

# NEGOTIATING WITH TERRORISTS: THE COSTS OF COMPLIANCE\*

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## Abstract

It is often argued that negotiating with terrorists will encourage terrorist attacks. To date, corroborating empirical evidence is absent. Using ITERATE data, we investigate the impact of negotiations on terror activity. We restrict attention to hostage events with clear-cut demands from terrorists. Our sample period runs from 1978 to 2005, and comprises 1448 events in 125 countries. Estimating a dynamic panel with annual data, we find that terror activity increases in the negotiation rate with an elasticity of around 0.7. The use of individual country, monthly data in vector autoregressions does not yield a clear message.

*Keywords:* Terrorism, Negotiations, Dynamic Panel, VAR

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# 1 Introduction

**Motivation and main results.** A fundamental question in dealing with terrorists is how complying with their demands affects the frequency and intensity of attacks. Many countries such as the U.S. and Israel have repeatedly announced strict no-negotiation policies, and some states as Colombia have even outlawed any contact with hostage-takers.<sup>1</sup> The main argument for such an unrelenting policy is that terrorists learning that they can accomplish their goals by violence might be encouraged to perpetuate their behavior. Yet, it is well-known that ransom is often paid; famous examples include the kidnapping of three US citizens during the Reagan administration in India in 1987 and the case of kidnapped school children in Maalot seeing Israel negotiating. Nowadays, the repeated ransom payments by European governments for hostages taken in Yemen as well as to pirates hijacking vessels off the Somali coast provide examples of stakeholders' readiness to at least partially comply with terrorist demands.

Our paper is the first one investigating the impact of negotiations on the intensity of terror attacks with econometric techniques. We make use of ITERATE<sup>2</sup> which is the only worldwide data set including information on negotiations and their outcomes. We restrict our attention to kidnappings, skyjackings and barricade missions, that is, events which are characterized by clear-cut demands from terrorists and the threat of the loss of human lives. Our sample period runs from 1978 to 2005 and records 1052 kidnapping, 273 skyjackings and 123 barricade missions in 125 countries and autonomous regions. Since these cases differ considerably in the number of victims, we construct a composite terror index measuring the intensity of terror over time. The negotiation rate, defined as the percentage of events that were negotiated, is around 33%. In almost half of these cases, terrorists were at least partially successful with their demands, so that the success rate defined as the number of successful negotiations over all events amounts to 16%. The main result of our paper is that both higher negotiation rates and higher success rates significantly increase the terror index.

For analyzing the impact of negotiation behavior on the terror index, we estimate a dynamic panel data model. Due to time series evidence (Enders and Sandler (2005)) documenting that the intensity of terror is correlated over time, and to account for unobserved heterogeneity at the country level, we use a Generalized Methods of Moments estimator as proposed by Arellano and Bond (1991). We find that the negotiation rate is significant at the 1% level and that, evaluated at the mean negotiation rate, the

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<sup>1</sup>See, e.g., Bapat (2006) and Faure (2003) for surveys.

<sup>2</sup>The ITERATE data set was originally compiled by Mickolus (1982) and has been updated consistently.

elasticity of the terror index with respect to the negotiation rate is around 0.72. The impact of the success rate is smaller with an elasticity of around 0.37. This finding indicates that unsuccessful negotiations, that is, negotiations in which none of the terrorist demands were met, are even worse than successful negotiations.

We extend our analysis in three directions: Since we are interested in the impact of negotiations, we need to restrict attention to cases with clear-cut demands that can be negotiated at all. A potential concern regarding our findings is the possibility of substitution effects - terrorists learning that governments will not comply with their specific demands may not give in, but may switch from hostage-takings and barricade missions to other terror modes such as explosive bombings, armed attacks or suicide bombings. Since ITERATE also records these latter events, we analyze potential substitution effects by regressing a terror index constructed for the latter event types on our measures of negotiation behavior relating to the former three event types. We do not find any evidence in favor of substitution effects, though.

A second extension concerns possible spill-over effects among countries. The literature has long recognized that negotiations of governments may either increase or decrease terror rates in other countries,<sup>3</sup> but there are no empirical studies on this issue yet. When estimating the impact of negotiations in country  $i$  on the terror index in country  $i$ , we control for the negotiation behavior in all other countries. This is done by including average world negotiation rates for the rest of the world. None of our specifications, however, allows us to reject the hypothesis of no spill-over effects.

Third, many case studies show that country specific effects play an important role for terror frequencies, and considering different countries separately is hence worthwhile. Furthermore, our panel analysis enables us only to quantify the magnitude, but not the timing of the negotiation rates' impact on the terror index. The high frequency of terror events in Colombia, Iraq, and Lebanon allows us to use monthly data in a vector autoregression (VAR) relating the respective countries' terror intensities and negotiation behavior. While the response of the terror index to negotiation innovations is positive in the case of Iraq and Lebanon, the response is negative in Colombia. The mixed picture reinforces the view that country specific effects are important for understanding terrorism, but the analysis of the three countries does not yield general insights. Our main result hence remains that, on average, higher negotiation rates lead

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<sup>3</sup>See, for instance, Sandler et al. (1983), Im et al. (1987), Lee (1988), and in particular Siquiera (2006). Intuitively, spill-over effects may go in either direction: If one government refuses to negotiate, then terror organizations might take this as an up-date on the behavior of other governments, and terror rates would then also decrease in other countries. Equally plausible, terror organizations facing tough governments may just move on to other countries, so that spill-over effects would be negative.

to an increase in the terror index.

**Relation to the literature.** There are no other papers analyzing the impact of negotiations on terror activity empirically, but from a broader perspective, our article is related to the following strands of literature: The seminal *theoretical* paper on reputation effects is Lapan and Sandler (1988) who show that a no-negotiation policy can be successful if the government's type is private information, and if terrorist benefits from attacks require that negotiations take place. Related approaches are taken by Sandler and Enders (2004), Arce and Sandler (2005), and Caplan (2006). Alternatively, one could also think of models where paying "moderate" ransoms keeps the terror rate subdued at a stable equilibrium level both sides can live with.<sup>4</sup> Ultimately, the impact of negotiations on terror rates seems an empirical question.

The *empirical* literature focuses on the causes, targets and costs of terror. Concerning the *causes* of terror, most papers agree that terror rates are increasing in political instability, ethnic tension<sup>5</sup> and poor institutional factors (see Krieger and Meierrieks (2010) for a survey).<sup>6</sup> The level of democratization is found to be influential with some evidence that the impact on terror rates is inversely U-shaped when countries move from dictatorial to increasingly democratic regimes (Abadie (2006)).<sup>7</sup> By contrast, GDP and growth rates<sup>8</sup> as well as the degree of inequality<sup>9</sup> are found to have little or a non-robust impact on terror rates.

Concerning the *targets* of terror, Tavares (2004) as well as Wade and Reiter (2007) find that wealthier countries are more susceptible. Dreher and Gassebner (2008) show that United Nations voting behavior in line with the U.S. increases the risk of being attacked. In a similar spirit, Deloughery (2009) finds that joining political and economic

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<sup>4</sup>Such a view seems not implausible for terror organizations such as the Abu Sayyaf Group seeing hostage-taking (at least partially) as a business opportunity (see, e.g., Faure (2003)). Similarly, the government under President Pastrana in Colombia has negotiated with the two main socialist guerrilla groups, FARC-EP and ELN since 1998, whose financing practices include kidnapping as well as extortion of large corporations and cattle ranchers (see, e.g., the case study on Colombia in Whittaker (2007)).

<sup>5</sup>See Bravo and Dias (2006), Piazza (2006) and Choudhary and Shughart (2010). Abadie (2004) finds that ethnic diversity matters only when accompanied by different languages.

<sup>6</sup>In particular, Li (2005) finds a significant impact of political rights on terror rates, and Kurrild-Klitgaard et al. (2006) show that increasing civil rights reduces terror rates.

<sup>7</sup>This view is supported by Freytag et al. (2009) who find that low growth rates and poor institutional conditions induce higher terror rates only for countries with an intermediate degree of democratization.

<sup>8</sup>See, e.g., Piazza (2006), Burgoon (2006), Drakos and Gofas (2006), Krueger and Laitin (2008) and Piazza (2008).

<sup>9</sup>Most papers find no significant impact (see, e.g., Kurrild-Klitgaard et al. (2006)). Li and Schaub (2004) is an exemption.

unions with countries having high attack rates increases the own risk of being targeted. In our empirical analysis, we aim at capturing effects like these by the use of country and time fixed effects, so that our results on the impact of negotiation rates should be meaningful.

*Costs* of terror include reductions in GDP,<sup>10</sup> higher stock market volatility and lower share prices, lower life satisfaction (Frey et al. (2007)), and reactions by governments impeding the process of democratization and economic development. Tavares (2004) finds that a high frequency of incidents is more damaging than a large number of victims in a particular incident. We account for this by giving the terror index a logarithmic expression. Doing so implicitly shifts weight from the number of individuals killed and hostages taken to the frequency of terror attacks.

Finally, our study can be seen as complementary to empirical papers analyzing under which circumstances negotiations are successful in the sense that hostages are released (Atkinson et al. (1987)). Donohue and Taylor (2003) use statements of contemporary witnesses to investigate 186 negotiations with terrorists. Accordingly, there are many papers from different disciplines such as political science (Hoffman (2006)), psychology (Hudson (1999) and Stout (2002)) and history (Lewis (2003)) discussing the motives of terrorists. While these studies are interested in the microstructure of attacks and negotiations, we aim at capturing the average effect of negotiating with terrorists.

In the following, we describe the data in section 2. Section 3 presents the panel data analysis, and section 4 extends to the VAR analysis for Colombia, Lebanon and Iraq. We conclude in section 5.

## 2 Data

The ITERATE dataset<sup>11</sup> is unique in providing information on negotiations over a long time span (1968 - 2006) and for a large number of countries. The working definition of international/transnational terrorism underlying ITERATE's recording of information is

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<sup>10</sup>See Abadie and Gardeazabal (2003) for a study of the Basque Country, and Crain and Crain (2006) for a large panel data analysis. Blomberg et al. (2004) report that the negative impact of terror on growth is accompanied by a substitution of government spending for private investment. Abadie (2007) shows that terrorism reduces GDP also because investors re-allocate capital from regions with a high terror intensity to less exposed areas.

<sup>11</sup>The ITERATE - International Terrorism: Attributes of Terrorist Events - dataset is maintained by Mickolus et al. (2004).

”the use, or threat of use, of anxiety-inducing, extra-normal violence for political purposes by any individual or group, whether acting for or in opposition to established authority, when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims and when, through the nationality or foreign ties of its perpetrators, its location, the nature of its institutional or human victims, or the mechanism of its resolution, its ramifications transcend national boundaries.”

Our sample period ranges from 1978 to 2005, and Appendix A provides a list of the 125 countries and autonomous regions making up our dataset. Table 1 provides summary statistics for the panel dataset.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Events	3500	0.41	2.10	0	76
Individuals killed	3500	0.67	10.26	0	378
Hostages	3500	7.5	45.08	0	999
Terror Index ( $E$ )	3500	0.45	1.18	0	6.92
Negotiation Rate ( $N$ )	603	0.33	0.42	0	1
Success Rate ( $N_{suc}$ )	603	0.16	0.34	0	1
World Neg. Rate ( $W$ )	603	0.28	0.08	0.06	0.6
World Suc. Rate ( $W_{suc}$ )	603	0.13	0.08	0	0.37
Other Events	3416	0.42	2.13	0	76
Other individuals killed	3416	0.69	10.38	0	378
Other individual wounded	3416	0.50	13.61	0	700
Terror Index ( $E^o$ )	3416	0.23	0.63	0	6.98

Table 1: Summary Statistics - Annual Data

Data Source: ITERATE, Annual Data, 1978-2005, 125 countries and autonomous regions.

Our dataset comprises 3500 ( $125 \times 28$ ) observations. For analyzing the impact of negotiations, our terror index  $E$  contains only *kidnappings, skyjackings and barricade missions*; terror events that imply terrorist demands and strong incentives for governments to negotiate immediately. The terror index follows the logic in Eckstein and Tsiddon (2004) and is calculated as

$$E_{it} = \log(1 + \#events_{it} + \#killed_{it} + \#hostages_{it}).$$

Hence, the intensity of terror in country  $i$  in year  $t$  is measured by the logarithm of the sum of terror events, deaths associated with these events, and hostages involved

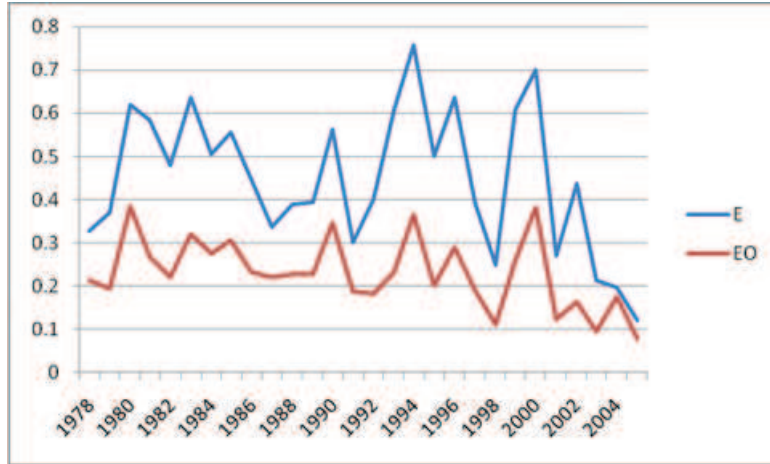


Figure 1: Terror indices  $E$  and  $E^O$ ; 1978-2005, Annual Data

in these events. Summary statistics for the terror index and its component series are provided in the first four rows of table 1.

For the negotiation rate, we have 603 observations meaning that there was at least one terror attack in 603 country years. The negotiation rate is defined as the number of negotiations divided by the number of events, and only one third of all cases were negotiated. The success rate is the ratio of successful negotiations to events, where “successful” means that the terrorists’ demands were at least partially fulfilled. Similarly, the world negotiation rate is also calculated twice; inclusive and exclusive of unsuccessful negotiations. For each country  $i$  and year  $t$ , the world negotiation rate is taken as the average across countries excluding country  $i$ . It is used in the analysis of spill-over effects among countries.

While our event measure  $E$  considers kidnappings, skyjackings and barricade missions, all other events ranging from assassinations to suicide bombings enter the second index  $E^O$ . The last four rows in table 1 have interpretations similar to those for the event index  $E$ . Figure 1 depicts the intertemporal development of the two terror indices.

The summary statistics for the analysis of the country level data, which characterize terror activity in Colombia, Lebanon and Iraq, will be provided in section 4.

### 3 Panel Estimation

**Estimation technique.** The panel nature of the data allows us to control for unobserved heterogeneity at the country and the time levels, and in order to take full

advantage of this nature, only two-way fixed effects regressions are reported. To account for autocorrelation in the terrorist incident series, we include the lagged value of the dependent variable as a regressor in addition to the negotiation rate. Nickell (1981) illustrates that dynamic panel data models with fixed effects are subject to Hurwitz biases of order  $1/N$  with  $N$  being the number of time periods available in the data. To correct for this bias, we employ an estimation technique suggested by Arellano and Bond (1991). The authors propose a Generalized Methods of Moments (GMM) estimator using lagged (two periods or more) values of the dependent variable, the predetermined variables and the strictly exogenous variables as instruments. By using the GMM estimator we therefore also address the likely endogeneity of the negotiation rate which is replaced by lagged values. As a consequence, we are in a position to estimate the impact of the negotiation rate with country fixed effects in a consistent manner.

Our model takes the form

$$E_{it} = \delta I + \gamma E_{it-1} + \beta_1 N_{it} + a_i + u_{it}, \quad t = 2, \dots, T \quad (1)$$

where  $\delta$  is a  $1 \times T$  vector collecting the coefficients of the constant and  $T - 1$  time period dummies, and  $a_i$  captures unobserved heterogeneity at the country level.  $E_{it}$  and  $N_{it}$  respectively denote the intensity of terror and the negotiation rate in country  $i$  at time  $t$ . As negotiation rates, we use both the overall negotiation rate and the success rate since it is a priori not clear which rate has a higher impact on the terror index.

**Results.** Table 2 reports the results. Irrespective of the negotiation rate considered, inclusive or exclusive of unsuccessful negotiations, all four specifications support the autoregressive nature of the terror intensity over time. The estimated coefficient of  $\hat{\gamma} = -0.22$  shows that an increase in the intensity of terror yesterday by one point reduces the intensity of terror today by 0.22 points.<sup>12</sup>

Column (1) shows that, controlling for the dynamics in the intensity of terror over time, an increase in the negotiation rate increases the terror index at the 1%-level of significance. Evaluated at the mean negotiation rate  $\bar{N} = 0.33$ , a 1% increase in the negotiation rate is predicted to increase the intensity of terror by approximately 0.72%. Controlling for the negotiation behavior in the rest of the world  $W$  in column (2) further increases the predicted impact of negotiations. Yet, there is no evidence

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<sup>12</sup>Negative coefficients are also found in Enders and Sandler (2005).



Dep. Var. $E_t$	(1)	(2)	(3)	(4)
Constant	0.07 (1.13)	0.09 (1.44)	0.06 (0.96)	0.05 (0.68)
$E_{t-1}$	<b>-0.22***</b> (-4.61)	<b>-0.22***</b> (-4.58)	<b>-0.24***</b> (-4.82)	<b>-0.24***</b> (-4.81)
$N$	<b>0.98***</b> (3.21)	<b>1.2***</b> (3.89)		
$N_{suc}$			<b>1.04**</b> (2.41)	<b>1.02**</b> (2.17)
$W$		4.5 (1.42)		
$W_{suc}$				-1.29 (-0.17)
Country Dummy	yes	yes	yes	yes
Time Dummy	yes	yes	yes	yes
Observations	240	240	240	240
$\chi^2$	450.6	550.34	257.93	379.48
$p$ -value $\rho_1$	0.002	0.002	0.002	0.002
$p$ -value $\rho_2$	0.92	0.86	0.55	0.53

Table 2: Annual Data, Panel Results

Data Source: ITERATE. Robust standard errors.  $z$ -statistics in parentheses. Bold faced coefficients are statistically significant. \*\* and \*\*\* respectively indicate significance at the 5% and 1% levels. The null hypothesis for first and second order autocorrelation is no autocorrelation.

of spill-overs from the rest of the world: The coefficient for the world average rate is positive but insignificant (with a  $p$ -value of 0.16, though).

Columns (3) and (4) report the results when the negotiation rate is substituted by the success rate. Even though the results are qualitatively very similar, the impact of the success rate is less pronounced. The coefficients are significant only at the 5%-level, and evaluated at the mean success rate  $\bar{N}_{suc} = 0.16$ , the elasticity is now around 0.37 compared to 0.72 for the negotiation rate. This means that, according to our findings, unsuccessful negotiations are even worse than successful negotiations. One might reasonably speculate that negotiating at all gives terrorists the impression that they might eventually be successful. Not having achieved their goals yet, terrorists may therefore act even more determined after unsuccessful negotiations than subsequent to successful negotiations.

Including the world negotiation rate, which is far from significant, in column (4) leaves this prediction essentially unaffected. In a robustness check, we have also included both negotiation rates in one regression. In that case the success rate becomes insignificant which supports the view that what counts is if an event is negotiated at

all.<sup>13</sup>

Finally, the  $p$ -values associated with the null hypothesis of no second order autocorrelation of the error terms in specifications (1) to (4) fail to indicate such correlation.<sup>14</sup>

Dep. Var. $E_t^o$	(1)	(2)	(3)	(4)
Constant	<b>0.11**</b> (2.14)	<b>0.13**</b> (2.25)	<b>0.13**</b> (2.01)	<b>0.18**</b> (2.19)
$E_{t-1}^o$	<b>-0.13**</b> (-2.17)	<b>-0.12**</b> (-2.05)	<b>-0.13**</b> (-2.18)	<b>-0.13**</b> (-2.19)
$N$	-0.01 (-0.04)	0.2 (0.98)		
$N_{suc}$			-0.16 (-0.74)	0.11 (0.47)
$W$		4.6 (1.09)		
$W_{suc}$				7.46 (1.23)
Country Dummy	yes	yes	yes	yes
Time Dummy	yes	yes	yes	yes
Observations	236	236	236	236
$\chi^2$	180.71	183.09	156.72	132.91
$p$ -value $\rho_1$	0.01	0.01	0.02	0.01
$p$ -value $\rho_2$	0.15	0.17	0.20	0.21

Table 3: Annual Data, Panel Results, Other Terror

Data Source: ITERATE. Robust standard errors.  $z$ -statistics in parentheses. Bold faced coefficients are statistically significant. \*\* and \*\*\* respectively indicate significance at the 5% and 1% levels. The null hypothesis for first and second order autocorrelation is no autocorrelation.

Table 3 reports the results when replacing the *kidnapping, skyjacking, and barricade mission* based terror index (i.e., terror index  $E$ ) in equation 1 with the index  $E^o$  for *all other terror events* recorded in the ITERATE database. The purpose of regressing this alternative terror index on its lag and the negotiation rate for index  $E$  is to test the existence of substitution effects between modes of terror. If governments reject negotiating in kidnapping, skyjacking and barricade mission cases, terrorists might substitute these logistically complex terror attacks by bombing attacks or suicide missions.

While all specifications provide evidence of the autoregressive nature of the alternative terror index, the negotiation rate is insignificant in all four specifications. We

<sup>13</sup>The results are available from the authors upon request.

<sup>14</sup>This is important as, by contrast to the presence of first-order autocorrelation in the differenced residuals, the presence of second-order autocorrelation would imply that the estimates are inconsistent (Arellano and Bond (1991)).

therefore cannot reject the null hypothesis of no substitution between these types of attack modes.

## 4 VAR Analysis

**Data.** The high frequency of terror events in Colombia, Iraq, and Lebanon allows us to use monthly data in a vector autoregression (VAR) relating the respective countries' terror intensities and negotiation behavior. In the case of Lebanon, the sample period records 151 events for our terror index  $E$ . 41 out of these events were negotiated, and 12 resulted in partial or full negotiation success. 303 events of the second terror type ( $E^0$ ) were recorded.

Country	Events	Negotiated	Success	Other Events
Lebanon	151	41	12	303
Colombia	150	38	12	150
Iraq	121	38	8	413

Table 4: Top three countries according to events.

Data Source: ITERATE; 1978-2005.

An advantage of the VAR analysis is that it allows us to quantify not only the magnitude, but also the timing of the reputation effects. Furthermore, in allowing for the simultaneous determination of the LHS variables in the system of equations, the VAR approach also addresses the possible endogeneity of the stakeholders' negotiation behavior and the intensity of terror. Equation 2 illustrates the system of equations underlying the VAR:

$$\begin{aligned}
 E_t &= \alpha_0 + \alpha_1 E_{t-1} + \alpha_2 E_{t-2} + \dots + \beta_1 N_{t-1} + \dots + v_t \\
 N_t &= \delta_0 + \delta_1 E_t + \delta_2 E_{t-1} + \dots + \eta_1 N_{t-1} + \dots + u_t
 \end{aligned}
 \tag{2}$$

The shocks to negotiation behavior are identified from a Choleski decomposition of the variance-covariance matrix, which assumes that the variables in a VAR model are ordered in a particular fashion: The variable higher in the ordering  $E$  has a contemporaneous effect on the variable lower in the ordering  $N$ . In contrast, the variable lower in the ordering  $N$ , is assumed to have only a lagged effect on the variable higher in the ordering  $E$ . This specification seems reasonable, given the fact that most terror events

require an instant negotiation response from the government. Both variables enter our model in log-levels.

A number of lag length selection criteria was used to determine the appropriate lag length, and a uniform lag length of 12 months was chosen for all models for comparability purposes. The VAR allows us to plot the response of the terror index  $E$  to a one standard deviation shock to the respective negotiation measures by using Impulse Response Functions (IRFs). Two-standard deviation confidence intervals, which are used to check the statistical significance of the IRFs, are calculated from a Monte Carlo Simulation based on 10,000 draws.

Figure 2 in appendix A presents the IRFs of the terror index. The figure contains six diagrams depicting the reaction of the terror index to the two different negotiation measures in the three countries. The first column depicts the response of the indices to negotiation innovations, whereas the second column measures the response with respect to successful negotiation innovations. The impulse response functions are represented by the solid lines. The dashed lines represent 95%-confidence intervals around the estimated IRFs. Table 5 summarizes the impulse response of the terror index  $E$  to negotiation shocks of the two types.

Country	Response of $E$ to $N$	Response of $E$ to $N_{suc}$
Colombia	negative (8)	positive (5)
Iraq	positive (1-8)	positive (2-4,6,7)
Lebanon	positive (2,4,12)	negative (3,9,10)

Table 5: Impulse response of the terror index  $E$  to negotiation shocks as measured by  $N$  and  $N_{suc}$ .

Data Source: ITERATE, Monthly Data, 1978-2005. The numbers in parentheses refer to the statistically significant (5% level) lags.

Overall, the results are mixed and we cannot identify a clear-cut picture on the relationship between the countries' negotiation behavior and the terror indices in the three countries: The response of the terror index to negotiation innovations is significantly positive in Iraq (first 8 months) and Lebanon (second, fourth and twelfth months) but negative in Colombia (eighth month). By contrast, the response of terror to negotiation success innovations is significantly positive for Iraq (second to fourth as well as sixth and seventh months) and Colombia (fifth month), but negative for Lebanon (third, ninth, and tenth months).

Consistent with our panel data approach, we have investigated the evidence in favor of substitution effects between terror modes at the individual country level. To that end, we have replaced the terror index  $E$  by the alternative terror index  $E^o$  in the system of equations 2. Recall that the indices differ according to how strong the negotiation incentives are which emanate from the terror events. With the exception of respectively one lag in the case of the impulse response functions describing the effects of negotiation shocks in Iraq, there is no significant effect of negotiation innovations on the alternative terror index.<sup>15</sup> Our data and specifications therefore do not support the existence of substitution effects between the terror modes considered.

## 5 Conclusion

We have analyzed the impact of negotiating with terrorists on the terror intensity. Since we need to account for the autoregressive component of terror found in the literature and confirmed in our data, and because we need a model with country fixed effects due to unobserved heterogeneity, we have used a Generalized Methods of Moments (GMM) estimator as proposed by Arellano and Bond (1991).

Supporting the widespread view that complying with terrorists' demands might encourage terror groups, we find a positive terror-negotiation rate elasticity of 0.72. Interestingly, the impact is smaller when considering only successful negotiations with an elasticity of 0.37. Our results hence indicate that terror organizations realizing that governments are willing to negotiate, but haven't fulfilled their demands yet, may have the highest incentives for perpetuating their behavior.

For three countries, Colombia, Lebanon and Iraq, the number of events is sufficient to employ monthly data in a vector autoregression (VAR) relating the respective countries' terror intensities and negotiation behavior. Since the results from the VAR-analysis are too mixed for identifying general patterns, our overall findings are twofold: the panel analysis shows that, on average, negotiating with terrorists increases the terror index, but the VAR approach confirms the widespread view that country specific effects are highly important in understanding terrorism. With regards to the potential reasons for the mixed messages from the VAR analysis, we refrain from speculating ourselves and refer the reader instead to the political science literature that has produced learned case studies on the countries concerned (see, e.g., Whittaker (2007)).

Of course, our panel analysis needs to neglect the specificities of the different cases at hand, and all we can do is to control for heterogeneity with country and time

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<sup>15</sup>The results are available from the authors upon request.

dummies. We hence view our analysis as complementary to case studies on terrorism performed by many researchers from different disciplines. Necessarily, the advantages and drawbacks of the two methodologies represent two sides of the same coin: While case studies are highly informative for particular events, they can hardly be generalized; and while our results provide information on the average impact of negotiating with terrorists, they can hardly be used for giving advice in specific situations.

Finally, we wish to emphasize that our analysis restricts attention to the consequences of negotiating in cases where terror organizations have specific demands and the impetus for immediate negotiations is strong. Our findings do not extend to more complex, political negotiation strategies in dealing with terror organizations. Concerning these more general issues, many authors argue that coercion and sanctions have little or even reinforcing impacts on terrorism, in particular by fostering the terrorists' belief that they are fighting a well justified war (see, e.g., Frey (2004)). Our results add nothing to this discussion.

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# A Country List and Impulse Response Functions

USA	Italy	Zambia	Laos
Puerto Rico	Malta	Zimbabwe	North Vietnam
Canada	Yugoslavia	Namibia	Malaysia
Cuba	Croatia	Swaziland	The Philippines
Haiti	Bosnia-Herzog.	Morocco	Indonesia
Dominican Rep.	Greece	Canary Islands	Papua NG
Trinidad and Tobago	Cyprus	Spanish Sahara	New Caledonia
Dominica	Russia	Algeria	Solomon Islands
Martinique	Azerbaijan	Tunisia	Fiji
Mexico	Armenia	Libya	Austria
Guatemala	Chechnya	Sudan	Mozambique
Honduras	Ukraine	Iran	Cambodia
El Salvador	Tajikistan	Iraq	Brazil
Nicaragua	Georgia	Turkey	Ireland
Costa Rica	Kirgizystan	Egypt	
Panama	Sweden	Syria	
Colombia	Norway	Lebanon	
Venezuela	Denmark	Jordan	
Suriname	Senegal	Israel	
Ecuador	Ivory coast	Palestine	
Peru	Guinea	Saudi Arabia	
Bolivia	Equat. Guinea	Yemen	
Chile	Liberia	Dubai	
Argentina	Sierra Leone	UAE	
Uruguay	Nigeria	Afghanistan	
United Kingdom	Gabon	China	
Northern Ireland	Chad	Taiwan	
Netherlands	Congo-Brazav.	Hong Kong	
Belgium	Uganda	South Korea	
Corsica	Tanzania	Japan	
France	Rwanda	India	
Switzerland	Somalia	Bangladesh	
Spain	Djibouti	Pakistan	
Portugal	Ethiopia	Burma	
Germany	Eritrea	Sri Lanka	
East Germany	Cabinda	Nepal	
Poland	Angola	Thailand	

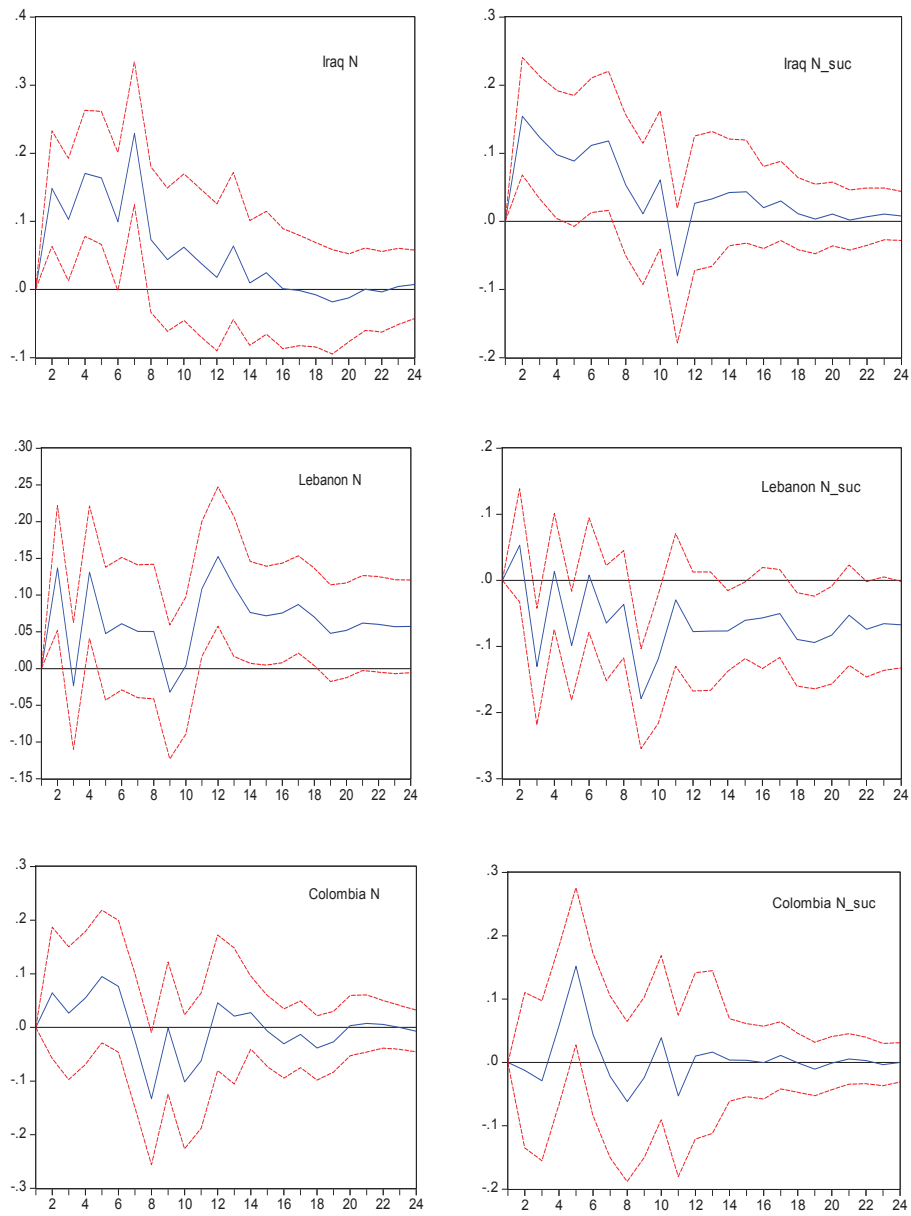


Figure 2: IRFs of the terror index with respect to negotiation behavior innovations.

Data Source: ITERATE, Monthly Data, 1978-2005. Impulse responses of the terror index after 1 to 24 months.