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On the Determinants of Terrorism Risk Concern in Europe

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On the determinants of terrorism risk concern in Europe

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Abstract

We investigate whether differences in terrorism risk are mirrored on terrorism risk concern across European countries for the period 2003-2007. We find that the average propensity for terrorism risk concern is indeed affected by actual risk levels. Furthermore, country and individual heterogeneity contribute substantially to the variation of observed risk concern. According to our findings, males, singles and individuals with white collar jobs are less likely to mention terrorism as one of the most pressing issues their country faces. In contrast, political positioning towards the right end of the spectrum and living in rural areas make it more likely to be concerned about terrorism. As far as competing risks are concerned, we find that the likelihood terrorism is mentioned increases when competing risks' drivers also increase such as taxation, inflation, unemployment and poverty risk at work. In contrast, terrorism is less likely to be mentioned when the determinants of crime, immigration rates, housing costs and pensions are higher. Finally, based on the Bayesian framework we also examine the formation of terrorism risk perceptions, and decompose the observed country level time series of terrorism activity into a long and a short run component. We conclude that the observed risk concern variation is mostly explained by the trend part of terrorism activity countries face, although cyclical variations are also important.

Keywords: probit, survey data, terrorism risk concern, time series decomposition

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1. Introduction

There is a burgeoning literature that focuses on the manner in which people shape their perceptions regarding several hazards (Slovic 1999, Weber 2003, Loewenstein *et al.*, 2001). In the post 9/11 era, terrorism which is a human-made hazard, has been added to the already long list of other hazards (Slovic and Weber 2002, Sjöberg 2005, Sunstein 2003). As a result, sluggishly but steadily, relevant questions appear in regular opinion surveys on risk perception. In this paper we use micro-level data for European countries obtained from the Eurobarometer survey. Although there are no direct risk perception questions, there is a set of questions asking respondents to state which are the two most important issues their country faced, with terrorism being among these issues. We conduct a simple econometric analysis that aims to explore whether differences in terrorism risk perception reflect the underlying differences in country-level terrorism risk. Our econometric model, over and above country and time fixed effects, controls for individual heterogeneity by including several respondent-specific variables and in addition, is augmented by the drivers of terrorism's competing risks in order to capture the sampling process.

Moreover, motivated by the Bayesian framework, we proceed by breaking down country terrorism risk into a long run and a short run component. We then project terrorism risk perception on these two components in an attempt to investigate their impact (Viscusi and O'Connor 1984; Viscusi 1985, 1989; Evans and Viscusi 1991; Viscusi and Evans 1998). The present study makes a twofold contribution to the literature: firstly, it extends the risk perception literature with special reference to terrorism, and secondly presents the first microeconometric analysis for European countries.

Pinning down the drivers of terrorism risk concern is important since the public's terrorism risk concern (perception) is known to affect non-economic aspects of behavior (see Elster 1998; Schuster *et al.* 2001; Berrebi and Klor 2006; Frey *et al.* 2007), and also induce

indirect adverse economic effects via increasing fear and uncertainty (see Becker and Rubinstein 2004, Christelis and Georgarakos 2009).

The remainder of the paper is organized as follows. Section 2 describes the data under scrutiny. Section 3 discusses the empirical methodology adopted for analyzing terrorism risk concern. Section 4 presents and discusses the empirical results from the main model, while Section 5 conducts a further analysis by decomposing terrorism index into a long and a short run component. Section 6 concludes the paper.

2. Data Issues and background analysis

Data on terrorism concern for 2003-2008 (broken down to six month intervals Spring-Autumn) were obtained from the **Eurobarometer** (ZA: 3904, 3938, 4056, 4229, 4411, 4414, 4506, 4526, 4530, 4565, 4744) which is a harmonized survey of representative samples for Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, Great Britain and Northern Ireland. Based on responses from the question,

"What do you think are the two most important issues facing (OUR COUNTRY) at the moment?"

we construct a dichotomous variable:

$$trc_{j,i,t} = \begin{cases} 1 & \text{if } j \text{ respondent living in country } i \text{ at time } t \text{ mentioned terrorism} \\ 0 & \text{otherwise} \end{cases}$$
 (1)

Table 1 shows the basic descriptive statistics of terrorism risk concern by country and year. The differences in terrorism concern between countries are substantial, ranging from 1 percent of the respondents mentioning terrorism as one of the key issue in one country to 66

percent in another. The countries expressing constantly above average terrorism risk concerns over the years are Spain, Turkey, Great Britain, Northern Ireland, and Denmark.

----Insert Table 1 about here----

The data also suggest that country-level terrorism risk concern exhibits substantial persistence over time, which becomes apparent by simply inspecting the country rankings in terms of terrorism risk concern by year, which are reported in Table 2. Formal statistical evidence for the cross-sectional persistence is given by the Spearman correlation test calculated for rankings from adjacent time periods, as well as rankings two periods apart. The null of no dependence is emphatically rejected in all cases suggesting that country rankings of terrorism risk concern are quite persistent.

----Insert Table 2 about here----

2.1 Data on terrorism activity

We proxy terrorism risk by the following metric (Eckstein and Tsiddon 2004):

$$terrindex_{i,t} = \log[(1 + deathrate_{i,t} + woundedrate_{i,t} + attackrate_{i,t})]$$
 (2)

Where:

$$attackrate_{i,t} = \left(\frac{\text{count of terrorist attacks}}{100 \text{ thousand inhabitants}}\right)_{i,t}, \ deathrate_{i,t} = \left(\frac{\text{count of fatal casualties}}{100 \text{ thousand inhabitants}}\right)_{i,t} \text{ and }$$

$$woundedrate_{i,t} = \left(\frac{\text{count of wounded}}{100 \text{ thousand inhabitants}}\right)_{i,t}.$$

Where (i) denotes country, (t) time period. The advantage of this metric is that it takes into account, not only the count of attacks, but also their severity. On the other hand, a problem with this metric is that it gives an equal weight to attacks and casualties. For instance, it implies that an attack with one hundred deaths receives the same weight as one hundred attacks with one death each. Therefore, we also use the total number of attacks per 100,000

inhabitants, and casualties from these terrorist attacks (deaths and wounded persons per 100,000 inhabitants) per year and country separately:

$$attackrateindex_{i,t} = \log[(1 + attackrate_{i,t})]$$
(3)

$$casualtyrate index_{i,t} = \log[(1 + woundedrate_{i,t} + deathrate_{i,t})]$$
(4)

Data for the period 1994-2007 on terrorist events are obtained from the Global Terrorism Database (http://www.start.umd.edu/start/). Data on population were obtained from Eurostat. Terrorism risk rates, as well the count of attacks, by country and year are reported in Table A.1 in the Appendix. Similar to expressed concerns about terrorism, we find that the population risks across the countries are heterogeneous.

2.2 Data on individual characteristics

Individual level information about the respondents is obtained – together with the data on terrorism concern – from the Eurobarometer files used in this study. Specifically, we use information on age, gender, political self-positioning, years of full-time education, occupational type, marital status, and community size. Table A.2 in the Appendix gives an overview on these variables.

2.3 Data on competing risk drivers

The wording of the questions on the most important issues in a country does not prompt respondents to state their levels of concerns for a given topic. Rather, it allows them to choose two items from a list of topics, thus asking respondents to rank their concerns regarding different topics in a relative fashion. It is conceivable that the relative importance of different issues is driven by their respective underlying risks. In order to catch these underlying risks, we include indicators concerning crime, economic situation, inflation, taxation, unemployment, housing, immigration, health care system, educational system,

pensions, and protecting the environment. Data for these indicators are also obtained from Eurostat. For an overview see Table A.3 in the Appendix.

3. Econometric methodology

Our econometric methodology is based on three sequential steps where each successive step nests the previous, and effectively enhances the set of covariates used to explain the observed variation in terrorism risk concern across European countries and across time. Due to the annual nature of the competing risk indicators given by Eurostat, and the availability of the data over the years, we solely use the Eurobarometer data until 2007 on terrorism risk concerns. Further, using only the *autumn* data takes into consideration the information set respondents have at the time of the survey about terrorism and competing risks over each year in their countries.

3.1 Model with country and year fixed effects

The first step is a simple probit model where the dependent variable records whether the respondent mentioned (or not) terrorism as one of the two major issues her/his country faces. The only explanatory variable is each country's terrorism index. The model is as follows:

$$\Pr(trc_{ij,t}=1) = \beta_0 + \beta_1(terrindex_{i,t}) + u_{i,t}$$
(5)

Then we employ two variants of this simple model: (i) a model that includes country dummies $(\mathbf{C}_{i,t})$, to capture country heterogeneity, and (ii) a model that also includes, over and above country dummies, time fixed effects (\mathbf{T}_t) in order to capture time variation. Hence the models are given below:

$$\Pr(trc_{j,i,t} = 1) = \beta_0 + \beta_1(terrindex_{i,t}) + \gamma' \mathbf{C}_{i,t} + u_{j,t}$$
(6)

$$\Pr(trc_{j,i,t} = 1) = \beta_0 + \beta_1(terrindex_{i,t}) + \gamma' \mathbf{C}_{i,t} + \delta' \mathbf{T}_t + u_{j,t}$$
(7)

In each equation we expect (β_1) to be positive, indicating that respondents in countries with higher terrorism risk are more likely to mention terrorism as an issue.

3.2 Model controlling for micro heterogeneity

The previous models implicitly assumed that respondent heterogeneity may reflect at most country and year differences. Clearly, since the dependent variable is generated from a micro survey it is imperative to control for respondent-specific heterogeneity. In order to tackle this, we expand the set of covariates with $(\mathbf{X}_{j,i,t})$ whose members are several respondent characteristics such as their age, political disposition, education, occupation, gender, marital status and type of community in which they reside. The choice of these characteristics was motivated by the extant applied literature which has shown that these variables are usually significant determinants of risk perception (see e.g. Slovic 1999). Thus, the augmented model is as follows:

$$\Pr(trc_{j,i,t} = 1) = \beta_0 + \beta_1(terrindex_{i,t}) + \gamma' \mathbf{C}_{i,t} + \delta' \mathbf{T}_t + \psi' \mathbf{X}_{j,i,t} + u_{j,t}$$
(8)

This model is expected to exhibit substantially higher explanatory power since individual heterogeneity is controlled for. Moreover, it will allow us to investigate potential differential propensities in terrorism risk concern across individuals with dissimilar profiles. In addition, we will explore the robustness of the relationship between country-level terrorism risk, the stimulus, and micro responses.

3.3 Model controlling for competing risks

Recall a peculiarity of the dependent variable's sampling rule. Terrorism is one of, the thirteen in total, alternative responses among which individuals could only select two. This raises the possibility that terrorism may (not) be selected, because it represents a higher (lower) perceived risk compared to the competing risks respondents have to choose from. In other words, since respondents must select the two most important issues it is apparent that

they resort to a (perceived) hierarchy among the risks. This inherent relativity in the sampling rule may distort our previous findings either by inflating or deflating the covariates' estimates depending on the probability that other risks are mentioned. In order to tackle this, we employ the following strategy. Suppose the probability that each alternative risk mentioned depends on a risk-specific driver. This is similar to our modeling approach so far, where mentioning terrorism depends on terrorism risk. Hence, we control for the fact that terrorism is (not) mentioned conditional on other risks being more (less) likely to be mentioned. Thus our model includes an extra vector of covariates ($\mathbf{z}_{i,t}$), whose members are the competing risks' drivers, and is as follows:

$$\Pr(trc_{j,i,t} = 1) = \beta_0 + \beta_1 \left(terrindex_{i,t}\right) + \gamma' \mathbf{C}_{i,t} + \delta'' \mathbf{T}_t + \psi' \mathbf{X}_{j,i,t} + \xi' \mathbf{Z}_{i,t} + u_{j,t}$$
(9)

We are again primarily interested in the sign and significance of the terrorism risk' coefficient. However, this setup permits us to investigate some further issues. First, joint (in)-significance of the competing risk drivers' coefficients would reveal that terrorism risk concern is (autonomously) jointly determined by other competing risks. Moreover, inspecting the competing risks' coefficients individually can convey important information. For instance, the significance of particular competing risk coefficients would indicate which competing risks tend to affect terrorism risk concern responses. In addition, the sign pattern of the significant coefficients would be revealing 'complementarities' or 'substitutabilities' between terrorism risk concern and other competing risks. Our indicators for competing risks can be divided into two categories: (1) those where we can easily assume that rising values of that variable are 'good news' for the respondents, thus decreasing concern levels about that issue (e.g. spendings on education or pensions); and (2) those where rising values indicate a worsening situation, e.g. unemployment rate, infant mortality rate, etc. Competing risks of the first category entering the model with significantly negative coefficients, and competing risks of the second category with significant positive coefficients would suggest a

'complementarity', implying that a 'bad state' in any of those indicators increases the odds to worry about terrorism. In contrast, risks of the first category entering the model with significantly positive coefficients, and risks of the second category entering with negative coefficients would imply that they tend to displace terrorism risk concern. In other words, concern about these competing risks would exhibit 'substitutability' with terrorism risk concern.

4. Empirical results

The first three columns of Table 3 report the results from the simplest probit model where neither micro heterogeneity nor competing risks are considered. Country-level terrorism risk carries a positive coefficient suggesting that higher terrorism risk increases the likelihood that the average individual from that country mentions terrorism as an issue. Note that the model where no heterogeneity whatsoever is allowed (column 1), explains approximately 5% of the observed variation in terrorism risk concern. Columns 2 and 3 correspond to the models where time and country heterogeneity are included. Note that the null hypotheses that either country effects or time effects are insignificant are rejected. The former suggests that the propensity for the average individual to mention terrorism is significantly determined by her/his country of residence, over and above the country's terrorism risk. The latter suggests that the average propensity differs across years. Note also that the explanatory power of the model increases substantially from about 5% (without country and time effects) to about 20%, where the lion share of the incremental explanatory power is attributed to country effects. Controlling for country and time effects, we find that the country-level terrorism index remains significantly positive, suggesting that the average propensity for terrorism risk concern is affected by actual terrorism risk.

Column 4 of Table 3 reports the estimation results from the probit model that also controls for individual heterogeneity. The results are indicative of a significant effect of

individual heterogeneity on the likelihood that terrorism is mentioned. Starting with political disposition we find that the further to the right a respondent positions herself/himself on the political spectrum, the more likely she/he is to mention terrorism as an issue. Using respondents who completed their full-time education by the age of 15 as the baseline category, we find that people with more years of education are not less likely to mention terrorism. In fact, only those respondents with no completed full-time education are significantly less likely to mention terrorism. This seems surprising at first sight, since other studies have found that better education has a negative impact on (terrorism) concern levels. However, there are two points: First, other studies analysed the relationship with concern levels. Second, it might be conceivable that respondents with no completed full-time education worry about other issues which have more direct effects on their every day personal lives. In addition, we uncover significant gender differences, with male respondents being less likely to mention terrorism. Marital status is also an important determinant, with singles exhibiting a lower propensity to mention terrorism. A similar direction in propensity is found for those being self-employed, managers or having other white collar jobs. Community of residence emerges also as an important factor, with respondents living in rural areas and villages being more likely to mention terrorism. In general, the individual characteristics' coefficients are in line with results reported by previous studies on the determinants of fear or concern about terrorism (Huddy et al. 2005, Boscarino et al. 2003, Brück & Müller 2010).

----Insert Table 3 about here----

In Table 4 we report the estimation results from our full model where apart from micro-level heterogeneity, we also control for proxies of the competing risks' drivers. We present three variants of the model where each variant employs alternative proxies for terrorism risk; (i) the metric taking into account the number of attacks and their severity, (ii) the index only accounting for the attack risk, and (iii) the index of casualties from terrorist

attacks. The variable of main interest, country-level terrorism risk, retains its sign and significance. This highlights the robustness of our main finding that the average propensity to mention terrorism is significantly increased for respondents living in countries with higher terrorism risk. We interpret this as evidence in favor of respondent rationality.

The presence of competing risks' drivers leads to quite similar conclusions regarding the impact of individual characteristics. The only individual characteristic that is affected is education. Respondents with no full-time education are still less likely to mention terrorism as one of their concerns, yet the difference is not significant anymore. At the same time, the difference between people who finish their full-time education by the age of 15 and those who finish at the age of 16-19 become statistically significant. All other characteristics retain their previous signs and significance. Inspecting the results for the competing risks' drivers, we find that they are jointly significant as expected. In some more detail, we find that the probability terrorism is mentioned is strongly affected by almost all competing risk drivers, except for the immigration rate and tax wedge. The signs of the significant coefficients are not identical implying that the average probability terrorism concern is mentioned, is not identically affected by competing risks. In particular, terrorism risk concern exhibits 'complementarity', i.e. the likelihood that terrorism is mentioned increases, with higher inflation rates, higher unemployment rates, larger environmental issues in terms of the emissions of greenhouse gas, and an increasing infant mortality rate. In contrast, 'substitutability' between terrorism concern and observed spending on pensions and education, crime rates, and the burden of housing is uncovered.

----Insert Table 4 about here----

Table 5 shows the results of the same specifications, but using cluster robust standard errors. Again, the indicators of the severity of terrorism are highly significant in explaining the dependent variable, and the impact of individual characteristics changes only slightly to the

previous specifications: The size of the community a respondent lives in does not play a significant role anymore in determining the probabilities to mention terrorism in a given country and year. However, the effect of clustering on a national level does effect the significances of the competing risk drivers. We find that only housing issues significantly affect the probability to mention terrorism as one of the most important issues in a country across the specifications, and that it works as a substitute: The higher the costs of housing in a given country, the lower the probability that terrorism is picked as one of the two most concerning issues.

----Insert Table 5 about here----

5. Further Analysis: Terrorism risk concern and decomposed terrorism index

We use the Bayesian framework as our departure point where risk perception is a weighted average of the reference risk $trc_{j,i,t}^p$, based on prior beliefs (ex ante perceived risk), and the arrival of new information $r_{j,i,t}^s$ corresponding to the sample risk inferred from the information (Viscusi and O'Connor 1984; Viscusi 1985, 1989; Smith and Michaels 1987; Smith and Johnson 1988; Loewenstein and Mather 1990; Smith $et\ al.$ 1990; Evans and Viscusi 1991; Liu $et\ al.$ 1998; Viscusi and Evans 1998; Smith $et\ al.$ 2001):

$$trc_{j,i,t} = w_1 \ trc_{j,i,t}^p + w_2 \ r_{j,i,t}^s$$
 (10)

Where w_1, w_2 are positive constants.

In equation (10) one has to deal with the latent nature of the prior concern and the measurement of sample risk. To this end we assume that the public's prior terrorism concerns reflect a fundamental characteristic, and are shaped by the country's overall past experience with terrorism. Hence the first building block is that priors are a function of a country's long term history of terrorism risk $ltr_{i,t}$:

$$trc_{i,i,t}^{p} = \phi \ ltr_{i,t}$$
 (11)

Where $\phi > 0$.

The sample risk is derived as the difference between current terrorism risk and long-term terrorism risk:

$$r_{i,i,t}^s = terrindex_{i,t} - ltr_{i,t}$$
 (12)

Hence:

$$trc_{j,i,t} = w_1 \cdot \phi \quad ltr_{i,t} + w_2 \quad terrindex_{i,t} - ltr_{i,t}$$
 (13)

Now equation (10) is operational provided that long-term terrorism risk and innovations of terrorism risk are available. We derive these quantities by employing a standard time series decomposition of $terrindex_{i,t}$, into a long-run trend $\tau_{i,t}$ and a cyclical component $c_{i,t}$, in an additive manner (see Harvey 1985; Clark 1987):

$$terrindex_{i,t} = \tau_{i,t} + c_{i,t}$$
 (14)

We decompose the terrorism index employing three alternative smoothing specifications: moving average (using a window of 1.5 and 2.5 years) or exponential smoothing, using a non-linear optimizer to choose the smoothing parameter (α) which minimizes the sum of squared residuals. Thus, the trend component $\tau_{i,t}$ for each country is:

$$\begin{split} \tau_{i,t}^{ma3} &= \frac{terrindex_{i,t-2} + terrindex_{i,t-1} + terrindex_{i,t}}{3}\,, \\ \tau_{i,t}^{ma5} &= \frac{terrindex_{i,t-4} + terrindex_{i,t-3} + terrindex_{i,t-2} + terrindex_{i,t-1} + terrindex_{i,t}}{5}\,, \text{ and} \\ \tau_{i,t}^{\exp} &= \alpha * terrindex_{i,t-1} + 1 - \alpha * terrindex_{i,t-2} \,. \end{split}$$

The estimation of the long term terrorism risk $\tau_{i,t}$ permits us to compute the cyclical component $c_{i,t}$, as the deviation of the current terrorism risk from the trend. Thus we

explore the Bayesian property of terrorism concern by testing whether prior beliefs and new information have a positive and significant impact (λ 's >0):

$$\Pr\left(trc_{j,i,t}=1\right) = \beta_0 + \gamma'\mathbf{C}_{i,t} + \delta'\mathbf{T}_t + \psi'\mathbf{X}_{j,i,t} + \xi'\mathbf{Z}_{i,t} + \lambda_1\left(\tau_{i,t-1}^k\right) + \lambda_2\left(c_{i,t-1}^k\right) + \varepsilon_{j,t}$$
(15)

Where the superscript k denotes each alternative smoothing method and $\varepsilon_{i,t}$ is a random disturbance, while the λ 's are constant parameters. Note, that for the decomposition of terrorism risk we now use time periods of 6 months each, allowing for more variation in long-term trends and short-term deviations, and thereby allowing for shorter term impacts of the components.

In table 6 we report the results where, instead of terrorism risk, we employ its decomposed constituent series; the short run (cyclical) and long run (trend) components. The results from the MA(3) and the exponential smoothing are quite similar, suggesting that the probability of mentioning terrorism is responsive to both the trend and the cyclical component. The results from the MA(5) suggest, that the probability to mention terrorism is only affected by the long-term trend. Overall, we conclude that agents' terrorism risk perception is more heavily affected by long-term trends in terrorism risk, with short-term variations playing a smaller role (in terms of size of the coefficient, and statistical significance). This finding is consistent with Bayesian updating, where agents reshape their perceived terrorism risk in the face of terrorism shocks that represent the arrival of new information. With regards to respondent heterogeneity and the impact of competing risks, there are no grave differences from the previous models.

----Insert Table 6 about here----

6. Conclusions

In this study we investigate whether differences in terrorism risk are mirrored on terrorism risk perception across European countries for the period 2003-2007, based on micro-level responses from the Eurobarometer. Our strategy is to sequentially add different sets of covariates in order to analyze observed variations in terrorism risk concern across countries and time in Europe. We find that across all specifications the average propensity for terrorism risk concern is affected by actual risk levels. Furthermore, country and individual heterogeneity contribute significantly to the explanation of observed variations in terrorism risk perceptions. We find that males, singles and individuals with white collar jobs are less likely to mention terrorism as one of the most pressing issues their country faces at the moment. On the contrary, political positioning towards the right end of the spectrum and living in rural areas make it more likely to be concerned about terrorism. Due to the nature of our dependent variable being one amongst thirteen alternative responses to be selected, we test for competing risks that might affect terrorism risk concerns. We find that there are risks that raise the likelihood of terrorism being mentioned as one of the issues, e.g. inflation and unemployment rate, environmental issues, and health indicators; and that there are risks that work as substitutes, i.e. make it less likely that respondents worry about terrorism, e.g. crime rates, housing costs, and spending on education and pensions.

Finally, on the Bayesian framework we also examined the formation of terrorism risk perceptions, and decomposed the observed country level time series of terrorism activity into a long and a short run component. Utilizing different alternative decomposing techniques we conclude that the observed risk perception variation is largely explained by the long-term trend of terrorism, and to a smaller extent by the cyclical part of terrorism activity countries face.

References

- Becker, G. and Rubinstein, Y. (2004): "Fear and the response to terrorism: an economic analysis," University of Chicago, online http://econ.tau.ac.il/papers/faculty/beckerrubinstein_may11.pdf.
- Berrebi, C. and Klor, E. F. (2006): "On Terrorism and Electoral Outcomes: Theory and Evidence from the Israeli-Palestinian Conflict," *Journal of Conflict Resolution* 50(6), 899-925.
- Boscarino, J. A., Figley, C. R. and Adams, R. E. (2003): "Fear of Terrorism in New York After the September 11 Terrorist Attacks: Implications for Emergency Mental Health and Preparedness," *International Journal of Emergency Mental Health* 5(4): 199-209.
- Brück, T. and Müller, C. (2010): "Comparing the determinants of concern about terrorism and crime," *Global Crime* 11(1), 1-15.
- Clark, P. K. (1987): "The Cyclical Component of U.S. Economic Activity," *Quarterly Journal of Economics* 102, 797-814.
- Christelis, D. and Georgarakos, D. (2009): "Household Economic Decisions under the Shadow of Terrorism," available at SSRN: http://ssrn.com/abstract=1317086
- Eckstein, Z. and Tsiddon, D. (2004): "Macroeconomic consequences of terror: Theory and the case of Israel," *Journal of Monetary Economics* 51(5), 971-1002.
- Elster, J. (1998): "Emotions and economic theory," *Journal of Economic Literature* 36, 47-74.
- Evans, W. N. and Viscusi, W. K. (1991): "Estimation of State-Dependent Utility Functions Using Survey Data," *Review of Economics and Statistics* 73(1), pages 94-104.
- Frey, B. S., Luechinger, S. and Stutzer, A. (2007): "Calculating Tragedy: Assessing The Costs Of Terrorism," *Journal of Economic Surveys* 21(2) 1-24.
- Harvey, A. C. (1985): "Trends and Cycles in Macroeconomic Time Series," *Journal of Business and Economic Statistics* 3, 216-227.
- Huddy, L., Feldman, S., Taber, C. and Lahav, G.(2005): "Threat, Anxiety, and Support of Antiterrorism Policies," *American Journal of Political Science* 49(3), 593-608.
- Loewenstein, G. F., and Mather, J. (1990): "Dynamic processes in Risk Perception," *Journal of Risk and Uncertainty* 3(2), 155-175.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K. and Welch, N. (2001): 'Risk as Feelings', Psychological Bulletin 127(2), 267–86.
- Liu, S., Huang J. C., and Brown G. L. (1998): "Information and Risk Perception: A Dynamic Adjustment Process," *Risk Analysis* 18(6), 689-699.

- Schuster, M., Stein, B., Jaycox, L., Collins, R., Marshall, G., Elliot, M., Zhou, A., Kanouse, D., Morrison, J. and Berry, S. (2001): "A national survey of stress reactions after the September 11, 2001, terrorist attacks," *New England Journal of Medicine* 345(20), 1507-1512.
- Sjöberg, L. (2005): "The Perceived Risk of Terrorism", *Risk Management: An International Journal* 7(1), 43-61.
- Slovic, P (1999): 'Trust, Emotion, Sex, Politics, and Science: Surveying the Risk-Assessment Battlefield', *Risk Analysis* 19(4), 689–701.
- Slovic, P. and Weber, E. U. (2002): "Perceptions of Risk posed by Extreme Events", paper prepared for discussion at the conference 'Risk Management Strategies in an Uncertain World', Palisades, New York, April 12-13, 2002.
- Smith, V. K., and Johnson, F. R. (1988): "How Do Risk Perceptions Respond to Information: The Case of Radon," *Review of Economics and Statistics* 70(1), 1-8.
- Smith, V. K., Taylor, D. H. Jr., Sloan, F. A., Johnson, F. R. and Desvousges, W. H. (2001): "Do Smokers Respond to Health Shocks?" *Review of Economics and Statistics* 83(4), 675-687.
- Smith, V. K., and Michaels, R. G. (1987): "How Did Households Interpret Chernobyl? A Bayesian Analysis of Risk Perception," *Economics Letters* 23(4), 359-364.
- Smith, V. K., Desvousges, W. H., Johnson, F. R., and Fisher, A. (1990): "Can Public Information Programs Affect Risk Perceptions?" *Journal of Policy Analysis and Management* 9, 41-59.
- Sunstein, C. R. (2003): "Terrorism and Probability Neglect", *Journal of Risk and Uncertainty* 26(2/3), 121-136.
- Viscusi, W. K. (1989): "Prospective Reference Theory: Toward an Explanation of the Paradoxes," *Journal of Risk and Uncertainty* 2(3), 235-263.
- Viscusi, W. K. (1985): "A Bayesian Perspective on Biases in Risk Perceptions," *Economics Letters* 17(1), 59-62.
- Viscusi, W. K., and Evans, N. E. (1998): "Estimation of Revealed Probabilities and Utility Functions for Product Safety Decisions," *Review of Economics and Statistics* 80(1), 28-33.
- Viscusi, W. K., and O'Connor, C. J. (1984): "Adaptive Responses to Chemical Labeling: Are Workers Bayesian Decision Makers?" *American Economic Review* 74(5), 942-956.
- Weber, E. U. (2003): 'Origins and Functions of Perceptions of Risk' (paper presented at NCI Workshop on 'Conceptualizing and Measuring Risk Perceptions', Washington, DC, February 13–14, 2003).

Tables

Country	2003	2004	2005	2006	2007	2008	Average over years
Austria	0.06	0.06	0.03	0.04	0.07	0.06	0.05
Belgium	0.07	0.06	0.04	0.07	0.05	0.02	0.05
Bulgaria		0.05	0.04	0.04	0.01	0.01	0.03
Croatia		0.01	0.01	0.01	0.02	0.01	0.01
Cyprus		0.03	0.04	0.04	0.03	0.02	0.03
Czech Republic		0.04	0.02	0.03	0.03	0.03	0.03
Denmark	0.14	0.16	0.23	0.34	0.19	0.13	0.20
Estonia		0.02	0.02	0.02	0.02	0.01	0.02
Finland	0.02	0.05	0.04	0.03	0.02	0.00	0.03
France	0.11	0.10	0.07	0.07	0.06	0.03	0.07
Germany	0.05	0.04	0.03	0.04	0.09	0.03	0.05
Great Britain	0.23	0.26	0.24	0.26	0.21	0.13	0.22
Greece	0.05	0.03	0.02	0.03	0.03	0.02	0.03
Hungary		0.05	0.02	0.02	0.01	0.01	0.02
Ireland	0.04	0.06	0.05	0.06	0.04	0.01	0.04
Italy	0.16	0.14	0.09	0.12	0.08	0.02	0.10
Latvia		0.02	0.01	0.01	0.00	0.01	0.01
Lithuania		0.03	0.01	0.01	0.01	0.01	0.01
Luxembourg	0.07	0.11	0.06	0.05	0.04	0.02	0.06
Malta		0.03	0.01	0.02	0.01	0.02	0.02
Netherlands	0.05	0.09	0.31	0.22	0.13	0.15	0.16
Northern Ireland	0.40	0.28	0.23	0.26	0.19	0.10	0.24
Poland		0.06	0.03	0.04	0.02	0.02	0.03
Portugal	0.04	0.06	0.01	0.02	0.02	0.02	0.03
Romania		0.04	0.04	0.03	0.02	0.02	0.03
Slovakia		0.04	0.05	0.04	0.04	0.02	0.04
Slovenia		0.03	0.01	0.01	0.01	0.00	0.01
Spain	0.52	0.59	0.38	0.32	0.42	0.32	0.43
Sweden	0.03	0.05	0.04	0.05	0.02	0.01	0.03
Turkey		0.19	0.34	0.48	0.64	0.43	0.42
Average over countries	0.13	0.09	0.08	0.09	0.08	0.06	0.08

No

Table 2.	. Ranking of	countries b	oased on	unconditional	probability	of terrorism	risk concern	ı by
vear								

year	2002	2004	2005	2006	2007	2000
Deciles	2003	2004	2005	2006	2007	2008
91-100	Spain, Northern Ireland	Great Britain, Northern Ireland, Spain	Netherlands, Spain, Turkey	Denmark, Spain, Turkey	Great Britain, Spain, Turkey	Netherlands, Spain, Turkey
81-90	Great Britain	Denmark, Italy, Turkey	Denmark, Great Britain, Northern Ireland	Great Britain, Netherlands, Northern Ireland,	Denmark, Netherlands, Northern Ireland	Denmark, Great Britain, Northern Ireland
71-80	Denmark, Italy	France, Luxembourg, Netherland	France, Italy, Luxembourg	Belgium, France, Italy	Austria, Germany, Italy	Austria, Czech Republic, France
61-70	France	Austria, Belgium, Ireland	Belgium, Ireland, Slovakia	Ireland, Luxembourg, Sweden	Belgium, France, Slovakia	Belgium, Cyprus, Germany
51-60	Belgium, Luxembourg	Hungary, Poland, Portugal	Bulgaria, Romania, Sweden	Bulgaria, Cyprus, Slovakia	Cyprus, Ireland, Luxembourg,	Italy, Romania, Slovakia
41-50	Austria, Netherlands	Bulgaria, Finland, Sweden	Cyprus Germany, Finland	Austria, Germany, Poland	Czech Republic, Greece, Sweden	Luxembourg, Malta, Poland
31-40	Germany, Greece	Germany, Romania, Slovakia,	Austria, Czech Republic, Poland	Czech Republic, Finland, Romania	Estonia, Finland, Poland	Greece, Poland, Sweden
21-30	Ireland	Cyprus, Czech Republic, Slovenia	Estonia, Greece, Hungary	Greece, Malta, Portugal	Croatia, Portugal, Romania	Bulgaria, Croatia, Ireland
11-20	Portugal	Greece, Lithuania, Malta	Malta, Portugal, Slovenia	Estonia, Hungary, Slovenia	Bulgaria, Hungary, Slovenia	Estonia, Latvia, Lithuania
1-10	Finland, Sweden	Croatia, Estonia, Latvia	Croatia, Latvia, Lithuania	Croatia, Latvia, Lithuania	Latvia, Lithuania, Malta	Finland, Hungary, Slovenia
Spearman's correlation for t and t+1 ^(d)	0.88***	0.87***	0.92***	0.83***	0.87***	-
Spearman's correlation for t and t+2 ^(e)	0.74***	0.86***	0.78***	0.72***	-	-
Notes: (a) Sour	ce Eurobarometer	files Spring 2003 -	Spring 2008 own	calculations (b) o	countries within de	ciles are ordered

Notes: (a) Source Eurobarometer files Spring 2003 – Spring 2008, own calculations, (b) countries within deciles are ordered alphabetically, (c) *, **, *** denote significance at the 10, 5 and 1 percent level respectively, (d) Spearman's correlation coefficient between the proportion of respondents expressing concerns in t and t+1 over all countries, (e) Spearman's rank correlation coefficients between the proportion of respondents expressing concerns in t and t+2 over all countries.

	No I	Micro Heteroge		With Micro Heterogeneity
	(1)	(2)	(3)	(4)
	1.197***	0.309***	0.290***	0.284***
Terrorism Risk Index	(0.022)	(0.023)	(0.024)	(0.024)
Country dummies	-	Included	Included	Included
Time dummies	_	-	Included	Included
				-0.00198
Age	_	_	-	(0.002)
	-	-	-	0.0000433**
Age squared				(0.000)
D. P.C. L.	-	-	-	0.112***
Political center				(0.015)
D 197 1 7 17	-	-	-	(0.015) 0.167***
Political right				(0.016) -0.155***
No full-time education	-	-	-	-0.155***
No full-time education				(0.060)
16 10 years of advection	-		-	0.0167
16-19 years of education		-		(0.016)
More than 20 years of education	-	-	-	-0.0183
Wore than 20 years of education				(0.018)
Studying	-	-	-	0.0288
Studying				(0.029)
Occupation white	-	-	-	-0.0499***
Occupation winte				(0.014)
Male	-	-	-	-0.0308***
172010				(0.011)
Small/middle sized town	-	-	-	-0.0378***
				(0.013)
Large town	-	-	-	-0.0353**
<u> </u>				(0.014)
Single	-	-	-	-0.0390***
				(0.012)
Intercept	-1.410***	-1.616***	-1.770***	-1.812***
тистесрі	(0.005)	(0.029)	(0.032)	(0.061)
Zero country effects	-	[0.000]	[0.000]	[0.000]
Zero time effects	_	_	[0.000]	[0.000]
Zero time effects			[0.000]	[0.000]
Zero individual effects	-	-	-	[0.000]
N	131270	131270	131270	129212
pseudo R^2	0.046	0.197	0.199	0.201
AIC	78377.0	66086.5	65866.6	64152.0
BIC	78396.6	66380.1	66199.3	64630.7

Notes: (a) Robust standard errors in parentheses, (b) one, two, three asterisks denote significance at the 10, 5 and 1 percent level respectively, (c) non-responses to political orientation and community size controlled for.

e 4: Probit models for terrorism risk	(1)	(2)	(3)
	0.363***	_	
Terrorism Risk Index	(0.045)		
Attack Rate Index	-	14.04***	-
Attack Nate fildex		(1.684)	35 35 35
Casualty Rate Index	-	-	0.361***
	7.12 0**	0.555	(0.044)
Intercept	-5.120**	-0.557	-5.211***
Country dummies	(1.995) Included	(1.849) Included	(2.000) Included
Time dummies	Included	Included	Included
Time dummies			meraded
	Individual character	istics	
	-0.00236	-0.00248	-0.00236
Age	(0.003)	(0.003)	(0.003)
A 1	0.0000486*	0.0000498*	0.0000485*
Age squared	(0.000)	(0.000)	(0.000)
Political center	0.119***	0.119***	0.119***
romical celler	(0.021)	(0.021)	(0.021)
Political right	0.157***	0.157***	0.157***
1 Ondour right	(0.024)	(0.024)	(0.024)
No full-time education	-0.0474	-0.0463	-0.0475
	(0.089)	(0.088)	(0.089)
16-19 years of education	0.0688***	0.0695***	0.0688***
•	(0.024)	(0.024)	(0.024)
More than 20 years of education	0.0189 (0.027)	0.0186 (0.027)	0.0189 (0.027)
	0.0520	0.0541	0.0519
Studying		(0.045)	
	(0.045) -0.0516**	-0.0503**	(0.045) -0.0516**
Occupation white	(0.021)	(0.021)	(0.021)
34.1	-0.0432***	-0.0435***	-0.0432***
Male	(0.017)	(0.017)	(0.017)
Small/middle sized town	-0.0351*	-0.0325*	-0.0351*
Sman/middle sized town	(0.019)	(0.020)	(0.019)
Large town	-0.0494**	-0.0477**	-0.0494**
Large town	(0.022)	(0.022)	(0.022)
Single	-0.0409**	-0.0408**	-0.0409**
	(0.018)	(0.018)	(0.018)
	Competing risk driv	vers	
Tax wedge	0.0243	0.0229	0.0255
Tax wedge	(0.019)	(0.018)	(0.019)
Crime rate	-0.000290***	-0.000187***	-0.000293***
	(0.000)	(0.000) -0.000185***	(0.000)
Immigration rate	-0.0000663		-0.0000628
	(0.000)	(0.000)	(0.000)
Inflation rate	0.169**	0.213***	0.166**
	(0.073) -0.0855***	(0.073) -0.0743***	(0.073) -0.0858***
Burden of housing costs	(0.012)		(0.012)
	0.510***	(0.011) 0.755***	0.501***
Spending on education	(0.187)	(0.200)	(0.187)
T	0.00796*	0.000184	0.00813*
Environmental issues	(0.005)	(0.004)	(0.005)
Chanding	0.361***	0.0828	0.368***
Spending on pensions	(0.122)	(0.126)	(0.122)
Unemployment rate	0.109***	0.122***	0.108^{***}
Onemployment rate	(0.033)	(0.033)	(0.033)
	-0.0133**	-0.0196***	-0.0131***

Infant mortality rate	0.119** (0.050)	0.214*** (0.050)	0.117** (0.050)
N	52333	52333	52333
pseudo R ²	0.198	0.199	0.198
AIC	29431.5	29429.0	29431.5
BIC	29901.3	29898.9	29901.4
Zero country effects	[0.000]	[0.000]	[0.000]
Zero time effects	[0.001]	[0.001]	[0.001]
Zero individual effects	[0.000]	[0.000]	[0.000]
Zero competing risks effects	[0.000]	[0.000]	[0.000]

Notes: (a) Robust standard errors in parentheses, (b) one, two, three asterisks denote significance at the 10, 5 and 1 percent level respectively, (c) p-value in square brackets, (d) non-responses to political orientation and community size controlled for.

	(1)	(2)	(3)
Terrorism Risk Index	0.363*** (0.109)	-	-
Attack Rate Index	-	14.04*** (4.335)	-
Casualty Rate Index	-	-	0.361*** (0.107)
Intercept	-5.120 (3.304)	-0.557 (3.385)	-5.211 (3.303)
Country dummies	Included	Included	Included
Time dummies	Included	Included	Included
	Individual character	istics	
	-0.00236	-0.00248	-0.00236
Age	(0.004)	(0.004)	(0.004)
Age squared	0.0000486	0.0000498	0.0000485
	(0.000)	(0.000)	(0.000)
Political center	0.119***	0.119***	0.119***
	(0.030)	(0.030)	(0.030) 0.157***
Political right	0.157***	0.157***	
	(0.044)	(0.044)	(0.044) -0.0475
No full-time education	(0.077)	(0.076)	(0.077)
	0.0688**	0.0695**	0.0688**
16-19 years of education	(0.031)	(0.030)	(0.031)
5 1 20 6 1 1	0.0189	0.0186	0.0189
More than 20 years of education	(0.043)	(0.043)	(0.043)
Studelina	0.0520	0.0541	0.0519
Studying	(0.043)	(0.043)	(0.043)
Occupation white	-0.0516**	-0.0503**	-0.0516**
	(0.025)	(0.025)	(0.025)
Male	-0.0432**	-0.0435**	-0.0432**
	(0.018)	(0.018)	(0.018)
Small/middle sized town	-0.0351	-0.0325	-0.0351
	(0.032)	(0.032)	(0.032) -0.0494
Large town	(0.030)	(0.030)	(0.030)
	-0.0409***	-0.0408**	-0.0409***
Single	(0.016)	(0.016)	(0.016)
	Competing risk dri		(0.010)
	0.0243	-0.0229	0.0255
Tax wedge	(0.027)	(0.032)	(0.027)
Cuimo noto	-0.000290	-0.000187	-0.000293
Crime rate	(0.000)	(0.000)	(0.000)
Immigration rate	-0.0000663	-0.000185***	-0.0000628
	(0.000)	(0.000)	(0.000)
Inflation rate	0.169	0.213	0.166
	(0.145)	(0.145)	(0.145)
Burden of housing costs	-0.0855*** (0.031)	-0.0743*** (0.030)	-0.0858*** (0.031)
	0.510	0.755	0.501
Spending on education	(0.502)	(0.581)	(0.499)
T	0.00796	0.000184	0.00813
Environmental issues	(0.008)	(0.007)	(0.008)
Spanding on manair	0.361*	0.0828	0.368*
Spending on pensions	(0.209)	(0.212)	(0.210)
	0.109	0.112	0.108

Economic sentiment	-0.0133	-0.0196	-0.0131
Economic sentiment	(0.012)	(0.012)	(0.012)
I. f t t . l'. t t	0.119	0.214**	0.117
Infant mortality rate	(0.092)	(0.104)	(0.092)
N	52333	52333	52333
pseudo R ²	0.198	0.199	0.198
AIC	29371.5	29369.0	29371.5
BIC	29575.4	29572.9	29575.4
Zero country effects	[0.000]	[0.000]	[0.000]
Zero time effects	[0.123]	[0.098]	[0.127]
Zero individual effects	[0.000]	[0.000]	[0.000]
Zero competing risks effects	[0.000]	[0.000]	[0.000]

Notes: (a) Cluster robust standard errors in parentheses, (b) one, two, three asterisks denote significance at the 10, 5 and 1 percent level respectively, (c) p-value in square brackets, (d) non-responses to political orientation and community size controlled for.

Table 6: Probit models for terrorism ri	sk concern using decompos	sad tarrarism risk	
table 0: Frobit models for terrorism in	(1)	(2)	(3)
	` '	(2)	(3)
Terrorism risk index	2.353***	-	-
Trend component, MA3 Terrorism risk index	(0.307) 0.360**		
		-	-
Cycle component, MA3 Terrorism risk index	(0.166)	2.056***	
	_	2.956***	-
Trend component, MA5		(0.427)	
Terrorism risk index	_	0.251	-
Cycle component, MA5		(0.191)	2.662***
Terrorism risk index	_	-	2.662***
Trend component, exponential			(0.772) 0.643***
Terrorism risk index	_	-	
Cycle component, exponential	2.002	• 000	(0.184)
Intercept	-3.382	-2.880	-4.903**
	(2.167)	(2.236)	(2.315)
Time dummies	Included	Included	Included
	Individual characteris	stics	
	0.000853	0.000707	0.000311
Age	0.000852	0.000797	-0.000211
	(0.004)	(0.004)	(0.004)
Age squared	0.0000173	0.0000177	0.0000266
8 · · 1 · · · ·	(0.000)	(0.000)	(0.000)
Political center	0.0884***	0.0868***	0.0770**
	(0.031)	(0.031)	(0.032)
Political right	0.149***	0.148***	0.133***
	(0.040)	(0.040)	(0.043)
No full-time education	0.00250	0.0214	0.0950
Two run time education	(0.106)	(0.106)	(0.121)
16-19 years of education	0.0812***	0.0817***	0.0628^{**}
	(0.031)	(0.030)	(0.031)
More than 20 years of education	0.0846^{*}	0.0864^{*}	0.0730
Whole than 20 years of education	(0.047)	(0.047)	(0.047)
Studying	0.121***	0.120***	0.0920^{**}
Studying	(0.044)	(0.045)	(0.046)
Occupation white	-0.0409	-0.0402	-0.0399
Occupation write	(0.025)	(0.025)	(0.025)
Male	-0.0455***	-0.0450***	-0.0448***
Male	(0.017)	(0.017)	(0.016)
C11/: 1.11:1 t	0.00466	0.00514	0.0134
Small/middle sized town	(0.035)	(0.035)	(0.036)
Longo t	-0.0555**	-0.0561**	-0.0459*
Large town	(0.026)	(0.026)	(0.027)
G: 1	-0.0419***	-0.0413***	-0.0400***
Single	(0.013)	(0.013)	(0.013)
	Competing risk drive	ers	
	-0.00735	-0.00600	0.0221
Tax wedge	(0.023)	(0.023)	(0.022)
	0.0000317	0.0000296	0.0000203
Crime rate	(0.000)	(0.000)	(0.000)
	-0.00000771	-0.00000670	-0.00000904
Immigration rate	(0.000)	(0.000)	(0.000)
	-0.123	-0.124	-0.146
Inflation rate			
	(0.106)	(0.107)	(0.121)
Burden of housing costs	0.0187***	0.0182**	0.0216***
	(0.007) -0.211**	(0.007) -0.190**	(0.008) -0.279***
Spending on education			
	(0.088)	(0.091)	(0.098)
Environmental issues	0.00548	0.00508	0.0164***
	(0.005)	(0.006)	(0.005)

a	0.0790	0.0746	0.0182
Spending on pensions	(0.052)	(0.051)	(0.057)
II	-0.0704**	-0.0704**	-0.0663**
Unemployment rate	(0.031)	(0.032)	(0.032)
Economic sentiment	0.00883	0.00378	0.0112
Economic sentiment	(0.017)	(0.018)	(0.019)
Infant montality note	0.254**	0.249**	0.292***
Infant mortality rate	(0.109)	(0.110)	(0.112)
N	52333	52333	52333
pseudo R ²	0.163	0.161	0.148
AIC	30687.1	30745.8	31213.6
BIC	30891.0	30949.7	31417.5
Zero time effects	[0.699]	[0.507]	[0.644]
Zero individual effects	[0.000]	[0.000]	[0.000]
Zero competing risks effects	[0.000]	[0.000]	[0.000]

Notes: (a) Cluster robust standard errors in parentheses, (b) one, two, three asterisks denote significance at the 10, 5 and 1 percent level respectively, (c) p-value in square brackets, (d) non-responses to political orientation and community size controlled for

Appendix

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Austria	0.06	0.15	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Ausura	(5)	(12)	(4)	(1)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1)	(1)
Belgium	0.05	0.01	0.00	0.02 (2)	0.03	0.02 (2)	0.00	0.00	0.03	0.08	0.00	0.00	0.00	0.01 (1)
	(5)	0.02	0.14	0.04	0.02	0.00	(0)	0.01	0.00	(8)	(0)	0.00	0.00	0.00
Bulgaria	(2)	(2)	(12)	(3)	(2)	(0)	(2)	(1)	(0)	(0)	(0)	(0)	(0)	(0)
Croatia	0.09	0.02	0.07	0.17	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.02	0.00	0.00
Crouna	(4)	(1)	(3)	(8)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(1)	(0)	(0)
Cyprus	1.11 (7)	0.46 (3)	1.52 (10)	0.00	0.15 (1)	0.15 (1)	0.00	0.14 (1)	0.00	0.00	0.14 (1)	0.00	0.00	0.13 (1)
C 1 D 11'	0.01	0.03	0.03	0.04	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Czech Republic	(1)	(3)	(3)	(4)	(0)	(0)	(0)	(1)	(0)	(1)	(0)	(0)	(0)	(0)
Denmark	0.00	0.12	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Dominark	(0)	(6)	(0)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(1)	(0)
Estonia	0.41 (6)	0.14 (2)	0.07	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Finland	(1)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1)
France	0.17	0.12	0.46	0.22	0.02	0.08	0.04	0.03	0.03	0.06	0.02	0.04	0.06	0.03
Trance	(97)	(71)	(268)	(130)	(12)	(46)	(21)	(17)	(16)	(34)	(11)	(22)	(34)	(16)
Germany	0.10	0.18	0.06	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Great	(79) 0.07	(148) 0.01	(50)	(12) 0.01	(5)	(12) 0.01	(6) 0.01	(5)	(2) 0.01	(1)	(2)	(1)	(4) 0.01	(2)
Britain	(42)	(5)	(7)	(5)	(6)	(8)	(8)	(11)	(3)	(0)	(1)	(9)	(4)	(9)
	0.40	0.08	0.19	0.20	0.26	0.32	0.25	0.09	0.10	0.11	0.04	0.05	0.21	0.14
Greece	(42)	(8)	(20)	(21)	(28)	(35)	(27)	(10)	(11)	(12)	(4)	(6)	(23)	(16)
Hungary	0.02	0.00	0.13	0.17	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1141194117	(2)	(0)	(13)	(17)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Ireland	0.28 (10)	0.08	0.03	0.11 (4)	0.08 (3)	0.08 (3)	0.00	0.03	0.00	0.03	0.00	0.00	0.02	0.02
	0.03	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.03	0.01	0.01	0.01	0.00
Italy	(18)	(1)	(8)	(8)	(6)	(7)	(7)	(10)	(2)	(15)	(3)	(6)	(4)	(0)
Latvia	0.08	0.04	0.00	0.08	0.17	0.04	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Latvia	(2)	(1)	(0)	(2)	(4)	(1)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(1)
Lithuania	0.00	0.05	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0) 0.75	(2)	(3)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Luxembourg	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Malta	0.00	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mana	(0)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Netherlands	0.02	0.05	0.04	0.03	0.00	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00
	(3) 13.02	(7) 1.03	(6) 1.75	(4) 4.37	(0)	(1) 4.05	(0)	(0)	(2) 0.94	(3)	(0)	(0)	(0)	(0)
Northern Ireland	(214)	(17)	(29)	(73)	(58)	(68)	(39)	(51)	(16)	(23)	(4)	(9)	(3)	(7)
Poland	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polalid	(4)	(4)	(6)	(3)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Portugal	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(1) 0.00	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Romania	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
G1 1:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Slovakia	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Slovenia	0.05	0.00	0.15	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Siovenia	(1)	(0)	(3)	(1)	(0)	(0)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Spain	0.14	0.11	0.16	0.22	0.04	0.12	0.23	0.17	0.09	0.05	0.07	0.05	0.05	0.02
	(55) 0.01	0.01	(64) 0.01	(86) 0.05	0.00	0.02	(94) 0.01	(69) 0.00	(38)	0.00	0.00	0.02	(0)	0.00
Sweden	(1)	(1)	(1)	(4)	(0)	(2)	(1)	(0)	(0)	(0)	(0)	(2)	(1)	(0)
Total.	0.50	0.22	0.09	0.07	0.04	0.16	0.03	0.02	0.01	0.03	0.04	0.05	0.05	0.04
Turkey	(299)	(133)	(53)	(44)	(24)	(107)	(23)	(13)	(6)	(19)	(27)	(39)	(39)	(30)

Table A.2: Definition of the individual characteristics			
Variable	Coding		
Age	Age (15-98)		
Age squared	Square of age		
Male	1 = male, 0 female		
Political left	1 = political left (1-4), 0 otherwise		
Political center	1 = political middle (5-6), 0 otherwise		
Political right	1 = political right (7-10), 0 otherwise		
Politscale_nr	1 = political indecisive or refuse, 0 otherwise		
No full-time education	1 = no full-time education, 0 otherwise		
15 years of education	1 = up to 15 years of education, 0 otherwise		
16-19 years of education	1 = between 16-19 years of education, 0 otherwise		
More than 20 years of education	1 = more than 20 years of education, 0 otherwise		
Studying	1 = still studying, 0 otherwise		
Occupation white	1 = respondent is self-employed, works as a manager or has another white collar job, 0 otherwise		
Single	1= the respondent is not married, remarried or unmarried currently living with a partner, 0 otherwise		
Rural area	1 = respondent lives in rural area or village, 0 otherwise		
Small/middle sized town	1 = respondent lives in small or middle sized town, 0 otherwise		
Large town	1 = respondent lives in large town, 0 otherwise		
Community_nr	1 = respondent does not know size of his community, 0 otherwise		
Source: Eurobarometer files Spring 2003 – Spring 2008.			

Table A.3: Definition of the competing risk indicators			
Competing risk as mentioned in the Eurobarometer	Driver proxy	Definition	
Crime	Crime rate	Numbers of all types of registered crime, per 100.000 inhabitants.	
Economic situation	Economic sentiment indicator	A composite indicator made up of five sectoral confidence indicators with different weights: Industrial confidence indicator, Services confidence indicator, Consumer confidence indicator, Construction confidence indicator Retail trade confidence indicator.	
Rising prices / Inflation	Inflation rate	Annual average rate of change in Harmonized Indices of Consumer Prices.	
Taxation	Tax wedge	The tax wedge on the labour cost measures the relative tax burden for an employed person with low earnings.	
Unemployment	Unemployment rate	Unemployed persons as a percentage of the labour force.	
Housing	Housing	Financial burden of the repayment of debts from hire purchases or loans.	
Immigration	Immigration rate	The number of foreigners including citizens of other EU Member States and non-EU citizens, usually resident in the reporting country, per 100.000 inhabitants.	
Health care system	Infant mortality rate	The ratio of the number of deaths of children under one year of age during the year to the number of live births in that year. The value is expressed per 1 000 live births.	
Educational system	Spending on education	Spending on education as % of GDP / public spending.	
Pensions	Spending on pensions	Expenditure on pensions as the percentage of GDP.	
Protecting the environment	Greenhouse gas emissions	Index of greenhouse gas emissions in CO2 equivalents.	
Source: Eurostat.			