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ABSTRACT

Whether the danger invoked is nuclear war or genetically modified foods, far more people in some countries than in others say they are afraid. Using data from six surveys, I show that the levels of reported fear of different dangers correlate strongly across both individuals and countries. I construct indexes of fearfulness for 15-25 countries and map the prevalence of fear in Western Europe. About two thirds of the crossnational variation within Europe can be explained by differences in pessimism—the degree to which respondents exaggerate the likelihood of disasters. Among the countries for which I have data, the most robust correlates of fearfulness relate to countries' religious traditions. Fear tends to be higher in countries where more people believe in Hell and where fewer believe in Heaven.

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1 Introduction

In some countries, people are more fearful than in others. Whether the object of fear is nuclear war, epidemics, or serious medical errors, survey respondents in Portugal are two to three times as likely as those in the Netherlands to say they are afraid. More than 80 percent of Greeks report worrying about the spread of weapons of mass destruction, genetically modified foods, and new viruses; in each case, fewer than 50 percent of Finns say the same.

In this paper, I show that predispositions to fear vary systematically across countries, and map the geography of fearfulness, concentrating on Europe for which data are most plentiful. I show that variation in fearfulness is correlated with—but only partly explained by—variation in pessimism (overestimation of the probability of unpleasant outcomes). I examine some hypotheses about why fear might vary across countries, and determine to what extent they are consistent with the observed patterns. Although the data do not permit strong conclusions, I conjecture that aspects of countries' religious traditions predispose countries to higher or lower levels of fear.

Of course, some countries are more dangerous than others. Their inhabitants might be more afraid simply because they have more to be afraid of. This, I argue, can explain only a small part of the variation. Some dangers—world war, nuclear conflict—are inherently global in scope, and variation in fear of these is both large and correlated with fear of other threats. For certain dangers one can compare levels of fear to objective measures of the risk. I show that the correlations between these are often weak, non-existent, or even negative. For instance, fear of contracting swine flu in 2009 tended to be lower in countries where the infection rate was higher.

Another possibility is that what varies across countries is not fear itself but just the willingness to admit it. In some cultures, expressing emotions is discouraged, especially in the presence of strangers. Where men are expected to be more "macho," fewer might confess to being afraid. That respondents might tailor their answers to comply with social norms is quite possible. But I show that it is precisely in countries with more "masculine" cultures that more respondents—both male and female—express fear. Reports of fear are also more—not less—common in countries with cultures that most strongly discourage the open expression of emotions.

Understanding why people are more afraid in some countries than in others is important for several reasons. Economists have noted substantial crossnational differences in reported happiness and life satisfaction (e.g. Deaton 2008). Although national income helps to account for this variation, part remains unexplained (Stevenson and Wolfers 2008). In a companion paper, I show that—at least within Europe, for which data are available—individuals who are more fearful tend to be less satisfied with their lives. Countries where the average level of fear is higher tend to have lower average happiness, even controlling for national income. It is hard to prove a causal relationship. Still, it is reasonable to suppose that if the level of fear in some countries were to fall, this would improve their average level of subjective wellbeing.

Fear is also thought to be related to various other social, political, and economic phenomena. Greater fear of nuclear war has been found to correlate with a lower savings rate (Slemrod 1986), and, in general, fearfulness may reduce the motivation to plan ahead and invest. Some have linked fear of crime to poorer health (Ross 1993). In politics, various scholars argue that fear predisposes people to more conservative attitudes or aggressive behavior (Bar-Tal 2001). Some conjecture that fear induces individuals to favor—or at least accept—more authoritarian government, in Erich Fromm's phrase to "escape from freedom" (Fromm 1941, Feldman and Stenner 1997). In the companion paper already mentioned, I examine the strength of empirical relationships between countries' average levels of fear and such purported consequences.

While the study of emotions and moods—most notably, happiness—has flourished recently in economics, empirical work on the geographical prevalence of emotions is less common. A major exception is Moïsi (2009), who characterizes the continents on the basis of particular emotions which he sees as locally dominant—for Asia, hope; for the Middle East, humiliation; and for the West, fear. The evidence I provide, although far from definitive, suggests that fear is not higher in the West than in other parts of the world and that variation within continents is at least as significant as variation across them. Scholars have studied the geographical distribution of cultures, usually identified with particular syndromes of values (Hofstede 2001, Inglehart and Wlezen 2005). I examine here to what extent the value systems detected in such work correlate with fearfulness.

I also briefly explore the relationship between fear and trust. Many scholars have noted large differences across countries in how much confidence individuals have in their national political institutions and how ready they are to trust others. It seems plausible that trust and fear would be related. Fear might cause people to be more distrustful, and distrust might make people fearful. I show that, in fact, across individuals—either within countries or groups of countries—the correlations between measures of trust and measures of fear are very weak. Across countries, average levels of fear and trust are more highly correlated. However, they do not appear to be merely noisy measures of the same underlying phenomenon. Factor analysis conducted on trust and fear questions together—whether at the individual or country level—identifies two distinct factors, one highly correlated with trust and one highly correlated with fear, both of which explain a significant proportion of the variation.

The next section discusses the concept of fear and offers a simple formalization. Section 3 reviews the patterns of fear evident in survey data and devises indexes of fearfulness. Section 4 assesses the validity of the data. Section 5 devises a crossnational index of pessimism and shows that this can explain about two thirds of the variance in fearfulness. Section 6 explores the relationship between measures of fear and measures of trust. Section 7 examines possible explanations for why some countries have higher levels of fear. Section 8 concludes.

2 The concept of fear

Many scholars—in philosophy, psychology, sociology, and political science—have considered the nature and causes of fear, and there is insufficient space here to adequately review their work.[1] Instead, I provide only the background necessary to orient the subsequent analysis of crossnational differences.

Fear is an intense, unpleasant emotional reaction to perceived danger (e.g., Öhman 2008, p.710). Most scholars consider it to be one of six or seven "basic emotions" that are thought to be

[1] Recent surveys include Svendsen (2008), Tudor (2003), Lewis et al. (2008), Gullone (2000), and Robin (2000).

found in all human communities, each of which comes with a characteristic facial expression (Ekman et al. 1982).[2] A range of animals also exhibit signs of fear (e.g. Gray 1987). It is thought to confer evolutionary advantage, preparing organisms to flee or defend themselves when threatened. In humans and some other mammals, fear is associated with distinctive physiological responses, including activation of the autonomic nervous and endocrine systems, increased heart rate, and activity in the amygdala (LeDoux 2000).

While the word fear usually denotes a response to a particular stimulus (fear of spiders, of nuclear war, etc.), the related concept of anxiety refers to a mood of foreboding not focused on any concrete danger (Öhman 2008, p.710).[3] Of course, an anxious mood may predispose individuals to feel more intense fear of specific threats. As I will show, fears tend to correlate strongly across individuals and countries, consistent with the idea that an underlying predisposition—"fearfulness"—influences reactions to danger. In some cases, the surveys I use ask respondents how "worried" they are about a given danger. I treat "worried" and "afraid" as being close to synonyms, although worrying is usually understood as less intense.

Fear can be a response to an observed threat in the immediate environment—a bear in one's path, an explosion above one's head—but it can also focus on a danger not currently present—a planned visit to the dentist, a nuclear war. In such cases, the stimulus is a mental image. One might think that the intensity of the fear experienced would vary with the expected disutility of the feared event—that is, the probability of its occurrence multiplied by the disutility if it occurs. However, psychological research suggests a more complicated process.

There are thought to be two pathways to fear—one innate or pre-conditioned and subconscious, the other involving conscious information processing. The subconscious "low road" involves the rapid passage of signals from the sensory organs via the sensory thalamus to the amygdala, bypassing regions of the brain cortex associated with conscious thought (LeDoux 2000,

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[2] Besides fear, the emotions usually considered to be "basic" are happiness or joy, sadness or distress, anger, surprise, and disgust.

[3] Similar emotion-mood pairs include joy-happiness, distress-sadness, irritation-anger.

pp.174-5). The amygdala immediately activates arousal systems that boost output of stress hormones, stimulate the autonomic nervous system, and fire up those brain regions that consciously analyze information.

The second pathway involves the conscious processing of danger signals in the brain cortex. Such cognition may either dampen or amplify fear generated subconsciously. While the probability and aversiveness of the feared event are important, research suggests that people do not simply multiply the objective probability by the disutility, as in expected utility theory (Lowenstein et al. 2001). For one thing, individuals must first form subjective estimates of the probability. Such estimations turn out to be sensitive not just to (accurate) remembered information, but also to erroneous beliefs, mood, and any fear the individual is already feeling. People who are in a bad mood or afraid tend to be more pessimistic (Johnson and Tversky 1983, Lerner and Keltner 2000). Estimates of risk may also depend on how the relevant information was acquired—personal experience is overweighted relative to information absorbed from indirect sources (Weber 2010). Evaluating the aversiveness of the feared outcome is also not straightforward. Previously acquired beliefs and values obviously matter. But, in addition, situational details such as how vividly the outcome is described or imagined affect how unpleasant it seems (Lowenstein et al. 2001, pp.275).

Finally, even given an evaluation of how probable and undesirable an event is, other factors—some universal, some culturally specific, and some individual—influence how much fear it evokes. At the universal end of the scale, dangers that are perceived to be imminent generate more fear (Lowenstein et al. 2001, pp.278). So do dangers that are relatively new and unfamiliar, and those over which the individual feels a greater lack of control (Slovic 1987). Different cultures condition people to have stronger or weaker emotional reactions to particular dangers (Douglas and Wildavsky 1982). At the individual end, the same people may feel more or less fear of a given danger when in different moods.

Figure 1 shows a simple representation of the fear-generating process that attempts to capture various linkages suggested by psychological research.[4] Algebraically, we can define the amount of fear, F, that a given individual feels when considering an unpleasant possible event, x, as:

$$F = \phi + f\left(p(\phi, m, b), u(b), m\right) \tag{1}$$

where ϕ is the intensity of the subconsciously generated fear response prompted by the image of x, u is the disutility the individual expects to experience if x occurs, b is a vector of the individual's beliefs and values, $p(\cdot)$ is the individual's subjective probability of x, m is a measure of the individual's mood, and $f(\cdot)$ is a function that represents the individual's emotional arousal to a given perceived danger.

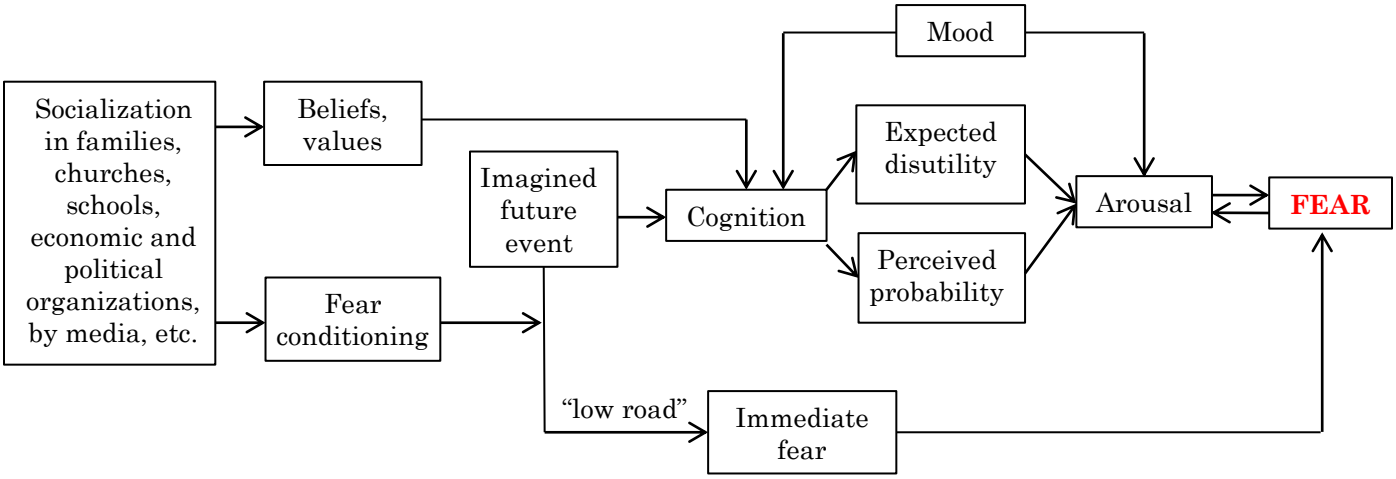

Figure 1: A simple model of fear

Individual characteristics and social influences may affect the production of fear at multiple points. Genetic differences help to determine the intensity with which the amygdalas of different individuals react to flying bullets or deafening noises, and also their susceptibility to different

[4] This is meant to summarize current psychological thinking about fear (for another, similar view, see the flow charts in Lowenstein et al (2001)). One could no doubt complicate the diagram with even more arrows and feedbacks. The "affect heuristic" of Finucane et al. (2000) suggests that both the perceived probability and disutility are determined by the (here omitted) variable "affect," which measures how good or bad the imagined event is perceived to be.

moods.[5] Such genetic factors may—or may not—sum to differences across national populations. Culture is also bound to matter. Conditioning in a variety of social settings—families, churches, schools, enterprises, political organizations—determines the set of beliefs and values that individuals bring to bear in the cognitive analysis of dangers, and social experiences affect the prevalence of different moods. Media messages influence values and beliefs. Finally, conditioning in social settings trains the amygdala to respond more or less intensely to particular stimuli.

3 Mapping fear

I analyze data from six surveys. Three were conducted by the Eurobarometer team, which polls representative samples of citizens of EU countries twice a year, predominantly on attitudes towards the European Union. On three occasions—November-December 2000; March-May 2002; and September-October 2005—the questionnaires included a number of questions on fears of various dangers. The 2000 and 2002 surveys (EB2000 and EB2002) included exactly the same set of questions. Specifically, respondents were told: "Here is a list of things that some people say they are afraid of. For each of these, please tell me if, personally, you are afraid of it, or not. 1. A world war. 2. A nuclear conflict in Europe. 3. A conventional war in Europe (not nuclear, bacteriological, or chemical). 4. The accidental launch of a nuclear missile. 5. An accident in a nuclear power station. 6. Spread of nuclear, bacteriological or chemical weapons of mass destruction. 7. Ethnic conflicts in Europe. 8. Terrorism. 9. Organised crime. 10. Epidemics." For each of these, respondents could reply "afraid," "not afraid," or "don't know."

The 2005 survey (EB2005) asked about certain food-related dangers. Respondents were told: "For each of the following issues, please tell me if you are very worried, fairly worried, not very worried or not at all worried by it." Eleven dangers were then listed. Since many of these were similar—for instance, "pollutants like mercury or dioxin" and "pesticide residues in fruit, vegetables, or cereals"—I chose to focus on a subset of four that were more distinct: "1. The so called mad cow

[5] A variety of research suggests a genetic component in fearfulness (e.g. Marks 1986; Montag et al. 2008).

disease (BSE); 2. Genetically modified products in food or drinks; 3. To put on weight; and 4. New viruses like avian influenza." Later the questionnaire turned to medical care, and asked respondents: "All in all, how worried are you to suffer a serious medical error?" As before, respondents could pick from: "very worried," "fairly worried," "not very worried," "not at all worried," or "don't know."

A fourth survey, the "Asia Europe Survey: A Multinational Comparative Study in 18 Countries" (ASES), conducted in 2001 by Takashi Inoguchi of Chuo University, polled representative samples of respondents in nine European and nine Asian countries on a variety of topics.[6] Included in the questionnaire was the question: "Some people feel that their life is going well. Others are worried about the way it is going. In your own case, how worried are you about each of the following? 1. Your work situation. 2. Your health. 3. Your family life. 4. Your neighborhood. 5. Your country. 6. The international situation generally." Respondents could select "very worried," "somewhat worried," "not worried at all," and "don't know." Another, partly overlapping question later asked: "Now, when thinking specifically about the situation in [respondent's country], how worried are you about each of the following? A) The economy. B) Political corruption. C) Problems of human rights. D) Unemployment. E) The level of crime. F) The quality of the public services. G) The level of immigration. H) Ethnic conflict. I) Religious conflict. J) The condition of the environment." Possible answers were the same as before.

Finally, the Pew Global Attitudes Project (GAP) conducts annual surveys of the residents of a number of countries, on themes that vary from year to year.[7] The Spring 2009 survey asked respondents in 25 countries if they had heard of the disease known as "swine flu,"[8] and then asked those who had heard of the illness: "How worried are you that you or someone in your family will be

[6] The Eurobarometer and ASES survey data were downloaded from the Inter-University Consortium for Political and Social Research (ICPSR). For full reference details, see Table A1 in the appendix. In each case, the original collector of the data, ICPSR, and the funding agencies bear no responsibility for my interpretations or inferences.

[7] Data downloaded from the Pew Global Attitudes Project website at http://pewglobal.org/category/data-sets/.

[8] More than 90 percent had heard of swine flu in most countries, the four exceptions being Pakistan (16 percent), India (69 percent), Nigeria (61 percent), and Kenya (75 percent).

exposed to swine flu?" Respondents could answer "very worried," "somewhat worried," "not too worried," "not at all worried," "already exposed," or "don't know." In the 2006 Pew poll, an almost identical question was asked about the bird flu, which was then a major health issue. In another question in 2006, those who said they had heard about global warming were asked: "How much do you personally worry about global warming – a great deal, a fair amount, only a little, or not at all?"

These surveys have different advantages and disadvantages. EB2000 and EB2002 covered just the 15 Western European countries that were then EU members. EB2005 added the 10 new EU members (five from Eastern Europe, three Baltic states, plus the Mediterranean islands of Cyprus and Malta). ASES combined nine Western European and nine Asian countries. Finally, the Pew Surveys of 2006 and 2009 included, respectively, 15 and 25 countries from around the world. EB2000 and EB2002 contained the most usefully framed battery of questions. Their repetition of exactly the same questions makes it possible to check the consistency of answers and to look for change between the two dates (a period that included the 2001 9/11 terrorist attack). Surveys differed in how fine-grained a set of options they allowed respondents. Whereas EB2000 and EB2002 offered only "afraid" and "not afraid" (as well as "don't know"), the other three surveys let respondents provide more detail about the intensity of their fear. However, these three used the word "worried" rather than "afraid." The types of dangers invoked also varied across the surveys. In EB2000 and EB2002, war and other disasters predominated, while in EB2005 there was greater focus on food and health issues. For these reasons, with the exception of EB2000 and EB2002, one cannot examine change in the level of fear over time.

Table 1 shows the percentages of respondents in each country that said they were afraid of or worried about each of the main dangers investigated, excluding those who said they did not know or refused to answer, and using sampling weights when these were available. (As shown, all the surveys had low rates of "don't know" or "refused to answer".)

Several observations immediately suggest themselves. First, there are clear geographical patterns. Within Western Europe, the southern, Mediterranean countries—Greece, Portugal, Spain

Table 1: The geography of fear (percentage of respondents "afraid of" or "worried about" the following dangers)

	EB 2000									*EB2002*	*EB 2005*					
	World War	*Nuclear conflict*	*Nuclear accid-ent*	*Prolif-eration*	*Ethnic conflict*	*Terror -ism*	*Organized crime*	*Epidem-ics*	*Aver-age 2000*	*World War*	*Mad cow disease*	*Genetic-ally modified foods*	*Putting on weight*	*New viruses like avian flu*	*Medical errors*	*Aver-age 2005*
W. Europe																
Portugal	76	74	82	80	81	87	88	87	82	71	51	58	45	76	52	56
Greece	67	63	89	83	75	86	90	79	79	69	67	82	53	81	71	71
Cyprus											56	77	64	83	53	67
Malta											48	59	71	84	44	61
Spain	66	62	79	71	76	89	76	75	74	65	55	58	51	58	37	52
Luxembourg	44	51	81	62	62	76	83	53	64	51	47	67	50	69	48	56
Italy	39	36	80	59	72	82	88	52	64	55	71	79	63	85	67	73
France	35	32	79	68	73	81	74	67	64	50	59	68	50	74	40	58
Germany	50	51	78	66	62	68	79	55	63	52	51	63	38	64	30	49
UK	51	52	71	69	61	73	72	58	63	59	39	55	49	57	33	47
Ireland	46	51	76	64	61	68	78	57	63	50	39	53	43	57	32	45
Sweden	39	38	76	64	74	71	83	52	62	37	17	46	40	48	13	33
Belgium	36	33	70	54	64	76	81	50	58	41	51	53	50	62	39	51
Denmark	37	33	73	56	69	62	73	35	55	40	41	56	48	54	30	46
Austria	40	44	85	52	52	53	63	39	53	34	49	71	40	57	21	48
Netherlands	25	22	64	49	70	69	75	42	52	27	34	43	42	53	20	38
Finland	28	28	73	36	48	54	73	52	49	31	30	47	49	47	24	39
*All W.E.**											*47*	*60*	*49*	*64*	*37*	*51*
E. Europe																
Poland											72	78	42	83	54	66
Slovenia											56	70	45	66	40	55
Hungary											57	65	40	75	38	55
Slovakia											45	55	47	68	43	52
Czech Rep.											55	53	47	66	34	51
*All E.E. **											*56*	*63*	*44*	*71*	*40*	*55*
Former Soviet																
Lithuania											70	70	45	76	74	67
Latvia											66	73	45	76	65	65
Estonia											46	55	38	65	30	47
All Baltic											*61*	*66*	*42*	*72*	*56*	*60*
% DK or NA	2	3	2	4	4	3	2	4	3	3	1	4	1	2	2	2

Table 1: Continued

	Asia Europe Survey (ASES)							*Pew Global Attitudes Surveys*			
	2001							*-2009-*	*2006*		
	Work	*Health*	*Family*	*Neighborhood*	*Country*	*International situation*	*Average 2001*	*Swine flu*	*Bird flu*	*Global warming*	*Average 2006-9*
W. Europe											
Greece	78	89	86	71	94	91	85				
Spain	67	73	69	50	80	83	70	53	57	86	65
Portugal	55	69	56	31	78	71	60				
Italy	52	48	39	25	56	86	51				
Germany	51	68	42	29	58	85	55	27	33	64	41
France	43	36	26	18	48	81	42	35	34	86	52
UK	37	38	29	36	64	72	46	28	30	68	42
Sweden	33	35	22	24	43	71	38				
Ireland	27	39	29	27	39	49	35				
All W.E.	*49*	*55*	*44*	*35*	*62*	*77*	*54*	*36*			
E. Europe											
Poland								39			
Turkey								47	37	75	53
Former Soviet											
Russia								77	81	66	75
Asia											
Philippines	89	86	88	84	95	91	89				
South Korea	81	89	86	74	88	80	83	68			
Japan	80	82	69	54	89	96	78	60	68	93	74
China	68	62	54	26	60	60	55	45	59	62	55
Taiwan	65	54	55	58	81	77	65				
Thailand	64	49	43	24	71	66	53				
Indonesia	58	35	51	32	84	64	54	77	87	77	80
Malaysia	51	65	51	33	64	67	55				
Singapore	42	54	47	29	37	47	43				
India								77	81	87	82
Pakistan								66	78	59	68
All Asia	*67*	*64*	*61*	*46*	*74*	*72*	*64*	*60*			
Americas											
Brazil								65			
Mexico								64			
Argentina								61			
USA								29	44	53	42
Canada								23			
Middle East											
Jordan								71	76	66	71
Egypt								69	82	77	76
Lebanon								54			
Pal. Terrs.								51			
Israel								43			
Africa											
Nigeria								74	80	80	78
Kenya								63			
% DK or NA	4	1	1	2	2	7	3	0.5	0-2	0-8	

Sources: see Table A1 in appendix. Percentages calculated with sampling weights where available (all except ASES), excluding don't knows and no answers. *East Germany included in East European—but not West European—total.

and Italy—tend to be the most fearful. If we rank countries on the frequency of reported fear, Portugal and Greece are in the top three for all eight of the dangers from EB2000 shown here, and Spain is in the top three for six. In EB2005, Italy, Greece, and Cyprus are the leaders, sometimes joined by Malta and France. The former communist countries, included in this survey, appear somewhat more afraid than the Western European ones on average—although not of putting on weight, which seems to be a characteristically Western concern. Among the European countries in the ASES survey, Greece is always at the top and Spain and Portugal generally round out the top three. At the other end of the scale, the Netherlands, Finland, Austria, and sometimes Denmark and Sweden tend to be among the most fearless in all surveys.[9]

Second, to characterize continents by referring to a single dominant emotion (à la Moïsi) seems a little too simple. Each survey shows a striking range of levels of fear across countries within the same continent. Indeed, the range within each continent is often greater than the difference in averages across them. Judging by these data, it would not be accurate to describe Europe as the continent of fear and Asia as the continent of hope. A larger proportion of Asians than Europeans confessed to worrying about their work, health, family, neighborhood, and country on the ASES survey. Only on the international situation did European worriers take the lead. China was, as Moïsi supposed, less fearful than some of its neighbors; but the Asian country where respondents were least afraid was actually Singapore, which often beat the West European average. On the 2009 Pew Survey, 60 percent of the Asians surveyed said they were worried about exposure to the swine flu (32 percent "very worried"), compared to 36 percent of West Europeans (13 percent "very worried"). This was so despite the fact that almost no cases of swine flu had been reported in Asia, whereas thousands had in Europe.

[9] The use of identical questions in EB2000 and EB2002 makes it possible to examine change during this period. As Table A2 in the appendix shows, more fears declined between December 2000 and March 2002 than increased. In almost all countries, the proportion afraid of nuclear accidents, ethnic conflict, epidemics, and organized crime decreased. As one might expect given that 9/11 fell within the period, fear of terrorism increased on average, but only slightly. Increases in West Germany and Italy were offset by a fall in Northern Ireland, where the peace process continued to reduce violence.

Table 2: Crossnational correlations between percentages of respondents who were afraid of particular dangers

	----------EB2000----------								EB02	----------EB2005----------				----------Asia-Europe Survey----------						----Pew----	
	WW	*Nuc. con-flict*	*Nuc. acci-dent*	*Pro-lifer-ation*	*Ethnic con-flict*	*Terror -ism*	*Org. crime*	*Epid-emics*	*WW*	*Mad cow dis-ease*	*Gen. mod. foods*	*Put on weight*	*New viruses*	*Med-ical errors*	*Work*	*Health*	*Family*	*Neigh bor-hood*	*Coun-try*	*Intern-ational*	*Swine flu*	*Bird flu*
Nuclear conflict	.97																					
Nuclear accident	.60	.64																				
Proliferation	.85	.81	.56																			
Ethnic conflict	.51	.36	.19	.70																		
Terrorism	.64	.54	.31	.77	.83																	
Org. crime	.46	.39	.31	.54	.62	.70																
Epidemics	.83	.76	.50	.78	.57	.78	.55															
World War 02	.90	.86	.58	.89	.56	.80	.56	.85														
Mad cow disease	.41	.34	.58	.44	.32	.57	.35	.41	.61													
Gen. mod. foods	.36	.35	.81	.44	.16	.36	.30	.28	.52	.84												
Put on weight	.07	-.02	.18	.10	.24	.49	.41	.22	.38	.23	.28											
New viruses	.45	.40	.61	.59	.49	.69	.64	.53	.68	.81	.77	.49										
Medical errors	.52	.46	.57	.56	.44	.70	.71	.56	.74	.83	.75	.41	.83									
Work	.66	.52	.81	.66	.55	.77	.48	.66	.75	.70	.66	.42	.57	.69								
Health	.81	.74	.77	.72	.40	.57	.50	.67	.76	.53	.48	.11	.42	.55	.82							
Family	.81	.72	.80	.76	.49	.71	.49	.74	.81	.57	.52	.30	.44	.64	.91	.91						
Neighborhood	.67	.62	.61	.71	.23	.49	.32	.54	.67	.35	.41	.24	.20	.48	.79	.78	.88					
Country	.85	.75	.65	.83	.49	.74	.39	.78	.89	.51	.46	.32	.43	.61	.87	.69	.84	.79				
International	.14	-.03	.53	.25	.38	.52	.28	.21	.32	.64	.70	.46	.54	.50	.61	.56	.49	.56	.63			
Swine flu	*.61*	*.43*	*.51*	*.82*	*.88*	*.94*	*.06*	*.95*	*.69*	*.42*	*.04*	*.49*	*-.01*	*.36*	.70	.27	.71	.55	.84	-.09		
Bird flu	*.75*	*.60*	*.51*	*.75*	*.77*	*.84*	*.24*	*.86*	*.74*	*.43*	*-.22*	*.41*	*-.33*	*.36*	.69	.13	.68	.37	.78	-.22	.95	
Global warming	*.00*	*-.20*	*.56*	*.63*	*.97*	*.93*	*-.23*	*.93*	*.23*	*.71*	*.32*	*.76*	*.35*	*.95*	.39	.21	.38	.52	.49	.64	.31	.17

Sources: see appendix.
Note: Correlation coefficients; in italics if fewer than six countries available in both series.

Table 3: Relationships between fears of different dangers among individuals (odds ratios from logistic regressions including country dummies), Eurobarometer 2000

		Dependent variable: afraid of…						
		World War	Nuclear conflict	Nuclear accident	Prolifer-ation	Ethnic conflict	Terrorism	Organized crime
Independent variable: afraid of…	Nuclear conflict	43.1 (7.8)						
	Nuclear accident	6.4 (1.0)	9.5 (1.6)					
	Proliferation	11.5 (1.6)	15.8 (1.9)	15.5 (2.5)				
	Ethnic conflict	4.3 (.6)	4.3 (.6)	6.2 (.8)	5.7 (.8)			
	Terrorism	5.0 (.7)	4.8 (.5)	6.0 (.8)	5.2 (.6)	10.1 (1.0)		
	Organized crime	4.6 (.7)	4.5 (.7)	6.0 (.7)	4.8 (.7)	7.6 (.8)	26.4 (4.0)	
	Epidemics	5.5 (.6)	6.1 (.6)	5.0 (.7)	6.2 (.7)	4.4 (.6)	5.4 (.6)	6.3 (.9)

Sources: see appendix.
Note: calculated with sampling weights, controlling for country. Robust standard errors in parentheses, clustered by country. Figures estimate the number of times greater the odds are that a given individual will be afraid of the dependent variable if he is afraid of the independent variable. For instance, controlling for country, individuals who were afraid of nuclear conflict had odds of being afraid of world war 43.1 times as high as the odds for individuals who were *not* afraid of nuclear conflict.

Third, related to the previous points, Table 1 reveals considerable consistency in the level of fear across different perceived dangers. In countries where many respondents were afraid of one danger, many tended to be afraid of other dangers as well. Table 2 shows the cross-country correlations between the percentages of respondents that expressed fear of particular dangers. In many cases, the correlations are very high. In almost all cases, the correlations are positive, and the vast majority are greater than r = .40. Naturally, fears of dangers that are closely related—such as world war and nuclear conflict—are the most highly correlated. But fear of world war also correlates at greater than r = .80 with more mundane items such as worry about one's family and one's health. As one might expect, the fear of putting on weight was less closely associated with the other fears, but even it correlated at a r > .40 with fear of terrorism and organized crime and worry about new viruses, medical errors, swine flu, bird flu, global warming, the international situation, and the respondent's work situation.

Such consistency is also visible at the individual level. Table 3, using EB2000 data, shows how the odds of a given respondent being afraid of one danger went up if that individual was known to be afraid of another danger. The numbers are odds ratios calculated using logistic regressions that controlled for country. Respondents who were afraid of one danger were very significantly and substantially more likely to be afraid of others. For example, the odds of being afraid of terrorism were 26.4 times as high for those who were afraid of organized crime as for those who were not.

This consistency of patterns in the data suggests it is reasonable to posit a common element in these various fears—an underlying predisposition, which I will call "fearfulness"—that varies across individuals and countries. One common measure of how closely related different statistics are is Cronbach's alpha. Cronbach's alpha, calculated for the answers of individual respondents, was generally high for the different fears included in each survey (.88 for EB2000, .89 for EB2002, .89 for ASES, with measures of alpha for individual countries ranging between .78 and .95 in these three surveys). The internal consistency of the five fear measures in the EB2005 was a little lower (.70, with alpha for individual countries ranging from .57 to .78). Calculated for the percentages of respondents afraid of different dangers in the various countries, alpha was higher, ranging from .89 for EB2005 to .96 for EB2002.

For each of the Eurobarometer surveys and for the Europe-Asia survey, I constructed an index of fearfulness using all the available questions.[10] This index is simply the standardized value of the first principal component, calculated from the individual-level data. Since the responses to the questions about fear are all ordinal (in the first two case, dichotomous), I used the polychoric correlation matrix in the analysis, as recommended by Kolenikov and Angeles (2004). In each case, the first principal component accounted for a reasonably high proportion of the variance—from 51 to

[10] For 2000 and 2002, I used the questions about fear of world war, nuclear conflict in Europe, conventional war in Europe, the accidental launch of a nuclear missile, an accident at a nuclear power station, proliferation of weapons of mass destruction, ethnic conflict, terrorism, organized crime, and epidemics. For 2005: fear of mad cow disease, genetically modified food, putting on weight, new viruses such as avian flu, and medical errors. For the Europe-Asia Survey: worry about work, health, family, the neighborhood, the respondent's country, the international situation, and, with reference to the respondent's country, worry about the economy, unemployment, the level of crime, the quality of public services, the level of immigration, ethnic conflict, religious conflict, and the condition of the environment. (I did not use worry about political corruption or problems of human rights as missing data would have required dropping China.) In the PEW surveys, there were too few questions about fear to extract an underlying dimension.

72 percent for the three Eurobarometer surveys, and 46 percent for the Europe-Asia survey, which included a larger number of more varied questions.

The distribution of the fear index thus derived was reasonably close to Normal for EB2005 (see Appendix for graphs of the distributions). However, for EB2000 and EB2002, many observations were bunched at the upper limit, with a smaller but still disproportionate weight at the lower limit. This was also true, although to a lesser degree, for the Asia Europe survey. This bunching at the extremes is caused by the fact that a significant proportion of respondents said they were worried about each of the dangers or said they were not worried about any of them. In effect, the tails of the distribution are censored (fearfulness certainly varies among those in the top and the bottom categories, but the survey is not able to distinguish among them). Thus, in subsequent analysis I use OLS for the regression of the EB2005 data, but Tobit—which assumes an underlying Normal distribution but censored data—for the other three.

Before examining the country-level patterns, Table 4 shows how these fear scores relate to characteristics of individuals. Previous work has found various traits to be associated with greater fearfulness. Women tend to report greater fear than men (Hersen 1973, Gullone 2000). Others have noted associations with age.[11] Ross (1993, p.166) found that the married and well educated were less afraid of crime than the unmarried and poorly educated (although income was not significant).

Regressing the fear indexes on these and other individual characteristics, along with controls for the respondent's country, I found evidence of greater fearfulness among women, at least in Europe, although not so clearly in the Asian countries included in the ASES (see Table 4). Older respondents were more afraid, although the rate at which fear increases with age apparently tapers off (age squared had a negative coefficient, sometimes statistically significant). Within Europe, there was some evidence that people who were married (or divorced) were more fearful than those never married, and having young children may have increased fearfulness, but these findings were not robust. The unemployed tended to be more fearful, and the more educated less fearful at least in the Eurobarometer surveys.

[11] Rose and Ditto (1983) found that some fears increased with age, while others decreased.

Table 4: Individual level correlates of fearfulness

	---------EB2000---------		---------EB2002---------		---------EB2005---------		----------ASES----------		
	(1)	*(2)*	*(1)*	*(2)*	*(1)*	*(2)*	*All*	*Europe*	*Asia*
Female	.41***	.42***	.50***	.52***	.31***	.32***	.08***	.13***	.01
	(.05)	(.05)	(.05)	(.05)	(.02)	(.03)	(.03)	(.03)	(.02)
Age	.014**	.016**	.014**	.014*	.012***	.012***	.014***	.023***	.006
	(.006)	(.008)	(.006)	(.007)	(.003)	(.003)	(.005)	(.007)	(.004)
Age squared	-.0001*	-.0001	-.0001	-.0001	-.0001***	-.0001***	-.0002***	-.0002***	-.0001**
	(.0001)	(.0001)	(.0001)	(.0001)	(.0000)	(.0000)	(.0000)	(.0001)	(.0000)
Married	.10*	.10*	.04	.02	.16***	.14***	-.01	-.01	-.01
	(.06)	(.06)	(.05)	(.06)	(.03)	(.03)	(.02)	(.02)	(.04)
Divorced	.15**	.14**	.05	.04	.10**	.06			
	(.08)	(.07)	(.07)	(.08)	(.04)	(.04)			
Widowed	.14*	.14*	.04	.06	.02	-.00			
	(.08)	(.08)	(.10)	(.10)	(.04)	(.04)			
Has young children	.06*	.10**	n.a.	n.a.	-.02	-.01	.03	.00	.07*
	(.03)	(.04)			(.02)	(.02)	(.02)	(.02)	(.04)
Years of education	-.020***	-.019***	-.018***	-.015**	-.019***	-.020***	.005	.005	.004
	(.004)	(.004)	(.006)	(.007)	(.003)	(.00)	(.006)	(.009)	(.010)
Unemployed	.12*	.17**	.10	.11	.01	-.00	.16***	.18***	.15*
	(.07)	(.08)	(.06)	(.07)	(.03)	(.03)	(.04)	(.05)	(.08)
Interviewed afternoon	-.04	.006	-.10**	-.11***	-.11***	-.09***			
	(.03)	(.03)	(.04)	(.04)	(.02)	(.03)			
Interviewed evening	-.13***	-.12**	-.17***	-.16***	-.10***	-.09***			
	(.04)	(.05)	(.04)	(.04)	(.03)	(.03)			
Interviewed night	-.13**	-.08	-.16***	-.17***	-.05	-.04			
	(.06)	(.07)	(.06)	(.06)	(.05)	(.05)			
Respondent not alone	.05		.07		-.001				
	(.05)		(.04)		(.02)				
Log pseudo-likelihood	-20275	-20264	-19475	-19465			-17666	-17645	-17645
R^2					.1234	.1262			
N	13,826	13,826	13,313	13,313	21,781	21,781	14,024	14,024	14,024
Method	Tobit	Tobit	Tobit	Tobit	OLS	OLS	Tobit	Tobit	Tobit

Sources: see appendix.
Note: Dependent variable is standardized individual fear score. Robust standard errors, clustered by country; *** p < .01, ** p < .05, * p < .10. Tobit regressions used when considerable weight at maximum and minimum values of the fear score scale. Column 2 models show estimated effects for respondents who were alone when interviewed. All regressions include country dummies. Question on children not asked in 2002 survey.

Besides individual characteristics, aspects of the interview setting could affect the answers respondents give. I hypothesized that people might feel more fearful at some times of the day than at others. The data strongly confirm this. Fearfulness appears to decline during the day, with those

interviewed after 6 p.m. very significantly less afraid than those surveyed in the morning. This pattern appears in all three Eurobarometer surveys, which recorded the interview times. Several explanations are possible, but a plausible conjecture is that many of those reached in the evening had already acquired a dose of "Dutch courage"—alcohol may reduce feelings of insecurity.

One concern is that respondents might answer questions insincerely if interviewed in the presence of family members or friends. They might either hide their fears in order to seem brave, or invent worries about world peace and global warming in order to seem concerned and serious. The effect of having others present might also vary across countries in line with social expectations. Using interaction terms, I confirmed this: in many countries, the average answers given by respondents in company differed from those given by respondents interviewed while alone, and the direction of the effect did vary from country to country. These balanced out across countries so that there was no statistically significant effect of having others present in the survey sample as a whole. In Table 4, columns marked (1) contain regression coefficients for the whole population; those marked (2) contain coefficients for those respondents who were alone (i.e. estimated from regressions including interaction terms). Whether the respondent was alone was sometimes associated with small changes in the effects of other variables. For instance, in EB2000 unemployed people interviewed alone confessed to more fear than those interviewed in front of family members or friends. So did parents of young children who were interviewed alone.

Using these fear indexes, I derived average country fear scores by regressing the individual level fear indexes on country dummies. The coefficients from these regressions are shown in Table 5 in the columns labeled "Unadjusted." I also show scores that have been adjusted to take into account relevant differences in the interviewees in different countries. The columns marked "Adjusted" show country effects derived from regressions that also control for gender, age, marital status, years of education, employment status, and—for the Eurobarometer surveys, which provided the necessary data—the time of day when the interview was conducted as well as whether the respondent was alone when interviewed (allowing this effect to vary by country by means of interaction terms). The "adjusted" coefficients shown are for an employed, never married, 30-year-old male with 12 years of

Table 5: Country fear scores

	-------EB2000-------		-------EB2002-------		-------EB2005-------		Asia Europe Survey 2001		*Arrindell et al. index of fear of bodily injury, illness and death*
W. Europe	*Unadj.*	*Adjusted*	*Unadj.*	*Adjusted*	*Unadj.*	*Adjusted*	*Unadj.*	*Adjusted*	
Portugal	1.24	.85	1.04	.76	.00	-.27	-.08	-.13	
Cyprus					.43	.17			
Greece	.92	.51	1.02	.72	.48	.15	1.20	1.14	13.8
Spain	.77	.43	.68	.40	-.14	-.48	.22	.16	12.1
Italy	.01	-.31	.31	.01	.53	.25	.16	.09	13.5
Malta					.30	-.03			
France	.03	-.24	.21	-.04	.10	-.27	-.32	-.40	
Germany	.23	-.06	.10	-.18	-.10	-.43	-.02	-.08	11.2
West	.11	-.16	.00	-.26	-.08	-.42			
East	.59	.28	.41	.08	-.15	-.47			
Luxembourg	.15	-.22	.15	-.17	.01	-.36			
Ireland	.16	-.10	.30	.01	-.34	-.64	-.80	-.86	
UK	.15	-.25	.23	-.15	-.26	-.57	-.37	-.43	
G. Britain	.14	-.27	.24	-.14	-.27	-.57			1.7
N. Ireland	.48	.12	.40	.07	-.12	-.45			
Denmark	-.24	-.48	-.27	-.44	-.23	-.55			
Sweden	.00	-.23	-.21	-.38	-.69	-1.01	-.41	-.47	1.5
Belgium	-.19	-.53	-.31	-.61	-.14	-.48			
Austria	-.22	-.55	-.45	-.76	-.06	-.36			
Finland	-.48	-.75	-.49	-.70	-.43	-.76			
Netherlands	-.46	-.68	-.56	-.88	-.50	-.81			
E. Europe									
Poland					.42	.07			
Hungary					.11	-.21			12.5
Slovenia					.07	-.22			
Czech Rep.					-.05	-.39			
Slovakia					-.18	-.50			
Former Soviet									
Lithuania					.39	.07			
Latvia					.36	.05			
Estonia					-.18	-.48			
Asia									
Philippines							1.09	1.03	
Japan							.52	.46	18.7
South Korea							.47	.40	
Malaysia							-.01	-.05	
Thailand							-.02	-.07	
Taiwan							.00	-.06	
Indonesia							-.03	-.09	
China							-.35	-.42	
Singapore							-1.16	-1.21	

Sources: Author's calculations from EB2000, EB2002, EB2005, ASES; Arrindell et al. (2004, Table 1).
Note: country scores constructed as follows. First, the first principal component (FPC) was estimated for answers to the 5-14 questions on fear in the given survey, using the polychoric correlation matrix since variables are ordinal. The FPC was then standardized and regressed on country dummies, using Tobit when the FPC's distribution had considerable weight on end values (EB2000, EB2002, ASES), OLS otherwise (EB 2005), and using sampling weights. "Unadjusted" columns show the coefficients on country dummies. For comparability, "adjusted" columns contain country coefficients estimated in each case for an employed, never married 30-year-old male with 12 years of education. Where possible (EB2000, EB2002, EB2005), they also adjust for the time of day and circumstances of interview (coefficients are for morning and interviewed alone).

Table 6: Fear scores for main Western European regions

	2000	2002		2000	2002
Greece			*Germany*		
North		.60	Schleswig-Holstein	**-.43**	**-.38**
Central		.81	Saarland	**.54**	**-.24**
East and South Islands		.51	West Berlin	**.67**	**.28**
Spain			Hamburg	**-.35**	**-.44**
Galicia	**.54**	**-.31**	Niedersachsen	**-.44**	**.17**
Canaria	**1.79**	**.65**	Bremen	**-.55**	**-.56**
North	**-.67**	**-.21**	Nordrhein-Westfalen	**-.38**	**-.59**
Northeast	**-.58**	**-.42**	Hessen	**.13**	**-.14**
Aragon and Rioja	**-.31**	**-.56**	Rheinland Pfalz	**.28**	**-.20**
Madrid	**.31**	**.54**	Baden-Wurttemberg	**-.07**	**-.22**
Central	**.66**	**.44**	Bayern	**-.11**	**-.31**
Catalonia	**.34**	**.58**	East Berlin	.08	.08
East	**.37**	**.43**	Brandenburg	.30	-.05
South	**1.12**	**1.06**	Mecklenburg	-.17	.26
Finland			Sachsen	.43	.21
Uusimaa	-.76	-.91	Sachsen-Anhalt	.31	-.08
Etelä-Suomi	-.70	-.67	Thuringen	.50	.29
Itä-Suomi	-1.04	-.68	*Italy*		
Väli-Suomi	-.44	-.55	Northwest	-.37	.04
Pohjois-Suomi	-.86	-.50	Sicily	-.24	.19
Austria			Sardinia		.85
East		-.85	Lombardy	-.44	.16
South		-.52	Northeast	.01	-.28
West		-.78	Emilia Romagna	-.27	-.24
France			Central	-.31	-.25
Ile de France	-.37	.02	Lazio	-.01	.29
Bassin Parisien	-.29	-.18	Molise Abruzzi	-.10	.00
Nord, Pas de Calais	.01	-.03	Campania	-.36	.05
East	-.41	-.03	South	.35	-.09
West	-.21	-.01	*Ireland*		
Southwest	-.14	-.30	Dublin	.25	-.13
Center-East	.37	.05	Rest of Leinster	.06	.33
Mediterranean	-.42	.11	Munster	-.43	-.20
Belgium			Connaught Ulster	-.40	.14
Wallonie	**-.31**	**-.26**	*UK*		
Brussels	**-.55**	**-.66**	Scotland	.18	.30
Vlaanderen	**-.63**	**-.78**	N, NW, Yorks. Humberside	-.13	-.18
Netherlands			E & W Midlands, E. Anglia	-.34	-.08
North	-.67	-.99	Wales	-.41	.40
East	-.69	-.56	GLC	-.25	-.32
West	-.68	-1.14	Southeast and Southwest	-.77	-.18
South	-.62	-.58	Northern Ireland	-.03	.00

Sources: Author's calculations from EB2000 and EB2002.
Note: Calculated as in Table 5, but with region dummies (plus country dummies for countries that contained only one NUTS 2 region). Scores adjusted so that they represent average effect for an employed, never married, 30-year-old male with 12 years of education, interviewed alone in the morning (with interactions for "interviewed alone" at the country level). Scores in bold for countries where the pattern in 2000 correlated highly with the pattern in 2002. Apparent data error for Sardinia 2000.

Average of fear scores constructed from Eurobarometer 2000 and 2002 surveys (by method described in text). Fear scores are adjusted for gender, age, marriage status, years of education, unemployment, time of interview, and others present. Subnational regional differences shown only for West Germany, Belgium, and Spain, where correlations between regional patterns in 2000 and 2002 were reasonably high.

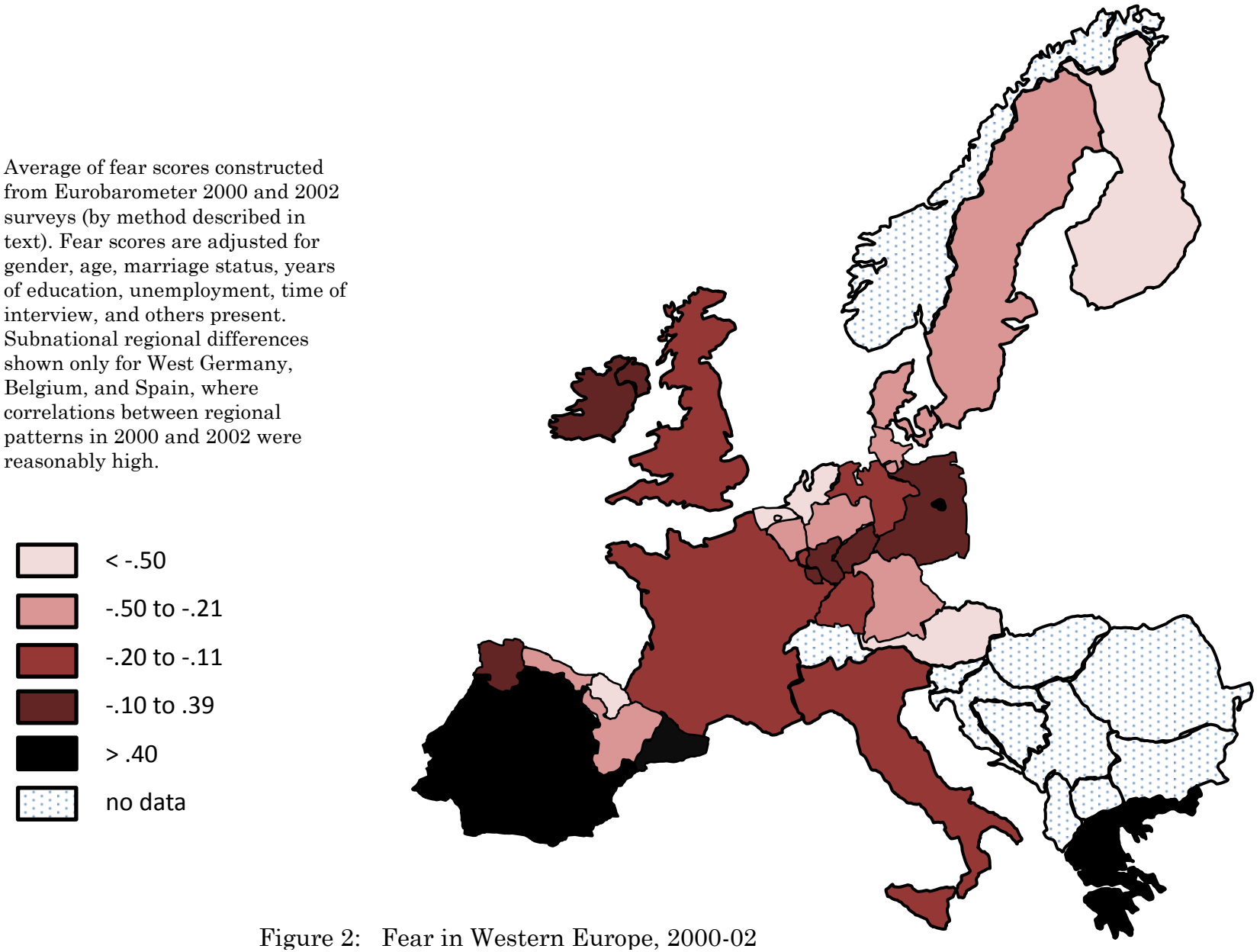

Figure 2: Fear in Western Europe, 2000-02

education. The cross-country pattern of fear in the adjusted scores is very similar to that in the unadjusted scores (correlations all above r = .99), but for some countries there are small changes. Since men tend to express less fear than women, the adjusted scores for all countries are lower.

From the Eurobarometer surveys, it is also possible to estimate average levels of the fear indexes for subregions within European countries (I focus on the "NUTS 2" level units such as provinces and counties). The range of fearfulness across regions within some countries turns out to be as large as the range across countries (see Table 6). In Spain in 2000, for instance, the most fearful and least fearful regions were further apart than the most fearful and least fearful EU countries. On the scale on which Finland's (adjusted) national score was -.75 and Portugal's was .85, the most fearful Spanish region, the Canary Islands, had a score of 1.79, while Spain's North had a score of just -.67.

Although many of the regional differences are statistically significant in a given year, it is another question whether they represent durable regional characteristics or more ephemeral shocks. One way to assess this is to examine whether, within particular countries, the regional fear scores from EB2000 correlate strongly with those from EB2002. It turns out there is a high positive cross-regional correlation only in Spain, Belgium, and West Germany. In all the other countries, the pattern of regional differences in 2000 was not close to that in 2002, suggesting that—unlike the crossnational patterns, for which the correlation was r = .95—the subnational differences were mostly fleeting. Were the more consistent regional divergences in Spain, Belgium, and West Germany becoming more or less pronounced between these years? To check this, I calculated the correlations across regions within each country between the 2000 fear score and the change in 2000-02. A negative correlation would suggest convergence among regions. The correlations were r = .999 for Belgium, suggesting increasing divergence among its three regions; r = -.69 for Spain, suggesting moderately fast convergence; and r = -.77 for West Germany, suggesting more rapid convergence. Figure 1 maps how fearfulness was distributed across the countries of Western Europe in 2000-02. For most countries, I indicate the national (adjusted) fear score, averaged for 2000 and 2002, while

for Spain, Germany, and Belgium, I indicate how fearfulness varied across the countries' subregions, again averaged for 2000 and 2002.

4 Validity of the data

How much faith should one have in these data? As demonstrated, the crossnational patterns are quite consistent across surveys and types of fear. As a further validity check, I include in Table 5 another index of fearfulness constructed by a team of social psychologists in the mid-1990s. Arrindell et al. (2004) administered a standard questionnaire to college students in 11 countries, asking about five types of fear: social; agoraphobic; bodily injury, illness, and death; sexual and aggressive scenes; and harmless animals. For each set of questions, they extracted the first principal component. In Table 4, I show the country average level of fear for the category "bodily injury, illness, and death," which was closest in content to the fears examined by the Eurobarometer and ASES surveys. Although only 6-7 of Arrindell et al.'s countries are also in any given survey studied here, the correlation between their fear of bodily injury, illness, and death score and the indexes of fearfulness I constructed was high (from r = .48 to r = .93, and even higher if two outliers—Italy and Japan—were excluded; see Figures A1-A4 in the appendix).

Still, several possible problems merit consideration. First, can we be sure that respondents in different countries understand the same thing when asked about their fears? It could be that in some cultures what English-speakers refer to as "fear" is not a commonly recognized emotion. Second, even if the emotional experience of fear is common to all cultures studied, it could be that the words used to translate "afraid" or "worried" into the relevant languages have different connotations or intensity, which could explain different rates of affirmative answers. Third, in some countries, displaying emotions is culturally discouraged. Apparent crossnational differences in fear might in fact be picking up differences in sincerity, caused by varying social norms on expressing emotions. I consider these points in turn.

The difficulty of comparing the subjective experiences of survey respondents is a serious one. But it is one common to all survey research, including that within a single country. We cannot know whether the "fear" that any two respondents report feeling is the same, or even similar. That said, research has uncovered some powerful cross-cultural associations between the names of the basic emotions, facial expressions, and physiological responses. Across a broad set of cultures a particular facial expression—characterized by widened eyes, furrowed brows, and lips stretched horizontally—is associated with the emotion usually translated as "fear" in English (Keltner and Ekman 2000). Pictures of such "fearful" expressions have been found to trigger distinct neuronal responses in the amygdala, where fear is processed, as well as in the autonomic nervous sytem. The more extreme the fear suggested by the picture, the greater the response (Morris et al. 1996). Such amygdala responses have been found in the US, Europe, and Japan (Morris et al. 1996; Chiao et al. 2008).[12] Performing the "fearful" facial expression has been found to produce an accelerated heart rate and shorter breathing among both Americans and the Minangkabau of West Sumatra (Levenson et al. 1992).

While an emotion corresponding to the English "fear" is found in all known cultures, most languages contain multiple words corresponding to different types and intensities (Russell 1991). If a milder word was used in some countries than in others, this could influence the survey results. Although this may be an issue at the margin, it is unlikely to have caused the large crossnational divergences observed in Table 1. If a more emphatic word was used in the Netherlands than in other countries, one would expect low levels of reported fear among the Dutch *with regard to all dangers*. But that is not what we see. Most dangers elicited few reports of fear from the Dutch respondents. Yet 75 percent of them said they were afraid of organized crime. Few Austrians were afraid of world war or epidemics; but 85 percent were afraid of a nuclear accident. The words used for "afraid" in the Netherlands and Austria do not seem to have been too strong for Dutch and Austrian respondents to admit to the emotion. Although most Dutch, Austrian, and Finnish respondents reported relatively few fears, a large proportion confessed to some.

[12] Chiao et al. (2008) found that the response was greater when the fearful face was of the subject's own cultural group (Japanese vs. Caucasian American).

In some cultures expressing emotions such as fear in public is more accepted than in others. Thus, respondents might reply insincerely to questions about their fears because of embarrassment, caution, or social pressures. I have already addressed this to some extent by adjusting the fear scores for whether respondents were alone when interviewed. But cultural norms might still affect answers even when only the interviewer was present.

I explore this in two ways. First, one might expect male respondents to be more inhibited from admitting fear in more "macho" cultures, where men are expected to be tough, brave, and unemotional. The sociologist Geert Hofstede, using crossnational questionnaires, has produced an index of the extent to which different countries exhibit "masculine" cultural values. If such values were distorting the results, countries with more masculine cultures should have lower fear scores. In fact, there was a non-significant *positive* correlation between Hofstede's masculine values score and the level of fear (in EB2000, EB2002, EB2005, and ASES).[13] The correlation was even slightly stronger for male respondents taken separately.

To check this in a second way, I used a more direct measure of expressivity norms constructed by the social psychologist David Matsumoto (Matsumoto et al. 2008). Matsumoto and colleagues surveyed 5,361 college students in 32 countries with a standard questionnaire about the norms governing the display of seven common emotions—anger, contempt, disgust, fear, happiness, sadness, and surprise. Respondents were asked how they should behave if, in a variety of specific contexts, they felt the given emotion. Options in each case were: "show more than you feel it," "express it as you feel it," "show the emotion while smiling at the same time," "show less than you feel it," "hide your feelings by smiling," "show nothing," and "other." From the responses, the researchers derived an expressivity index. If expression norms were distorting the results, reported fear should be lower in countries with lower culturally-condoned expressivity. Figures A5 and A6 in the appendix show that, in fact, norms against expressing emotions correlate *positively* with higher

[13] Arrindell et al. (2004) argue that masculine culture might actually induce greater fear. I did not find a significant relationship using the data examined in this paper.

reported fear. In countries like Italy and Greece, where expressing emotions is frowned upon, respondents confessed to the most fear.[14]

5 Pessimism and fear

In Section 2, I suggested that the intensity of the fear an individual feels when contemplating a possible future event will depend on several factors: the intensity of the subconscious fear reaction (which will depend on both genetic factors and conditioning), the expected aversiveness of the event, the perceived probability of its occurrence, and the individual's arousability in the face of dangers. The evaluation of the probability and aversiveness will depend, in turn, on the individual's beliefs and values, mood, and even such situational details as the vividness of his mental imagery.

Measuring how these factors vary across countries presents an obvious challenge. In this section I construct an estimate of one of them—the extent to which respondents from different countries exaggerate the probability of unpleasant events—and call this "pessimism." I then examine how much of the crossnational variation in the previously constructed fear indexes can be explained by this.

At the outset, it is worth noting that the levels of fear expressed by survey respondents are themselves only weakly related to the objectively measured probabilities of the feared events. For four dangers—terrorism, BSE (mad cow disease), medical errors, and swine flu—I was able to construct an objective crossnational measure of the risk. For terrorism, I counted for each country how many deaths and injuries had been caused by terrorism in 1995-1999 (using the Rand Corporation's Database of Worldwide Terrorism Incidents), and then divided this by the population to get the rate per million inhabitants. Figure A7 in the appendix shows this estimate of the objective risk plotted against the percentage of respondents who said in 2000 that they were afraid of

[14] Of course, it would be better if data on norms about expressing specifically fear were available, rather than norms relating to all seven emotions; still, what data are available suggest the observed crossnational patterns might be even stronger if it were not for expressivity norms.

terrorism (from EB2000).[15] As can be seen, the relationship is weak. If one excludes Northern Ireland, which had many times more terrorist casualties than other European countries, the correlation is r = .16.

To estimate the risk of contracting BSE ("mad cow disease"), I used the natural log of the number of cases reported in farmed cattle in the country in question between 1989 (around the time of the first major outbreak) and 2004.[16] Figure A8 shows this plotted against the percentage of respondents who said in 2005 that they were worried about the disease. There is no relationship at all. Some of the highest levels of fear occurred in countries such as Greece, Latvia, and Lithuania that had experienced almost no cases of BSE. (These were, however, countries that ranked high on my indexes of fearfulness.)

To study medical errors, I used two questions in the EB2005 survey. Figure A9 shows the percentage afraid of being harmed by a medical error plotted against the percentage of respondents who said that they or a family member had actually suffered from one (in a hospital or as a result of a doctor's prescription). Here there is a positive correlation—r = .33—but it is a relatively weak one, leaving much variation unexplained. Finally, Figure A10 shows countries' rates of infection with the H1N1 swine flu virus up to mid-May 2009 plotted against the percentage of respondents to the Pew GAP poll taken the following month who said that they were worried about the virus (of those who had heard of it). The relationship is *negative* (r = -.58).[17] Worry about the swine flu was most widespread in countries such as Russia and Indonesia that had experienced no cases at all.

If differences in objective measures of risk explain relatively little of the variation in fear scores, what about differences in perceived risk? I first establish that perceived risk differs from objective indicators in these data. EB2005 asked respondents how likely they thought they were to fall victim to a number of dangers. These included terrorism, crime, and injury in a car crash.

[15] I take the natural log of the risk measure since most countries' scores were very low but a few were much higher.

[16] Data are from the World Organization for Animal Health.

[17] Even if one does not exclude respondents who had not heard of the swine flu virus—a very small proportion in most countries, but higher in Pakistan, Nigeria, and India—the correlation is negative (r = -.34)

Elsewhere in the survey, respondents were asked how likely they thought it was that a patient in a hospital in their country "would suffer a serious medical error because of the hospital doctors or medical staff." For each of these questions, I calculated what percentage of the respondents from each country thought the outcome very or fairly likely.

I compared these frequencies to objective estimates of the risks. For terrorism, I again used the log of the number of deaths and injuries per million inhabitants from the Rand Corporation's database but this time focusing on 2000-04, the five-year period preceding the survey in question. For medical errors, I used the percentage of respondents from the relevant country who, on the same survey, said that they or a family member had suffered a serious medical error in a local hospital. To estimate the risk of being injured in a car crash, I used the road traffic death rate per 100,000 people in 2007 estimated by the World Health Organization for its 2009 *Global Status Report on Road Safety*. (These figures adjust the number of reported traffic deaths for accuracy and include deaths of cyclists and pedestrians as well as drivers.) Finally, I used data from the 2005 International Criminal Victimization Survey to assess the risk of becoming a crime victim. Specifically, I added together the five-year prevalence rates of victimization for six categories of major crimes: burglary, attempted burglary, robbery, theft of personal property, sexual offences against women, and assaults and threats.

In each case, there was a weak to moderate correlation across countries between the measure of objective risk and the percentage of EB2005 respondents who thought themselves very or fairly likely to be victimized ($r = .35$ to $.43$). Thus, the objective risk does help to explain the subjective perception. However, a great deal of the variation was unrelated to the objective risk. To construct an index of pessimism, I proceeded in two stages. First, for each of the four dangers, I regressed the perceived likelihood of being a victim on the relevant measure of objective risk (both at the country level). The residuals from each of these four regressions—that is, the part of the variation that could not be explained by objective risk—constitute a measure of relative pessimism or optimism regarding the danger in question. These four sets of residuals correlated with each other at rates of from $r = .32$ to $r = .78$ and had a Cronbach's alpha of .69. Second, I extracted the first principal component of the

four sets of residuals to form an index of overall pessimism. Since missing data for several countries meant that this index was available for only 18 of the 27 countries, I also extracted the first principal component using just the medical errors and terrorism variables, which were available for all the countries. The pessimism index constructed in this way was very strongly correlated with the index formed using all four variables (r = .92).

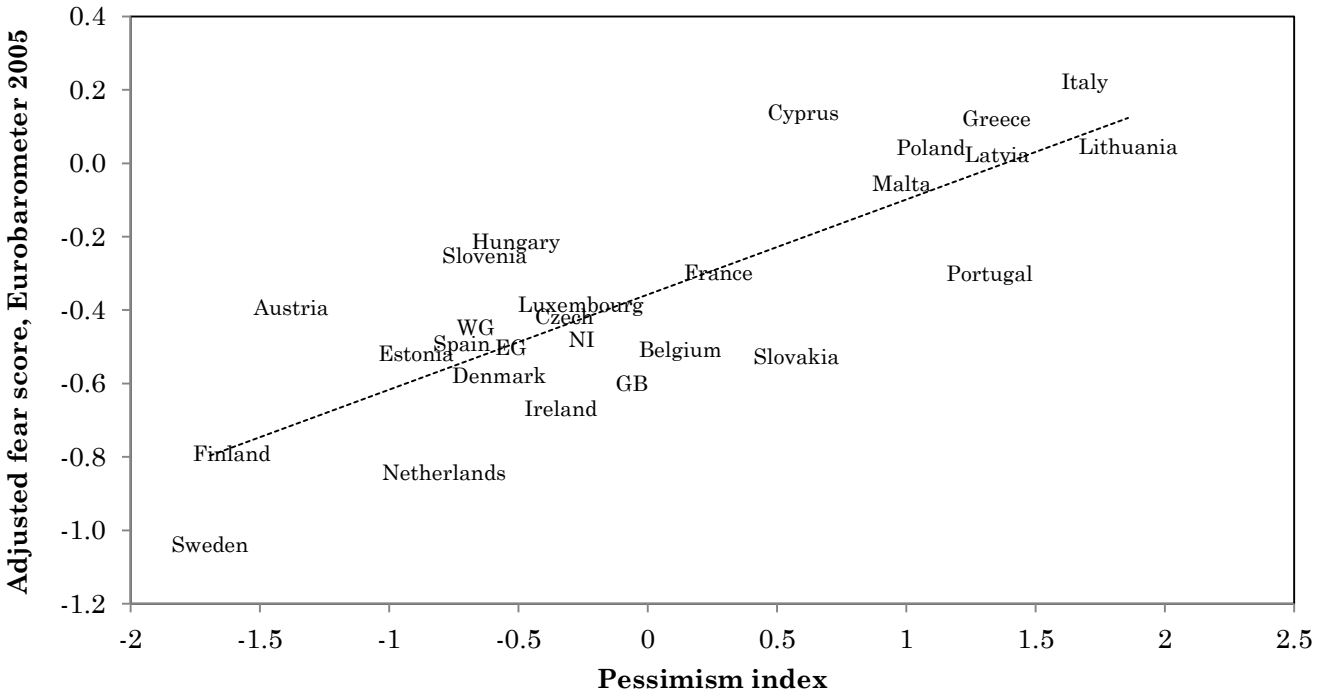

Figure 3: Pessimism and fear, 2005

Sources: Author's calculations, Eurobarometer 2005, other sources as described in text.

Figure 3 shows the EB2005 index of fear plotted against the second index of pessimism. About two thirds of the crossnational variation in fear can be explained by variation in the pessimism index (R-squared = .66). Judging by these results, that Lithuanians and Poles are considerably more fearful than East Germans or Danes can be entirely explained by the greater pessimism of the former: compared to Germans or Danes, Polish and Lithuanian respondents overestimated the likelihood of unpleasant outcomes more. Similarly, the Estonians are more fearful than the Finns—and the Maltese than the Spanish—because the former are more pessimistic than the latter.

Of course, given the limitations of the data and the potential for measurement error, this exercise can be no more than suggestive. Still, it appears that besides differences in pessimism, differences in other factors also matter. For instance, Cyprus and Slovakia have about the same pessimism score, yet the Cypriots are considerably more fearful than the Slovaks. For a given assessment of the danger, they apparently have a stronger emotional reaction.

6 Fear and trust

A growing literature in economics and political science has drawn attention to cross-national differences in "social" or "civic" capital, usually associated with a readiness to trust others.[18] It is plausible that differences in fearfulness, both among individuals and across countries, might be related to differences in trust. A low level of trust—either of the national authorities or of others in general—might cause people to exaggerate the risk that others will bring about harmful outcomes.[19] On the other hand, a predisposition to fearfulness could lead individuals to distrust others. Or it could be that particular cultural factors or historical experiences—civil war, for instance—simultaneously spread fearfulness and distrust within a given population.

Do the measures of fearfulness developed in this paper correlate with measures of trust? Using the Eurobarometer and ASES data, I examined the relationship at three levels: that of individuals in the full sample of countries; that of individuals within particular countries (i.e. controlling for country differences); and that of country averages on the fear and trust indexes. To measure trust, I constructed two variables. First, I created a measure of the respondent's trust in the national authorities. For the Eurobarometer surveys, this is the first principal component from a factor analysis of answers to questions that asked whether the respondent tended to trust the legal system, the police, the army, the civil service, the national parliament, and—for 2002 and 2005,

[18] For a recent review, see Guiso, Sapienza and Zingales (2010).

[19] Studies have noted a significant but relatively low correlation between measures of trust and risk perception (e.g. Viklund 2003).

where this was available—also the national government.[20] For ASES, I used the first principal component from a factor analysis of answers to questions that asked how much confidence the respondent had in the national parliament, the national government, the law and the courts, the country's main political leaders, the police, the civil service, and the military.[21] For EB2000, EB2002, and ASES, I was able to use data from the same surveys as were used to produce fearfulness scores, making it possible to examine correlations among individuals. Unfortunately, the questions about trust were not asked in the EB2005 survey. However, these questions were asked in another Eurobarometer survey conducted in the same year (October-November 2005), and so I constructed country averages of trust in the authorities (for 2005) using this survey. As for fear, I created country averages both unadjusted and adjusted for various individual characteristics.

Second, I constructed measures of generalized trust using the now standard question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" This question was not asked in any of the Eurobarometer surveys from which I constructed fear scores, so I could not explore the relationship at the individual level. I used the World Values Survey (2000 wave) to form country-level measures of the percentage of respondents who thought that generally speaking most people could be trusted.

Table 7 shows the correlations between these measures of trust and the fear indexes created earlier. As can be seen (columns 1 and 2), among individuals the relationship between fearfulness and trust of the national authorities ranges from nonexistent to weak (r of from -.004 to -.24). This is true whether or not one controls for country. However, there is a stronger correlation between countries' average levels of fear and of trust in the national authorities (r ranging from -.25 to -.51; see columns 3 and 4). And, in the European data, there are even higher correlations between country averages of fear and of trust in people in general (column 5).

In other words, within a given country—or within a broader set of them—individuals who

[20] Respondents could answer "tend to trust," "tend not to trust," or "don't know"; because the data are not continuous, I use the polychoric correlation matrix in the principal components analysis.

[21] Respondents could choose between: "a great deal," "quite a lot," "not much," "none at all," "don't know," and "haven't thought much about it." I excluded the latter two categories and used the polychoric correlation matrix.

are more distrustful of their national authorities tend to be only slightly, if at all, more fearful. But, the average level of fear tends to be higher in countries where the average level of trust is lower. Various processes could produce these patterns. It could be that certain country characteristics produce both fear and distrust—but not necessarily in the same people. Or it might be that different country characteristics that tend to occur together separately predispose people towards distrust and fear. Even focusing on the country averages, a considerable part of the variation in fear is *un*related to trust. For instance, in EB2002, where the relationship between fear and generalized trust is strongest (r = -.69), Greece and Belgium had similarly low levels of trust (24 and 31 percent, respectively) but very different levels of fear: Greece was the second most fearful country, while Belgium was the fourth least fearful.

Table 7: Fear and trust, correlation coefficients

		Trust in national authorities				*Trust in "most people"*
		(1) individuals, all countries	(2) individuals, controlling for country	(3) country percentages, unadjusted	(4) country percentages, adjusted	(5) country percentages, unadjusted
Fear	EB2000	-.10	-.05	-.51	-.50	-.63
	EB2002	-.04	-.004	-.50	-.48	-.69
	EB2005	n.a.	n.a.	-.26	-.25	-.67
	ASES	-.24	-.15	-.47	-.46	-.23

Sources: Eurobarometer surveys (2000, 2002, 2005))and World Values Survey (2000).
Note: figures are correlation coefficients between fear score and index of trust in national authorities or in people in general. "Adjusted" country percentages control for gender, age, marital status, education, unemployment, and for Eurobarometer surveys also the time of interview and whether the respondents was interviewed alone. Figures in (2) are partial correlation coefficients controlling for country.

Although fearfulness and distrust correlate at the level of countries, they do not seem to be merely noisy indicators of the same underlying phenomenon. If they were, we should expect to see stronger correlations at the level of individuals. Another way to check this is to see whether a factor analysis of survey responses on fear and on trust of the authorities identifies a single dimension that is correlated with both fear and trust, or whether it identifies distinct dimensions for the two dispositions. Using the EB2000 data, I analyzed the 10 questions on different fears (as in footnote

10) and the five questions on trust of different national authorities. The analysis identified two important dimensions. The first, which explained 45 percent of the variation, correlated at r = .99 with my unadjusted fearfulness index. The second, which explained another 21 percent of the variation, correlated at r = .98 with the trust of state authorities index.[22]

7 Explaining the pattern

Besides decomposing the crossnational variation in fear into its proximate cognitive and subconscious causes (pessimism, arousability, etc.), one would like to know why people in some places are more afraid than those in others. What characteristics of countries predispose their populations to be more or less fearful? The available data do not permit confident conclusions. Measures of fear are only available for a relatively small number of countries, mostly in Europe. Multiple feedbacks are bound to connect fear with its causes. I present here only a preliminary analysis which sorts through arguments, demonstrates correlations, and suggests plausible paths, but which stops well short of establishing causal links.

A variety of factors might matter. One possible source of variation is genetic. Predispositions to fear have been shown to be heritable, and some research has even identified certain genes that affect fear processing (Montag et al. 2008). Such work is in its infancy, however, and I know of no studies that look for crossnational patterns in the relevant genetic variations. I will not examine genetic factors here, and any influence they have must remain in the regressions' residuals.

Besides genes, how people process danger signals will depend on their culture. Individuals draw on their repertoire of previously acquired beliefs and values to form estimates of the probability and aversiveness of events (Figure 1). These beliefs and values are internalized through processes of socialization within families and in institutions such as churches, schools, and economic and political organizations, as well as from media communications. Crossnational differences in these institutions

[22] The correlations between the first factor and the trust index and the second factor and the fearfulness index were both less than r = .2. A similar factor analysis conducted on country averages for the trust and the fear questions also identifies two factors—the first explaining 55 percent of the variation and correlated very highly with fear, the second explaining another 15 percent of the variation and correlated highly with distrust.

will generate crossnational differences in the relevant beliefs and values. Social institutions also condition subconscious responses, sensitizing and desensitizing individuals to specific dangers.

A country's level of economic development may also affect the fearfulness of its inhabitants. People in richer countries tend to report being happier than those in poor countries (Stephenson and Wolfers 2008), and happier people tend to be more optimistic. This would suggest a negative relationship between income and fear. At the same time, in richer countries the state is usually better at protecting its citizens from various disasters, natural and man-made, and more kinds of insurance are available. This also might decrease fear. On the other hand, reduced vulnerability to common dangers might render people more emotionally responsive to the threats that remain. Not having to worry about economic survival, citizens of richer countries might have more time to obsess about the most dramatic, existential dangers such as nuclear war or global warming.

Another source of possible variation is the extent of present or past violence. Previous experiences of extreme stress—such as living through a war or under a repressive government—can produce lasting pyschological changes. An extended period of fear may sensitize the mind to threatening signals, causing it to prioritize messages about dangers, to selectively retrieve information that exacerbates anxiety, and to overestimate the risks of bad outcomes (Bar-Tal 2001, p.604). In countries that have undergone war or authoritarian rule in recent decades, citizens might remain traumatized.

Finally, besides propagating beliefs and values, a country's media will focus the public's attention on particular threats (Bar-Tal and Antebi 1992). If sensationalism is the result of competition for readers, a more competitive press environment may correlate with higher fear. One might expect that government-controlled media would try to avoid alarming the public. On the other hand, if governments censor information about dangers in order to prevent panics, this may actually fuel the development of conspiracy theories, exacerbating fear. Some governments may deliberately use state-controlled media to spread particular kinds of fear—of foreign threats, for instance—in an effort to increase their domestic support.

To examine the evidence, I gathered data on a number of variables. For economic

development, I use the natural log of GDP per capita in the preceding year, measured at purchasing power parity. To capture the effect of recent authoritarian government, I use the widely-employed Polity scores; I constructed a dummy for whether in at least one year since 1960 the country received a rating of less than -5 on the scale that runs from -10 (pure autocracy) to +10 (pure democracy). For recent war or violent conflict, I use the number of years since 1960 in which armed force in a conflict that included the government had resulted in at least 25 battle-related deaths. My first measure of media exposure is the average answer to a question on the EB2000 survey which asked how often the respondent watched the news on television; respondents could choose between five answers ranging from "every day" to "never." For the ASES, I instead use the average answer to a question on that survey which asked "How often do you follow accounts of political or governmental affairs in a national newspaper, magazine, radio, or television?' Respondents could answer "regularly," "from time to time," or "never." To measure state control of the media, I used the proportion of the top five television stations that were state-owned, weighted by their share of total viewers.

To gauge crossnational differences in cultural beliefs and values, one can either try to measure the prevalence of particular beliefs and values themselves or focus on differences in the social institutions that propagate them, such as schools and religious organizations. To capture differences in the latter, I use dummy variables recording which religion is dominant in the country, defined as the religion—if any—that counted more than 50 percent of the population among its adherents in 2000. The level of adherence to a particular religion today might itself partly result from fear—those more afraid of war or sudden death might seek spiritual comfort in the church—but for most countries the identity of the nationally dominant religion was determined hundreds of years ago by wars and flows of missionaries; it can therefore be considered somewhat more exogenous.

Schools also socialize citizens in distinctive ways. Algan, Cahuc, and Shleifer (2010) argue that the educational styles dominant in different countries render their populations more or less trusting and predisposed to cooperate with strangers. They distinguish two ideal type pedagogical styles: "vertical," in which teachers stand at the blackboard lecturing and asking students questions while students take notes, and "horizontal," in which students work in groups on collective projects

and ask teachers questions. I used two of Algan et al.'s variables—the percentage of eighth grade students who said that in maths classes they always took notes from the board and the percentage of 15-year-old students who said that they felt awkward in class.[23]

Besides the analysis of trust in the previous section, I try to measure relevant differences in current beliefs and values in two ways. First, I use measures of the cultural dimensions that sociologists and political scientists have considered significant. Inglehart and collaborators argue that much of the crossnational variation in cultures can be reduced to two dimensions, which they call survival/self-expression values and traditional/secular-rational values (Inglehart and Welzel 2005, pp.48-54). The sociologist Geert Hofstede (2001) identifies five dimensions: power distance (i.e., acceptance of hierarchical authority), individualism, masculinity, uncertainty avoidance, and long-term orientation. Arrindell et al. (2004), in their study of 11 countries, found that fearfulness correlated with two of these: uncertainty avoidance and masculinity.

Given how Inglehart's and Hofstede's dimensions are defined, it is plausible that they would correlate with fear. The definitions even overlap. Uncertainty avoidance, in Hofstede's words, is the extent to which people "feel threatened by uncertain or unknown situations" (Hofstede 2001, p.161). One of three questions used to construct the index asks: "How often do you feel nervous or tense at work?" In countries where more people feel nervous, tense, and threatened by unknown situations, it is natural to expect that fear of catastrophic outcomes would be higher.[24] Survivalist values, in Inglehart's usage, refer to the extent to which individuals emphasize economic and physical security as opposed to subjective well-being, self-expression, and quality of life (Inglehart and Welzel 2005, p.52). In countries where more people are preoccupied with economic and physical security, one might expect that a higher percentage would report being afraid of threats to their security.

My second attempt to measure relevant cultural differences focuses on the content of

[23] The first comes from the Trends in International Mathematics and Science Study (TIMSS), conducted in 1995 in 33 countries, the second from the Program for International Student Assessment (PISA), conducted by the OECD, for 2000 and 2003.

[24] The other two questions used by Hofstede to measure uncertainty avoidance are *not* directly related to fear, however. They ask how long the respondent expects to continue working for the same company and whether it is acceptable to break company rules when an employee believes this to be in the company's best interest.

religious beliefs. Whereas the nature of a country's dominant religion is generally rooted in history, how literally adherents take its doctrines can evolve over time. That religious beliefs might affect adherents' fearfulness was originally suggested by Epicurus, who, in Bertrand Russell's paraphrase, "held that two of the greatest sources of fear were religion and the dread of death, which were connected, since religion encouraged the view that the dead are unhappy" (Russell 1946, p.254). How unhappy one believes the dead to be depends, in turn, on one's conception of the afterlife. I conjecture that belief in Hell should intensify fear of death, whereas belief in Heaven should alleviate fear. I measure these beliefs using two questions from the 2000 World Values Survey. While belief in Hell is highly correlated with belief in Heaven, in some countries far more people turn out to believe in the latter than in the former; this gap ranges from 0 percent in Indonesia to 32 percent in Ireland.

Given the small number of cases and the fact that possible causes are correlated, it makes sense to begin by simply examining the correlation coefficients (Table 8). In most cases, the signs of these are consistent with expectations. There is a moderately strong positive correlation between fearfulness and Orthodox Christianity, a weaker positive correlation with Catholicism, and a negative correlation with a dominant Protestant tradition.[25] The only Orthodox Christian country in EB2000, EB2002 and ASES is Greece, so the correlation simply picks up Greece's high fear score. In EB2005, Greece is joined by Cyprus, which is also relatively fearful. (The only predominantly Muslim country is Indonesia in ASES, and its fear score is about average.) Past experiences of both authoritarian rule and violent conflict correlate with higher fearfulness in all the surveys, and higher economic development consistently correlates with lower fear. There were also low to moderate correlations between fear and an indicator of "vertical" style of education—in which instruction consists mostly of students taking notes from the board—and between fear and students' feeling awkward in school.

[25] The Eurobarometer surveys did not ask respondents their religion. The ASES did, permitting analysis at the individual level. Controlling for other individual characteristics and country, differences in fearfulness among individuals of different denominations were not generally significant, although the pattern of coefficients was the same for the Protestants, Catholics, and other Christians (including Orthodox). This might be because of the endogeneity of individual religious adherence. But it could also reflect the fact that national cultures are shaped by the dominant religious tradition—and then affect all citizens, not just those who are themselves religious.

Table 8: Crossnational correlations: fearfulness and its possible determinants

	EB 2000	*EB 2002*	*EB 2005*	*ASES*	*Cath-olic*	*Prot-estant*	*Orth-odox*	*Mus-lim*	*Auth. hist-ory*	*War years*	*School take notes*	*School feel awk-ward*	*Ln GDP p.c. 1999*	*Mascu-linity*	*Uncer-tainty avoid-ance*	*Secular-Rat-ional*	*Self-expr-ession*	*Believe in Hell*	*Believe in Heaven*	*TV use 2000*
EB2002	.95																			
EB2005	.39	.56																		
ASES	.49	.66	.68																	
Catholic	.12	.18	.29	.02																
Protestant	-.14	-.19	-.52	-.19	-.27															
Orthodox	.37	.46	.44	.51	-.15	-.07														
Muslim	n.a.	n.a.	n.a.	-.02	-.24	-.12	-.07													
Auth. history	.84	.76	.31	.47	.12	-.27	-.01	.18												
War years	.50	.56	.40	.32	-.13	-.20	.00	.56	.26											
School: take notes	.37	.43	.48	.35	.18	-.49	.21		.10	.17										
School: feel awkward	.28	.18	.32	.39	.12	-.35	.05	-.15	.04	-.08	.74									
Ln GDP p.c. 1999	-.49	-.47	-.40	-.28	.25	.23	.11	-.43	-.56	-.73	.06	.17								
Masculin-ity	.12	.19	.18	.25	.24	-.24	.05	-.02	-.02	.04	.41	.16	-.06							
Uncertainty avoidance	.52	.53	.64	.61	.40	-.37	.33	-.05	.29	-.27	.71	.64	.19	.10						
Secular-Rational	-.36	-.42	-.30	.13	-.40	.24	.07	-.39	.08	-.42	-.07	.10	.23	-.11	-.02					
Self-expression	-.65	-.67	-.57	-.11	.01	.47	.05	-.19	-.69	-.31	-.28	-.14	.70	-.14	-.12	.11				
Believe in Hell	.35	.48	.47	.06	-.10	-.29	-.04	.61	.20	.64	.10	-.07	-.65	.13	-.13	-.76	-.43			
Believe in Heaven	.21	.29	.23	-.07	-.05	-.24	-.08	.51	.12	.57	.01	-.10	-.57	.14	-.16	-.81	-.24	.93		
TV use 2000	-.09	-.03	.08	n.r.	-.45	.24	.26		.17	.05	-.49	-.58	-.39	-.12	-.20	.31	.04	.03	.04	
National media	n.r.	n.r.	n.r.	.25	.22	-.12	.01	-.32	-.20	-.43	.32	.06	.43	.37	.51	.54	.20	-.54	-.58	.18
State share in TV	-.50	-.55	-.40	-.69	-.27	.14	-.39	.09	-.26	-.24	-.24	-.05	-.07	-.05	-.44	.08	.20	.13	.17	-.01

Sources: See Appendix Table A1. Correlation coefficients; n.a. not applicable. Most correlations are from sample including East and West Germany and Great Britain and Northern Ireland separately. Correlations with ASES are for sample with Germany and UK instead. N.a.: not applicable; n.r.: not relevant.

Turning to measures of current values, Hofstede's masculinity and uncertainty avoidance both correlate positively with fearfulness, but the first is not usually statistically significant. Countries that were higher on Inglehart's secular-rational vs. traditional and self-expression vs. survival scales tended to be less fearful in the European surveys— but the correlations were not significant in the ASES, which included Asian countries. Belief in Hell, as expected, correlated with higher fear in the European surveys, but not in ASES. Belief in Heaven also correlated (more weakly) with higher fear; but, given the high correlation between the two beliefs, one might expect this result even if belief in Heaven is actually fear-reducing but has a weaker effect than belief in Hell. Finally, there was no clear correlation between fearfulness and exposure to the television news, but a larger state role in television correlated quite strongly with lower fear.

Of course, simple correlations prove little. I next explore which variables are significant controlling for other likely determinants of fearfulness. It makes sense to consider at what stage on the causal pathway different variables operate. Values, for instance, are likely to be partly determined by religious traditions and economic development. At the same time, some purported causes of fear may themselves be caused by it. A sensationalistic media will excite the public's fears; but the media may become sensationalistic in order to pander to fears that already exist.

Given the limited data, these issues cannot be conclusively resolved. Still, one can look a little more closely at the patterns. It seems reasonable to divide the explanatory variables into three groups: those that are most exogenous, rooted in distant history (countries' dominant religion); those that are less exogenous, relating (mostly) to the last 50 years (authoritarian experience, war, economic development, educational style); and those that are not exogenous at all, relating to the current cultural and media environment (current beliefs and values, media characteristics). There are plausible paths by which religious traditions may have influenced the type of government, involvement in wars, the rate of economic development, and educational style in recent decades. These variables may, in turn, have influenced the current distribution of beliefs and values and the media environment. With this in mind, I show a series of regressions for each country, starting with the most exogenous variables, then adding those in the middle group, and finally including the least

exogenous variables. Since the number of observations is so low, I economize on degrees of freedom by dropping some variables whose coefficients are close to zero and statistically insignificant. Especially given the small number of cases, it makes sense to focus on results that are relatively robust. Findings that hold across the range of distinct fear measures are more likely to be genuine.

What do the regressions reveal? First, countries' dominant religions can explain from 20 to 45 percent of the variation in fearfulness. The coefficients on the religious dummies show a consistent pattern across all the surveys, although not all differ signficantly from the excluded category (other or no dominant religion). The pattern is the same as that for simple correlation coefficients. Orthodox Christian countries (Greece, along with Cyprus in EB2005) are the most fearful, followed by the predominantly Catholic, and then the predominantly Protestant ones.

In EB2000 and EB2002, the religious tradition effects drop sharply once I include the dummy for authoritarian rule. This is because in the West European sample, the most fearful countries—Orthodox Greece and Catholic Spain and Portugal—had all recently experienced authoritarian rule.[26] In EB2000, the authoritarian dummy can by itself explain 71 percent of the variation. However, once one includes authoritarian countries from Eastern Europe (EB2005) or Asia (ASES), the authoritarian effect either weakens or disappears completely, while the religion dummies remain significant. China, for instance, has relatively low fear despite a history of authoritarian government.[27] So do Slovakia and Estonia. Meanwhile, some other Southern European countries that do not have recent authoritarian experience—Italy, Malta, and Cyprus—have very high fear. It could be that an authoritarian past increased fear in Western European countries. But it seems more likely that the variable is picking up a more general effect of religious traditions. (It could also be that the somewhat different set of fears explored in EB2005 and ASES explain the different results.) Controlling for religious tradition, there was no clear relationship between recent violent conflict and fearfulness in the European surveys, but years of war did correlate with higher fear in ASES.

[26] The only other such country in EB2000 and EB2002 was East Germany.

[27] The effect of authoritarianism in the ASES would disappear completely if Singapore were classified as an authoritarian regime. It is coded by Polity at -2; the cutoff I used was -5.

Table 9: Correlates of fear

	A. EB2000										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Predominantly Catholic	.34	.13	.25	.27	.31						
	(.28)	(.23)	(.31)	(.29)	(.42)						
Predominantly Protestant	.20	.06	.13	-.14	.17						
	(.27)	(.26)	(.29)	(.28)	(.29)						
Predominantly Orthodox	.93***	.09	.54	.57	.91*						
	(.21)	(.28)	(.33)	(.35)	(.41)						
Authoritarian episode		.84***				.89***	.76***	.83***	.89***	.86***	.89***
		(.17)				(.17)	(.15)	(.12)	(.17)	(.09)	(.09)
Years of war			.10								
			(.06)								
Log GDP per capita				-.78							
previous year				(.65)							
School: take notes					-.06						
					(1.71)						
School: feel awkward					.02						
					(.06)						
Masculinity						.002					
						(.003)					
Uncertainty avoidance						-.000					
						(.003)					
Secular-Rational							-.16*			-.14*	
							(.07)			(.07)	
Self-Expression							-.10				
							(.17)				
Belief in Hell								1.01			.76***
								(.84)			(.17)
Belief in Heaven								-.25			
								(.78)			
TV use									-.85	-.56	-.84**
									(.54)	(.34)	(.29)
State share in TV									-.05		
									(.37)		
Constant	-.42*	-.42*	-.42*	7.63	-.69	-.45**	-.13	-.51***	3.53	2.27	3.25**
	(.21)	(.22)	(.22)	(6.69)	(.51)	(.17)	(.21)	(.14)	(2.43)	(1.51)	(1.30)
R^2	.2050	.7231	.3049	.4618	.2645	.7868	.8018	.8135	.7711	.8174	.8720
N	17	17	16	15	15	16	17	17	16	17	17

Table 9: (Continued)

	B. EB2002								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Predominantly Catholic	.52	.35	.43	.48	.44	.38	.12	.10	.29
	(.31)	(.30)	(.35)	(.33)	(.43)	(.32)	(.24)	(.32)	(.36)
Predominantly Protestant	.32	.20	.25	.05	.24	.01	.21	.00	.20
	(.28)	(.29)	(.30)	(.30)	(.30)	(.33)	(.22)	(.31)	(.31)
Predominantly Orthodox	1.29***	.61*	.89**	1.00**	1.12**	.68*	.60**	.12	.54
	(.25)	(.32)	(.35)	(.34)	(.41)	(.37)	(.21)	(.39)	(.59)
Authoritarian episode		.68***				.83***	.49**	.71***	.68**
		(.19)				(.23)	(.19)	(.16)	(.24)
Years of war			.10						
			(.06)						
Log GDP per capita previous year				-.70					
				(.57)					
School: take notes					.74				
					(1.60)				
School: feel awkward					-.01				
					(.06)				
Masculinity						.001			
						(.005)			
Uncertainty avoidance						-.004			
						(.004)			
Secular-Rational							-.22**		
							(.09)		
Self-Expression							-.23		
							(.19)		
Belief in Hell								2.10*	
								(.99)	
Belief in Heaven								-1.00	
								(.87)	
TV use									-.46
									(1.00)
State share in TV									-.19
									(1.08)
Constant	-.57**	-.57**	-.57*	6.66	-.59	-.34	-.07	-.50	1.63
	(.25)	(.26)	(.26)	(5.86)	(.51)	(.42)	(.29)	(34)	(4.43)
R^2	.3452	.6453	.4346	.5132	.3873	.7242	.7790	.8102	.6608
N	17	17	16	15	15	16	17	17	16

Table 9: (Continued)

	C. EB2005									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Predominantly Catholic	.17	.18	.16	.22*	.00	.17	.18	.12	.34	.15
	(.15)	(.14)	(.15)	(.12)	(.19)	(.11)	(.14)	(.10)	(.21)	(.11)
Predominantly Protestant	-.23	-.17	-.26	-.18	-.22	-.11	-.15	-.13	-.16	-.18
	(.16)	(.15)	(.17)	(.15)	(.18)	(.17)	(.15)	(.11)	(.17)	(.13)
Predominantly Orthodox	.57***	.58***	.56**	.63***	.40**	.48***	.63***	.39***	.98***	.56***
	(.13)	(.13)	(.21)	(.10)	(.17)	(.16)	(.09)	(.11)	(.23)	(.11)
Authoritarian episode		.12								
		(.10)								
Years of war			.00							
			(.04)							
Log GDP per capita				-.29**		-.27**	-.12	-.06	-1.08	
previous year				(.12)		(.12)	(.16)	(.12)	(.63)	
School: take notes					.79					
					(.71)					
School: feel awkward					-.00					
					(.02)					
Masculinity						-.000				
						(.002)				
Uncertainty avoidance						.003				
						(.003)				
Secular-Rational							-.04			
							(.07)			
Self-Expression							-.10			
							(.08)			
Belief in Hell								2.16***		2.32***
								(.62)		(.60)
Belief in Heaven								-1.65***		-1.86***
								(.47)		(.56)
TV use									.58	
									(.89)	
State share in TV									.97*	.44
									(.43)	(.29)
Constant	-.41***	-.48***	-.41***	2.50*	-.63*	2.09	.87	.28	7.31	-.51***
	(.13)	(.13)	(.14)	(1.20)	(.30)	(1.33)	(1.57)	(1.25)	(7.67)	(.14)
R^2	.4456	.4802	.4583	.6066	.4545	.5901	.5920	.7210	.7467	.7267
N	27	27	26	25	19	24	23	24	14	23

Table 9: (Continued)

	D. AASES									
	(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)	(10)	(11)
Predominantly Catholic	.11	.11	.10	.16	-.38					
	(.34)	(.32)	(.29)	(.32)	(.30)					
Predominantly Protestant	-.32	-.11	-.40	-.16	-.63					
	(.20)	(.32)	(.28)	(.28)	(.51)					
Predominantly Orthodox	1.27***	1.06***	1.34***	1.35***	1.06**	.62***	1.24***	1.13***	1.38***	.73***
	(.20)	(.20)	(.24)	(.25)	(.31)	(.19)	(.17)	(.18)	(.11)	(.18)
Predominantly Muslim	.04	-.17	-.65*	-.37	n.a.	-.80**	-.82*	-.82*	-.48	-.76**
	(.20)	(.20)	(.35)	(.42)		(.28)	(.42)	(.43)	(.43)	(.30)
Authoritarian episode		.42								
		(.32)								
Years of war			.02*			.03***	.03*	.03	.03**	.03***
			(.01)			(.01)	(.02)	(.02)	(.01)	(.01)
Log GDP per capita previous year				-.30						
				(.28)						
School: take notes					-1.26					
					(1.77)					
School: feel awkward					.05					
					(.06)					
Masculinity						.002				
						(.005)				
Uncertainty avoidance						.014***				.013***
						(.003)				(.003)
Secular-Rational							.17			
							(.20)			
Self-Expression							.05			
							(.23)			
Belief in Hell								1.75		
								(1.73)		
Belief in Heaven								-2.70**		
								(1.16)		
National media use									1.56**	.54
									(.57)	(.38)
Constant	-.13	-.34	-.28	2.78	-.01	-1.32***	-.39	.45	-4.02**	-2.42**
	(.20)	(.32)	(.26)	(2.65)	(.76)	(.36)	(.25)	(.38)	(1.39)	(.81)
R^2	0.3146	.4244	.4745	.4287	.7603	.8018	.5920	.5920	.5923	.8147
N	18	18	18	18	11	18	15	15	18	18

Sources: See Appendix Table A1.

Controlling for religious tradition, the effect of economic development was not usually statistically significant. The exception was some models for EB2005; it might be that the relatively lower income of the East European and Southern European islands (Cyprus and Malta) helps explain their higher fear levels. The measures of educational style were never significant and sometimes had the "wrong" signs. The results for media environment were unclear. In some cases, watching television news more regularly was associated with lower fear, but in ASES attention to the national media correlated with higher fear. State control of television did not have a consistent effect.

Disentangling the effects of values is obviously tricky. The "masculinity" of a country's culture was never significantly associated with fearfulness, controlling for religious tradition. Somewhat surprisingly given the close conceptual connection, uncertainty avoidance only showed up as significant in one survey, the ASES. In this case, including uncertainty avoidance caused a sharp drop in the coefficient on Orthodox Christianity. It is possible that in this case uncertainty avoidance is picking up some aspect of differences in religious traditions. Inglehart's self-expression vs. survival dimension was never significant, controlling for religious traditions. Secular rational vs. tradition values did correlate with lower fear in the Western European surveys, but this was not significant in the broader samples.

The most consistent finding on values was a positive relationship between belief in Hell and higher fear, and sometimes a negative relationship with belief in Heaven. In Western Europe, the highest levels of belief in Hell were found in Greece, Italy, and Ireland (where this belief was leavened by an even stronger belief in Heaven). Adding in the newer EU members, the group includes Poland, Lithuania, Slovakia, and Malta. Including belief in Hell and Heaven in regressions usually reduced the estimated impact of religious tradition.[28] This was also true for regressions including the predominant religion variables in the EB2000 survey (not shown). This is consistent with the notion that the beliefs about divine retribution that different religions propagate affect the

[28] Belief in Hell is higher in Greece than in most other West European countries (41 percent), not because Orthodox Christians have a higher rate of belief in Hell than for instance, Catholics (they do not), but because the proportion of Greeks who are religious is very high (96 percent) even relative to that in predominantly Catholic countries like Italy (82 percent).

degree of fearfulness in countries whose cultures were shaped by these religions. To illustrate, Figure 4 plots the EB2005 fear score against the percentage of country residents that in 2000 said they believed in Hell.

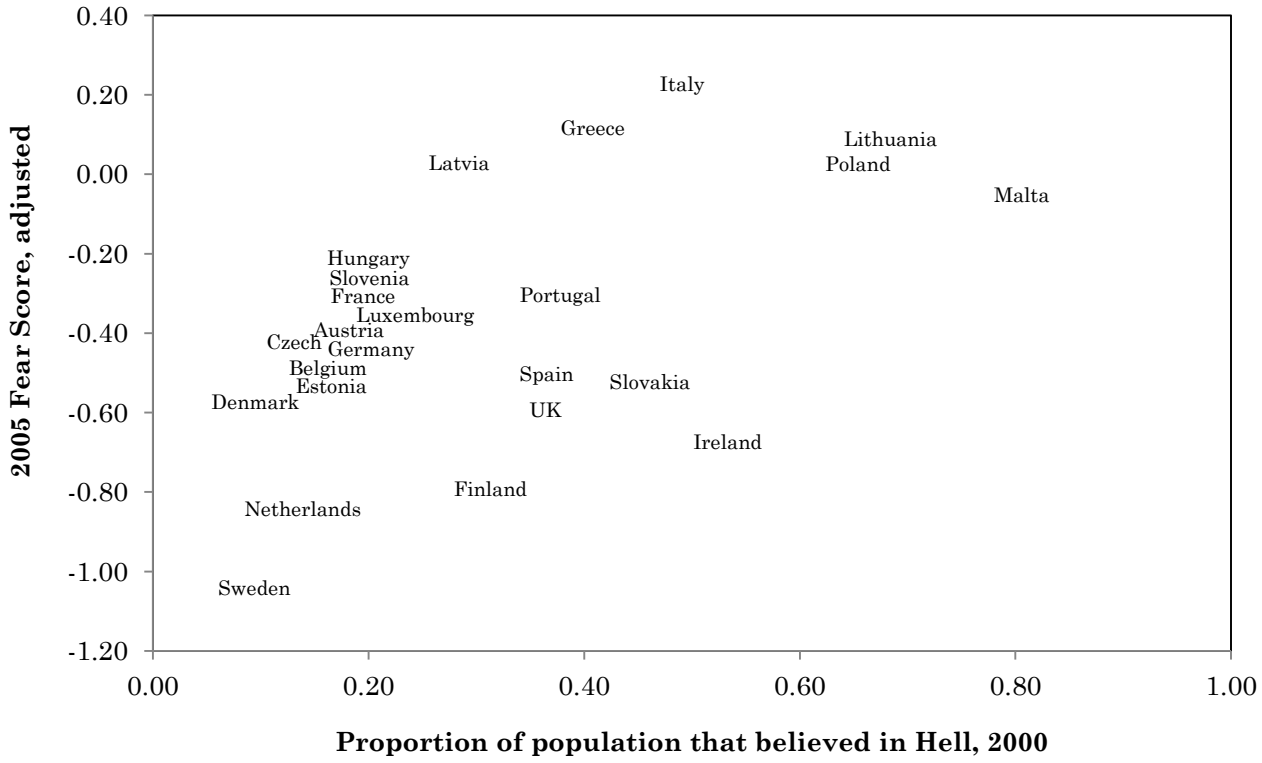

Figure 4: Belief in Hell and Fear, 2005

Sources: World Values Survey, 2000, as in Barro Dataset on Religion; author's calculations using EB2005. Correlation: r = .54.

7 Conclusion

Reported fear of major dangers varies across countries in quite consistent ways. I constructed indexes of feafulness using data from four surveys taken between 2000 and 2005. Within Europe, the highest levels of fear were found in a number of Mediterranean countries—Greece, Portugal, Spain, Italy, Cyprus, Malta—followed by some of the former communist countries of Eastern Europe, while the lowest levels of fear were in the Netherlands, Finland, and Austria. Some countries also showed

consistent subnational variation in reported fear. About two thirds of the crossnational variation within Europe can be explained by differences in a measure of pessimism—the degree to which respondents exaggerate the likelihood of unpleasant outcomes. Countries where people are more fearful tend to be those in which people are more distrustful—of national authorities or other people in general—but more distrustful individuals are only slightly, if at all, more fearful.

Available data did not permit strong conclusions about why fear is more widespread in some countries than others. However, certain conjectures fit the evidence better than others. Fearfulness correlated relatively robustly with the dominant religious tradition and with the proportions of citizens who believed in Heaven (negatively) and in Hell (positively). Recent authoritarian government might increase fear in Western Europe, and experience of war might do the same in Asia, but this is less clear. Of course, there is no guarantee that the patterns noted here would remain in more comprehensive or more recent data; definitive answers must await more detailed surveys. Still, the relationships reviewed in this paper support the view that important aspects of the quality of life vary across countries in ways that are not captured by differences in per capita income. Mapping the "emotional climates" of the world—and explaining their origins—remains an important challenge for social scientists.

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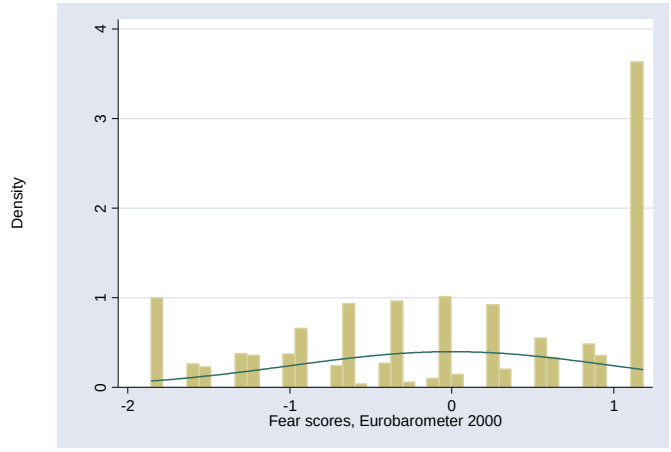
Appendix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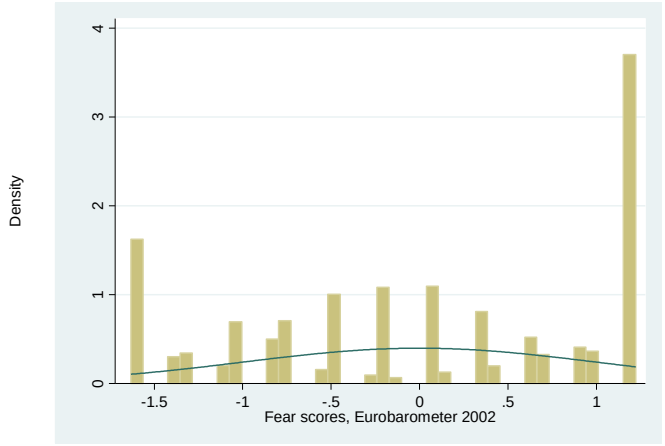
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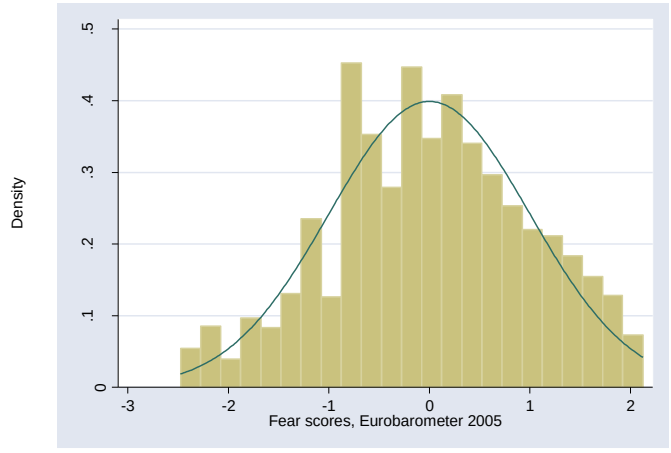
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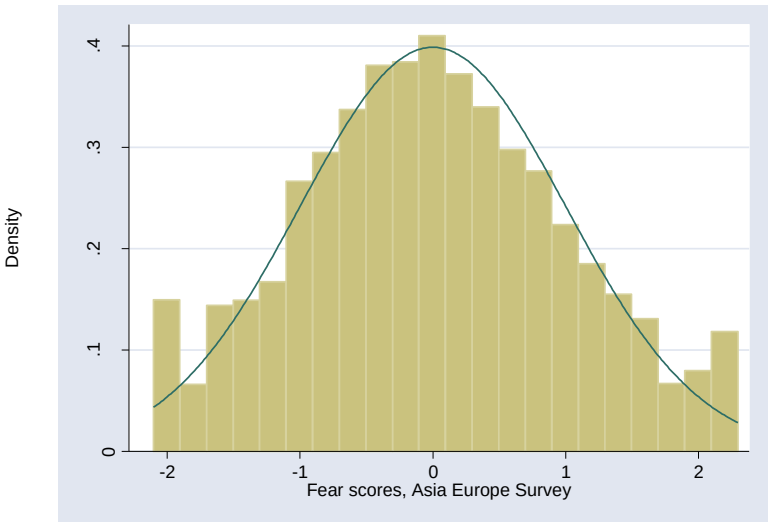

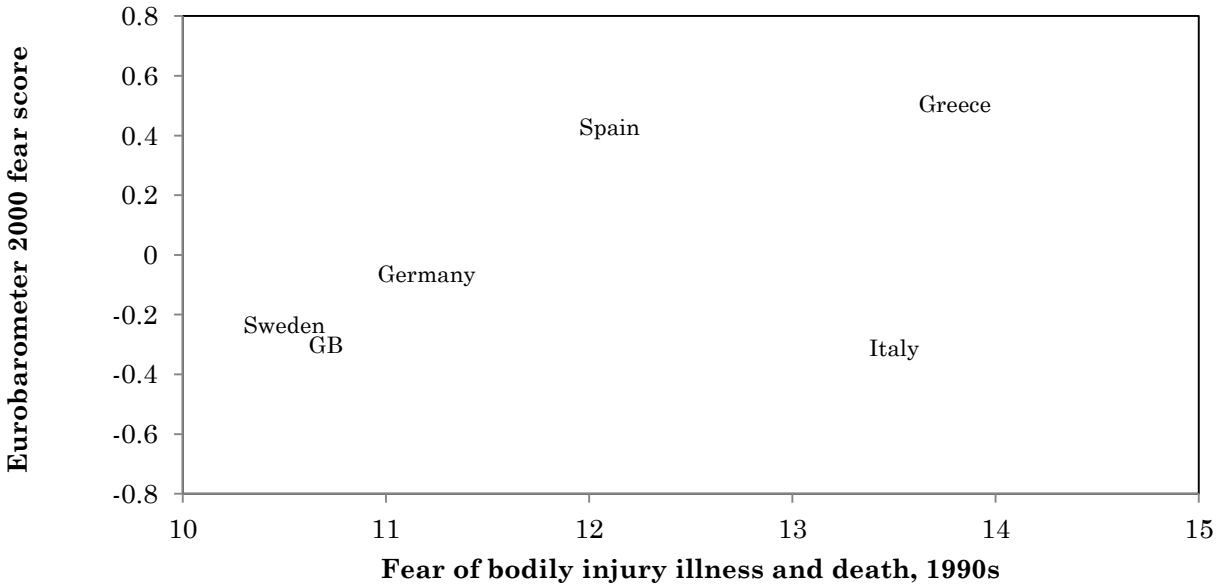

Figure A1: Fear of bodily injury, illness, and death, 1990s (Arrindell et al. 2004) and Eurobarometer 2000 fear score

Sources: Arrindell et al. (2004); Eurobarometer 2000 survey (ICPSR); author's calculations.
Correlation: r = .48. Correlation without Italy: r = .96

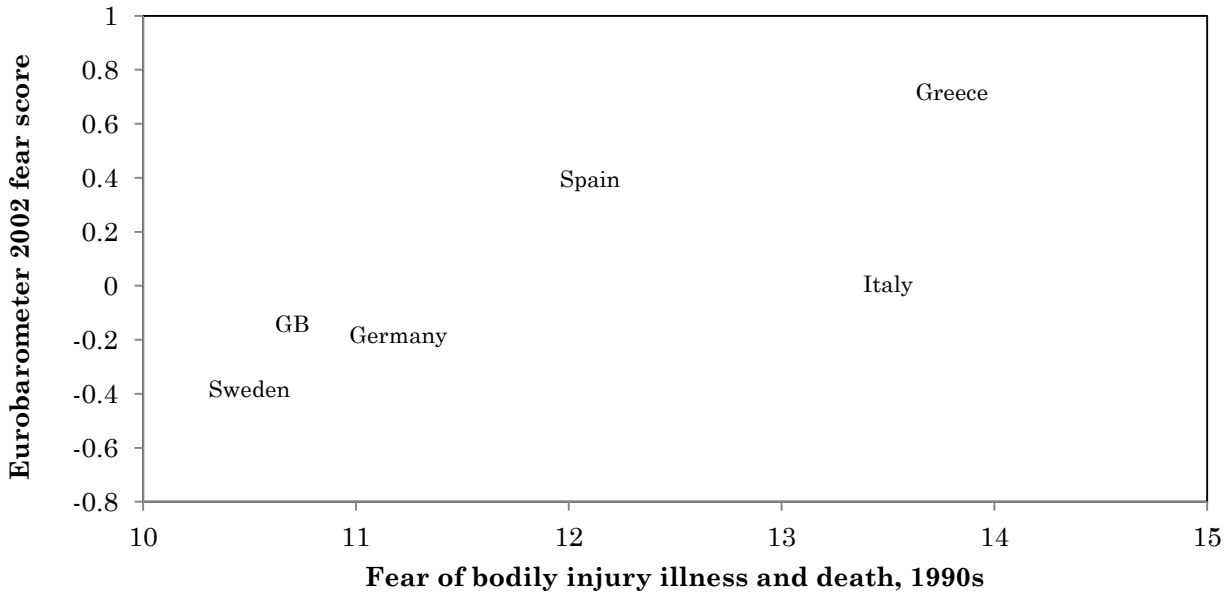

Figure A2: Fear of bodily injury, illness, and death, 1990s (Arrindell et al. 2004) and Eurobarometer 2002 fear score

Sources: Arrindell et al. (2004); Eurobarometer 2002 survey (ICPSR); author's calculations.
Correlation: r = .78. Correlation without Italy: r = .96

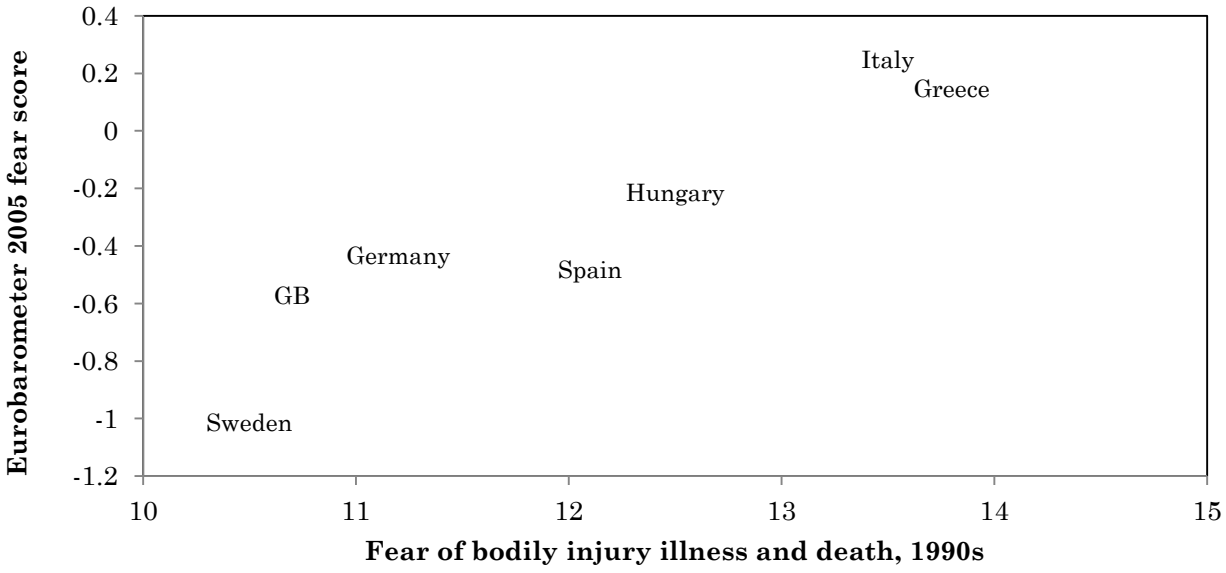

Figure A3. Fear of bodily injury, illness, and death, 1990s (Arrindell et al. 2004) and Eurobarometer 2005 fear score

Sources: Arrindell et al. (2004); Eurobarometer 2005 survey (ICPSR); author's calculations.
Correlation: r = .93.

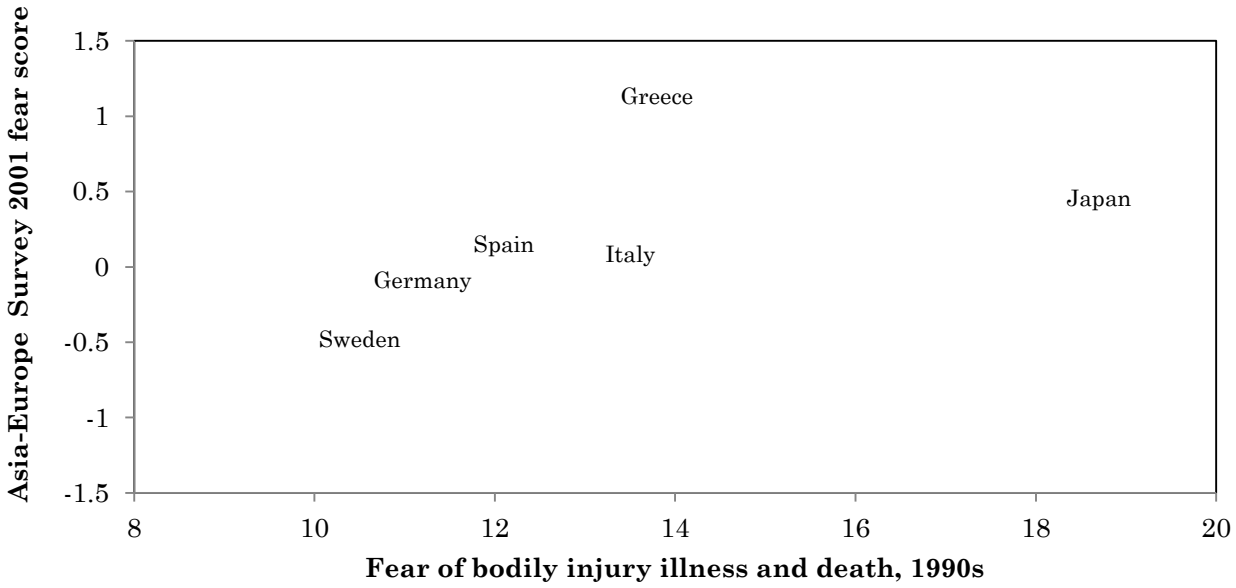

Figure A4. Fear of bodily injury, illness, and death, 1990s (Arrindell et al. 2004) and Asia Europe Survey 2001 fear score

Sources: Arrindell et al. (2004); Asia Europe Survey 2001 (ICPSR); author's calculations.
Correlation: r = .54. Correlation without Japan: r = .82.

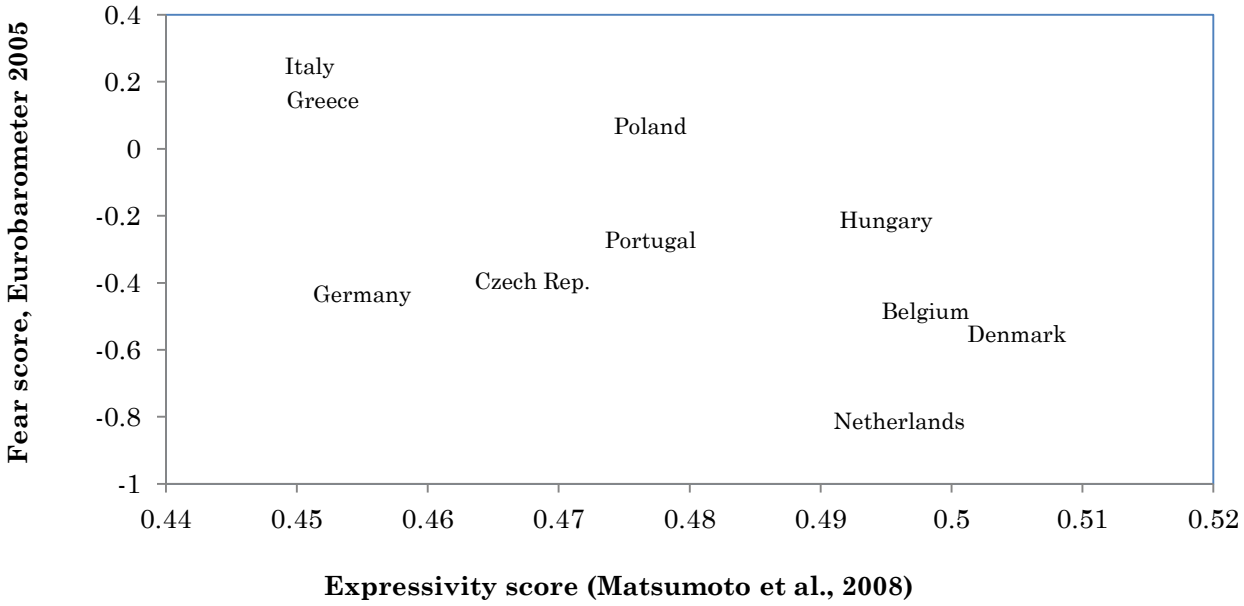

Figure A5: Do cultural norms against expressing emotions explain low fear scores? Eurobarometer 2005

Sources: Matsumoto et al. (2008); Eurobarometer 2005 survey (ICPSR); author's calculations. Correlation: r = -.66.

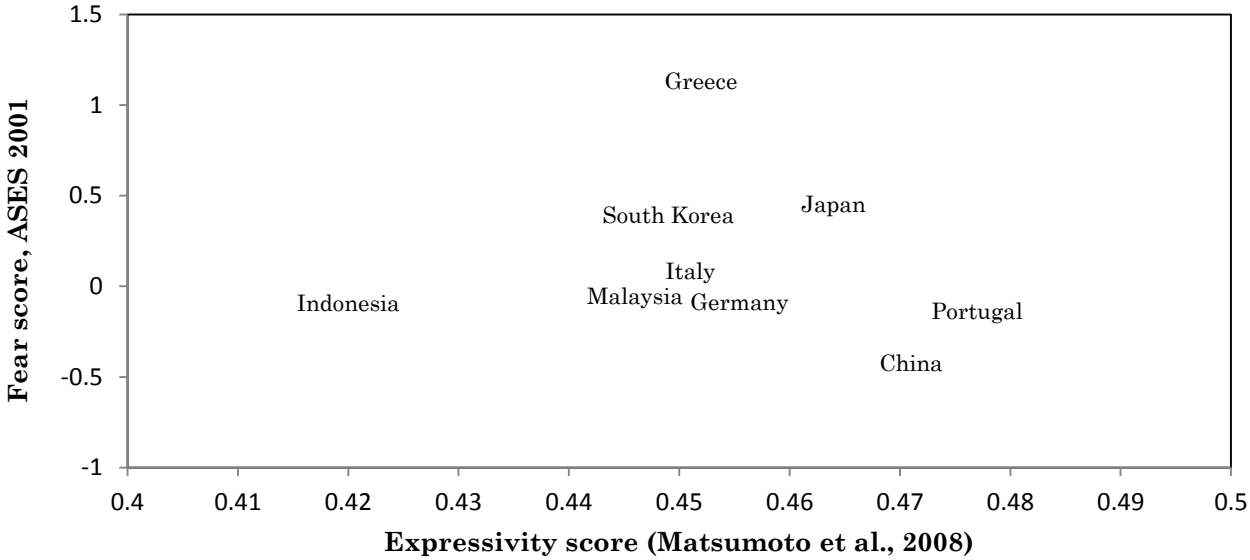

Figure A6: Do cultural norms against expressing emotions explain low fear scores? ASES Survey

Sources: Matsumoto et al. (2008); ASES 2001 survey (ICPSR); author's calculations. Correlation: r = -.11

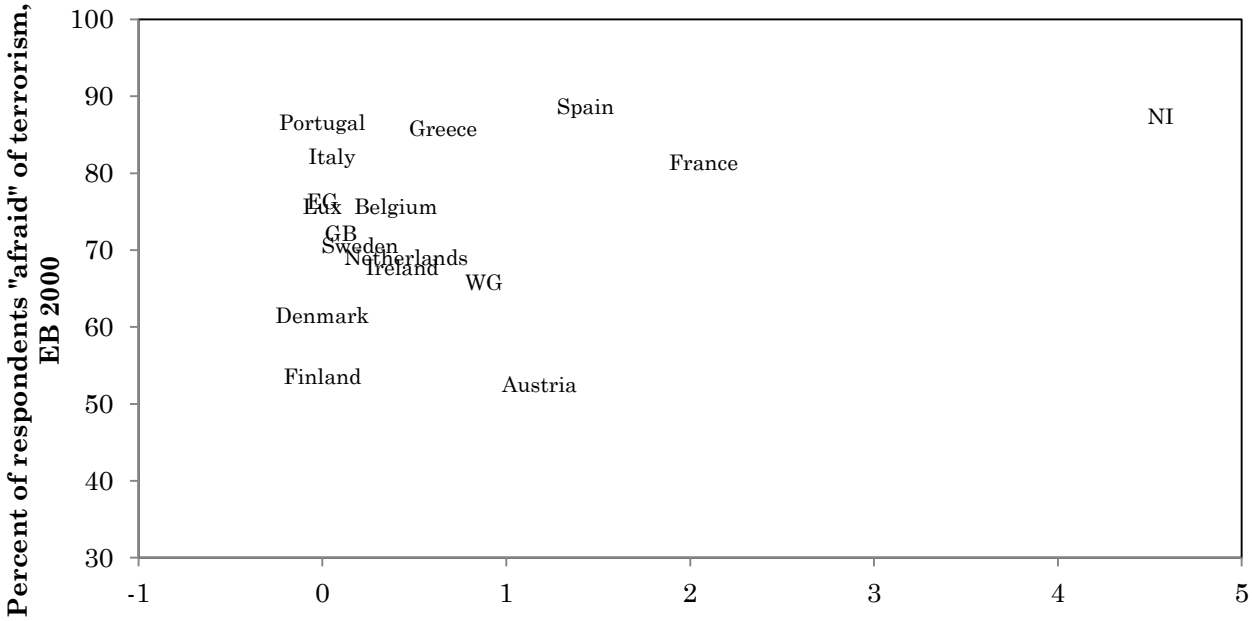

Figure A7: Terrorism, fear and objective danger

Source: RAND Database of Worldwide Terrorism Incidents, downloaded Sept 16, 2010, www.rand.org/nsrd/projects/terrorism-incidents/; Eurobarometer 2000 (ICPSR). Correlation: r = .35. Correlation excluding Northern Ireland: r = .16

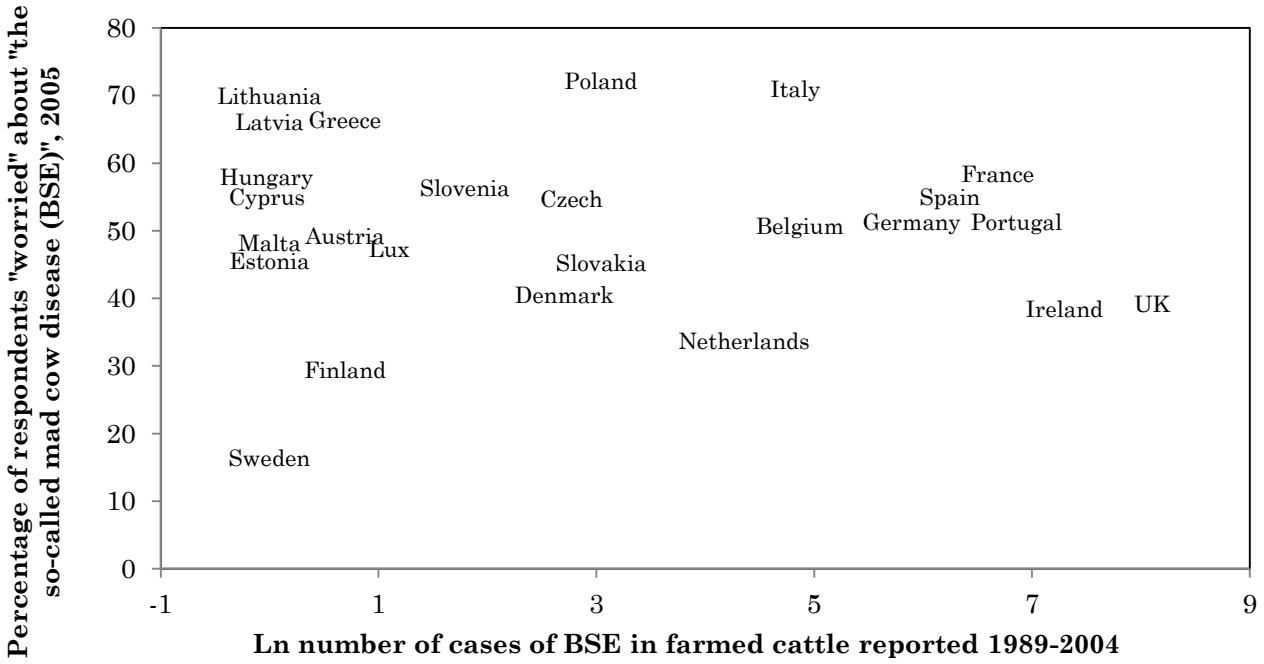

Figure A8: "Mad cow disease," fear and objective danger

Sources: World Organization for Animal Health, www.oie.int/eng/info/en_esbmonde.htm.; Eurobarometer 2005 (ICPSR); one added to number of cases of BSE before taking logs. Correlation: r = -.05

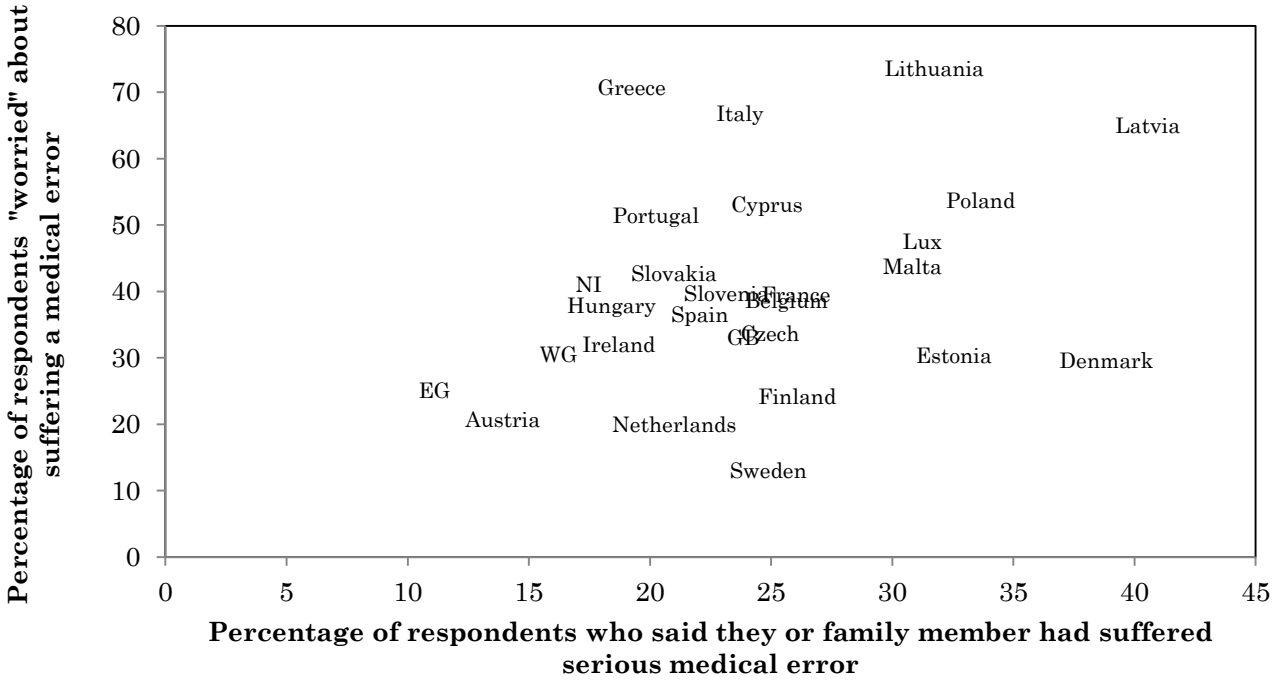

Figure A9: Medical errors, fear and objective danger

Source: Eurobarometer 2005 (ICPSR). Correlation: r = .33

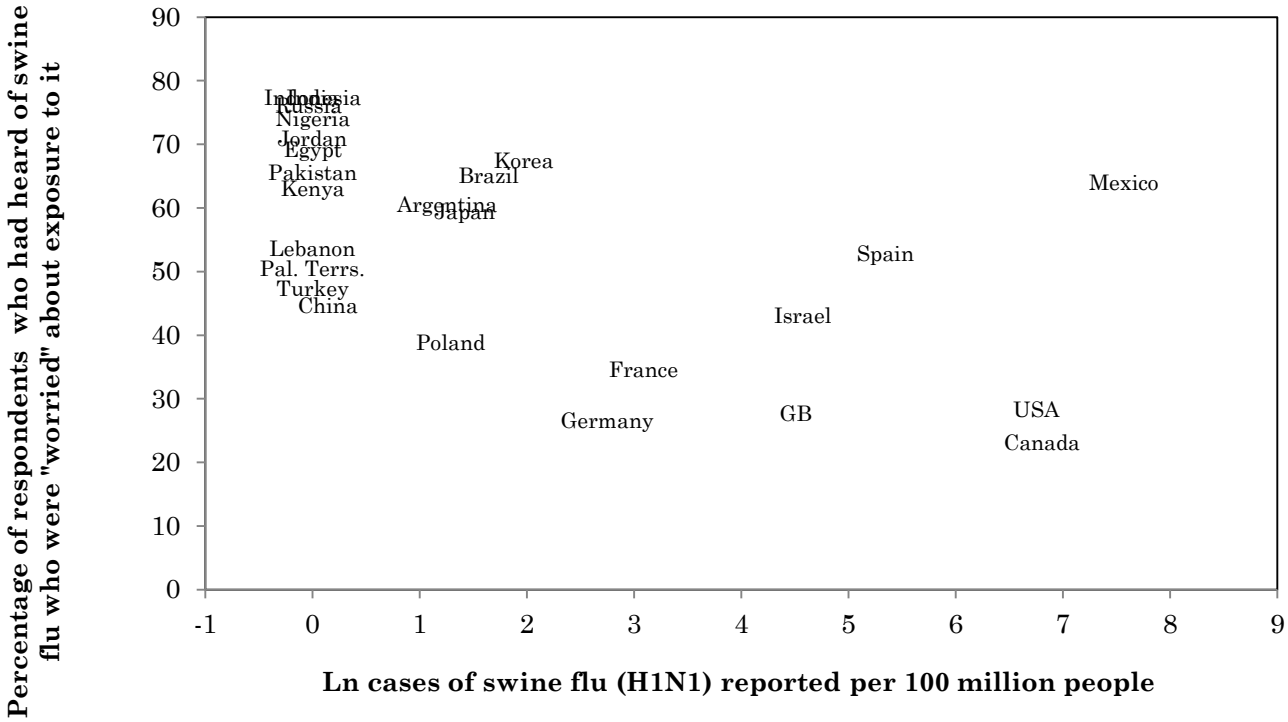

Figure A10: Swine flu, fear and objective danger

Sources: Pew GAP Survey 2009; WHO "Weekly epidemiological record" 15 May 2009, www.who.int/wer/2009/wer8420.pdf; one added to number of cases of BSE before taking logs.
Note: Correlation: r = -.58

Table A1: Variable definitions and sources

Variable	Definition	Source
EB2000 (zslong, zshort)	Index of fear, EB2000	Author's calculations, from: Hartung, Harald. *Eurobarometer 54.1: Bulidng Europe and the European Union, The European Parliament, Public Safety, and Defense Policy,* November-December 2000 [Computer file] (ICPSR03209-v4. Conducted by European Opinion Research Group EEIG, Brussels. 2nd ZA ed. Cologne, Germany: Zentralarchiv fur Empirische Sozialforschung [producer], 2008. Cologne, Germany: Zentralarchiv fur Empirische Sozialforschung/Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributors], 2008-08-14. doi:10.3886/ICPSR03209)
EB2002 (zslong, zshort)	Index of fear, EB2002	Author's calculations, from: Christensen, Thomas. *Eurobarometer 57.1: European Union Enlargement, the European Parliament, and the Euro,* March-May 2002 [Computer file] (ICPSR03521-v2. Cologne, Germany: Zentralarchiv fur Empirische Sozialforschung/Ann Arbor, MI: Inter-university Consortium for Political and Social Research

		[distributors], 2007-02-12. doi:10.3886/ICPSR03521)
EB2005 (zslong, zshort)	Index of fear, EB2005	Author's calculations, from: Papacostas, Antonis. *Eurobarometer 64.1: Mobility, Food Risk, Smoking, AIDS Prevention, and Medical Errors*, September-October 2005 [Computer file] (ICPSR04641-v2. Cologne, Germany: GESIS/Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributors], 2010-04-26. doi:10.3886/ICPSR04641)
ASES (zslong, zshort)	Index of fear, ASES	Author's calculations, from: Inoguchi, Takashi. *Asia Europe Survey (ASES): A Multinational Comparative Study in 18 Countries*, 2001 [Computer file] (ICPSR22324-v1. Ann Arbor, MI: Inter-university Consortium of Political and Social Research [distributor], 2008-06-24, doi:10.3886/ICPSR22324)
Arrindell index	Fear of bodily injury, illness, and death, 1990s	Arrindell et al. (2004)
Matsumoto index	Expressivity score	Matsumoto et al. (2008)
Ln terrorism	Natural log of number of deaths and injuries caused by terrorism per million people, 1995-1999; 2000-04.	RAND Database of Worldwide Terrorism Incidents, downloaded Sept 16, 2010, www.rand.org/nsrd/projects/terrorism-incidents/.
Ln BSE	Natural log of number of cases of BSE in farmed cattle reported 1989-2004	World Organization for Animal Health, www.oie.int/eng/info/en_esbmonde.htm downloaded Oct 1, 2010.
Ln Swine Flu	Natural log of number of cases of swine flu (H1N1) reported per 100 million people	WHO "Weekly epidemiological record" 15 May 2009, http://www.who.int/wer/2009/wer8420.pdf
Crime	Sum of 5-year prevalence victimisation rates for burglary, attempted burglary, robbery, theft of personal property, sexual offence against women and assaults and threats (2005 or closest year)	Jan van Dijk, John van Kesteren, and Paul Smit, *Criminal Victimisation in International Perspective*, Appendix 9, Table 3, http://english.wodc.nl/onderzoeksdatabase/icvs-2005-survey.aspx?cp=45&cs=6796
Car accidents	estimated road traffic death rate per 100,000 people, 2007	WHO Global status report on road safety, 2009, downloaded sept 17, 2010, www.who.int/violence_injury_prevention/road_safety_status/data/table_a2.pdf
Masculinity	Extent to which men have values different from those of women—assertive and competive as opposed to modest and caring.	Geert Hofstede cultural dimensions data, http://www.geerthofstede.nl/research--vsm/dimension-data-matrix.aspx, downloaded 12 oct, 2010
Uncertainty avoidance	Extent to which people feel uncomfortable in unstructured situations	Geert Hofstede cultural dimensions data, http://www.geerthofstede.nl/research--vsm/dimension-data-matrix.aspx, downloaded 12 oct, 2010
Self-expression vs. Survivalist	Extent to which societal values emphasize economic and physical security rather than subjective well-being, self-expression and quality of life.	World Values Survey website, www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_54, downloaded October 20, 2010
Secular-Rational vs. Traditional	Extent to which societal values emphasize importance of religion, deference to authority, parent-child ties, and trraditional standards	World Values Survey website, www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_54, downloaded October 20, 2010

	relating to family life.	
School: take notes	Percent of 8th grade maths students saying "all the time," in answer to: "In schools, how often do you do these things? Copy notes from the board during the lessons?"	*Trends in International Mathematics and Science Study*, 1995, as in dataset for Algan, Cahuc and Shleifer (2010)
School: feel awkward	Percent of 15-year-olds who say they "agree" or "strongly agree" when asked: "In general, do you feel awkward in your class?"	Program for International Student Assessment, 2000 and 2003, as in dataset for Algan, Cahuc and Shleifer (2010)
Generalized trust	Percent saying most people could be trusted.	World Values Survey website, www.wvsevsdb.com/wvs/WVSAnalize.jsp, downoladed January 20, 2011, data for 2000 wave
Predominantly XXX	More than 50% of population adherents of XXX, 2000,	Robert Barro Religion Adherence Dataset (http://www.economics.harvard.edu/faculty/barro/data_sets_barro), from Barrett, D.B., G.T. Kurian, and T.M. Johnson (2001). *World Christian Encyclopedia*, 2nd ed., Oxford, Oxford University Press.
Believes in Hell	% of country respondents who say they believe in Hell	World Values Survey, 1999-2000, as in Robert Barro Religion Adherence Dataset (http://www.economics.harvard.edu/faculty/barro/data_sets_barro),
Believes in Heaven	% of country respondents who say they believe in Heaven	World Values Survey, 1999-2000, as in Robert Barro Religion Adherence Dataset (http://www.economics.harvard.edu/faculty/barro/data_sets_barro),
Gdp per capita PPP	Real GDP per capita (Constant Prices: Chain series)	Penn World Tables 63.
FH unfree press	Index of restrictions on press freedom, average for years from 1994 to survey year or t-1 if n.a.	Freedom House, *Freedom of the Press Scores*, downloaded Oct 15, 2010.
TV use	Average answer to "How often do you watch the news on tv" where 5 = every day, 1 = never, 2000	EB 2000
Follows national media	Average answer to "How often do you follow accounts of political or governmental affairs in a national newspaper, magazine, radio, or Television?" where 3 = regularly, 1 = never	ASES
State share TV	Share of the audience of the top 5 television stations that is accounted for by state-owned television stations	Djankov, Simeon, Caralee McLiesh, Tatiana Nenova and Andrei Shleifer. "Who Owns The Media?," *Journal of Law and Economics*, 2003, v46(2,Oct), 341-382.
War years	Number of years between 1960 and survey date in which at least 25 battle-related deaths occurred associated with use of armed force between two parties, of which at least one was the government of a state.	UCDP/PRIO Armed Conflict Dataset, Version 4, 2009,downloaded October 20, 2010; see Nils Petter Gleditsch, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, and Havard Strand, "Armed Conflict 1946 to 2001: A New Dataset," *Journal of Peace Research* 39 (2002): 615-37.
Authoritarian episode since 1960	At least one year in which country's Polity2 score was less than -5.	Polity IV dataset, 2009.

Table A2: Change in percentages afraid, 2000-2002

	World war	*Nuclear conflict*	*Conventional war*	*Nuclear missile*	*Nuclear accident*	*Proliferation*	*Ethnic conflict*	*Terrorism*	*Organized crime*	*Epidemics*
France	15	7	4	-1	-4	-1	-3	6	-2	-13
Belgium	5	-1	-7	-9	-16	-7	-13	-2	-8	-10
Netherlands	2	1	-3	-9	-19	0	-10	-4	-16	-3
W. Germany	3	0	-3	-10	-14	0	-10	8	-8	-11
Italy	16	6	9	0	-9	10	-9	9	-1	-3
Luxembourg	6	-8	-5	-8	-4	1	-3	-1	-7	-6
Denmark	3	-3	-2	-3	-13	4	-6	6	-14	-5
Ireland	4	4	-1	5	4	4	-7	5	-4	-8
Britain	8	6	0	-4	-9	0	-5	1	-7	-5
N. Ireland	1	-6	-9	-8	-1	5	-3	-9	-4	-2
Greece	2	1	2	-1	-5	-3	-5	0	-5	1
Spain	-1	-3	-6	-5	-9	-3	-4	-1	1	-12
Portugal	-5	-4	-6	-5	-7	-7	-9	-4	-4	-9
E. Germany	-3	-7	-5	-13	-15	-4	-6	2	-10	-14
Finland	3	-1	-3	0	-15	13	-9	0	-8	-15
Sweden	-1	-4	-12	-6	-20	0	-16	-4	-16	-14
Austria	-6	-9	-10	-6	-15	-7	-13	2	-14	-9
Average	*3*	*-1*	*-3*	*-5*	*-10*	*0*	*-8*	*1*	*-7*	*-8*

Sources: Author's calculations from EB2000 and EB2002.