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Fatality sensitivity in coalition countries:

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by

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ABSTRACT

This paper investigates the fatality sensitivity of public opinion in coalition countries, i.e. those that participate in war efforts but are not a leading force. The analysis is based on the war-related opinion polls from the United Kingdom, Poland and Australia. 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, which may be considered as a measure of success of the war efforts, dominating other indicators in the absence of frequent soldier fatalities. The results also show that news of success has a power to reduce war opposition, while scandals are costly in terms of public support.

1. Introduction

The war in Iraq, which began on 20 March 2003, occupied news services and national agendas of many countries for several years. The invasion led by the United States was justified by 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 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 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 study.

The decision to commit armed forces to war belongs to the most vital decisions any government can make. Military operations require public support because it is the citizenry who pays the price of war with their lives, health and taxes. Thus, 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 intolerable from a political point of view. As a result, a study of public opinion regarding armed conflict is important from both an 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 analyse 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 study, 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 country. Consequently, I concentrate on three countries, the 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: 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 because 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 the combat is unlikely to have a pivotal impact on the war outcome and the consequences of such a move would be mostly limited to strained relationships with the United States. Irrespectively of the supporting forces' performance, international condemnation in case of failure is most likely to concentrate on the coalition leader. This way, even if the Iraq war was lost, the blame would be placed largely on 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 number of deaths is likely to grow differently among the coalition troops. For instance, the death toll among American soldiers amounted to 2.5% of the country's maximum deployment in the post-invasion period. The corresponding number for the United Kingdom and Poland was approximately 1%, 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 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 the magnitude of terrorism in Iraq. This method offers two considerable advantages. First, it tackles problems of nonstationarity which plague opinion and fatality series. Second, it has 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 in one period raises 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. Furthermore, variables in ECM are first-differenced and the model allows the public to respond to signals of war progress. This will be true also for specifications using cumulative deaths as explanatory variables, because the public opinion will be analyzed against changes in the rate of fatality accumulation.

Since governments are chiefly concerned about avoiding political sanctions for their military endeavours, and less about maintaining war support (Klarevas 2002), I use opposition scores as a dependent variable. 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, creating a perception of the terrorism intensity.

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 Lis (2011). 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, which happened within 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 of this study may be interpreted as a policy-relevant guidance for governments considering involvement in 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 the coalition in order to keep allies committed to the military intervention.

The remainder of this paper is organized as follows. The next section offers literature review. Sections 3 and 4 present data sources and properties. Sections 5 and 6 discuss

estimation method and results. Discussion and concluding remarks are offered in Sections 7 and 8.

2. Literature review

The literature 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 fatalities. 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 fatalities has a better explanatory power than cumulative fatalities when marginal fatalities are increasing; when they are decreasing – log of cumulative fatalities gives better results.

Numerous studies seek explanation to changes in war support in factors other than 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 fatalities in certain types of military interventions. In his study, Berinsky (2007) considers the “elite cue theory” according to which opinion is shaped 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 public support for the Iraq war was faster than during the wars in Vietnam and Korea. He attributes the higher sensitivity to war fatalities 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 fatalities on the presidential rating. They consider cumulative fatalities 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 fatalities 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 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) Voeten and Brewer (2006) follow the line suggested by Gelpi and his colleagues but look at the direct effect of fatalities on the perception of war success and war support. They show that soldier deaths have the strongest

¹ Several explanations of lower 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 expectations of low human losses. Livingston (1997) argues that vivid pictures and time proximity of news reports make deaths more shocking, and therefore increase the degree of public casualty sensitivity, while Aday (2010) argues that media exert influence only in conjunction with elite consensus.

impact on the expectations of war outcome, and somewhat weaker effect on war support. More recently, a book by Gelpi, Feaver and Reifler (2009) provides a comprehensive study of fatality sensitivity among Americans, reinforcing the argument of the public being “defeat phobic, not casualty phobic”.

All the articles cited above focus on the U.S. public opinion. To the best of my knowledge, there have been no studies that link war casualties to the war support or opposition in the three countries in question. The available literature discusses the British public opinion and concentrates mostly on the Falklands war of 1982. The major contributors in this area were Norpoth (1987; 1991), Sanders, Ward and Marsh (1987; 1991), and Clarke, Mishler and Whiteley (1990). More recently, Lai and Reiter (2005) studied the presence of rally effects in the United Kingdom in the post-World War II conflicts. What all these studies have in common is that they look at the popularity of the governing party, not the public support for war. Moreover, they tend to model the war period with indicator variables, and hence do not account for the intensity of the conflict and its human costs.

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.

3. 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 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% were in favour of the use of military force and 39% were against it. The support for the invasion reached its maximum of 66% on 10 April 2003. The same survey showed the lowest opposition of 29%. The poll conducted after the release of pictures of torture on Iraqi prisoners in 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% 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 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%. The situation changed in 2006, when the opposition of 59% exceeded the number of supporters by 24%. 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 (see Baker 2006).

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 were asked “*Do you support the participation of Polish soldiers in the mission in Iraq?*”². The initial opposition of 73% fell down to 45% in May 2003 (see Panel 2 of Figure 1). This was also the time, when the support for sending troops to Iraq reached its peak of 45%. As the sectarian violence engulfed Iraq, the Poles grew less comfortable with the country’s involvement in the military operations. The opposition bounced back to 70% in the second quarter of 2004 and exceeded 80% in 2007. Notably, neither the Polish nor the Australian polls did show the “rally-around-the-flag” effect described by Mueller (1971).

Data for explanatory variables is taken chiefly from two sources: iCasualties.org (2010) and the MIPT Terrorism Knowledge Base³ (2008). The latter draws from open sources and provides information on acts of terrorism defined as violence for political purposes by sub-national actors, designed to induce 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 (of which 593 were classified as international) that took place in Iraq between 20 March 2003 and 31 December 2007, and caused 26,147 fatalities. This number represents mostly civilian deaths as the database concentrates on non-combatant targets; only 0.6% of incidents 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 40 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 the model. This suggests that public does not react only to the number of attacks, but is also sensitive to their severity.

² Original wording: “*Czy popiera Pan(i) udział żołnierzy polskich w operacji w Iraku, czy też nie?*”

³ The 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.

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, 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 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 and Seriously Injured. Overall, there were 222 cases falling into these two categories. 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 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. 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).

4. Graphical analysis

Figures 1 and 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, while 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 2005⁴. I show the number of soldiers 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 1 Panel 3b).

[Figures 1 and 2 about here]

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

⁴ 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. 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 opinion (see Gartner and Segura 1998).

gaining strength, the public enthusiasm for the war diminished, which is reflected in the rising share of those who opposed 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 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 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 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 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 opinion⁵. 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

⁵ See Gartner and Segura (1998) for a comprehensive discussion of advantages of marginal casualties over logged casualties.

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. 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 Lis 2011). Since soldier deaths are relatively rare, 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 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. 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, 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 opinion in coalition countries.

5. 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). A failure to account for nonstationarity may lead to 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, which appears to be commonly used in studies of public opinion (e.g. Clarke, Ho et al. 2000; De Boef and Kellstedt 2004; Keele 2007; Jennings and John 2009). It was previously applied to study fatality sensitivity of the American public by Voeten and Brewer (2006) and Lee (2011). The model relates current changes in the war opposition to the contemporaneous changes in the magnitude of violence, the extent to which the series were outside of their equilibrium relationship in the previous period, and exogenous events. It may be written as follows:

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

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)⁶. α_0 and ε_t are a constant and an error term, respectively.

An advantage from using ECM is the ability to capture the series' permanent memory, i.e. allowing the public opinion to be permanently affected by the shocks in explanatory variables. This characteristic is particularly valuable as I expect the impact of violence occurring in period t on the public opinion to be dispersed across several following 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. Panels 1b and 2b of Figure 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 estimation procedure has been outlined in Engle and Granger (1987) and De Boef and Granato (1999).

6. Results

⁶ 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.

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 than marginal fatalities⁷.

[Table 1 about here]

Table 1 presents results of estimating Equation 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 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 cumulative Polish fatalities. Regression coefficients behave as anticipated. The error-correction parameter ($Opposition_{t-1}$) in models 1 – 3 and 5 suggest that shocks to British 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

⁷ In addition, I consider the hypothesis proposed by Gartner and Segura (1998) that marginal casualties explain changes in opposition better 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.

rate of 98%, which means that only 2% of an effect remains after one period and 0.04% 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 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%. Thus, the Polish public "overreacts" to the news of fatalities by 4% within the first period. This is then corrected over ensuing periods, with a 0.16% correction after two periods, a negligible overcorrection after three periods, 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 considers itself terrorism-free. According to polls conducted between June 2003 and October 2007 (CBOS 2007), on average 75% of respondents deemed that due to its involvement in Iraq, Poland would become a target of such attacks. In October 2004, when 82% of Poles feared terrorist attacks, the British public seemed a little bit less concerned. "Only" 56% 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 a one percent increase in fatalities being followed by a 0.16% 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 too. A long-run multiplier of 10.74, shown in Table 2, informs that the total short- and long-run effect of a one percent increase in fatalities gives a boost of 0.1% to 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% 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% 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% confidence level. These results are largely reproduced when I use logged cumulative British casualties (soldiers killed plus wounded) as

a measure of violence (see Appendix). In fact, I cannot reject the hypothesis of coefficients equality across the two specifications at any conventional significance level.

[Table 2 about here]

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 its 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 suggest that a one percent increase in one of these series leads to a boost in war opposition by approximately 0.08% and 0.03%, 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 1 also provides estimates of changes in war opposition induced by selected events. The end of the Iraq invasion in early May 2003, coincided with a significant reduction in opposition in Poland (and a rise in support, CBOS 2007). 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, which seems to explain the 26% 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%, and had a less evident impact in Poland.

All models in Table 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 effects. 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 a withdrawal from Iraq.

Marginal fatalities

Table 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 fatalities 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 wartime opinion through their regular and nearly every-day appearance in news reports. 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 the 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.

[Table 3 about here]

The 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. Being aware of the dangers of inference from such a small sample, I try to fit my 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 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 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.

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 an average rate of two a day.

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.

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 of terrorism in Iraq on war opposition in the coalition countries. The failure to find a 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.

7. Discussion

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 in the coalition countries is sensitive not only to their own fatalities but also to deaths of Iraqis.

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 studies of the American opinion by Gartner and Segura (1998) and Gelpi et al.

(2006)¹⁰, 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 West. 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 expected to enjoy. Overall, the benefit side has been depreciating throughout the entire military campaign because the citizenry of the supporting states have been seeing a

¹⁰ Unfortunately, I cannot test directly the hypothesis advanced by Gelpi et. al (2006) and Voeten and Brewer (2006) that the effect of fatalities on war opposition is through the perception of the probability of war success, as there are no appropriate polls available for the coalition countries. However, this hypothesis is consistent with the cost-benefit approach, where the prospect of success determines the expected value of benefits.

growing divergence between the war and their national interests. Hence, sluggish progress and swelling casualties may have led the public to a conclusion that the “lesser extent” of democracy in Iraq would have been an acceptable price for avoiding additional bloodshed.

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 as 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. This highlights the distinction between choices facing the public in the United States and in other coalition countries.

Finally, the results appear to 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. 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. This could have been already observed in Polish attitudes towards the conflict in Libya. An overwhelming majority of 88% voiced their opposition to country's military involvement in the conflict (CBOS 2011).

8. Conclusions

This study uses opinion polls from the United Kingdom, Poland and Australia to analyze fatality sensitivity of war-related public opinion in coalition countries, i.e. those that participate in military 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 efficient 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. 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 wartime opinion. A lower cost of a potential withdrawal could have made it easier to join war opposition.

The study confirms the validity of using logged cumulative fatalities as an explanatory variable in wartime 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 shows 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 employs 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 support ratings. 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, 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.

Figure 1. Opposition to the Iraq war and soldier deaths

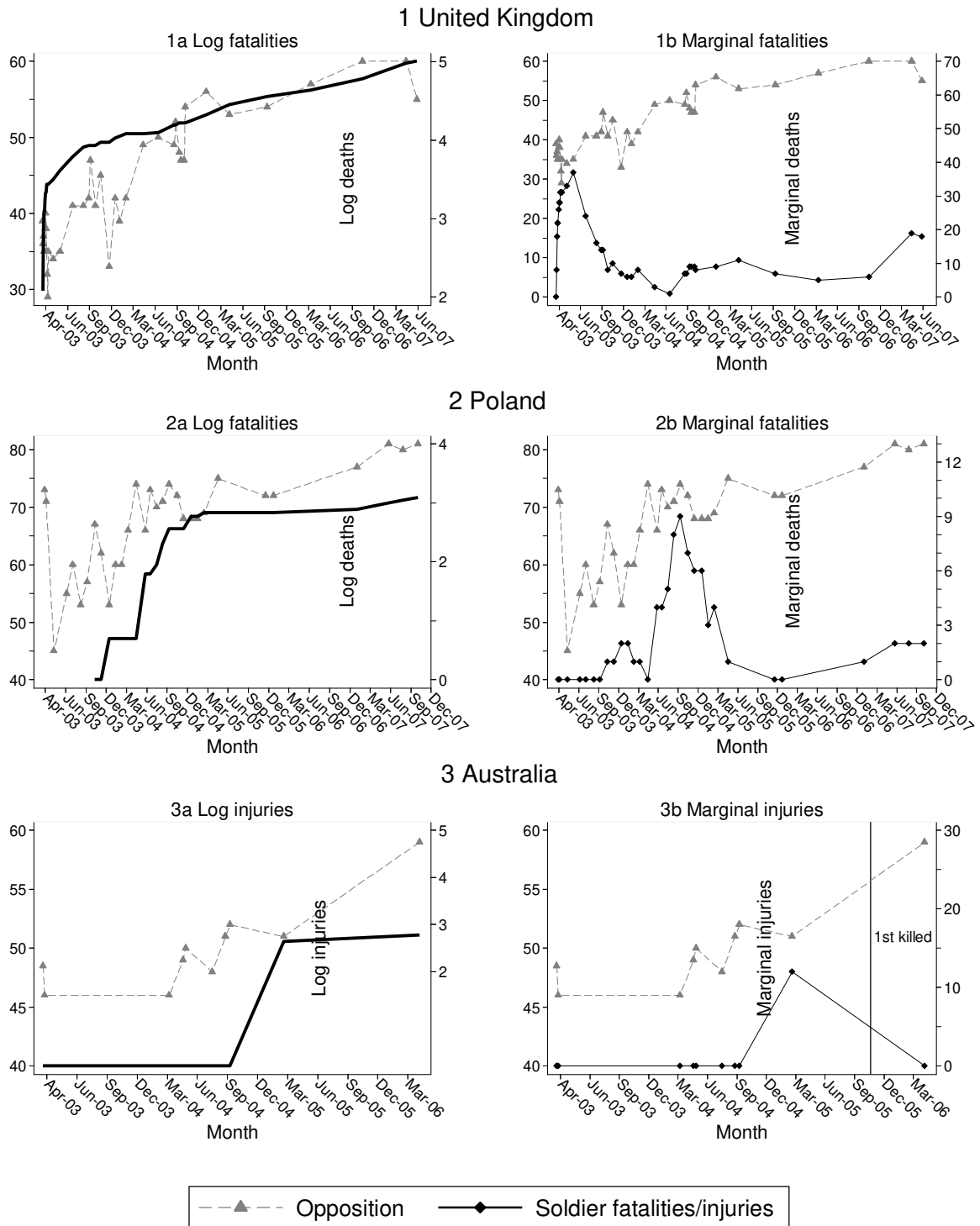


Figure 2. Opposition to the Iraq war and MIPT fatalities

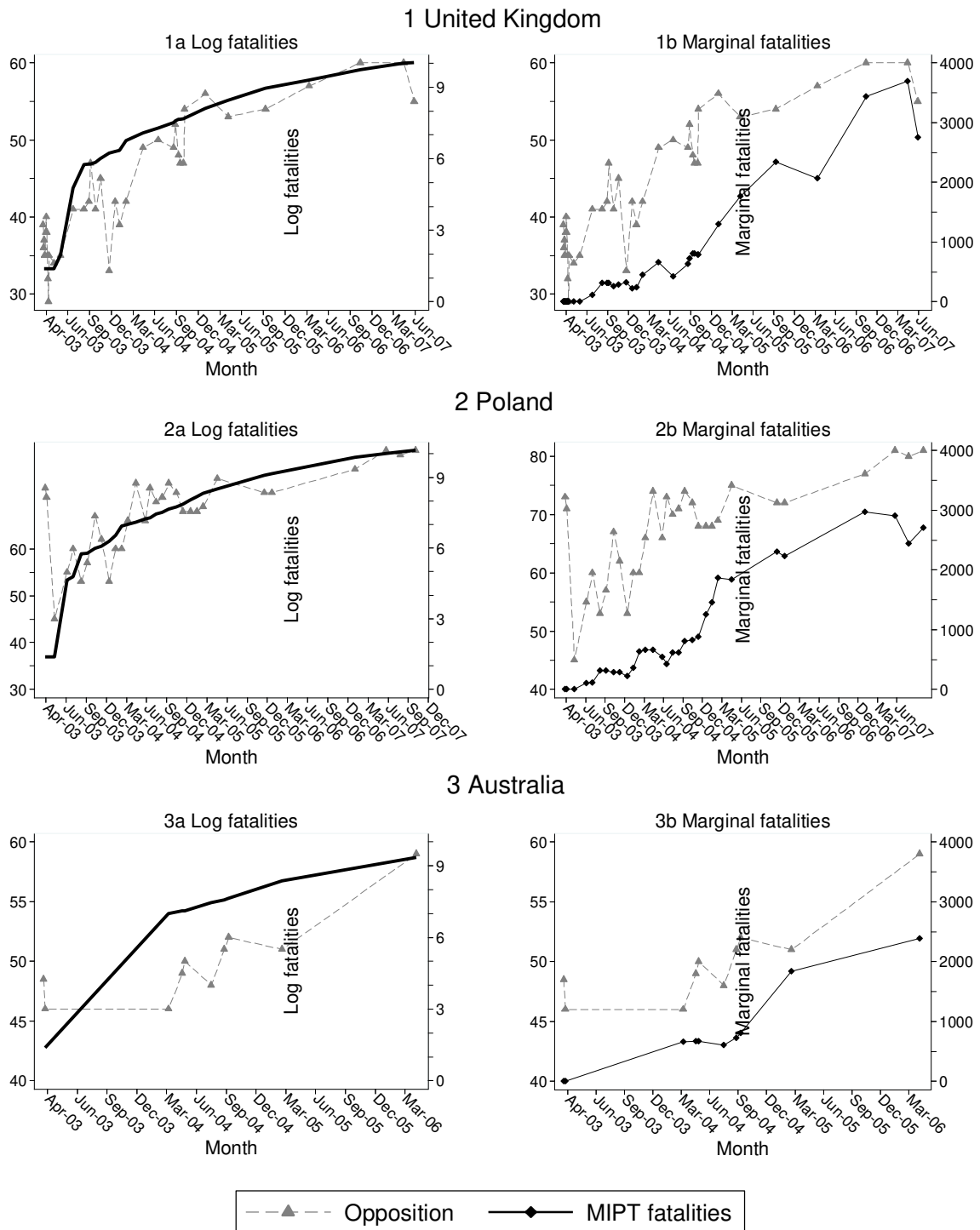


Table 1. ECM estimates based on logged cumulative fatalities

	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. * $p \leq .05$, ** $p \leq .01$. One-tailed tests. [†] significant heteroskedasticity.

Table 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 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				-0.41 (0.77)			
Mrg National fatalities _{t-1}				-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

Appendix

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.

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