion for respective phases separately. Furthermore, using presidential ratings is problematic as they are influenced by numerous factors and it is difficult to extract the pure war component (see also Klarevas, Gelpi et al. 2006).

This study is closest to the work of Mueller (1971) and Gartner and Segura (1998) as it identifies human cost of war as a chief determinant of public opinion. However, it uses a more efficient estimation method which deals with problems typical for opinion poll and fatality series. It also allows the public to react to deaths incurred by citizens of the invaded country.

2.3. The build-up to the war

In order to obtain a public mandate for the military intervention, the governments of the three countries had to convince their citizenry to the objectives underlying the invasion. The used rhetoric reflected that of the American administration and emphasized the need to disarm Iraq of WMD, end regime's support for terrorists, and bring freedom to the Iraqi people. The public was assured of legality of military actions, and reminded of Iraq's failure to disarm, and the deception game it had played with UN weapon inspectors for 12 years since the first Gulf war (Blair 2003; Bush 2003; Howard 2003; Kwasniewski 2003).

In Britain, the war objectives fit into Tony Blair's doctrine laid down in Chicago in 1999, which justified military intervention based on values, even without an approval from the UN Security Council. According to him, it is justified to intervene on humanitarian

grounds, even when the intervening country is not directly threatened, because in the interdependent world, self-interest of one nation is “*allied to the interests of others*” (Blair 2004). In the post-9/11 world a special emphasis was put on risks associated with Iraq’s alleged links to terrorist organizations. The politicians were drawing dark visions of WMD falling into hands of terrorists and picturing the invasion of Iraq as a part of the War on Terrorism. President Kwasniewski of Poland recalled the nation’s victims of the 9/11 attacks (Kwasniewski 2003), while Australians were reminded by Prime Minister Howard that they were “*as much targets [of terrorism] as any other Western country and its people*” (Howard 2003). Finally, the public was told of the dire humanitarian conditions under Saddam’s regime, where 60 per cent of the population had been dependent on food aid programmes, malnutrition and diseases had been killing thousands of children every year, and hundreds of thousands had been driven from their homes or murdered. The coalition governments pledged far-going humanitarian and reconstruction efforts in building free Iraq (Blair 2003; Howard 2003; Kwasniewski 2003). The Australian Prime Minister stressed the importance of setting an example to other rogue countries with intentions of developing WMD, and deterring them from supporting terrorist groups. He also gave a close security alliance with the United States as a reason and highlighted America’s vital role in maintaining Australia’s long-term security (Howard 2003).

Similar reasoning was echoed in Poland, where the government was determined to support the United States even at the price of straining relations with Germany and France, the sponsors of Poland’s accession to NATO and the European Union (Economist 2003). Polish leaders drew a picture of benefits flowing for the country from the military involvement. The closer relations with the United States were expected to increase Poland’s

importance in international politics and strengthen Polish position in relations with the EU and Russia. Moreover, the government sources estimated that the economy could gain 2 to 3 billion dollars from potential business contracts within several years, which would create over 300,000 jobs (Nowakowski 2003). In spite of a very deep pro-American sentiment in the society, the ally rhetoric and a vision of economic benefits, the Polish government did not manage to secure majority's support for the involvement in the invasion. Effectively, the promise of benefits that have never realized could have added up to disillusionment and war weariness, which later might have translated into falling support for the war.

This section briefly summarized the arguments used by the three governments to justify the armed intervention in Iraq. The following section addresses data sources and describes public opinion at the onset of the invasion.

2.4. Data

The data is drawn from several sources. The information on the opposition to the Iraq war was collected from YouGov (2007), CBOS (2007) and Roy Morgan (2003-2006) for the United Kingdom, Poland and Australia, respectively. The British were asked the following question: "*Do you think the United States and Britain are/were right or wrong to take military action against Iraq?*", forty times between 18 March 2003 and 7 June 2007 (see Panel 1 of Figure 2.1). The survey was conducted with varying frequency on around 2,000 people. In 2003 and 2004, when the Iraq war dominated public debate, YouGov carried out 22 and 11 polls, respectively. In 2005 the number fell to three polls, and in 2006 and 2007 there were only two surveys each year. Until May 2004 the majority of respondents saw the military action against Iraq as a right thing. As the invasion began, 53 per cent were in

favour of the use of military force and 39 per cent were against it. The support for the invasion reached its maximum of 66 per cent on 10 April 2003. The same survey showed the lowest opposition of 29 per cent. The gap between the two fractions had been narrowing over following twelve months. The poll conducted after the release of pictures of torture on Iraqi prisoners in late April 2004 showed that, for the first time, the majority did not support the war. The fraction of those who perceived the conflict as wrong reached 60 per cent in April 2007, at the same time the “right” answer was given by 26 per cent.

The Australian public was asked less frequently about their opinion on the involvement in the Iraq war. The most consistent survey was conducted by Roy Morgan between 19 March 2003 and 20 April 2006, typically on a sample of over 500 respondents. The question: “*Now thinking about Iraq — In your opinion should Australia have a military presence in Iraq?*” was put forward ten times (see Panel 3 of Figure 2.1). The Australian opinion remained split fairly in the middle over the polling period, with differences between *yes*’s and *no*’s oscillating between 2 and 5 per cent. The situation changed in 2006, when the opposition of 59 per cent exceeded the number of supporters by 24 per cent. Unfortunately, there are no polls available that could reflect the effects of revelations suggesting that the Australian government had sent troops to Iraq under the condition that its wheat trade with the country was protected, and in order to strengthen its commercial position in dealings with the United States (see Baker 2006; BBC News 2007).

Poland was the only country of the three, where the opponents of sending troops to Iraq were always in majority. CBOS conducted 31 surveys in which a typical sample of around 1,000 adults was asked “*Do you support the participation of Polish soldiers in the*

*mission in Iraq?*². The question was a part of regular monthly polls carried out between March 2003 and March 2005. Thereafter it was asked two more times in 2005, once in 2006 and four times in 2007 (see Panel 2 of Figure 2.1). The initial opposition of 73 per cent fell down to 45 per cent in May 2003, or shortly after the end of the invasion. This is also the time, when the support for sending troops to Iraq reached its peak of 45 per cent. As the insurgency had begun and sectarian violence engulfed Iraq, Poles grew less comfortable with their country's involvement in the military operations. The opposition bounced back to the 70 per cent level in the second quarter of 2004 and exceeded 80 per cent in 2007. Notably, neither the Polish nor the Australian polls did show the "rally-around-the-flag" effect described by Mueller (1971) and Gelpi, Feaver et al. (2006).

Data for the explanatory variables is taken chiefly from two sources: iCasualties.org (2010) and the MIPT Terrorism Knowledge Base³ (2008). The latter draws from open sources, such as news services, and provides information on acts of terrorism defined as violence for political purposes by sub-national actors, designed to induce an atmosphere of fear and anxiety in order to influence behaviour of an audience beyond that of the immediate victims (MIPT 2002). MIPT recorded 9,656 terrorist incidents (593 classified as international and 9,063 as domestic) that took place in Iraq between 20 March 2003 and 31 December 2007, and caused 26,147 fatalities⁴. This number represents mostly civilian deaths as the database concentrates on non-combatant targets; only 0.6 per cent of incidents

² Original wording of the question was: "*Czy popiera Pan(i) udział żołnierzy polskich w operacji w Iraku, czy też nie?*"

³ The MIPT Terrorism Knowledge Base (TKB) was a joint project of the Oklahoma City National Memorial Institute for the Prevention of Terrorism and the RAND Corporation. TKB ceased its operations on 31 March 2008. The RAND Corporation still keeps on collecting new data, but this is no longer available through the MIPT website.

⁴ Observations on deaths are missing for 685 attacks.

recorded in Iraq involved military targets. The incidence of terrorism in Iraq seems to be particularly large when compared to the overall number of 10,237 international terrorist attacks recorded globally within forty years to 2007. I use the number of fatalities as an explanatory variable because, although it shows the same effects as the number of attacks, it provides better goodness of fit of my model. This suggests that public does not react only to the number of attacks, but is also sensitive to their severity.

iCasualties.org, also known as the Iraq Coalition Casualty Count, is an independent online service containing information on MNF fatalities in the Iraq war. The website provides such details as the date of an incident, victim's country of origin, rank, age, a name and location of military unit, and a cause and place of death. This information is gathered from news reports and press releases issued by the U.S. Department of Defense, the U.S. Central Command, the MNF, and the British Ministry of Defence. As of 31 August 2010, the database listed 4,734 fatalities with a vast majority of 4,416 incurred by the United States. The United Kingdom, Poland and Australia lost 179, 23 and 2 servicemen, respectively. The death toll in 2003 amounted to 580 troops, including 53 British and 2 Polish combatants. During the four following years, MNF was losing around 900 soldiers each year, followed by a steep decline to 322 and 150 fatalities in 2008 and 2009, respectively. The period from 2004 to 2007 brought on average 30 fatalities a year among the British troops and 5 among the Polish. Australia incurred two casualties in non-hostile accidents, one in 2005 and another one in 2006.

The analysis of the impact of soldier casualties on public opinion is complemented by the use of the data on numbers of British and Australian troops wounded in Iraq. The information on the former has been obtained from the British Ministry of Defence (DASA

2009) under the Freedom of Information Act 2000. In particular, I use the monthly total number of soldiers classified as Very Seriously Injured (VSI) and Seriously Injured (SI). There were 222 cases falling into these two categories in total. In addition, I have obtained a monthly breakdown figures on the number of Australian Defence Force (ADF) soldiers wounded in action in Iraq between 2003 and 2010. The information was provided upon request by the Australian Minister for Veterans' Affairs and Defence Personnel (Griffin 2010). In total, 28 ADF soldiers suffered injuries while performing their action duties, with the highest number of 13 wounded in 2005. I combine this information with the data on soldier fatalities from the iCasualties dataset, and generate *UK casualty* and *Australia casualty* variables, which provide an additional measure of personnel losses incurred by the two forces. Unfortunately, in spite of numerous attempts, I have not managed to obtain analogous information from either Poland's government or respective military forces. The recent revelations by the national press suggested that neither of the mentioned institutions had been recording such information (Górka 2010).

2.5. Graphical analysis

Figure 2.1 and Figure 2.2 provide a graphical comparison of the war opposition in the three countries with soldier deaths and fatalities in terrorist attacks that took place in Iraq. The plots on the left-hand side present log of cumulative fatalities, and those on right-hand side show marginal deaths, which are calculated as a number of fatalities within 120 days preceding a poll date. For instance, the observation on 1 May 2005 is a number of fatalities that occurred between that day and 1 January 2005⁵. I show the number of soldiers

⁵ The choice of 120 days is dictated by a number of reasons. First, the series of marginal fatalities obtained for 30, 60, 90 and 180 days are highly correlated, with correlation coefficients between 0.7 and 0.98.

wounded in action for Australia, because the country lost only one serviceman in a non-hostile accident within the period covered by the available surveys (marked in Figure 2.1 Panel 3b).

The swift invasion in the first weeks of the conflict was largely regarded as a success, which seems the most likely explanation behind the drop in opposition numbers in Poland and Great Britain. Thereafter, as Iraq immersed in sectarian violence and the insurgency was gaining strength, the public enthusiasm for the war diminished, which is reflected in the rising share of those who disapproved of the military operations. The insurgency was associated with an increase in fatalities incurred by the coalition countries, depicted as log of cumulative soldier deaths and marginal fatalities in Figure 2.1. The British death toll swelled already during the invasion period, which left Poland's forces unharmed. Great Britain suffered the highest losses and the fastest accumulation of fatalities among the three countries which, given the size of the British contribution to the war, is not surprising. The Poles started paying with their lives later that year, and incurred highest losses in 2004 and 2005. Australia did not have any wounded-in-action accidents until October 2004, and 12 out of 28 cases took place in January 2005.

Judging by Figure 2.1, British opinion seems to show signs of the “rally-around-the-flag” effect. Although the casualties are rising rapidly during the first weeks of the invasion, the opposition to the war appears relatively small (Panel 1). The lack of human losses on the Polish and Australian sides prevent from drawing a similar conclusion for these countries. The plots of the log of cumulative fatalities suggest that it may have a

Second, the series based on 120-day intervals exhibit the strongest cointegration with the war opposition series. Third, it makes my analysis comparable with other work on casualties and public opinion (see Gartner, Segura 1998).

potential to explain changes in the war-related public opinion. This is particularly true for the periods of steady rise in opposition after summer 2004. However, the possible relationship between log fatalities and war opposition is less clear in the earlier periods, when the opinion is more volatile and accumulation of soldier deaths more rapid. The marginal fatalities, depicted on the right-hand side of Figure 2.1, may explain declines in opposition better than the log of cumulative casualties. This is due to the fact that, unlike cumulative values, marginal casualties are not monotonic and can fluctuate with opinion⁶. The relationship between the war opinion and marginal casualties seems to be weaker in the later months, when fatalities stay relatively low and opposition gradually increases. Because of very few data points available, it is impossible to draw permitted conclusions from the graphical analysis of the Australian series. The most noticeable point in Panel 3 is an increase in the war opposition following the first death among ADF soldiers. Nonetheless, it is hard to attribute that change to this fatal event as it was a non-hostile accident. It is likely that some other factors, beyond the scope of this study, contributed to changes in Australian opinion.

The three coalition countries suffered only a fraction of deaths incurred by the United States, whose public opinion constitutes a focus of most studies (e.g. Mueller 2005; Gelpi, Feaver et al. 2006). Therefore, I come up with another measure of violence and instability in Iraq: a number of people killed in terrorist attacks. I use this variable to test the hypothesis that public in the coalition countries is sensitive to occurrence and intensity of terrorism in Iraq (as suggested in Chapter 1). Since soldier deaths are relatively rare,

⁶ See Gartner and Segura (1998) for a comprehensive discussion of advantages of marginal casualties over logged casualties.

frequent and gory terrorist attacks are likely to occupy news services more often and as such may affect public opinion to a greater extent. Figure 2.2 demonstrates logged cumulative and marginal deaths from terrorist attacks in Iraq. As before, logged fatalities seem to reflect the overall direction of changes in public opinion fairly well. However, due to its monotonic nature, the variable fails to explain drops in the opposition, such as the one in the United Kingdom in the last quarter of 2003. Marginal fatalities (for 120 days preceding a poll date) also appear to reflect the rise in opposition, but additionally they seem to mirror downward changes. For instance, the decline in the war unpopularity in Britain in 2007 is mirrored by a drop in marginal fatalities, which appears to be particularly suggestive. Even changes in Australia's public opinion seem to somehow follow marginal deaths in terrorist attacks.

The graphical analysis does not provide an answer to whether logged or marginal deaths are a better predictor of public opinion, or whether they should be used in conjunction as proposed by Gartner and Segura (1998). The problem with logged cumulative fatalities is that they are always increasing in time. Although more capable of capturing shocks and temporary changes in the intensity of the conflict, the marginal fatalities may underperform in capturing long time patterns of the war. It is also likely that some exogenous events, for instance the terrorist atrocities in Madrid and London, the release of pictures of torture on Iraqi prisoners in 2004, or an election calendar, could exert a significant impact on public attitudes towards the war. The following section provides a more formal empirical set up for analyzing the effects of above variables on war-related public opinion in coalition countries.

2.6. Empirical approach

Many of the previous studies on casualty sensitivity seem to ignore the fact that public support as well as casualty series are most likely to be nonstationary. This is true for studies by Mueller (1971), Gartner and Segura (1998), Jentleson (1998), and Norpoth (1987). Although Gelpi et al. (2006) acknowledge that they have trend stationary series, they fail to address the problem sufficiently. Their Prais – Winsten correction solves the problem of serial correlation in residuals, however, it does not prove that the series are indeed cointegrated or that there is causality between them. A failure to account for the nonstationary nature of time series may result in spurious regressions, i.e. misleading standard errors may result in a model that shows a relationship that does not exist (Engle and Granger 1987). A remedy to this problem is an error correction model (ECM), which is based on a notion that a true relationship will be preserved by first differencing, whereas spurious one will not survive the process (Greene 2003). The model's dynamic nature captures short-term shifts and long-term trends of public opinion in response to changes in explanatory variables, provided that variables cointegrate. In my study, I use a single-equation ECM, an approach previously applied in analysis of public opinion in Clarke et al. (2000), Keele (2007) and Jennings (2009).

The model relates current changes in the war opposition to the contemporaneous changes in the magnitude of violence (an effect captured by β_2), the extent to which the series were outside of their equilibrium relationship in the previous period (captured by coefficients on lagged variables), and exogenous events. It can be written as follows:

$$\begin{aligned} \Delta OPPOSITION_t = & \alpha_0 + \beta_1 OPPOSITION_{t-1} + \beta_2 \Delta FATAL_t \\ & + \beta_3 FATAL_{t-1} + \beta_4 EVENTS + \varepsilon_t, \end{aligned} \quad (2.1)$$

where *FATAL* is one of the following measures of violence: fatalities among nation's soldiers, all MNF deaths, or killed in terrorist attacks. *EVENTS* includes the end of the invasion of Iraq (1 May 2003), the capture of Saddam Hussein (13 December 2003), the terrorist attack in Madrid (11 March 2004), and the revelation of widespread prisoner abuse at Abu Ghraib prison (April 2004)⁷. α_0 and ε_t are a constant and an error term, respectively.

An advantage of using ECM for estimation of unit root processes is ability to capture the series' permanent memory, i.e. allowing the public opinion to be permanently affected by the shocks in explanatory variables. This is in contrast to stationary processes in which shocks only briefly affect the series in question and any disruptions are followed by a quick return to the pre-shock levels. Thus, by preserving long-run information, ECM establishes equilibrating relationship between series, which would be lost if one brought time series to stationarity through simple differencing (Boef de and Granato 1999). This characteristic of ECM is particularly valuable as I expect the impact of violence occurring in period t on the public opinion to be dispersed across several following time periods. One can imagine a situation in which increased fatality rate at period t causes the war opposition to soar. Although the fatalities may be considerably lower in following periods, the public may be affected by the memory of the earlier death toll and unwilling to scale down their opposition to the level implied by the smaller death rate in the most recent time interval.

⁷ I also test for an impact of the Iraqi elections in 2005 and the London bombings of 7 July 2005. Nevertheless, estimates of these effects are never significant and therefore are not presented.

Panels 1b and 2b of Figure 2.1, where large declines in marginal deaths are not followed by immediate downward adjustments of opposition, suggest that such a scenario is plausible and a surge in fatalities may have a long lasting effect on the opposition series.

The rate of re-equilibration in response to shocks to the long-run equilibrium is given by the error-correction parameter, β_1 . I expect it to be negative because a positive value would be reinforcing the disequilibrium instead of correcting it. As Jennings (2009) shows, a value of β_1 between 0 and -1 indicates that equilibrium shocks are corrected at a gradual rate and the dynamic effect eventually dies out. If β_1 falls between -1 and -2, then the error correction oscillates between positive and negative values but diminishes and tends towards zero over time. This results in a process, where in one period public opinion overreacts in response to violence in Iraq, but then it under-corrects in the following period, eventually returning to its long-run equilibrium. This overreaction may signal that the public over-weighs new information. Finally, if β_1 is smaller than -2, the correction process still oscillates between positive and negative values, but this time it is exploding, i.e. the public opinion becomes increasingly detached from the events in Iraq. When analyzing the estimation results, one should keep in mind that the poll data used in this study is unevenly spaced, which raises questions about the interpretation of the error-correction term. Nevertheless, this should not affect validity of coefficients on the remaining exogenous variables.

The estimation procedure involves the following steps. First, I apply the Augmented Dickey-Fuller and Phillips-Perron unit root tests to establish whether the opposition and fatality series are of the same level of integration. Once I confirm that the series are unit root processes, I run cointegrating regressions and test whether obtained residuals are

stationary. Having confirmed that the series are cointegrated, I use ordinary least squares (OLS) to estimate Equation 2.1 (see Engle and Granger 1987; Boef de and Granato 1999). Finally, I use a host of diagnostics to test goodness of fit of estimated models.

2.7. Results

Following the insights from the data section, I cannot rule out that both the log of cumulative fatalities and marginal fatalities may have explanatory power for the changes in the war opposition. I begin the discussion from the results based on the former measure, which appears to give better fit of the model than marginal fatalities. In addition, I consider the hypothesis proposed by Gartner and Segura (1998) that marginal casualties explain changes in opposition during periods of conflict intensification, but cumulative casualties have a greater explanatory power during conflict de-escalation. However, after arranging explanatory variables in the way outlined by the two authors, I obtain a poor fit for the data, with discouraging model diagnostics, and significant coefficients only for deaths in terrorist attacks. Due to the poor performance of such a model, I do not show its results in the remainder of this chapter.

Table 2.1 presents results of estimating Equation 2.1, where *FATAL* is measured as a log of cumulative fatalities of a specific type and the dependent variable, *OPPOSITION*, is measured in the 0 – 100 point metric scale. The “National fatalities” variable contains deaths incurred by either British or Polish troops. Model diagnostics displayed in the bottom of Table 2.1 indicate that all models but one offer reasonable fit to the data. Model 6 suffers from heteroskedasticity (Breusch-Pagan $\chi^2 = 7.97$), which can be attributed to the lack of explanatory power of the independent variable, cumulative Polish fatalities.

Obtained coefficients behave as anticipated. The error-correction parameter ($OPPOSITION_{t-1}$) in models 1 – 3, 5 and 8 suggest that shocks to the British and Polish opposition inflicted by fatalities in Iraq are gradually corrected and dissipate over time. However, as mentioned in the previous section, the interpretation of this coefficient is problematic due to uneven spacing of the poll data. Interestingly, in some of the models the parameter is close to -1, which actually suggests a static model.

Assuming that the estimates of the error correction parameter are correct and interpretable, a conventional analysis would indicate that shocks in model 5 are corrected at a rate of 98 per cent. This means that only 2 per cent of an effect remains after one period and 0.04 per cent after two periods. Thus, although the public does not forget past fatalities when forming opinion, their effect dies out relatively fast. In four models, mostly on Poland's side of Table 2.1, the error correction parameter is lesser than -1, suggesting hypersensitive nature of public opinion to fatalities. Model 8 explains the highest proportion of variability in the Polish series and appears to provide the best fit. It suggests that shocks to long-run equilibrium between the opposition and fatalities in terrorist attacks are corrected at a rate of 104 per cent. Thus, the Polish public “overreacts” to the news of fatalities by 4 per cent within the first period. This is then corrected over ensuing periods, with a 0.16 per cent correction after two periods, a negligible overcorrection after three years, and eventually reaching the long-run equilibrium state. As models 2-3 and 7-8 indicate, public in both countries respond to increases in MNF soldier fatalities and terrorism intensity in Iraq, however, the Poles seem to be more sensitive to incoming information. This could be caused by the fact that never before had Poland contributed to a military mission abroad on such a scale, and the public could be paying more attention to

this novelty, seeing news of victims as more sensational than people in war-experienced Britain. Similarly, Poles' long-run hypersensitivity to the number of terrorism victims may be influenced by the fact that Poland has no experience of international terrorism and going to Iraq was perceived by many as an invitation for Islamic extremists to launch attacks in the country that prides itself for being terrorism-free. According to polls conducted between June 2003 and October 2007 (CBOS 2007), on average 75 per cent of respondents deemed that due to its involvement in Iraq, Poland would become a target of such attacks. In October 2004, when 82 per cent of Poles feared terrorist attacks, the British public seemed a little bit less concerned. "Only" 60 per cent were anxious about an increased threat from global terrorism and 56 per cent felt less safe as a result of the war (YouGov 2004). Thriving terrorism in Iraq seemed likely to contribute to those fears and consequently increase the war opposition.

Model 1 implies that increases in cumulative British soldier deaths have a significant contemporaneous effect on the public, with one per cent increase in fatalities being followed by a 0.16 per cent rise in war opposition ($\beta_2 = 15.94$). A positive lagged coefficient confirms that an increase in fatalities in current period will have an effect on opposition over subsequent periods. A long-run multiplier of 10.74, shown in Table 2.2, informs that the total short- and long-run effect of a one per cent increase in fatalities is a boost of 0.1 per cent in war opposition. Although these values may seem small at first, they translate into substantial fatality sensitivity. For example, a change from 10 to 20 fatalities is associated with a 10 per cent increase in war opposition. In the next step, I test whether deaths incurred by all MNF nations or fatalities from terrorist attacks could have impact on the war opposition in the United Kingdom. Models 2 and 3 give an affirmative answer to

that question and show that increases in either cumulative measure of violence could contribute to a rise in opposition. Since introducing the three violence variables sequentially produces significant coefficients, I enter them simultaneously in model 4. In order to avoid double counting of British deaths, they are excluded from “All fatalities”. Although British soldier deaths and terrorism preserve their significance (lagged national fatalities and differenced terrorism are significant at 10 per cent confidence level), the non-British MNF fatalities lose their explanatory power. That is in line with the expectation that public does not base their opinion on total coalition fatalities as this information is not readily available in daily media. Thus, while the variable captures some cost of the war (through high correlation with national fatalities), the two other series reflect public sensitivity better. Finally, model 5 confirms the significance of the short- and long-run impact of terrorist violence on the war-related opinion in the United Kingdom. However, removing “All fatalities” from the model reduced the influence of British fatalities to short-run effect, which now is significant only at 10 per cent confidence level. These results are largely reproduced when I use logged cumulative British casualties (soldiers killed plus wounded) as a measure of violence (see Table 2.4). In fact, I cannot reject the hypothesis of coefficients equality across the two specifications at any conventional significance level.

Models 6 – 8 offer a sequential introduction of the violence variables and their impact on the Polish war opposition. One cannot infer about effects of fatalities among Polish soldiers, as its coefficients never reach significant levels. Nevertheless, it does not mean that the Polish opinion is insensitive to losses among the nation’s troops. The model might be not picking up any effects because deaths among Polish soldiers are relatively few (23 over a five year period). The regressions return positive long-run effects on opposition

caused by changes in series depicting cumulative deaths among all MNF troops and cumulative fatalities in terrorist incidents. Total effects given by the long-run multipliers in Table 2.2 suggest that a one per cent increase in one of these series leads to a boost in war opposition by approximately 0.08 and 0.03 per cent, respectively. Including all measures of violence in multivariate regressions returns no significant coefficients. Model 10 limits the hypothesized effects to terrorism and Polish fatalities. As before, the latter variable is insignificant, but the model confirms the long lasting influence of terrorism and additionally brings its short-run effect to significance.

Table 2.1 provides also estimates of changes in war opposition induced by selected events. The first of them, the end of the invasion of Iraq in early May 2003, coincided with a significant reduction in opposition (and a rise in support, CBOS 2007) in Poland. The rapid defeat of the Iraqi regime was perceived as a major success and the country did not lose any of its troops during that phase. This seems to explain the 26 per cent drop in the opposition numbers. Similarly, the capture of Saddam Hussein in December 2003, another success of the military operations, reduced the British opposition by approximately 5 per cent, and had less evident impact in Poland. All models in Table 2.1 confirm significance of the “Torture / March 11” variable, which encompasses effects of the terrorist attack in Madrid in March 2004 and the release of Abu Ghraib torture pictures. The temporal proximity of those two events and frequency with which polls were being conducted prevent me from distinguishing between their individual effects. The growth in opposition could be attributed to one or both of the following incidents. First, the evidence of soldiers’ misconduct may have increased the dislike of the war among those members of the public who believed that the war was about improving Iraqi lives and freeing them from brutal

dictatorship. Second, the March 11 bombings, which were perceived to be a result of Spain's involvement in Iraq, may have increased the fears among the British and Polish public of being punished for the countries' war participation with similar attacks. Thus, one cannot rule out that the March 11 attack boosted opposition by increasing the number of those demanding withdrawal from Iraq.

Marginal fatalities

Table 2.3 presents estimates based on marginal fatalities representing the number of deaths of a given type that occurred within 120 days prior to a poll date. Models 1 – 6 bear out the sizeable impact of the intensity of terrorism in Iraq on British and Polish opinion. Nonetheless, they fail to confirm any effects caused by soldier fatalities. It is in line with Mueller's (2005) argument that only cumulative casualties matter, because media report deaths as totals since the beginning of the war. Hence, the public may not be aware how many troops were killed within a 120-day window. Similarly, I do not expect the public to know how many people died in terrorist incidents. However, my argument is that frequent and severe attacks influence war-time opinion through their regular and nearly every-day appearance in news reports (see also Lee 2011). Over the analyzed polling period, Iraq was a stage to an average of six terrorist incidents a day, which claimed 15 lives. They were bound to make a more frequent news appearance than deaths of soldiers, which were happening at a rate of one in 10 and 75 days for the British and Polish forces, respectively. In addition, since MIPT records are based on open sources, such as international news services, the database should somewhat reflect media content reaching the public. Thus, the

intensity of terrorism could be a signal of war progress which dominates other cost measures when soldier fatalities are relatively rare⁸.

Analysis of the Australian war opposition is hindered by the small number of data points - the most frequent and consistent poll was conducted only ten times. Studies of wartime opinion are often plagued by small sample sizes. For instance, Mueller (1971) and Gartner and Segura (1998) base their consideration on 25 and 26 observations, while Larson (1996) uses a sample as small as three. Although I am aware of the dangers of inference from such a small sample, I try to fit my error correction model to the Australian data. Proceeding as before, I fail to establish cointegrating relationships between war opposition and either MNF fatalities or Australian casualties, which is not surprising after the inspection of plots in Figure 2.1. However, I cannot rule out a relationship between public opinion and terrorism. The coefficients obtained by using marginal deaths in terrorist attacks are shown in model 7 of Table 2.3⁹. The estimates add to the evidence of a significant long-run impact of terrorism intensity on opinion in the coalition countries. I do not include event variables in model 7 as their meaning would be difficult to interpret accurately due to low frequency of polling. Furthermore, including more than one intervention variable with so few observations exacerbates the risk of multicollinearity.

In summary, using marginal fatalities supports the findings of the effect that terrorism in Iraq has on war opposition in the coalition countries. The failure to find a

⁸ This argument may not hold for the coalition leader, the United States. The American public is more likely to be influenced by their troop losses, which were happening at a rate of 2 a day. In this case, frequent reports of soldier deaths are likely to perform better as a predictor of war opposition, as argued by Mueller (1971, 2005).

⁹ The log specification also detects a long-run effect of terrorism on war opposition in Australia. However, such a model suffers from residual non-normality.

relationship between soldier fatalities and the Australian public opinion should not be interpreted as a lack of casualty sensitivity. It ought to be attributed to the weaknesses of available data and very low casualty rates among Australian soldiers, which make testing the casualty sensitivity hypothesis impossible.

2.8. Discussion

The results presented in the earlier section offer a number of implications. First, in the absence of frequent soldier fatalities, which constitute the most obvious cost of armed conflict to a nation, the public is likely to respond to perceived successfulness of a mission measured by the ability or disability to bring peace and stability to a troubled nation. Since the Iraq war was framed as a part of the war on terror, swelling numbers of terrorist incidents and fatalities may serve as an indicator that the coalition efforts are failing. In addition, some members of public may have been convinced that attacks are a direct result of the MNF presence in Iraq and therefore, their support or ambivalence to the war was turned into opposition. Furthermore, mounting terrorist casualties may be interpreted as a signal that the cost of achieving war objectives is too high in terms of Iraqi lives. All this leads to a conclusion that the public is sensitive not only to their own fatalities but also to deaths of Iraqis. This finding somewhat differs from Mueller's (2005) opinion about the American public, which is expected to be responsive only to deaths of U.S. soldiers.

Second, the public seems to be forming opinion in a consistent and rational way, which requires a cost-benefit analysis of the likely war outcome. This notion has been affirmed in Gartner and Segura (1998) and Gelpi, Feaver et al. (2006), but rejected by Berinsky (2007), who pointed out that the public had too little information to make

complex cost-benefit calculations. Nevertheless, it is possible that such an analysis is not based on precise knowledge of costs and combat situation, but rather on public's perception of those. Relatively low losses associated with the invasion and its high perceived success caused the opposition to deteriorate. This drop may have been helped by people's desire to be seen as supporting "our troops", and favourable media accounts. According to Lewis (2004), nearly two out of three news reports showed coalition troops being welcomed by Iraqi people. At the same time they avoided showing graphic images of death and destruction, helping public to overlook the costs. The gap between perceived expected costs and benefits was further tipped in favour of the latter by politicians' attempts to portray the war as a move to pre-empt future aggression and terrorist attacks against the Western homelands and interests. Nonetheless, perceived benefits were soon readjusted in response to evaporation of the main reason for the war, WMD. Consequently, the campaign became more of a humanitarian venture and less of an endeavour to defend coalition countries' interests. When the costs started mounting and the vision of success became diluted by escalating insurgency, public opposition started rising. This tendency may have been reinforced by episodes of soldier misconduct, for instance in Abu Ghraib, which on one hand contributed to the cost side of equation by compromising the Western values and increasing the risk of retaliatory attacks, and on the other may have made the public question the gains of freedom and democracy that Iraqis were supposed to enjoy. Overall, the benefit side have been depreciating throughout the entire military campaign because the citizenry of the supporting states have been seeing a growing divergence between the war and their national interests.

Third, the citizenry in the coalition countries could feel less limited in joining war opposition than their American counterparts because of a wider range of alternatives. A withdrawal of a coalition member would not mean that the war was lost or that Iraq would immerse in even greater violence. Most likely, the United States would keep the situation under control. If not, a failure could still be largely blamed on the United States. A penalty for the “defector” would be limited mostly to strained relations with America and uncertainty of future defence alliances, which at the time may have been difficult to assess, and consequently seem a low price to pay for bringing troops home. A withdrawal of the coalition leader would be associated with very different and much graver consequences, including destabilization of Iraq and a loss of the superpower’s credibility. Additionally, America’s premature exit from Iraq would energize Islamist militants, who would see it as a victory even greater than the expulsion of the Soviet Union from Afghanistan. This highlights the distinction between choices facing the public in the United States and in other coalition countries.

Finally, the results may support the “Iraq syndrome”, a concept promoted by Mueller (2005). The controversies surrounding the campaign and its high death toll have made the public more suspicious and less supportive for similar ventures. This was reflected in rapidly escalating war opposition across the MNF countries, including the United States, where support for the Iraq war declined faster than for the Vietnam and Korean wars (Mueller 2005). The main contributor to the public mistrust was the failure to find WMD. However, scandals of soldier misconduct, such as Abu Ghraib, also must have played their role. The three coalition countries had their share of damaging allegations too. Public trust in Britain was dented by accusations against Prime Minister Tony Blair of

deliberately misleading the public on the evidence of Iraq's possession of WMD. The Australian public was outraged with the news that the reason for which the country joined the war was to protect its lucrative wheat trade. The Polish government was trapped in allegations of housing secret CIA prisons, where suspected terrorists had been tortured. Thus, the war and associated events have been likely to make the public question not only whether they can trust the United States, but also whether they can believe their own governments. Consequently, this will make convincing the citizenry to deploy troops abroad more difficult and hinder involvement in future military interventions.

2.9. Summary

This study uses the opinion polls from the United Kingdom, Poland and Australia to analyze fatality sensitivity of public opinion in coalition countries that participate in war efforts but are not a leading force. It introduces a notion that the relationship between war opposition and war fatalities has a dynamic character and therefore is best represented in the form of an error correction model, which solves problems of data nonstationarity and allows for shocks to have a long lasting impact. Nevertheless, uneven spacing of the poll data makes it impossible to make a sound judgment on the dynamic nature of the series. In fact, some of the estimates seem to suggest a static model. Overall, the data does not provide conclusive evidence on soldier casualty sensitivity, which I manage to establish to some extent only for the British series. However, there is evidence that the public in the coalition countries is sensitive to deaths in terrorist attacks in Iraq, which highlights the urgency of devising war strategies that tackle this form of violence in a more effective way. Intensity of terrorism may be considered as a measure of success of the war efforts as well as a contributor to the war costs. Therefore, public responsiveness here implies that the

opinion is formed through a cost-benefit analysis. Although such a framework is not ideal to explain the evolution of public opinion, it is flexible enough to capture the underlying process and is consistent with my results. The expected benefits were never high as the war participation was a policy choice, not a necessity to defend homeland. The distant enemy that did not appear obviously dangerous meant that the public placed smaller value on the stakes in Iraq. This may have translated into higher sensitivity to human losses evoked by the unexpectedly long and costly conflict. The very different nature of political and military involvement of the coalition countries was linked to their responsibility and risks being lesser than those of the coalition leader. Thus, their pull-out from the combat mission would have been unlikely to impair the overall war outcome and as such gave those countries more flexibility in forming their exit strategies. This could have been reflected in the war-time opinion. A lower cost of a potential withdrawal could have given the public more choice and made it easier to join the war opposition.

The study confirms the validity of using logged cumulative fatalities as an explanatory variable in war-time opinion models. Most of the time, news services reported the number of soldier deaths as a cumulative value since the beginning of the combat operations. Additionally, the opposition exhibited an upward tendency, which was captured rather well by the monotonic nature of cumulative fatalities. The reversal of the increase in opposition was almost impossible because the reasons for the intervention had been proven nonexistent and the coalition soon became implicated in numerous errors and scandals, contributing to an impression that it was a “dirty” war.

The error correction specification seems to indicate that the public does not base their opinion only on the most recent changes in the fatality series, but is likely to take into

account developments in earlier periods too. Moreover, there may be a tendency to overweigh new information, which means that reports of a surge in fatalities, soldier misconduct or wrongdoing are particularly damaging in short run. An overreaction should be gradually corrected in subsequent periods and a long-run equilibrium should be eventually reinstated. The fact that the public may employ a long-term perspective when forming opinion has implications for policymakers. First, together with the cost-benefit analysis it confirms public's rational approach to the war. Second, governments should avoid taking offhand and populist decisions under pressure of a moment and rather wait for the opposition to re-equilibrate. Third, they should make an effort to keep a number of war-related lapses and backslidings at minimum, because as the example of Abu Ghraib shows, they are costly in terms of war opposition. However, once an oversight happens, policymakers should try to convince the public that it was a one-off accident, for example through an appropriate investigation into causes, improved checks, guidelines, etc. A failure to do so is likely to deepen the damage in the war support because the adverse effect would die out more slowly than if the public was convinced that a future risk of such events was small. Fourth, possible long public memory may have led to the development of the Iraq syndrome, which is likely to hinder future military interventions, as public will be more suspicious of evidence and arguments presented by policymakers in support for committing a country to war.

Table 2.1. ECM estimates based on logged cumulative fatalities

	United Kingdom							Poland		
	1	2	3	4	5	6	7	8	9	10
Opposition _{t-1}	-0.89** (0.16)	-0.80** (0.16)	-0.67** (0.14)	-1.11** (0.17)	-0.98** (0.16)	-0.94** (0.19)	-1.19** (0.14)	-1.04** (0.13)	-1.10** (0.22)	-0.87** (0.15)
Δ Ln National fatalities _t	15.94** (5.28)			20.21* (8.98)	9.68 (5.00)	-2.88 (5.10)			-4.87 (3.82)	-6.73 (3.35)
Ln National fatalities _{t-1}	9.56** (3.08)			16.05 (8.74)	1.94 (3.79)	2.46 (1.93)			-3.24 (2.39)	-2.3 (1.60)
Δ Ln All MNF fatalities _t		9.10* (3.54)		-5.21 (5.79)			2.56 (8.96)		5.28 (10.81)	
Ln All MNF fatalities _{t-1}		4.96* (1.84)		-7.97 (4.38)			9.01** (1.71)		8.85 (8.76)	
Δ Ln Terrorism _t			1.27* (0.64)	1.67 (0.89)	1.39* (0.68)			2.12 (1.34)	0.44 (2.7)	3.19* (1.54)
Ln Terrorism _{t-1}			0.98* (0.43)	2.51** (0.80)	1.87** (0.73)			3.47** (0.59)	1.1 (2.77)	3.51** (0.71)
End of invasion	0.18 (1.96)	-0.60 (2.28)	0.34 (2.15)			-13.16* (6.18)	-27.38** (5.47)	-25.98** (4.77)	-28.33** (6.40)	-24.95** (4.94)
Capture of Saddam	-3.51 (2.01)	-4.76* (2.27)	-3.43 (2.18)	-3.91 (2.37)	-6.01** (2.11)	-0.07 (4.02)	-5.99 (2.99)	-5.68* (2.71)	-4.71 (3.23)	
Torture / March 11	8.52** (2.31)	6.28* (2.48)	7.86** (2.42)	12.15** (2.71)	8.96** (2.12)	9.28* (4.40)	8.83* (2.89)	9.19** (2.78)	11.14** (3.33)	8.68** (2.91)
Constant	-0.78 (7.80)	4.49 (7.08)	22.66** (4.54)	16.62 (12.61)	24.45* (11.61)	67.12** (14.97)	44.39** (10.82)	69.32** (9.93)	35.12 (28.75)	56.55** (11.64)
<i>Model diagnostics</i>										
Adjusted R ²	0.41	0.38	0.35	0.53	0.50	0.48	0.73	0.75	0.74	0.74
Ljung-Box Q Test	3.23	4.02	4.63	9.55	4.84	4.63	2.97	1.91	3.75	5.59
Breusch-Pagan χ ²	0.06	0.31	2.39	0.90	1.70	7.97 [†]	0.30	1.16	0.95	0.71
ARCH χ ² (1)	0.03	0.31	1.66	0.09	0.45	0.49	0.53	0.09	0.02	0.80
Skewness/Kurtosis χ ²	1.14	0.74	0.53	1.04	0.62	2.68	0.71	0.73	0.78	0.27

Note: Standard errors in parentheses. Models 4 and 9 use non-national fatalities instead of all fatalities. N = 39 for the UK and 31 for Poland. * p ≤ .05, ** p ≤ .01. One-tailed tests. [†] significant heteroskedasticity. The error correction parameter should be interpreted with caution due to uneven data spacing.

Table 2.2. Long-run multipliers for the log model

	Model	United Kingdom	Poland
National fatalities	1	10.74** (2.02)	-
All MNF fatalities	2	6.20** (0.81)	7.57** (1.60)
Terrorism	3	1.46** (0.43)	3.34** (0.95)

Note: Standard errors computed using Bewley (1979) transformation in parentheses. * $p \leq .05$, ** $p \leq .01$. One-tailed tests.

Table 2.3. ECM estimates based on unlogged marginal fatalities

	United Kingdom			4	Poland		Australia
	1	2	3		5	6	7
Opposition _{t-1}	-0.59** (0.14)	-0.55** (0.14)	-0.82** (0.16)	-0.86** (0.18)	-0.93** (0.17)	-1.12** (0.16)	-0.96* (0.29)
Δ Mrg National fatalities _t	-0.03 (0.16)			-0.41 (0.77)			
Mrg National fatalities _{t-1}	-0.10 (0.09)			-0.39 (0.48)			
Δ Mrg All MNF fatalities _t		0.02 (0.02)			0.00 (0.02)		
Mrg All MNF fatalities _{t-1}		-0.01 (0.02)			0.03 (0.02)		
Δ Mrg Terrorism _t			0.004* (0.002)			-0.002 (0.004)	0.01 (0.01)
Mrg Terrorism _{t-1}			0.003* (0.001)			0.005** (0.001)	0.007** (0.01)
End of invasion	3.60 (1.96)	4.25 (2.21)	4.07* (1.57)	-11.84 (6.41)	-16.07* (6.57)	-16.46** (5.39)	
Capture of Saddam	-3.35 (2.48)	-1.52 (2.35)	-2.11 (1.97)	1.20 (3.84)	-1.51 (3.75)	0.20 (3.11)	
Torture / March 11	8.80** (2.62)	8.42** (2.68)	8.15** (2.34)	13.69** (4.21)	11.58** (4.07)	11.22** (3.41)	
Constant	23.00** (5.89)	19.50** (5.07)	29.15** (5.94)	60.87** (14.07)	63.29** (13.43)	79.75** (12.65)	43.56* (13.88)
<i>Model diagnostics</i>							
Adjusted R ²	0.27	0.26	0.39	0.41	0.46	0.60	0.80
Ljung-Box Q Test	3.21	4.32	2.68	2.32	2.83	3.91	2.99
Breusch-Pagan χ^2	0.47	0.00	0.04	10.68 [†]	5.43 [†]	4.96 [†]	0.14
ARCH χ^2 (1)	1.56	2.11	0.76	0.93	0.79	0.27	0.01
Skewness/Kurtosis χ^2	1.04	1.26	0.82	3.29	0.37	0.25	0.90

Note: Standard errors in parentheses. Models 4 and 9 use non-national fatalities instead of all fatalities. N = 39 for the UK, 31 for Poland and 10 for Australia. *p ≤ .05, **p ≤ .01. † denotes present heteroskedasticity. The error correction parameter should be interpreted with caution due to uneven data spacing.

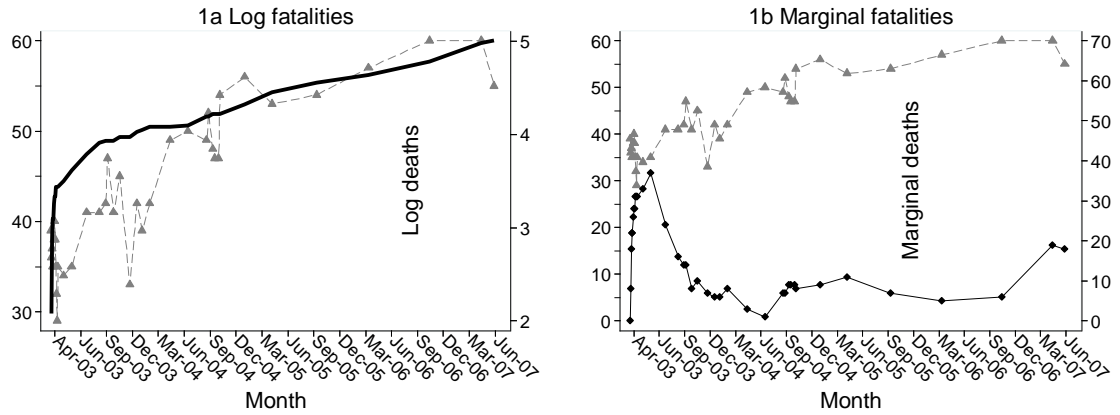
Table 2.4. ECM estimates based on logged cumulative casualty series

	United Kingdom		
	1	2	3
Opposition _{t-1}	-0.78** (0.16)	-0.96** (0.15)	-0.97** (0.14)
Δ Ln National casualties	11.98* (4.75)	4.24 (5.99)	6.25 (3.53)
Ln National casualties _{t-1}	6.49* (2.54)	-8.23 (7.05)	-1.49 (2.63)
Δ Ln All MNF fatalities _t		2.20 (5.06)	
Ln All MNF fatalities _{t-1}		5.08 (5.05)	
Δ Ln Terrorism _t		1.68* (0.80)	1.81** (0.64)
Ln Terrorism _{t-1}		2.32** (0.80)	2.56** (0.75)
End of invasion	-0.70 (2.42)		
Capture of Saddam	-3.20 (2.09)	-7.47** (2.48)	-6.29** (2.02)
Torture / March 11	7.25** (2.43)	7.76** (2.41)	8.95** (2.08)
First soldier killed			
Constant	4.07 (7.48)	35.92** (10.15)	34.31** (9.86)
<i>Model diagnostics</i>			
Adjusted R ²	0.37	0.52	0.53
Ljung-Box Q Test	3.96	7.99	6.81
Breusch-Pagan χ^2	0.29	3.58	1.16
ARCH χ^2 (1)	0.31	0.06	0.14
Skewness/Kurtosis χ^2	1.20	0.02	1.47

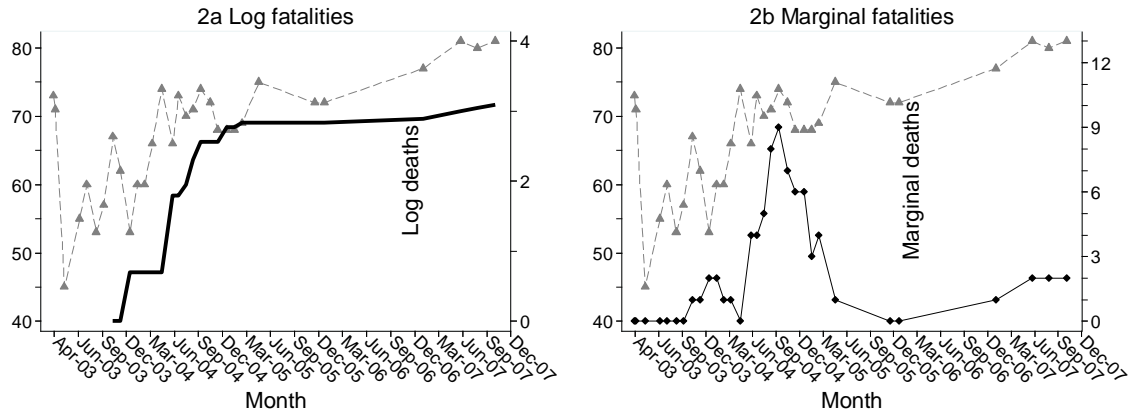
Note: Standard errors in parentheses. Model 2 uses non-national fatalities instead of all fatalities. N = 39. * $p \leq .05$, ** $p \leq .01$. One-tailed tests. The error correction parameter should be interpreted with caution due to uneven data spacing.

Figure 2.1. Opposition to the Iraq war and soldier deaths

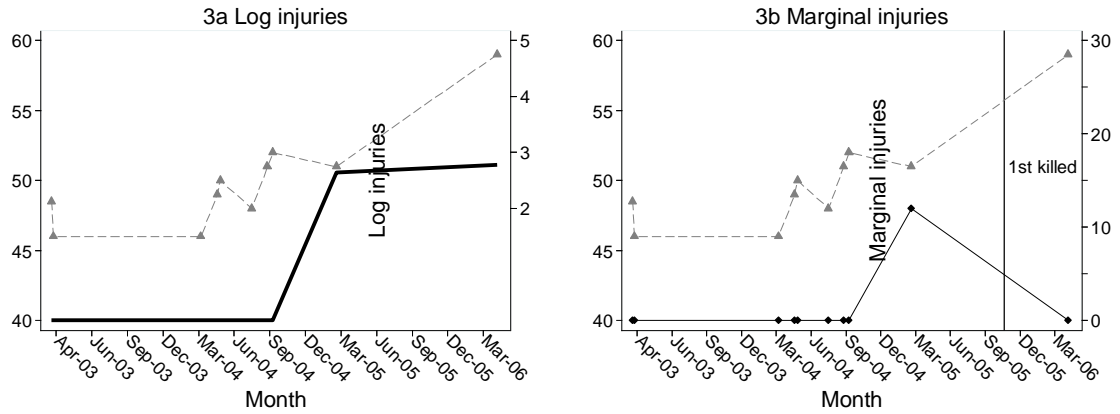
1 United Kingdom



2 Poland



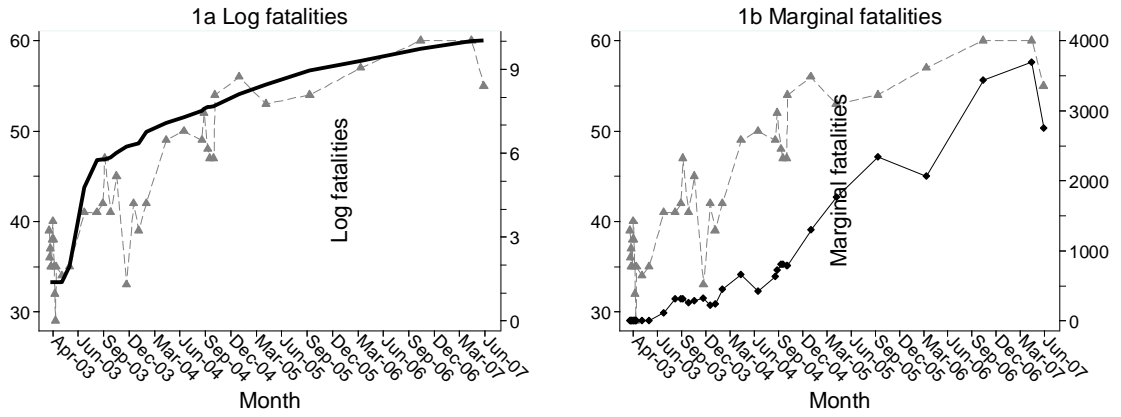
3 Australia



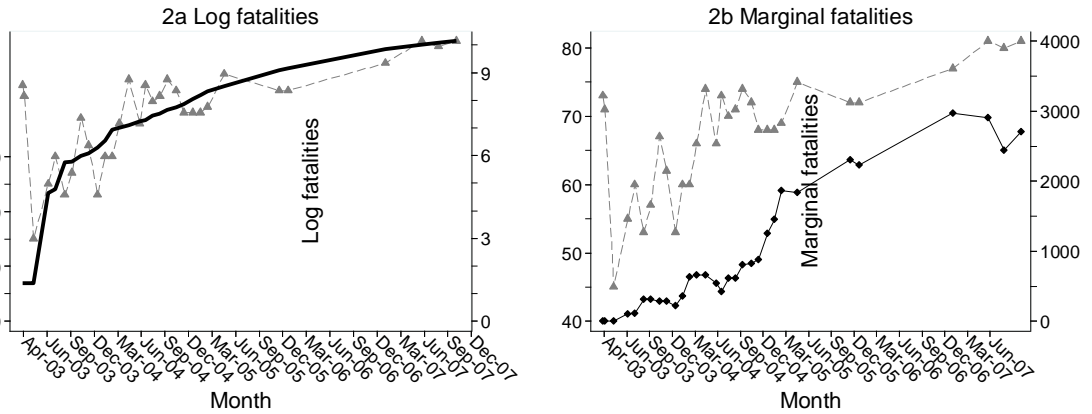
---▲--- Opposition —◆— Soldier fatalities/injuries

Figure 2.2. Opposition to the Iraq war and MIPT fatalities

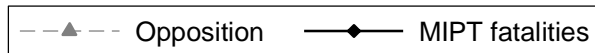
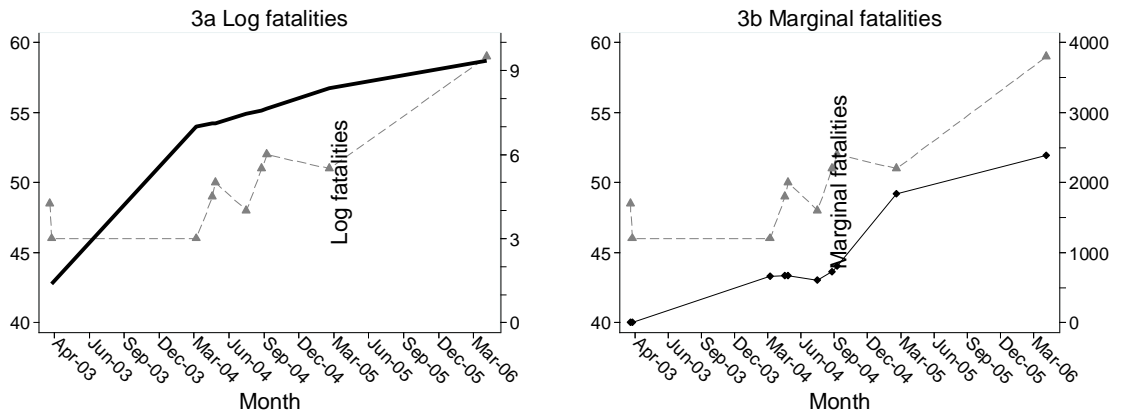
1 United Kingdom



2 Poland



3 Australia



Chapter 3

Armed Conflict and Terrorism as Determinants of Foreign Aid

3.1. Introduction

Foreign aid is often claimed to be targeted at promoting economic growth and social development, which in turn are likely to depend on peace and stability (Blomberg, Hess et al. 2004; Gaibullov and Sandler 2009). The occurrence of armed conflict or terrorism may constitute a hindrance for economic development and, in the eyes of donors, may reduce potential effectiveness of foreign aid. Therefore, these two forms of political violence can be considered as one of the determinants of aid flows. Following this line of reasoning, this chapter intends to answer whether the incidence of conflict and terrorism affects allocation of bilateral and multilateral aid.

There are several reasons for which aid could be diverted away from violence plagued countries. Conflicts are often accompanied by internal tensions that may increase the risk of corruption and sleaze when it comes to spending received aid. A considerable portion of aid seeps out to fund military ventures (Collier 2007). Violent conflict and terrorism destroy physical and human capital stock, and this way may directly disturb commercial interests of foreign donors. Such incidents limit the extent to which aid contributes to economic development and poverty alleviation, and therefore reduce the effectiveness of aid programmes. Additionally, if there are two or more competing political groups within a country, foreign donors may be afraid of being accused of interfering in

internal politics by supporting one of them, and in the end opt out from granting any help to a country in need.

Burnside and Dollar (2000) show that the impact of aid on development is not the main determinant of aid allocation. Donors take a number of other factors into consideration, including strategic alliances and colonial past (Alesina and Dollar 2000). An example of pursuing strategic goals by donors is aiding regimes affected by terrorism. Here, aid may serve as reimbursement for making counter-terrorist efforts (Mandler and Spagat 2003; Bandyopadhyay, Sandler et al. 2010). In such a principal-agent relationship, the donor wants the receiving government to contain terrorism before it spreads to the donor's homeland or affects its interests elsewhere. By its nature, international terrorism is expected to be most susceptible to this mechanism. Bandyopadhyay and Sandler (2010) argue that states with global interests must introduce proactive measures through counterterrorism-tied aid to countries where international terrorist groups reside. Indeed, Azam and Thelen (2008) find that increased assistance leads to reduced levels of terrorism originating from the receiving country.

When estimating the effects of terrorism, it may be important to control for armed conflict, which includes wars and minor conflicts of either external or internal nature. Drakos and Gofas (2006), Campos and Gassebner (2009), and Lai (2007) show that various types of conflict increase terrorism, while durable and stable regimes reduce it. Terrorism can also be one of the tactics used in armed conflict, hence one may expect a positive correlation between the two phenomena. However, the literature does not reach sound conclusions on that matter and is far from agreement. For instance, Li (2005) shows quite a different relationship and concludes that armed conflicts reduce terrorism. Also Blomberg,

Hess et al. (2004) argue that terrorism and conflict are fundamentally different. Overall, using the two types of violence as explanatory variables may offer some useful insights into the aid allocation process, as well as reduces the risk of having omitted variable bias in the econometric model.

The study distinguishes between bilateral and multilateral aid because the two types are expected to react differently to various factors. Multilateral aid should be more responsive to the quality of policies and government in the receiving countries and promote military expenditure reductions (Boyce and Pastor 1998). This is because inter-governmental institutions should not be influenced by commercial interests, strategic alliances, and geopolitical or historical considerations. At the same time, bilateral donors are likely to be driven by these motives (Alesina and Weder 2002), along with using aid as a tool in combating terrorism. A part of the empirical exercise tries to answer whether assistance to the poorest countries and oil exporters is affected by conflict and terrorism in a different way than aid to their relatively richer and non-oil-exporting counterparts. It is important to control for the Low Income Countries (LICs) because they have typically weaker governments and may be less reliable partners in combating terrorism. Piazza (2008) finds evidence that relatively more terrorism originates from this group. On the other hand, oil exporters may experience different treatment by donors because their stability is important for the world economy (Kilian 2006; Yergin 2006).

The empirical strategy is based on the two-way panel data estimation. The compiled dataset consists of an unbalanced yearly panel with observations for 161 recipient countries over years from 1973 to 2007. Including individual effects offers a remedy to heterogeneity among recipients (Frees 2004), while time effects reflect the fact that aid

decisions are being made each year as well as the potential coding variations in terrorism datasets. In addition, the explanatory variables are lagged by one year to ensure their predeterminedness. An additional benefit of this is that it should reflect the aid allocation dynamics, where donors decide the amount of aid during the budget planning procedure.

The data is drawn from several sources. The figures on foreign aid are taken from the Project-Level Aid 1.9.1, PLAID (Nielson, Powers et al. 2010), while the data on population and macroeconomic variables is drawn from the Penn World Table Version 6.3 (Heston, Summers et al. 2009). I also include an index of civil liberties compiled by the Freedom House (2010). The conflict information is taken from the UCDP/PRIO Armed Conflict Dataset Version 4-2009 (Gleditsch, Wallensteen et al. 2002). Two independent measures of terrorism are introduced. ITERATE (Mickolus, Sandler et al. 2008) measures only international terrorism, while the Global Terrorism Database (GTD) (START 2011) is dominated by domestic terrorism (Kis-Katos, Liebert et al. 2011).

The results on socio-economic variables are similar to those in the existing literature. More populous countries tend to get shares of foreign aid lower than suggested by their population size. Foreign aid is increasing in income but at a decreasing rate. Thus, donors tend to favour poor countries with an exception of a number of the poorest states, which are likely to have limited ability to use received aid efficiently. Notably, the relationship between multilateral aid to oil exporters and their income is strongly negative, while bilateral donors' decisions are driven mostly by the volume of oil exports. Finally, trade openness increases both multilateral and bilateral aid.

Armed conflict reduces bilateral and multilateral aid by nearly 40 and 80 per cent, respectively. However, bilateral donors appear ready to turn a blind eye on conflict and terrorism in oil exporting countries. The latter form of violence causes different reactions among bilateral and multilateral donors. Countries with a high level of international terrorism may hope for a proportionally higher raise in bilateral aid when faced with additional attacks than their peaceful counterparts. This is consistent with the principal-agent framework in which aid constitutes reimbursement for recipient's efforts against terrorists (Mandler and Spagat 2003; Bandyopadhyay, Sandler et al. 2010). However, bilateral donors are less sensitive to domestic terrorism, which does not affect their interests directly. Multilateral aid does not show any reaction to international terrorism, but seems to react somewhat adversely to its domestic variant. Overall, the results seem to agree with the notion that multilateral donors are more committed to poverty reduction and aid efficiency. Unlike bilateral donors, they do not need to provide security for their citizens, and therefore they do not have additional incentives in assisting violence ridden states. In fact, they may be conflict averse due to the potential losses in aid effectiveness. On the other hand, they still may be under influence of governments that constitute them, which could help to explain their lack of reaction to international terrorism.

The following section presents a brief literature review. Sections 3.3 and 3.4 describe the data sources and basic statistics. The empirical strategy and results are discussed in Sections 3.5 and 3.6, respectively. Finally, Section 3.7 offers concluding remarks.

3.2. Literature review

The economic and political literature is abundant with studies of determinants of foreign aid distribution and its effects on socio-economic development. This study belongs to the branch which deals with the impact that instability in receiving states has on aid flows. Chauvet (2003) summarizes four criteria for aid allocation: recipient's needs and merit, vulnerability to shocks, and donor's interests. She defines socio-political instability as a propensity for a change in executive power, and analyzes its influence on allocation of bilateral and multilateral aid. She finds that violent instability (coups, civil wars, guerrilla warfare, riots and strikes) has a positive impact on aid allocation, but also suggests that this is an "inverted U" relationship, where low levels of instability may result in increased aid flows as donors attempt to safeguard their interests. But when instability increases, the threat to donors' commercial and strategic interests may persuade them to shift their attention, and consequently money, to more stable countries. Thus, from a donor's point of view, instability may affect the needs of recipients, but at the same time it may be a merit variable through which donors may wish to reward more stable states. Chauvet (2003) also notes that LICs receive less aid than other countries when faced with violent instability.

In their oft cited study, Alesina and Dollar (2000) establish some determinants of bilateral aid and analyze behaviour of selected donor countries. They conclude that colonial history and strategic alliances are the main determinants of the amount of aid received. Hence, bilateral donors are likely to promote their strategic political interests over poverty reduction, promotion of openness, democracy and good policies. A paper by Alesina and Weder (2002) largely confirms these findings, but in addition studies the impact of corruption among recipients on aid allocation. In general they do not find any evidence of a

negative relationship between received aid and corruption. However, they note that donors differ in their behaviour. For instance, the Scandinavian countries and Australia tend to give more to less corrupt governments, while the United States favours democracies and does not seem to be preoccupied by the quality of government.

Game theoretic models linking aid to terrorism have been developed in Mandler and Spagat (2003), and Bandyopadhyay and Sandler (2010). The two models allow aid to be conditioned on undertaking certain counterterrorism efforts by the receiving government, and both of them warn that in some circumstances foreign aid may worsen the terrorist threat. Bandyopadhyay and Sandler (2010) note that recipient's efforts demonstrate substitutability with donor's counterterrorism measures as they are intended to thwart international terrorism at its origin. Nonetheless, terrorism-tied aid may result in protests and internal unrest in the receiving country. If the regime becomes sufficiently weakened, its ability to fight terrorists may become limited, and the threat to both the donor and recipient may rise. Azam and Delacroix (2006) and Azam and Thelen (2008) empirically test such a principal-agent framework by estimating an attack supply curve. They find that increased aid results in reduced levels of terrorism originating from the receiving country. In addition, the latter study shows that recipient country's level of education also reduces supply of terrorist attacks. Although their models do not allow for the possibility of a reverse relationship, i.e. that terrorism determines the aid levels, the authors conclude that donors are giving more aid to countries with higher risks of producing terrorism. In both papers the authors use terrorism as a dependent variable, while aid is one of the regressors. I take a different approach hypothesizing the causal relationship to run in the opposite direction: from terrorism to foreign aid.

The most common empirical approach in the literature seems to be the two-way panel data estimation. Trumbull and Wall (1994) set up a panel data model for foreign aid. They acknowledge that country-level data is likely to be plagued with heterogeneity and as a remedy suggest using fixed effects. Individual effects account for different weights that donors assign to recipients, while time effects are justified by the fact that aid decisions are being made each year. The former also controls for potentially omitted variables that tend to be persistent over time, and the latter for shocks that are temporal and affect all countries in a given period. Studies of determinants of foreign aid that follow a similar approach include Ali and Isse (2006), Alesina and Dollar (2000), Chauvet (2003), Collier and Hoeffler (2004), and Fleck and Kilby (2010). The two-way panel estimation is also used by Blomberg, Hess and Orphanides (2004), and Gaibulloev and Sandler (2008; 2009) to study effects of conflict and terrorism on economic growth.

3.3. Data

This section briefly describes data sources used in this chapter. The figures on foreign aid are drawn from the Project-Level Aid 1.9.1 database, PLAID 1.9.1 (Nielson, Powers et al. 2010), made available by AidData.org. The dataset includes development finance in a form of either loans or grants from governments, government aid agencies, and inter-governmental organizations (IGOs). PLAID goes beyond aid flows included in the OECD's Official Development Assistance (ODA), and incorporates international loans at market rates as long as they constitute an effort to foster economic or social development. However, it does not include funding that originates from non-governmental organizations (NGOs), contributions from private sector investors, banks, or foundations. A large portion of over one million records in PLAID is drawn from the online and CD-ROM versions of

the OECD's Creditor Reporting System (CRS)¹, which is then complemented with annual reports, project documents and web-based data collected directly from donors. PLAID reports two types, or stages, of aid flows: commitments, which are the amount of money that a donor has allocated to an aid project, and disbursements, which are the amount of money that has been actually spend on the activity. Although disbursements provide a more accurate picture of real aid flows, the information is available only for 48.6 per cent of records (Nielson, Powers et al. 2010). Therefore, I use the commitments (available 99.16 per cent of the time), which are likely to reflect the donors' perception of recipients' needs and circumstances fairly well, as well as to be an acceptable proxy for the funds actually donated. Before carrying on with the analysis, I drop the records presenting aid flows to multilateral organizations, where a receiving country cannot be uniquely identified.

The dependent variable in this chapter is aid per capita, which is generated by dividing the commitment figures in constant 2000 dollars by population in respective countries. The data on population, along with two macroeconomic variables is drawn from the Penn World Table Version 6.3 (Heston, Summers et al. 2009), which is commonly used in the literature and does not require detailed introduction. The macroeconomic variables are the real GDP per capita in constant dollars, and a measure of country openness, which is the total trade (exports plus imports) as a per centage of GDP in constant dollars. The latter may serve as an indicator of good economic policies, but also may be a variable of interest

¹ Although the online version of CRS is expected to be more up to date and detailed, it does not include information for a number of recipient countries, e.g. Bulgaria, Lebanon and Russia, and donors, e.g. World Trade Organization and Food and Agriculture Organizations. PLAID derives this information from the CD-ROM version of CRS. For details see the PLAID 1.9.1 Codebook and User's Guide available at <http://www.aiddata.org/help/guide>.

to donors. Aid helps to finance trade deficits of developing nations and thus is boosting their imports from rich countries.

A part of the empirical exercise tries to answer whether aid flows to the poorest countries and the oil exporters are affected by conflict and terrorism in a different way than those to the relatively richer and non-oil-exporting states. In order to distinguish between these groups, I employ the World Development Indicators, made available by the World Bank (1978-2008). Based on their gross national income (GNI) per capita, states are divided into three categories: low, medium and high income countries – LICs, MICs and HICs, respectively. I explicitly distinguish LICs as the poorest recipients in the following discussion. The “richer countries” group consists of MICs and those of them that had managed to advance to the HIC group during the sample period, for instance Portugal, Czech Republic and Bahrain. The sample of oil exporters includes states whose fuel exports as a percentage of merchandise exports average 50 per cent or more.

Previous studies, e.g. Alesina and Dollar (2000) and Chauvet (2003), show a significant relationship between received aid and recipients’ level of civil liberties and democracy. Therefore, I use the civil liberties index developed by the Freedom House (2010), which grades states on a scale from one to seven, with one representing the highest degree of freedom and seven the lowest².

To address the core question of this study, I introduce three independent measures of political violence. I take two alternative terrorism datasets, ITERATE (Mickolus,

² I also considered the Freedom House’s political rights index, but decided to present results based only on the measure of civil liberties. The two indices are highly correlated, with the correlation coefficients of 0.9, and give very similar results.

Sandler et al. 2008) and the Global Terrorism Database (GTD) (START 2011), and divide their annual totals for each country by population to construct two alternative measures of terrorism. I normalize the level of terrorism by the recipient's population because ten attacks in a country of 100 million should have a smaller economic impact than the same number of attacks in a country of five million. Since ITERATE includes only international events, and GTD includes international and domestic attacks, using these two alternative measures should help to distinguish, at least to some extent, between the effects of the two types of terrorism on aid. Between 1973 and 2007, ITERATE and GTD recorded 11,506 and 78,762 attacks, respectively³. Assuming that both datasets track international incidents in an adequate and comparable manner, an overwhelming majority of attacks in GTD is expected to be domestic. Indeed, Kis-Katos and Liebert et al. (2011) estimate that only around 14 per cent of incidents included in GTD constitute international terrorism. It should be stressed that it is unfeasible to separate domestic events by deducting ITERATE's records from those of GTD, because the two datasets are likely to rely on different sources and judgment calls. A similar strategy has been applied by Gaibulloev and Sandler (2008) in their study of the impact of terrorism on economic growth in Asia.

Finally, I draw the data on armed conflict from the UCDP/PRIO Armed Conflict Dataset Version 4-2009, which lists situations "where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths" (Gleditsch, Wallensteen et al. 2002). This includes wars and minor conflicts of either external or internal nature. Based on this dataset, I generate an indicator variable

³ The GTD dataset is missing the records for 1993, which were lost during moving the early paper version of the database from one location to another. This is reflected in a lower number of observations used in the following GTD regressions.

which takes a value of one if a country experienced a conflict in a given year, or zero otherwise.

Bringing the above variables together yields an unbalanced panel dataset for 161 recipient countries covering years from 1973 to 2007. The choice of 1973 as the initial year is dictated by the fact that prior to this date, the information included in PLAID and the terrorist datasets is rather spotty and less reliable. The following section discusses basic statistical properties of the data with a distinction between bilateral and multilateral aid flows.

3.4. Summary statistics

This section begins with a presentation of basic summary statistics for terrorism and conflict, and then moves to a review of correlation coefficients between the variables used in this study. The three panels of Table 3.1 display summary statistics by recipient type for ITERATE, GTD and the conflict data, respectively. The last three columns show a breakdown of the variation attributable to individual, time and random effects. The top panel describes international terrorism recorded by ITERATE. There are 0.29 attacks per million persons in an average recipient-year, with the poorest countries considerably less plagued by this type of violence. Large dispersion in the data suggests that some recipient-year observations are characterized by more than one attack. When looking at the variance decomposition, the random effects seem to be a driving factor. The individual effects account for around 30 per cent of the variance, while the time effects cause very little variation.

GTD, which records domestic and international terrorism, has a mean of 1.3 incidents per million persons in a typical recipient-year observation. As before, terrorism seems to be less frequent in the LIC and oil exporting countries. Since GTD contains a broader scope of terrorist events, the differences between its means and those of ITERATE are indicative of a much higher frequency of domestic terrorism. However, as explained before, one must be cautious when drawing such conclusions. Again, the data variance is driven mostly by the random component, while the time effects seem to be least influential.

The bottom panel reports the statistics on armed conflict, which is an indicator variable. It occurs in nearly one out of five recipient-years. It is more frequent in the oil exporting countries, and almost twice more likely in LICs than in other states. Interestingly, armed conflict seems more common among the poorest recipients, while terrorism tends to be more frequent in the non-LIC sample. This implies that the two do not capture the same patterns of violent instability, and therefore it is reasonable to analyze their effects separately. The individual and random components appear to be equally important: each of them accounts for around 50 per cent of the variance decomposition. The variance fractions in Table 3.1 underline the importance of controlling for the fixed effects when estimating the influence of armed conflict and terrorism on foreign aid allocation.

The correlations between foreign aid and the explanatory variables are shown in Table 3.2. In the all recipients sample, civil liberties and openness exhibit the strongest relationship with foreign assistance. However, their correlations go in opposite directions: less free countries, those with a higher Freedom House index, receive less aid per capita, while those with a higher ratio of international trade to GDP enjoy higher aid flows. Thus, democracy and economic openness are accompanied by larger aid receipts. Interestingly,

the low correlation of aid and income per capita suggests that donors may promote other aims than poverty reduction. A similar conclusion has been reached in Burnside and Dollar (2000). Not surprisingly, more open economies tend to have a higher GDP per capita.

Foreign aid shows little correlation with terrorism. However, the coefficient signs suggest that bilateral donors may remain undiscouraged by increased incidence of terrorism, while their multilateral counterparts are more likely to be terrorism-averse. This claim undergoes a more formal investigation in Section 3.6. Interestingly, the incidence of international terrorism appears to be increasing as recipient's income raises and civil liberties become more advanced (in line with Tavares 2004). Armed conflicts show a negative relationship with foreign aid. Notably, the correlation of conflict with multilateral aid is much stronger than with bilateral aid, -0.17 and -0.07, respectively. Conflicts seem more common in more populated countries, but less frequent in richer, more open and freer societies. International terrorism measured by ITERATE exhibits positive but small correlation with armed conflict (0.06), while GTD's relationship seems considerably stronger (0.21).

Panel 2 of Table 3.2 examines the LIC sample. The correlation of bilateral and multilateral aid is higher in the poorest countries than in the overall sample, 0.48 and 0.14, respectively. Thus, LICs may be more likely than their richer counterparts to receive simultaneous aid from both sources. There is also a stronger positive association of aid with income, economic openness and civil liberties. The relationship of aid and GTD is much stronger among LICs, while that with ITERATE is still negligible. The negative association of aid and the armed conflict variable is also stronger in LICs. Interestingly, the relationship between civil liberties and international terrorism is very different from that in other

countries. Here, the positive and somewhat higher correlation coefficient (0.124) suggests that there are more international attacks in less free societies.

Finally, Panel 3 provides correlation coefficients for oil exporters. Aid inflows appear to be weakly related to economic openness. However, this can be due to the smaller variation across recipient-years, which is expected since all these states are actively engaged in the international oil markets. Income per capita is positively but weakly correlated with bilateral aid. The correlation with multilateral aid is somewhat stronger and negative. Both types of aid are negatively correlated with the Freedom House index. Thus, a greater degree of freedom appears to be associated with more aid. However, this correlation is somewhat stronger for multilateral (-0.27) than bilateral aid (-0.03). Judging by the correlation coefficients, oil exporters may be less penalized for political violence. The relationship between aid and GTD is positive and relatively strong. As before, armed conflict is negatively associated with both types of aid, but here this relationship is relatively weak. These claims are pursued in Section 3.6.

To summarize, conflict appears to be positively correlated with terrorism, with an exception in the oil exporter sample. Thus, it is important to control for both types of violence in order to avoid omitted variable bias. Several more regularities can be suggested by Table 3.1 and Table 3.2. For instance, multilateral donors may be more likely to stick to the goal of poverty reduction and divert their resources away from richer oil exporters. In case of the LIC sample, the positive correlation of aid and GDP may be associated with an ability to use aid more effectively by relatively richer LICs, which may have stronger governments, better quality of policies and infrastructure. At the same time, multilateral

organizations are less likely to follow geopolitical strategic interests and therefore may show more adversity to conflict (see Boyce and Pastor 1998; Alesina and Weder 2002).

3.5. Empirical approach

The empirical analysis is based on OLS two-way panel data regressions. Similar approach in assessing determinants of foreign aid is used by Chauvet (2003), Trumbull and Wall (1994), Alesina and Dollar (2000), Alesina and Weder (2002). Gaibullov and Sandler (2008) and Blomberg et al. (2004) also use two-way panel data estimation to analyze the impact of terrorism and conflict on economic growth. The choice of explanatory variables on socio-economic conditions such as income, economic openness and level of democracy is motivated largely by the findings of earlier studies, in particular Alesina and Dollar (2000), Alesina and Weder (2002), and Chauvet (2003). The estimated model has the following form:

$$\begin{aligned}
 \ln(AID)_{i,t} = & \alpha_0 + \alpha_1 \ln(POPULATION)_{i,t-1} + \alpha_2 \ln(GDP)_{i,t-1} + \\
 & \alpha_3 [\ln(GDP)]_{i,t-1}^2 + \alpha_4 \ln(OPENNES)_{i,t-1} \\
 & + \alpha_5 \ln(ATTACKS)_{i,t-1} + \alpha_6 [\ln(ATTACKS)]_{i,t-1}^2 \quad (3.1) \\
 & + \alpha_7 CONFLICT_{i,t-1} + \alpha_8 LIC_{i,t-1} + \alpha_9 LIC \times \ln(ATTACKS)_{i,t-1} \\
 & + \alpha_{10} LIC \times CONFLICT_{i,t-1} + \alpha_{11} CIVLIB_{i,t-1} \\
 & + \alpha_{12} RECIPIENT_i + \alpha_{13} YEAR_t + \varepsilon_{i,t},
 \end{aligned}$$

where *AID* is aid per capita received by a recipient *i* in year *t*, *GDP* is measured per capita in constant dollars, and *OPENNESS* is the sum of recipient's exports and imports as a share

of GDP. The number of terrorist incidents per capita in a receiving country recorded either by ITERATE or GTD is denoted by *ATTACKS*, while *CONFLICT* is an indicator variable taking a value of 1 in a presence of armed conflict in country *i* and period *t*. The Low Income Countries are singled out by a binary variable *LIC*. The inclusion of the interaction terms *LIC* with the intensity of terrorism and conflict allows to test whether donors give different treatment to the poorest states affected by violence. The *CIVLIB* variable measures the level of democracy based on the Freedom House's Civil Liberties Index. *RECIPIENT_i* and *YEAR_t* are the recipient-specific and year-specific effects, respectively. Eventually, $\varepsilon_{i,t}$ stands for the error term. It needs to be emphasized that this is a reduced form model, and therefore it should not be interpreted purely in either demand or supply terms.

The two-way panel data estimation is not free from disadvantages. One of them is potential heterogeneity caused by unobserved effects that may be correlated with observed regressors. As a remedy, Frees (2004) suggests fixed effects estimation. Therefore, I control for recipient-specific fixed effects, which are likely to arise because donors assign different weights to recipients based on characteristics which remain constant over time, for instance colonial ties, geographical location, landmass or strategic alliances (Trumbull and Wall 1994). In addition, the model allows for time effects, which may arise because aid allocation decisions are typically made every year. This should, at least partially, alleviate the worries caused by global economic cycles. An additional benefit of controlling for time effects is that they account for possible changes in coding practices of ITERATE and GTD. Since these databases rely on individual decisions made by their staff and are based on various open sources, such changes are likely to emerge. The downside of individual fixed

effects is that they are not reliable in estimating observed but time invariant variables. For this reason, I do not include the colonial history in my model. Besides, it is not a variable of interest in this study and has been paid considerable attention in Alesina and Dollar (2000).

Another worry related to panel data estimation is potential endogeneity. The causal link between aid and political violence is not necessarily one-directional. One cannot rule out beneficial influence of foreign aid on stabilizing societies or inducing recipient governments to take more effective counterterrorism measures. Accordingly, through accelerated reforms aid can help governments to satisfy needs of dissident interest groups; through a positive impact on economic growth it may increase the opportunity cost of joining rebel or terrorist organizations; and through increased military and security expenditures it can make a successful atrocities less likely (Collier and Hoeffler 2000). On the other hand, aid may lead to increased violence by raising potential gains to rebels from taking over the government and having access to aid contracts. As Bandyopadhyay and Sandler (2010) argue, terrorism-tied aid can make the receiving government appear as serving foreign interests, and consequently lead to social unrest and destabilization. The result may be even more political violence. Similarly, a potentially two-directional relationship between aid and income or trade may also create endogeneity bias.

To mitigate this problem, the foreign aid allocations are estimated using explanatory variables lagged by one year. It is difficult to see how foreign aid in a current year, t , could affect the volume of terrorist attacks and incidence of armed conflict (or other regressors) in earlier years, $t - p$, where $p = 1, 2, 3, \dots$. Note that it seems plausible that aid may affect terrorism in the concurrent period because dissidents may be capable of launching almost immediate responses to changing environment. Hence, the econometric strategy is based on

lagged regressors and the ensuing assumptions of predeterminedness, and sequential exogeneity conditional on the unobserved effects. The predeterminedness of regressors ensures consistency of the OLS estimates, individual dummy terms remove unobserved fixed effects that could cause endogeneity, and lagged explanatory variables serve as sequentially exogenous instruments to estimate the model (Frees 2004). An additional benefit of using one-year lag is that it reflects the aid allocation dynamics. Decisions on granting aid are unlikely to be made in real time as events unfold. Decision makers are expected to base their opinion on historical data. Also, the amount of money a donor can dedicate to foreign aid is typically decided during the budget planning procedure, which takes place in advance. Consequently, a breakout of a conflict or increased terrorist activity in a current period is not expected to significantly affect current aid flows, which have been designated in donors' budgets. However, those events are likely to be taken into consideration when allocating aid for the following year.

The literature is split when it comes to using either yearly panel or averaging observations over longer periods, typically four or five years. Alesina and Dollar (2000), Alesina and Weder (2002), and Chauvet (2003) argue that working on longer periods has a beneficial effect of accounting for business cycle. Other researchers, such as Fleck and Kilby (2010), Blomberg et al. (2004), Gaibullov and Sandler (2009) work on yearly panels, and this is the approach that I pursue. Averaging observations over longer periods could blur effects of conflict or terrorism. An outbreak of violence in one year could result in a reduction in received aid; however, if a conflict was mitigated within a year or two, a country could consequently experience higher aid flows designated for reconstruction and

as an incentive for maintaining stability. This process would be indistinguishable when using five-year periods.

Finally, I also control for the “Egypt and Israel bias” (Alesina and Weder 2002; Azam and Delacroix 2006). The two countries receive a disproportionately large share of foreign aid (particularly from the United States). Both of them play a key role in maintaining stability in the Middle East, and have a history of terrorism and armed conflict. For similar reasons I control for Pakistan, whose support is deemed crucial for the War on Terror (Fleck and Kilby 2010). A collapse of those regimes and/or escalation of violence in these three countries almost certainly would affect the Western donors and their interests.

3.6. Results

This section discusses empirical results obtained through an estimation of the aid allocation function. I begin with a discussion of determinants of bilateral aid, then move to multilateral aid, and eventually address the aid flows to the oil exporting countries.

Bilateral aid

Table 3.3 presents estimates of the effects of terrorism and armed conflict on bilateral aid. Regressions in columns 1 and 3 do not distinguish the income class of the receiving state. Columns 2 and 4 introduce a dummy variable for the Low Income Countries, LIC, and its interactions with terrorism and conflict variables. This leads to a lower number of observations because I drop states which are not included in the World Bank’s income

classification⁴. R-squared above 0.6 suggests that the models explain the aid allocation fairly well. Behaviour of the coefficients on population, income, openness and civil liberties is in accord with the existing literature, and does not vary considerably across the models. Specifically, larger countries tend to get shares of foreign aid lower than their population suggests (although this effect appears to be marginally significant). Trumbull and Wall (1994) blame this “population bias” on donors’ preference to spend limited resources where the impact of one dollar will be the greatest per person. GDP per capita enters the regression twice: in a linear and quadratic form. The positive linear coefficient suggests that bilateral aid is increasing in income, while the negative quadratic coefficient indicates that this is happening at a decreasing rate. The turning point between 1,496 and 1,687 dollars per capita reassures that donors tend to favour poor countries with an exception of a number of the poorest states, which are likely to have very limited ability to use received aid efficiently (Chauvet 2003). This is further confirmed by the highly significant and negative coefficients on the LIC indicator variable. Thus, countries, which in 2006 had GDP per capita lower than 906 US dollars, received nearly 30 per cent less aid per capita than their richer counterparts, *ceteris paribus*. The openness coefficient shows that one per cent increase in recipient’s international trade to GDP ratio increases bilateral aid by 0.17 to 0.28 per cent, *ceteris paribus*. Thus, in this aspect donors seem to be rewarding good economic policies. Similarly, they reward freer countries. A negative civil

⁴ Table 3.7 presents the coefficients of the baseline models (not distinguishing LICs) re-estimated for the sample of recipients included in the World Bank’s classification. The estimates are largely similar to those in Tables 3.3 and 3.4 The only exception is a positive and significant coefficient on the bilateral donors’ reactions to domestic terrorism (Column 2), which suggests that the principal-agent mechanism may also work for countries affected by domestic terrorism.

liberties coefficient indicates that a one unit move on the one-to-seven scale towards less freedom is associated with a reduction in received aid by 10 to 15 per cent.

It appears that terrorism and conflict have an opposing impact on allocation of bilateral aid. Starting from model 1, countries plagued by international terrorism can count on increased assistance. I also control for the rate of change by including terrorism in a quadratic form. A positive coefficient on squared log of international attacks per capita indicates that this rate is increasing. Thus, countries with a high level of international terrorism may hope for a proportionally higher raise in bilateral aid when faced with additional attacks than their safer counterparts. The coefficients in model 2 are even higher and confirm that donors are willing to assist countries plagued by international terrorism. The interaction term of LIC and international terrorism suggests that the poorest countries are not treated in any different way when faced with this form of political violence. The emerging picture is consistent with the principal-agent framework in which aid constitutes reimbursement for recipient's efforts against terrorists (Mandler and Spagat 2003; Bandyopadhyay, Sandler et al. 2010). As donor's defensive counterterrorism measures increase security at home, they may induce terrorists to seek softer targets in other countries, making the donor's assets abroad more vulnerable. Thus, to protect political and economic interests, a donor may try to convince other states to exert counterterrorism efforts. A way to achieve this may be through conditional aid. Unfortunately, an accurate test of this hypothesis seems impossible, because the amount of aid conditioned on fighting terrorism cannot be established. However, even aid that is not explicitly tied to counterterrorism can bring desired effects. Namely, donors may hope to contribute to the eradication of terrorist-breeding grounds. By improving the economy and population's

living conditions, foreign aid may increase opportunity costs of joining terrorist organization enough to reduce the frequency of incidents. A similar reasoning is found in Blomberg et al. (2004) and Bueno de Mesquita (2005), which relate terrorism to economic downturns and a lack of economic opportunities.

The estimates in models 3 and 4 suggest that bilateral donors seem less sensitive to domestic terrorism. This probably could be attributed to the fact that, by its definition, domestic terrorism does not directly affect interests of foreign donors. In addition, the risk of attacks spreading to donors' homelands or against their interests is expected to be much lower than that associated with international terrorism. Model 4 suggests that LICs are punished by presence of domestic terrorism with reduced assistance (consistent with Chauvet 2003). Possibly, one could blame this effect on the donors' belief that LICs have limited capability in fighting terrorism. Another plausible explanation is that the poorest countries have relatively weak political and economic links with the outer world, thus potential donors may see less economic and strategic interests there than in more developed states. However, one should be cautious when drawing conclusions on domestic terrorism. Any global database, including GTD, is likely to be of limited reliability due to the presence of potentially large reporting bias. Domestic attacks may catch much less attention of international media, and at the same time, non-democratic regimes may find it relatively easy to suppress information on them. Thus, even the best efforts of data-collectors may give a picture that is distant from reality⁵.

⁵ It also should be noted that it is difficult to establish how much of the difference between the two datasets comes from different samples of countries. Both sources claim to cover terrorist incidents worldwide, and thus their codebooks include all countries considered in the study. It is possible that some states may be on the researcher's "radar", but because there have been no attacks recorded in those countries, they are not

Bilateral donors appear to be conflict-averse. Table 3.3 shows that armed conflict in a receiving country reduces bilateral aid by 36 to 42 per cent, *ceteris paribus*. Notably, LICs do not receive any less or more aid than other recipients in the presence of conflict. A typically fixed location of an armed conflict and a very low risk of it spreading to donor countries mean that foreign donors may not feel a need to subsidize conflict resolution efforts. Furthermore, they may curtail aid in order to exert pressure on a local government to pay more attention to the needs and wants of general population and this way avert current or future conflicts. By cutting aid to troubled recipients and giving it to the peaceful ones, donors may wish to show that maintaining social peace and stability pays off. Reduced aid may also reflect worries over an excessive influence of military strongmen and government cronies, who instead of implementing good policies may seek monetary spoils, while the general population is fighting for survival (Mallaby 2002). Such conditions should lead to a reduction in aid flows because they are far from ideal for the aid to be efficient and have a long lasting impact on poverty.

Finally, the coefficients on the indicator variables for Israel and Egypt (estimates of the recipient-specific fixed effects) confirm the existence of the bias in favour for these two countries. Respectively, they receive approximately 400 and 210-250 per cent more bilateral aid than other countries with similar characteristics. This result receives more attention in Alesina and Dollar (2000), and Azam and Delacroix (2006). There is also some evidence that Pakistan receives disproportionately more aid (see Fleck and Kilby 2010), however, this evidence is somewhat weaker than that for the “Israel and Egypt bias”.

reported in the dataset. For instance, if a country experiences only domestic terrorism, it is not expected to appear in ITERATE’s records, and hence assigning it a value of zero in ITERATE seems justified. Excluding such states would purge the dataset of stable and peaceful countries, while the lack of terrorism could also be a factor in the aid allocation process.

Multilateral aid

As Table 3.4 shows, the effects of economic and demographic indicators on multilateral aid are similar to those showed in the previous section. Multilateral aid exhibits stronger population bias: one per cent increase in the population size reduces aid per capita by approximately 1.5 per cent. The coefficients on GDP per capita also indicate that aid is increasing in income but at a decreasing rate. However, multilateral donors do not seem to explicitly discriminate against LICs. They also offer greater rewards for trade openness than bilateral donors. This could indicate that multilateral organizations are more committed to poverty reduction and good policies because they are less likely to be influenced by strategic alliances, geopolitical factors and colonial past (Alesina and Weder 2002).

Multilateral aid is more averse to violence. It does not show any reaction to international terrorism measured by ITERATE. But an escalation of domestic terrorism is likely to be associated with a drop in received multilateral aid. The negative coefficient on the log of quadratic attacks per capita (-0.009) indicates that this relationship seems to be non-linear. Multilateral aid responds very strongly to armed conflict: an affected country should expect a cut in multilateral aid of over 80 per cent on average. LICs are not additionally punished for the presence of political violence.

The response of multilateral donors may be different for several reasons. One of them may be that they are less likely to heed to geopolitical interests and therefore may pay more attention to the efficient use of aid, as well as the promotion of economic and social development. Consequently, they tend to limit the assistance to the countries affected by

terrorism and conflict. As Blomberg, Hess et al. (2004), and Gaibullov and Sandler (2008; 2009) show, violent instability significantly reduces economic growth. In addition, it is likely to be associated with smaller investment, poor policies and higher risks of resources being misused. Thus, it could discourage multilateral donors by having an adverse impact on the effectiveness of foreign aid. These studies also show that armed conflict influences economic growth much more than terrorism. Gaibullov and Sandler (2009) put the effect of conflict at twice the size of the impact of terrorism. This could explain why donors' response to armed conflict is stronger than to international or domestic terrorism. Concurrently, multinational agencies may be inclined to using aid as a tool in the promotion of peace and stability. They may try to establish an example for recipients by punishing violent states and rewarding those that find peaceful solutions. This reasoning is in line with Boyce and Pastor (1998), who argue that international institutions encourage military expenditure reductions and good governance.

There is still a question why multilateral donors respond differently to the two types of terrorism. Namely, why they shun away from domestic terrorism, but do not mind its international variant. One obvious answer seems to be that the latter is less frequent and therefore less destructive, and as such poses a lesser threat to human and physical capital that ensures an efficient use of aid. As already mentioned, multilateral institutions are less likely to succumb to geopolitical considerations and, unlike bilateral donors, do not need to provide security for their citizens. Hence, they do not have additional incentives in assisting violence ridden states. In contrary, they may be conflict averse due to the potential losses in aid effectiveness. However, one cannot rule out that multinational institutions are still under some influence of governments that constitute them. As discussed in the earlier section,

those governments may be not interested in providing additional assistance to recipients beset by domestic terrorism, but they tend to subsidize a fight against international terrorism. Thus, this predisposition to assist exporters of terrorism may be offset by the multilateral organization's drive towards efficiency. This is not implausible as the largest multilateral donors are dominated by the Western countries, which are also the most frequent targets of international terrorists. For instance, Mallaby (2002) argues that in spite of being multinational in principle, the World Bank and the International Monetary Fund reflect thinking and priorities of the United States – a country that is a target of 40 per cent of all international attacks (Enders and Sandler 2006).

Finally, multilateral aid does not seem to reward civil liberties. This, although surprising, is in line with Chauvet (2003). International institutions also do not favour Israel. It seems understandable because a special treatment to this well off country would be difficult to justify in terms of poverty reduction. Furthermore, it could be seen as too politically charged to pass the multilateral decision making process. Egypt and Pakistan still appear to receive more aid than other countries with similar characteristics. Unfortunately, the above analysis does not identify the reasons behind this favourable treatment.

Oil exporters

Conflict and terrorism may have different implications when taking place in oil exporting countries because stability of those states is a variable of interest to foreign donors. By oil exporting countries I understand states whose oil exports constitute at least 50 per cent of

all merchandise exports⁶. The estimates of determinants of aid received by this group are presented in Table 3.5.

Both types of aid demonstrate strong population bias, however they respond in a different way to the recipients' income per capita. Bilateral donors do not take this variable into account, while their multilateral counterparts react to increases in income with aid cuts. This result is not surprising because oil exporters belong to the richest aid recipients. Table 3.5 introduces an additional variable representing the value of oil exports in constant 2005 dollars (World Bank 1978-2008). As expected, multinational organizations are not influenced by the size of oil exports, while bilateral donors reward one per cent increase in oil exports with around 0.22 per cent raise in aid. Neither type of aid is dependent on civil liberties or trade openness. Note that the oil export variable also constitutes a measure of openness.

Bilateral donors appear to be neutral to terrorism and conflict occurring in oil exporting countries. Thus, they do not offer additional assistance when international terrorism rises, as it was in the case of the general sample. This result is somewhat surprising because it is a common perception that oil importers are ready to provide assistance to ensure stability of oil producing regimes, for instance the United States offers far going support to Saudi Arabia and Iraq. Perhaps bilateral donors do not want to appear to be supporting non-democratic regimes in exchange for oil. Nonetheless, this question would be best addressed in a donor-by-donor analysis, which is out of the scope of this study.

⁶ Countries included in the sample are: Algeria, Angola, Azerbaijan, Bahrain, Brunei, Congo, Rep., Ecuador, Gabon, Indonesia, Iran, Iraq, Kazakhstan, Kuwait, Libya, Nigeria, Oman, Qatar, Russia, Saudi Arabia, Syria, Trinidad & Tobago, Turkmenistan, United Arab Emirates, Venezuela and Yemen.

Multilateral donors, free of strategic alliances, are consistent in their aversion to conflict. An occurrence of armed conflict reduces multilateral aid to an oil exporter by approximately 75 per cent. Nonetheless, there is no evidence that they react to terrorism. Although the coefficients are negative, only the estimate on ITERATE (model 3) is marginally significant. I do not include the squared measure of terrorism in Table 3.5 because it returns statistically insignificant results in all four models.

In summary, dealing with oil exporters, multinational organizations seem to be more consistent with the aim of poverty reduction and promotion of socioeconomic development. At the same time, bilateral donors appear to be concerned mostly with the volume of oil exports, and ready to turn a blind eye on ongoing conflicts and civil right abuses.

3.7. Discussion

This study intends to answer whether the occurrence of armed conflict and terrorism affects foreign aid flows. To that end, panel data methods are employed to estimate an aid allocation function separately for bilateral and multilateral assistance. The used explanatory variables include basic indices of recipients' socio-economic conditions along with two independent measures of terrorism and an indicator of armed conflict. To ensure predeterminedness and sequential exogeneity, the regressors are lagged by one year. This operation should capture better the aid allocation process, where decisions are typically taken in advance during budget planning procedures.

The results largely confirm the existence of “population bias” meaning that larger countries tend to get shares of aid smaller than suggested by their population size. Foreign

aid appears to be increasing in income, but at a decreasing rate. Thus, donors are likely to concentrate their assistance efforts on poor countries. However, bilateral donors discriminate LICs, probably due to the weaker economic ties connecting those countries with the world. The income-aid relationship is different among the oil exporting recipients. Namely, inter-governmental institutions tend to cut aid sharply when country's GDP per capita increases, while bilateral donors are influenced mostly by the volume of oil exports. Finally, trade openness increases both multilateral and bilateral aid.

Armed conflict has a strong negative impact on foreign aid receipts. Its occurrence cuts bilateral and multilateral assistance by 40 and 80 per cent, respectively. However, bilateral donors are indifferent to violence in oil exporting countries. The two types of donors respond differently to terrorism. The episodes of international terrorism are associated with increased bilateral aid. This is consistent with the principal-agent framework in which recipients can count on additional assistance in return for undertaking counterterrorism efforts. At the same time, bilateral donors are less sensitive to domestic terrorism measured by GTD; their reaction is manifested by a reduction of assistance to LICs. Multilateral donors do not respond to international terrorism, but strongly react to its domestic variant. Importantly, they seem to treat the poorest and richer recipients equally.

Overall, the results seem to confirm that bilateral donors are likely to use assistance as a tool to achieve their strategic interests, while their multinational counterparts are more committed to poverty reduction and aid efficiency. For instance, to protect political and economic interests, bilateral donors may use aid to convince other states to participate in the fight against international terrorism, which may be considered as a substitute to defensive homeland efforts. Simultaneously, they are indifferent to domestic terrorism,

which does not affect them directly. They are also likely to favour countries with large oil exports and discriminate LICs, which are worse trading partners.

In contrast, multilateral donors are not influenced by the size of oil exports. One can also imagine that they would find it very difficult to explain why they discriminate LICs, the countries in the greatest need for help. Unlike bilateral donors, they do not need to provide security for their citizens, and therefore they do not have additional incentives in assisting violence ridden states. Indeed, they may be conflict averse due to the potential losses in aid effectiveness. They exhibit the strongest aversion to armed conflict, which causes much greater depletion of human and physical capital than terrorism. It appears likely that multinational agencies try to reward peaceful countries in order to set an example to others and thus promote stability among developing nations. Presumably, their dedication to poverty reduction and development is stronger because they should not be influenced by strategic alliances and geopolitical factors. However, one cannot rule out that multinational institutions are still under some influence of governments that constitute them, which could help to explain their lack of reaction to international terrorism. After all the largest multilateral donors are dominated by the Western countries, which are also the most frequent targets of international terrorists.

Table 3.1. Summary statistics of the terrorism and conflict data

Sample	Mean	Std. Dev.	Min	Max	Variance fractions*		
					Individual	Time	Random
<u>Attacks per million persons: ITERATE</u>							
All							
recipients	0.285	1.515	0	34.282	0.275	0.020	0.705
LICs	0.097	0.410	0	6.720	0.363	0.024	0.614
Oil Exp.	0.236	1.004	0	22.183	0.075	0.029	0.896
<u>Attacks per million persons: GTD</u>							
All							
recipients	1.313	6.778	0	167.535	0.268	0.026	0.706
LICs	0.474	1.710	0	29.751	0.348	0.054	0.598
Oil Exp.	0.638	1.643	0	30.473	0.095	0.041	0.864
<u>Conflict</u>							
All							
recipients	0.186	0.390	0	1	0.489	0.009	0.502
LICs	0.327	0.469	0	1	0.408	0.032	0.559
Oil Exp.	0.226	0.418	0	1	0.539	0.013	0.448

* Fraction of the data's variance that can be attributed to individual, time and random effects.

Table 3.2. Correlations by subsample

Variable	Bilat. aid	Multilat. aid	Popul- ation	GDP	Open- ness	Civil libert.	ITER- ATE	GTD
<u>All recipients</u>								
Multilat. aid	0.143							
Population	-0.076	-0.103						
GDP	0.013	-0.032	-0.086					
Openness	0.115	0.130	-0.186	0.264				
Civil libert.	-0.176	-0.263	0.076	-0.142	-0.174			
ITERATE	0.003	-0.015	-0.040	0.088	0.041	-0.044		
GTD	0.047	-0.008	-0.033	0.004	-0.061	-0.012	0.339	
Conflict	-0.067	-0.173	0.163	-0.170	-0.244	0.242	0.064	0.210
<u>LICs</u>								
Multilat. aid	0.479							
Population	-0.191	-0.177						
GDP	0.131	0.157	0.102					
Openness	0.308	0.310	-0.199	0.246				
Civil libert.	-0.188	-0.191	-0.098	-0.216	-0.187			
ITERATE	0.036	-0.002	-0.063	-0.011	-0.014	0.124		
GTD	0.119	0.089	-0.058	0.116	0.004	-0.016	0.349	
Conflict	-0.231	-0.253	0.185	-0.112	-0.263	0.191	0.169	0.180
<u>Oil Exporters</u>								
Multilat. aid	0.125							
Population	-0.055	-0.078						
GDP	0.027	-0.184	-0.317					
Openness	0.063	0.074	-0.373	0.132				
Civil libert.	-0.029	-0.270	-0.055	-0.009	0.179			
ITERATE	0.002	-0.027	-0.095	0.130	0.100	-0.015		
GTD	0.179	0.081	-0.072	-0.013	0.070	0.020	0.673	
Conflict	-0.042	-0.113	0.392	-0.317	-0.061	0.198	-0.025	0.152

Aid, GDP, ITERATE and GTD attacks are measured per capita. Civil libert. is a Freedom House index on a scale from one to seven, one indicating the highest degree of freedom, and seven the lowest.

Table 3.3. Bilateral aid: the effects of armed conflict and terrorism
(two-way panel estimates, recipient-specific effects)

Terrorism dataset	(1) ITERATE	(2) ITERATE	(3) GTD	(4) GTD
Ln(population)	-0.519 (0.368)	-0.713* (0.411)	-0.572 (0.370)	-0.807** (0.411)
Ln(GDP per capita)	7.490*** (0.955)	7.838*** (1.026)	7.410*** (0.974)	7.739*** (1.034)
Squared Ln(GDP per capita)	-0.504*** (0.0608)	-0.533*** (0.0650)	-0.500*** (0.0619)	-0.527*** (0.0655)
Ln(openness)	0.261*** (0.0874)	0.174* (0.0957)	0.281*** (0.0882)	0.208** (0.0969)
Ln(attacks per capita)	0.947** (0.402)	1.350*** (0.415)	0.362* (0.189)	0.0969 (0.117)
Squared Ln(attacks per capita)	0.0284** (0.0129)	0.0416*** (0.0133)	0.00981 (0.00622)	0.00178 (0.00338)
Conflict	-0.363*** (0.0865)	-0.407*** (0.148)	-0.422*** (0.0949)	-0.425*** (0.157)
LIC		-0.275** (0.124)		-0.352*** (0.132)
LIC * attacks		-0.00960 (0.00929)		-0.0175** (0.00826)
LIC * conflict		0.0716 (0.152)		0.0689 (0.156)
Civil liberties ^a	-0.0975*** (0.0303)	-0.141*** (0.0360)	-0.104*** (0.0310)	-0.145*** (0.0368)
Israel ^b	4.154*** (0.873)	4.057*** (0.926)	4.046*** (0.880)	4.031*** (0.933)
Egypt ^b	2.106*** (0.605)	2.311*** (0.634)	2.186*** (0.602)	2.509*** (0.636)
Pakistan ^b	1.266 (0.795)	1.549* (0.857)	1.390* (0.801)	1.785* (0.866)
Observations ^c	4,761	4,005	4,603	3,871
R-squared	0.616	0.611	0.618	0.613

Robust standard errors in parentheses. All explanatory variables lagged.

^a Scale from 1, free, to 7, not free. Negative coefficients mean that less free states receive less aid.

^b Coefficients on Israel, Egypt and Pakistan are the country-specific fixed effects estimates.

^c The difference in the number of observations between ITERATE and GTD is caused by the GTD's missing records for year 1993. Otherwise, the samples would be of nearly identical size.

*** p<0.01, ** p<0.05, * p<0.1.

Table 3.4. Multilateral aid: the effects of conflict and terrorism
(two-way panel estimates, recipient-specific effects)

Terrorism dataset	(1) ITERATE	(2) ITERATE	(3) GTD	(4) GTD
Ln(population)	-1.449*** (0.360)	-1.349*** (0.425)	-1.580*** (0.359)	-1.457*** (0.426)
Ln(GDP per capita)	10.67*** (1.135)	11.31*** (1.235)	10.74*** (1.128)	11.32*** (1.220)
Squared Ln(GDP per capita)	-0.702*** (0.0693)	-0.753*** (0.0754)	-0.707*** (0.0691)	-0.755*** (0.0748)
Ln(openness)	0.474*** (0.123)	0.546*** (0.139)	0.471*** (0.124)	0.552*** (0.139)
Ln(attacks per capita)	0.317 (0.559)	0.400 (0.546)	-0.270* (0.141)	-0.247 (0.153)
Squared Ln(attacks per capita)	0.00349 (0.0177)	0.00602 (0.0173)	-0.00950** (0.00409)	-0.00903** (0.00445)
Conflict	-0.838*** (0.115)	-0.842*** (0.177)	-0.830*** (0.125)	-0.820*** (0.193)
LIC		-0.120 (0.223)		-0.138 (0.213)
LIC * attacks		0.000447 (0.0151)		-0.00237 (0.0126)
LIC * conflict		0.00434 (0.211)		-0.0322 (0.222)
Civil liberties ^a	-0.0304 (0.0370)	-0.0665 (0.0435)	-0.0292 (0.0379)	-0.0607 (0.0446)
Israel ^b	-1.807 (1.159)	-1.361 (1.208)	-1.648 (1.179)	-1.157 (1.223)
Egypt ^b	4.558*** (0.917)	4.414*** (0.935)	4.497*** (0.924)	4.360*** (0.939)
Pakistan ^b	6.177*** (1.024)	6.044*** (1.081)	5.961*** (1.030)	5.816*** (1.085)
Observations ^c	4,714	3,979	4,557	3,846
R-squared	0.610	0.614	0.608	0.612

Robust standard errors in parentheses. All explanatory variables lagged.

^a Scale from 1, free, to 7, not free. Negative coefficients mean that less free states receive less aid.

^b Coefficients on Israel, Egypt and Pakistan are the country-specific fixed effects estimates.

^c The difference in the number of observations between ITERATE and GTD is caused by the GTD's missing records for year 1993. Otherwise, the samples would be of nearly identical size.

*** p<0.01, ** p<0.05, * p<0.1.

Table 3.5. Oil exporters: the effects of armed conflict and terrorism
(two-way panel estimates)

Terrorism dataset	Bilateral aid		Multilateral aid	
	(1) ITERATE	(2) GTD	(3) ITERATE	(4) GTD
Ln(population)	-2.148**	-2.270**	-4.511***	-4.708***
	-1.021	(1.049)	-0.836	(0.875)
Ln(GDP per capita)	3.343	2.963	-13.96***	-13.64***
	-4.125	(4.227)	-4.24	(4.339)
Squared Ln(GDP per capita)	-0.241	-0.230	0.639***	0.612***
	-0.22	(0.225)	-0.224	(0.230)
Ln(oil exports)	0.220***	0.233***	0.0612	0.0477
	-0.0744	(0.0831)	-0.105	(0.108)
Ln(openness)	0.0469	0.259	0.304	0.465
	-0.704	(0.735)	-0.69	(0.703)
Ln(attacks per capita)	-0.0805	-0.0124	-0.0804*	-0.0287
	-0.0494	(0.0464)	-0.0482	(0.0489)
Conflict	-0.531	-0.580	-0.754**	-0.758*
	-0.454	(0.479)	-0.382	(0.413)
Civil liberties ^a	0.158	0.132	0.171	0.243
	-0.152	(0.157)	-0.154	(0.159)
Observations ^b	500	487	500	488
R-squared	0.58	0.580	0.689	0.687

Robust standard errors in parentheses. All explanatory variables lagged.

^a Scale from 1, free, to 7, not free. Negative coefficients mean that less free states receive less aid.

^b The difference in the number of observations between ITERATE and GTD is caused by the GTD's missing records for year 1993. Otherwise, the samples would be of nearly identical size.

*** p<0.01, ** p<0.05, * p<0.1.

Table 3.6. Descriptive statistics for the recipient-specific fixed effects

	Bilateral aid Table 3.3				Multilateral aid Table 3.4			
	(1) ITERATE, no LIC dummy	(2) ITERATE, LIC dummy	(3) GTD, no LIC dummy	(4) GTD, LIC dummy	(1) ITERATE, no LIC dummy	(2) ITERATE, LIC dummy	(3) GTD, no LIC dummy	(4) GTD, LIC dummy
Observations	160	133	160	134	158	133	158	133
Minimum	-6.095	-6.176	-6.075	-6.105	-8.493	-5.504	-8.160	-5.335
Maximum	4.154	4.057	4.046	4.031	8.868	8.539	8.556	8.294
Mean	-0.096	-0.183	-0.084	-0.121	0.893	1.750	0.808	1.694
Median	0.114	-0.034	0.078	-0.041	0.871	1.446	0.777	1.457
St. Deviation	1.293	1.436	1.299	1.474	3.215	2.655	3.145	2.574
St. Error of Mean	0.102	0.125	0.103	0.127	0.256	0.230	0.250	0.223
Skewness	-1.029	-0.948	-1.029	-0.819	-0.066	0.238	-0.052	0.253
Kurtosis	6.711	5.661	6.632	5.195	3.002	3.078	2.970	3.069

Descriptive statistics computed for the recipient-specific fixed effect coefficients obtained in estimation of the base model for bilateral and multilateral aid shown in Tables 3.3 and 3.4, respectively. The numbers of columns correspond to those in Tables 3.3 and 3.4.

Table 3.7. Baseline models from Table 3.3 and 3.4 re-estimated on the limited sample

(only countries included in the WB income classification)

	Bilateral aid		Multilateral aid	
	(1) ITERATE	(2) GTD	(3) ITERATE	(4) GTD
Terrorism dataset				
Ln(population)	-0.723* (0.409)	-0.767* (0.411)	-1.348*** (0.423)	-1.468*** (0.424)
Ln(GDP per capita)	7.911*** (1.011)	7.810*** (1.030)	11.39*** (1.213)	11.41*** (1.204)
Squared Ln(GDP per capita)	-0.536*** (0.0646)	-0.531*** (0.0657)	-0.756*** (0.0746)	-0.759*** (0.0742)
Ln(openness)	0.168* (0.0960)	0.196** (0.0969)	0.543*** (0.139)	0.550*** (0.139)
Ln(attacks per capita)	1.346*** (0.412)	0.398** (0.191)	0.401 (0.573)	-0.242 (0.148)
Squared Ln(attacks per capita)	0.0416*** (0.0132)	0.0112* (0.00628)	0.00569 (0.0182)	-0.00886** (0.00429)
Conflict	-0.370*** (0.0892)	-0.420*** (0.0986)	-0.839*** (0.117)	-0.840*** (0.129)
Civil liberties ^a	-0.140*** (0.0361)	-0.146*** (0.0369)	-0.0655 (0.0435)	-0.0602 (0.0447)
Observations ^b	4,005	3,871	3,979	3,846
R-squared	0.611	0.613	0.614	0.612

Robust standard errors in parentheses. All explanatory variables lagged.

^a Scale from 1, free, to 7, not free. Negative coefficients mean that less free states receive less aid.

^b The difference in the number of observations between ITERATE and GTD is caused by the GTD's missing records for year 1993. Otherwise, the samples would be of nearly identical size.

*** p<0.01, ** p<0.05, * p<0.1

Columns (1) and (2) are the re-estimation of models (1) and (3) in Table 3.3.

Columns (3) and (4) correspond to models (1) and (3) in Table 3.4.

Conclusion

This thesis contributes to our understanding of some of the effects of terrorism and armed conflict. Each of the chapters helps us to understand behaviour of the respective agent types involved in violence. Chapter 1 focuses on decisions taken by terrorists when choosing an attack venue. It also lends some argument on the effectiveness of certain policies in deterring terrorism. Chapter 2 expands the evidence on attitudes of public opinion, or audience, towards the violence in the Iraq war. Finally, Chapter 3 adds to our knowledge of factors influencing foreign aid decisions made by governments and multinational institutions.

In particular, Chapter 1 exposes major discrepancies between two terrorist datasets, ITERATE and MIPT, and shows that, in spite of some substantial differences between them, they give fairly similar results. By showing that even seemingly insignificant adjustments in data may lead to very different conclusions, Chapter 1 offers a caveat against the dangers of using cross-national income data in time series analysis. This study acknowledges that all forms of terrorism in Iraq are likely to have wider audience abroad. It argues that citizens of countries with military presence in the Middle East may see their national interests being at stake, a view that finds support in the findings of Chapter 2. The results show that the effects of the rise of fundamentalist terrorism spread across all income groups, while the end of the Cold War was followed by transference of terrorism to the poorest countries. In contrast to the popular perception, the September 11 attacks did not cause a shift in the international terrorism patterns. Finally, the Iraq war coincided with a

reduction in the number of terrorist attacks in rich countries. This, when combined with a dramatic upsurge of terrorism in Iraq, provides some evidence for transference of terrorism from rich states to this Middle Eastern country.

Chapter 2 should be of interest to governments considering contribution of their troops to multinational military operations. It expands our knowledge of factors influencing war-related public opinion in coalition countries and indicates what is permissible and what is intolerable from a political point of view. Additionally, it confirms the validity of logged cumulative fatalities as an explanatory variable in war-time opinion models. The study shows that in the absence of frequent soldier fatalities, the public is likely to respond to perceived successfulness of a mission. There is evidence that the public in the coalition countries is sensitive to deaths in terrorist attacks in Iraq. This highlights the urgency of devising war strategies that tackle this form of violence in a more effective way. Furthermore, the public does not base their opinion only on the most recent events, but takes into account developments in earlier periods too. It reveals the costly nature of scandals of military misconduct and points out that news of success can significantly reduce war opposition.

The last chapter provides evidence on the effects of political violence on foreign aid. It shows that an occurrence of armed conflict cuts bilateral and multilateral assistance by 40 and 80 per cent, respectively. However, the two types of donors respond differently to terrorism. Episodes of international terrorism are associated with increased bilateral aid, while its domestic variant reduces multilateral assistance. The behaviour of bilateral donors is in line with the principal-agent model, in which recipients are reimbursed for undertaking counterterrorism efforts that are beneficial also for the donor. Further evidence that

governments use aid as a strategic tool comes from the fact that they are indifferent to domestic terrorism. They also tend to turn a blind eye on violence in oil exporting countries and focus their attention on the size of oil exports. In contrast, multilateral organizations strongly react to domestic terrorism and appear to be more committed to poverty reduction and aid efficiency.

Providing security to citizens is becoming increasingly difficult as the world becomes more interconnected and borders seem to disappear. In result, terrorists can effortlessly communicate and travel across countries, as well as react strategically to security upgrades. At the same time, nations are likely to see their troops being deployed in remote regions in the name of national interests, which are becoming more difficult to define. These ongoing changes in the nature of conflict and terrorism call for continuous research into all aspects of political violence and its prevention. By exposing the shifts in location patterns of terrorism, this thesis underlines the need for collective and coordinated counterterrorism efforts on a global level. It emphasizes the need of coming up with policies and strategies ensuring as much safety as possible for people in countries to which we are sending our troops. Eventually, it stresses the importance of maintaining peace and stability in developing countries which are in need of foreign aid.

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