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Essays on Interplay Between Economics and Culture

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ESSAYS ON INTERPLAY BETWEEN ECONOMICS AND CULTURE

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Economics

by

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Dedicated to my parents Ranjan and Pampa Tripathi

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ABSTRACT

This dissertation constitutes of two distinct essays on the influence of terrorism on individual perception and belief formation. In the first study, using micro-level data from 32 European countries, we find that an increase in terrorist activities by foreign perpetrators instigates negative sentiments towards immigrants. But the intensity of this adverse impact of terrorism decreases with time. Additionally, our analysis reveals that the effect of terrorism varies across individuals depending on various socio-economic attributes. Terrorism has a stronger negative influence on the residents, if their own country hosts relatively larger number of migrants. Individuals are not affected by terrorist attacks that are carried out perpetrator(s) of the same nationality as the victim(s), or the ones that happened before he/she was interviewed. International terrorism has no impact on one's opinions regarding the LGBT rights, the Government's role in reducing income differences or even whether modern science is competent enough to solve environmental problems. In the second study, we examine how exposure to violent environment, like one created in the aftermath of terrorist attacks, influences an individual's trust in the effectiveness of institutions, such as the country's parliament, the legal system, the police, the politicians, the political parties, the European Parliament, and the United Nations. We employ the variation in time of a series of terrorist attacks that occurred in between 2001 and 2017 in different European countries to study their effect on people's trust. Our results reveal that when an individual is exposed to terrorist attacks that result in human fatality or injury, his/her distrust in institutions significantly increases. But this effect is found to diminish with increasing temporal as well as spatial distance between an attack and an interview. Moreover, terrorism has less detrimental effect on residents of countries with relatively better institutional conditions.

CHAPTER 1. INTRODUCTION

This dissertation consists of 2 distinct essays within the broad field of economics of culture, focused towards understanding the interaction of terrorism and culture. We intend to understand how sudden shocks to the economy can influence an individual's beliefs and preferences. More specifically, how violence inflicted by terrorist attacks can instigate negative sentiments among the residents of an entire nation. In Chapter 2, we examine whether an increase in the number of human casualties in terrorist attacks can bias one's attitude towards the immigrants. In the next chapter, Chapter 3 we investigate how exposure to extreme violence inflicted by terrorism can influence an individual's confidence in the effectiveness of institutions.

1.1. Does Terrorism Influence Anti-Immigrant Sentiments?

The micro level information on individual opinion is obtained from the European Social Survey, and the information on terrorism is gathered from the Global Terrorism Database. Since, we are studying one's opinion regarding immigrants, we concentrate on the terrorist attacks carried out by foreign perpetrator(s), i.e. the perpetrator(s) and the victim(s) are of different nationality. To identify the impact of terrorism, we utilize the variation in the number of terrorism-related casualties an individual is exposed to. Our findings indicate that a rise in terrorism significantly reduces one's pro-immigration attitude. Also, relatively more recent attacks are found to have stronger impact on one's psyche, i.e. the adverse influence of terrorism is found to diminish with time.

We further investigate whether an individual's socio-economic characteristics can amplify or alleviate the adverse effects of terrorism. Our results reveal that terrorism does not trigger negative sentiments among the individuals who are born outside the country of residence or are second generation immigrants. We observe that although women are more compassionate toward

immigrants, terrorism has a stronger negative impact on their attitude towards immigrants compared to men. Also, an individual with lower educational attainment is more adversely affected by terrorism compared to one with higher levels of education. Individuals belonging to low household income category are found to harbor stronger anti-immigrant feelings, and the negative effect of terrorism is more intense for this group as well.

As per our expectations, we find that the citizens of countries with larger immigrant population are more positive opinionated towards them. But we intend to study the impact of migrant population size on the effect of terrorism. The results reveal the detrimental effect of terrorism on the residents is intensified if his/her country hosts a substantial number of immigrants.

Falsification exercises show that individuals are not affected by terrorist attacks that are carried out perpetrator(s) of the same nationality as the victim(s) or the ones that happened before he/she was interviewed. A final exercise shows that international terrorism has no impact on one's opinions regarding the LGBT rights, the Government's role in reducing income differences or even whether modern science is competent enough to solve environmental problems.

1.2. Impact of Terrorism on Trust in Institutions

We use the European Social Survey (ESS) data to capture one's confidence in different institutions, such as the country's parliament, the legal system, the police, the politicians, the political parties, the European Parliament, and the United Nations. We employ the variation in timing of a series of terrorist attacks that occurred in between 2001 and 2017 in different European countries to study their effect on people's trust. We consider only those attacks that lead to human casualties, i.e. someone killed and/or injured; and label them as *serious* attacks. Our results reveal that exposure to *serious* terrorist attack(s) in one's own country significantly increases his/her

distrust in institutions. Also, we find that the effect of exposure to terrorism-related violence is strongest when an individual is interviewed within 60 days of attack(s). Not only temporal proximity, the impact of terrorism decreases with reduction in spatial proximity as well. We find no evidence of adverse effect from the neighboring countries' *serious* attacks.

We also examine how the institutional quality of a country, reported by the World Governance Indicators can influence the impact of terrorism. As expected, the residents of countries with better institutions are less detrimentally affected compared to the ones living in countries with poorer institutions. Finally, we carry out a number of robustness checks and falsification tests to validate our results.

CHAPTER 2. DOES TERRORISM INFLUENCE ANTI-IMMIGRANT SENTIMENTS?

2.1. Introduction

The rapid growth of intolerance towards immigrants is noticeable across the globe, as is evident from instances such as the insurgence of populist right wing parties in the political map of Europe, Britain voting in favor of Brexit, genocide of the Rohingya Muslims in Myanmar, the impending annulment of DACA (Deferred Action for Childhood Arrivals) in the USA, and finally the introduction of SAF (Securing America's Future) Act. Research finds that anti-immigrant attitude of the voters ensured victory of the right-wing party in Norway (Sørensen 2016), in Germany (Otto and Steinhardt 2014), and in Italy (Barone et al. 2016) on various occasions. Citizens' perspectives towards the immigrants influence not only the election results but other policy decisions of a country (Facchini and Mayda 2008; Facchini et al. 2011; Krishnakumar and Mueller 2012; Miguet 2008; Card et al. 2012; Facchini and Steinhardt 2012; Finseraas 2011). Hence, it is crucial to understand the factors governing such unsympathetic behavior towards immigrants and economists have identified both economic and non-economic determinants of anti-immigrant attitude (Dustman and Preston 2007; O'rourke and Sinnott 2006; d'Hombres and Nunziata 2016).

In this paper, we investigate the factors that contribute to the intolerance of immigrants. Dustman and Preston (2007) describe three channels of the economic system that influence an individual's perception about the impact of immigration to his or her country: a) labor market concern b) welfare concern, and c) racial or cultural concern. Consistent with this framework, Scheve and Slaughter (2001) find that low skilled workers tend to favor restrictive immigration policies. Also, Mayda (2006) concluded that the correlation between an individual's skill and his

opinion towards immigrant inflow is conditional upon the relative skill composition of the natives compared to immigrants as well as the country's per capita GDP. Along these lines, there is a concern that large influx of immigrants might financially strain the host country and as a result affect the welfare benefits available for the natives (Huber and Oberdabernig 2016) or raise their tax burden (Facchini and Mayda 2009). On the other hand, Hainmueller and Hiscox (2007), and Facchini et al. (2013) point out that it is cultural prejudice that plays a critical role in surging anti-immigration bias.

In addition to the channels mentioned above, random shocks in the society, such as terrorist attacks can trigger negative sentiments towards a specific group in the society. This was observed in the aftermath of the 9/11 tragedy, when the surge in anti-Muslim feeling in the United States significantly lowered the relative earnings of Middle Eastern Arab and Afghan, Iranian, and Pakistani men (Dávila and Mora 2005; Kaushal et al. 2007). Moreover, this negative sentiment did not remain confined within the United States; rather it was observed in the European nations as well. Cornelissen and Jirjahn (2012) find that low-skilled Muslim workers in small and medium sized firms in Germany suffered a decline in relative income following the September 11th incident. In Amsterdam, the housing prices in Muslim-dominated neighborhoods dropped after a radical Islam convert had murdered Theo van Gogh (Gautier et al. 2009). Along the same lines, Rabby and Rodgers (2010) find a significant drop in employment of Muslim men following the London bombings of 2005. On the other hand, Åslund and Rooth (2005) conclude that although the anti-Muslim sentiment from the USA had reached Sweden as well, it did not lead to labor market discrimination against this particular minority group. Similar non-discriminatory labor market outcomes were observed for Germany (Braakmann 2007). Law (2011) clarifies the reason behind these apparent discrepancies in labor market results. He argues that the physical distance between

an attack's location and the labor market location is crucial and shows that although the 9/11 incident had negligible impact on the United Kingdom labor market, the London bombings had a significantly negative impact. But Braakmann (2010) does not find any evidence of labor market discrimination following the London bombings or Madrid bombings in their respective countries. Following this literature, it appears highly debatable whether terrorist attacks lead to labor market discrimination, although such incidents can trigger negative sentiments towards a particular group of people (Schüller 2013).

Our paper is a contribution to the area of the literature that analyzes the effects of terrorism on spurring negative sentiments against a certain group of people. More specifically, we study whether extreme violence caused by terrorist attacks can influence an individual's opinion regarding immigrants. We hypothesize that the rise in antagonistic environment for immigrants can be attributed to the rise in fear of being the next victim in a terrorist attack. The micro-level data of around 250,000 individuals of 32 European countries is obtained from the European Social Survey (ESS). There are two reasons behind choosing the European nations as a platform to test our hypothesis. First, they provide a varied sample of individuals with distinct cultural history, along with different socio-economic backgrounds. Second, around 25 percent of all the terrorist attacks carried out by foreign perpetrator(s) since 1970 have occurred in Europe. We obtain the terrorism information from the Global Terrorism Database (GTD), which covers around 150,000 events across the globe since 1970. If terrorist attacks instigate negative attitudes towards immigrants, then the attacks must have been caused by foreigner(s). So, we restrict our study to only those attacks where the nationality of the perpetrator(s) has been identified and it is different from that of the victim(s). We label these attacks as *international* ones. The number of people

killed or injured in an attack is used as the measure of terrorism and their impact on individual's attitude towards the immigrants is analyzed.

Both ESS and GTD report the exact date of an interview and an attack respectively. This information enables us to link each individual to certain terrorist attack(s) occurring in his/her country in the last “n” days.¹ After controlling for a number of individual as well as country attributes, we find that with an increase in number of casualties due to terrorism, the pro-immigrant attitudes significantly decrease. To be precise, a 10 unit rise in number of casualties is associated with around 5 to 6 percent decrease in an individual's pro-immigration attitude and 2 to 2.5 percent drop in one's perception that immigrants have a positive influence over the host country. Additionally, we find a decrease in the value of impact with time - the attacks that took place in the past 2 months from an interview date has much stronger effect compared to the ones that occurred 6 months before.

Gang et al. (2013) find that distressing economic condition can raise racial prejudice, whereas higher educational attainment makes an individual more welcoming towards foreigners. Along the same lines, Mocan and Raschke (2015) argue that an individual's perceived poor economic condition can instigate racist and xenophobic feelings, which again can be exacerbated by lack of education. Additionally, Francois and Magni-Berton (2013) show the role of gender in governing an individual's level of intolerance towards immigrants. In the light of this literature, we explore the role of various micro level socio-economic attributes, such as citizenship status, gender, level of educational attainment, and household income level, in modifying the impact of terrorism on one's psyche. Our results reveal that terrorism does not trigger any anti-immigrant sentiments in the residents, who are either first-generation or second-generation immigrants. We

¹ We use different values of “n”, such as 60, 120, and 180; and study the impact.

observe that although women are more compassionate towards immigrants, terrorism has a more detrimental effect on their pro-immigrant attitude compared to men. Also, an individual with lower educational attainment is more adversely affected by terrorism compared to one with higher levels of educational. Individuals with low level of household income are found to harbor anti-immigrant sentiments. The negative effect of terrorism is relatively stronger for the low-income group individuals as well.

We are curious about the effect of terrorism in countries hosting substantial number of immigrants. To study this, we use the country level information on stock of immigrant population, provided by the OECD database. The immigrant population should be high in the countries where the citizens are more positively opinionated towards them. Our analysis reveals similar result. But we intent to study the impact of migrant population size on the effect of terrorism. The results reveal the detrimental effect of terrorism on the residents is intensified if his/her country hosts substantial number of immigrants.

To investigate whether the results are driven by changes in a country's institution as a result of terrorism, rather than the violence brought upon by such incidents, we analyze the impact of neighboring countries' terrorism. After controlling for the effect of own country's terrorism, we find that an individual is negatively influenced by the rise in violence in the nearby neighboring countries. We also study the situation when an individual is exposed to only neighboring countries' terrorist attacks. The results are similar to the previous situation. So, we are suggesting that it is not the unobserved change in a country's institution that prompt our previous results

We conduct two falsification tests to verify whether the results are merely coincidental. First, we utilize the terrorist attacks that happened after the interviews were conducted by ESS. Second, we consider only those incidents that are carried out by preparator(s) of the same

nationality as the victim(s). We do the latter to ensure that it is the fear of violence brought around by foreigners that instigate the negative sentiments towards the immigrants. As per our expectations, neither the future nor the domestic attacks influence one's perception towards the immigrants. Also, we conduct placebo tests to ensure that the increase in violence related to terrorism is not affecting the country in a way that adversely influences the residents' attitudes in general. The results from placebo tests reveal that international terrorism has no influence on one's opinions regarding the LGBT rights, the Government's role in reducing income differences or even whether modern science is competent enough to solve environmental problems.

The rest of the paper is organized as follows – Section 2 describes the data in detail, Section 3 explains our estimation method, Section 4 presents the estimation results, Section 5 is falsification tests, and finally Section 6 provides a conclusion.

2.2. Data

European Social Survey

The micro-level data are obtained from the European Social Survey (ESS) dataset which is a cross-national survey conducted every alternate year since 2002, covering 34 European countries and Israel. We use the data from all 8 rounds - 2002 to 2017, conducted in 32 countries – Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom. We only consider those countries that are surveyed two or more times, which excludes Albania and Kosovo. Israel is removed from our sample not only because it is outside Europe, but also it has a long history of unrest.

To measure an individual's sentiment towards immigrants we select six questions from the survey, which are:

- i. *Now, using this card [card shown by enumerator to the interviewee], to what extent do you think [country] should allow people of the same race or ethnic group as most [country] people to come and live here?"*
- ii. *How about people of a different race or ethnic group from most [country] people?*
- iii. *How about people from the poorer countries outside Europe?*
- iv. *Would you say it is generally bad or good for [country]'s economy that people come to live here from other countries?*
- v. *Would you say that [country]'s cultural life is generally undermined or enriched by people coming to live here from other countries?*
- vi. *Is [country] made a worse or a better place to live by people coming to live here from other countries?²*

For the first 3 questions, the “card shown by enumerators” consists of four answer choices - *Allow many to come and live here; Allow some; Allow few; Allow none*. For the last 3 questions, the interviewee picks a number from a scale of 0 to 10 with 0 being *Bad for the economy*, and 10 being *Good for the economy*. We convert these responses to binary ones. When an individual chooses “Allow many to come and live here” or “Allow some”, we record the response as 1. Whereas, if an individual chooses “Allow few” or “Allow none”, then it is recorded as 0. We follow this rule for the first 3 questions. For the next 3 questions, we generate an indicator variable for each of the 3 questions that take the value of 1 when an individual selects 5 or any number larger than 5. In case the respondent picks a number lower than 5, the indicator variable takes the value 0.

² European Social Survey (<http://www.europeansocialsurvey.org/data/>)

Table 2.1 describes the summary statistics of all the outcome variables, explanatory variables, individual and country level control variables. Around 69 percent of the respondents think that their country should welcome immigrants of the same race/ethnic group as the majority. About 54 percent think that immigrants from different race/ethnic group should be welcomed. But only 50 percent would like to allow immigrants from poorer countries outside Europe. Around 63 percent of the respondents consider that immigrants are good for the economy. An even larger proportion, almost 71 percent, feel that their cultural life is “enriched” by immigrants, whereas 65 percent believe that immigrants make their country a better place.

Table 2.1. Descriptive Statistics

Variables	Mean	Std. Dev.	N
Attitude towards Immigrants ^a			
Allow many immigrants of same race/ethnic group as majority	0.687	0.464	243,075
Allow many immigrants of different race/ethnic group as majority	0.539	0.498	242,878
Allow many immigrants from poorer country	0.499	0.500	242,319
Immigration good for economy	0.634	0.482	242,172
Cultural life enriched by immigrants	0.715	0.451	242,884
Immigrants make country better place	0.650	0.477	247,746
Individual Attributes ^a			
Age	50.22	42.57	247,746
Female	0.525	0.499	247,746
Marital Status			
Married	0.529	0.499	247,746
Single	0.232	0.422	247,746
Other (Widowed, Divorced, Separated)	0.228	0.419	247,746
Household size			
Small (3 or less)	0.732	0.443	247,746
Large (more than 4)	0.268	0.443	247,746
Level of education			
High education (Tertiary, Post secondary, Upper secondary)	0.717	0.450	247,746
Low (Primary, Lower secondary)	0.281	0.450	247,746
Household income			
High income (belong to third, fourth, and fifth quintile)	0.629	0.483	247,746
Low income (belong to first and second quintile)	0.371	0.483	247,746
Main activity in last 7 days			
Working (paid work)	0.512	0.500	247,746
Student	0.065	0.194	247,746
Unemployed	0.039	0.430	247,746
Retired	0.244	0.347	247,746
Disabled, Military, Household work, not in labor force, other	0.140	0.247	247,746
Religion			
No denomination	0.405	0.491	247,746
Christianity	0.559	0.496	247,746
Islam, Judaism, Eastern religions, other non-Christian religions	0.036	0.186	247,746
Area of living			
Urban (city, town)	0.507	0.500	247,746
Rural (suburb, village, farm)	0.493	0.500	247,746
Birth country			
Respondent's both parents are born in survey country	0.855	0.352	247,746
Respondent born in survey country	0.915	0.278	247,746

Note: Table continued

Variables	Mean	Std. Dev.	N
Terrorism information ^b			
Casualty (Killed + Wounded) (divided by 10)			
Number of casualties in last 60 days	0.024	0.249	247,746
Number of casualties in last 120 days	0.040	0.320	247,746
Number of casualties in last 180 days	0.076	0.672	247,746
Country level attributes ^c			
GDP per capita (in 10,000 USD)	3.73	1.34	290
Population (in million)	20.97	24.52	290
Unemployment rate (ILO definition)	7.78	3.64	290
Information on immigrants ^d			
Per capita stock of immigrant population	0.0720	0.0524	216

The statistics above reflect our research sample, from 32 European countries from 2002 to 2017.

^a European Social Survey (<http://www.europeansocialsurvey.org/data/>)

^b Global Terrorism Database (<https://www.start.umd.edu/gtd/>)

^c World Development Indicators (<https://datacatalog.worldbank.org/dataset/world-development-indicators>)

^d OECD Database (<https://stats.oecd.org/>)

To understand how the attitudes towards immigrants vary across different countries, we calculate the country level weighted average from the individual responses.³ The choropleth maps⁴ provided in Figures 2.1 through 2.6 help us to visualize the variation, where the darker shade portrays a higher degree of pro-immigration attitude. Table 2.2 provides some of the information used to generate the maps. It shows that only 38 percent of Greek people want their country to allow immigrants from the same race or ethnicity as the majority, whereas 90 percent of Swedish people are welcoming immigrants of the same group. Similar variation can be observed when the decision is regarding immigrants from different race or ethnicity – 16 percent of the Greeks want to allow such immigrants compared to 87 percent Swedish people. On the other hand, when it comes to opinions regarding the effect of immigration, around 80 to 90 percent of the Icelandic people express a positive sentiment as opposed to only 30 to 40 percent of Greek people. Looking at Table 2.2, we can say that the Scandinavian countries are relatively more welcoming towards immigrants compared to the rest of Europe.

³ ESS advises the use of both population and design weight while comparing the data of two or more countries and with reference to their averages. The combined weight is obtained by simply multiplying the two weights.

⁴ A map that uses differences in shading, coloring, or the placing of symbols within predefined areas to indicate the average values of a property or quantity in those areas.

Table 2.2. Country averages of immigration-related attitudes

Allow <i>many</i> immigrants of <i>same</i> race/ethnic group as majority		Allow <i>many</i> immigrants of <i>different</i> race/ethnic group as majority		Allow <i>many</i> immigrants from <i>poorer</i> country	
Greece	0.379	Cyprus	0.115	Cyprus	0.083
Turkey	0.428	Greece	0.158	Greece	0.150
Portugal	0.441	Hungary	0.198	Hungary	0.150
Czech Republic	0.472	Turkey	0.301	Latvia	0.245
:		:		:	
Denmark	0.815	Lithuania	0.647	Poland	0.631
Switzerland	0.829	Norway	0.665	Norway	0.648
Sweden	0.909	Iceland	0.748	Iceland	0.755
Iceland	0.931	Sweden	0.871	Sweden	0.854
Immigration good for economy		Cultural life enriched by immigrants		Immigrants make country a better place	
Greece	0.384	Greece	0.369	Greece	0.329
Cyprus	0.429	Cyprus	0.371	Turkey	0.435
Turkey	0.445	Turkey	0.443	Cyprus	0.443
Hungary	0.448	Czech Republic	0.500	Czech Republic	0.485
:		:		:	
Norway	0.751	Luxembourg	0.859	Denmark	0.777
Switzerland	0.804	Sweden	0.887	Poland	0.813
Luxembourg	0.821	Iceland	0.910	Sweden	0.842
Iceland	0.833	Finland	0.914	Iceland	0.918

The country level averages are weighted averages of the individual responses, using both the population and design weight. For each variable, after arranging all the 32 countries in ascending order, only the top four and the bottom four are presented here.

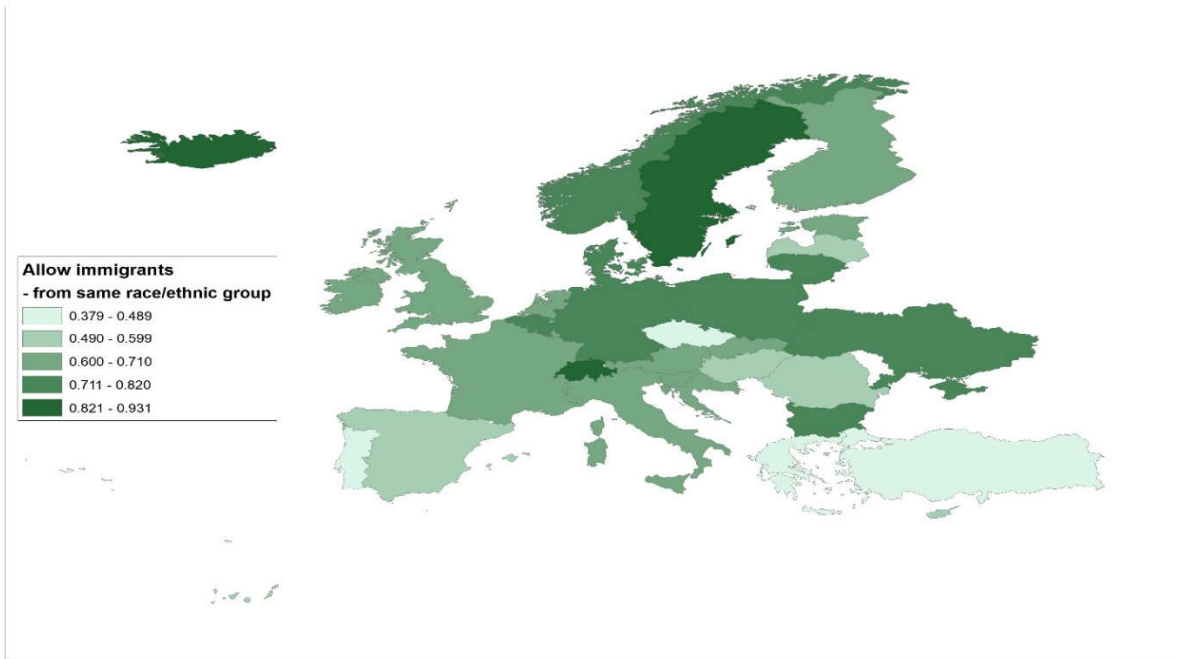


Figure 2.1. Country level average: Allow many immigrants of same race/ethnic group as majority

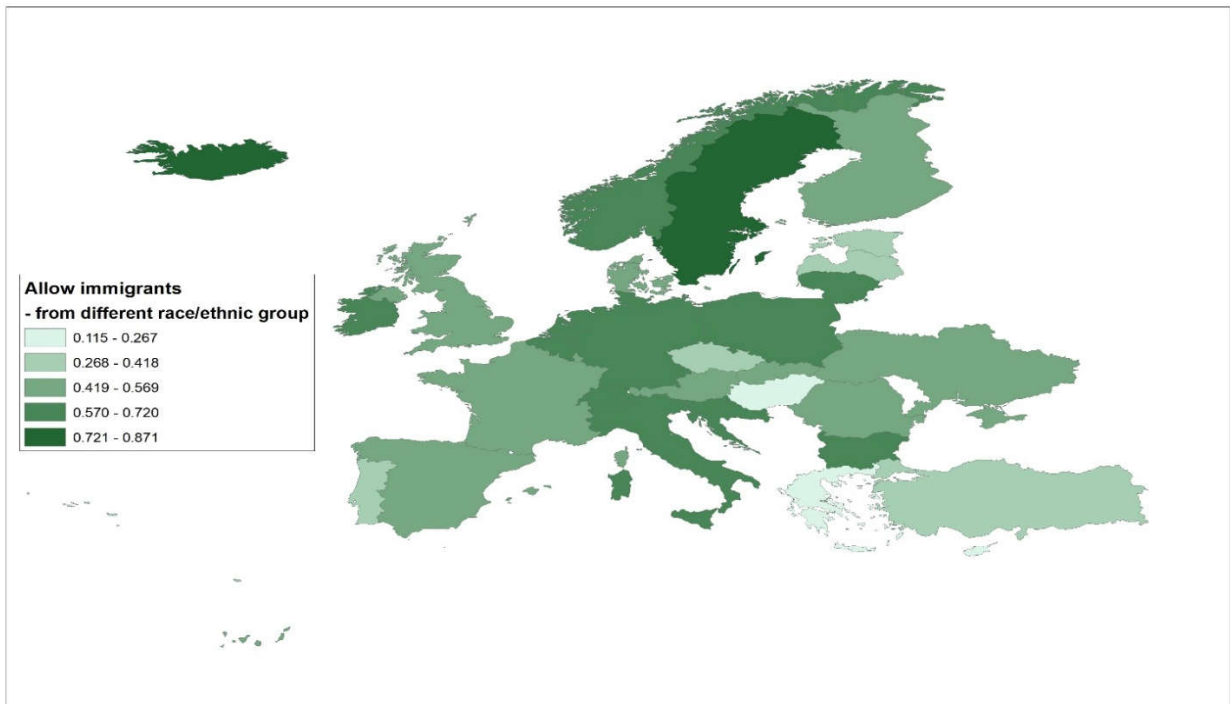


Figure 2.2. Country level average: Allow many immigrants of different race/ethnic group as majority

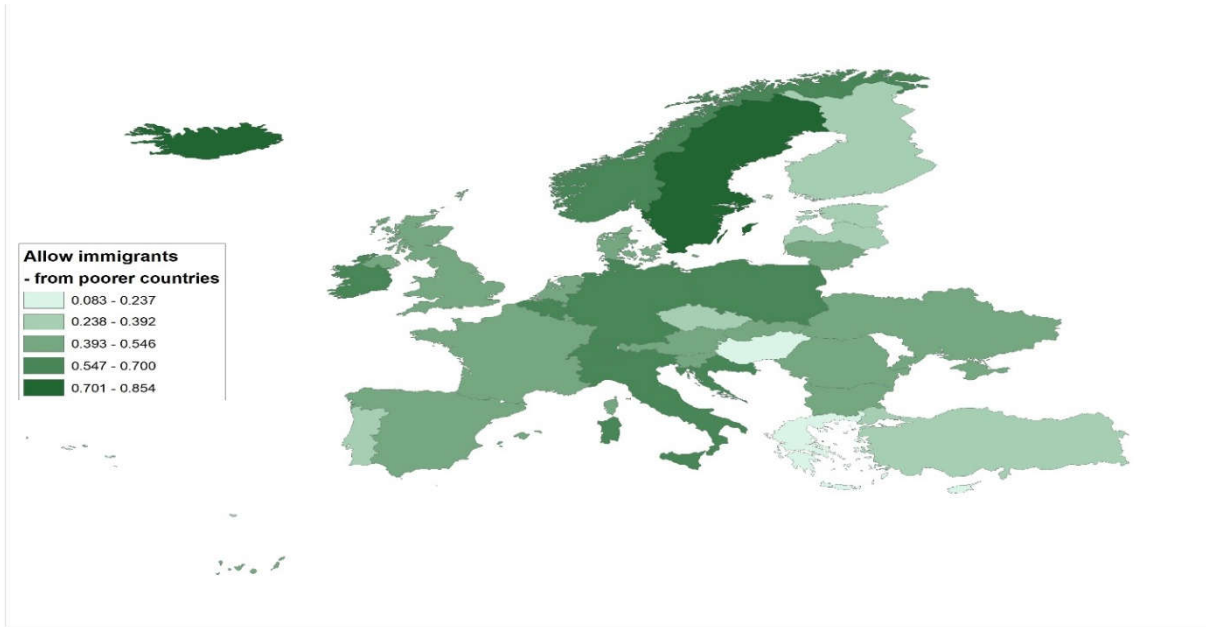


Figure 2.3. Country level average: Allow many immigrants from poorer country

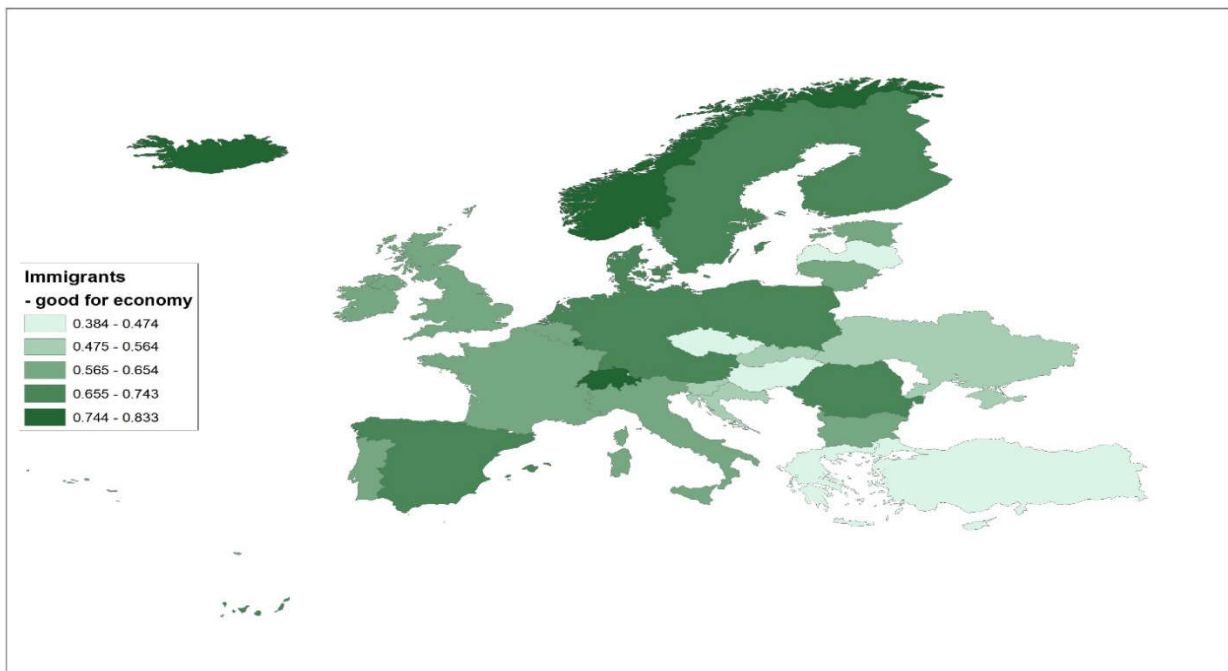


Figure 2.4. Country level average: Immigration good for economy

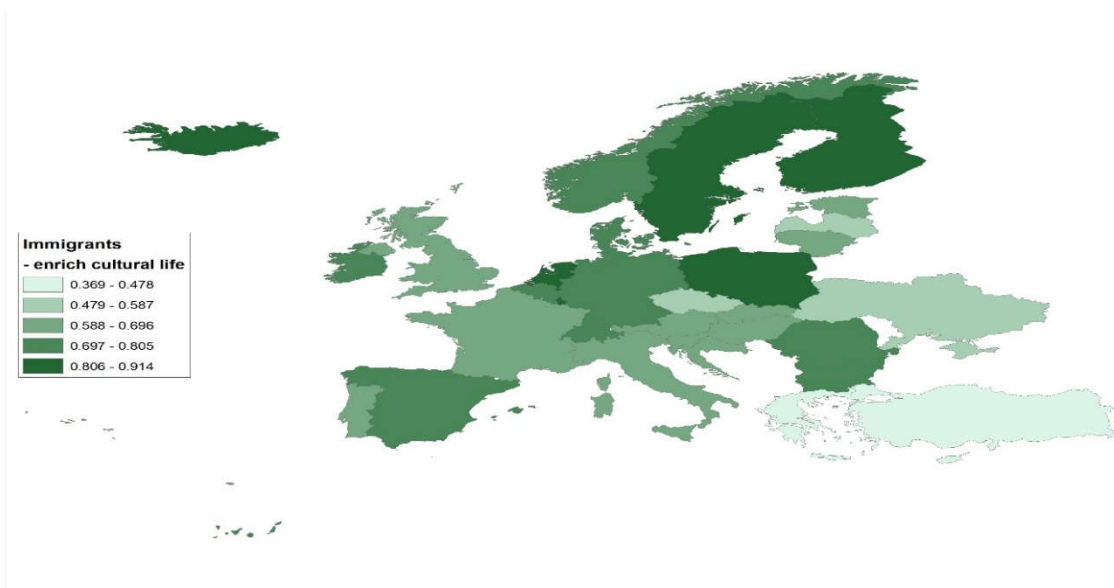


Figure 2.5. Country level average: Cultural life enriched by immigrants

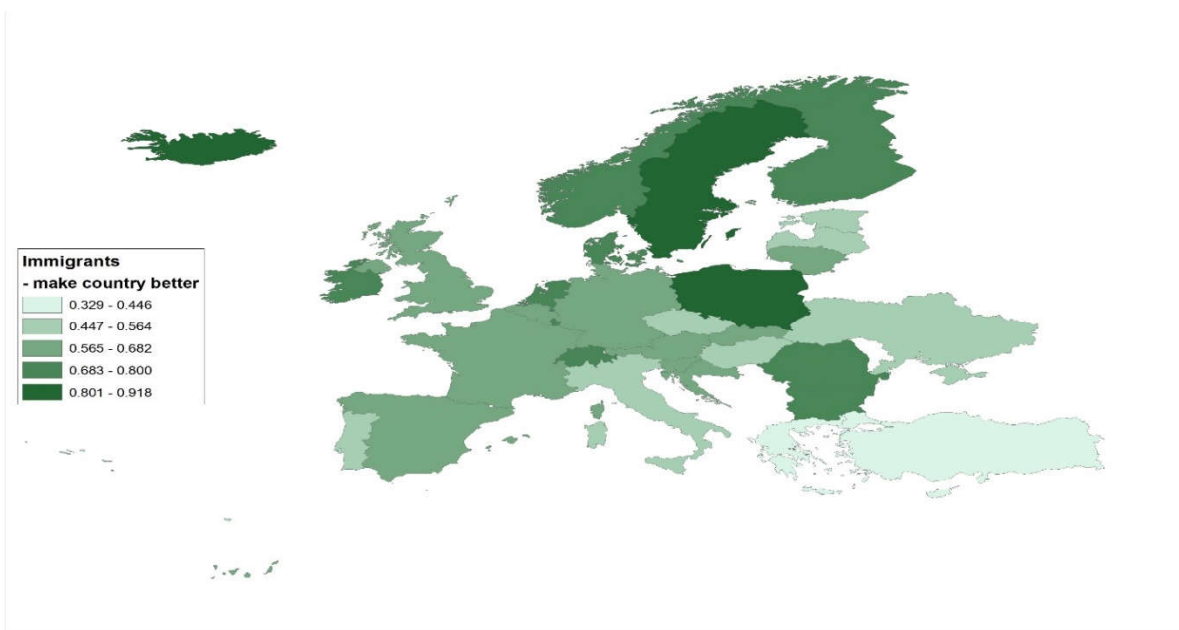


Figure 2.6. Country level average: Immigrants make country better place

To control for an individual's socio-economic characteristics in the regression models, we use the demographic attributes reported by the ESS such as – age, age squared, gender, religion, household income, level of education, employment status, marital status, household size, and area of living. Table 2.1 shows that the average age of the respondents is around 50 years, with almost 53 percent being female. Fifty three percent individuals are married, 23 percent single, and 23 percent fall in the “other type of marital status” group including widowed, divorced or separated individuals for. Based on the number of people living in a particular household, we denote the size to be small if three or fewer people regularly live in that house as a household member, and large when there are more than three members. About 73 percent of the households are classified as small ones, while the rest are large households. We employ the information of an individual's main activity in the last 7 days.

The respondents are assigned to one of the five groups depending on their educational attainment – primary, lower secondary, upper secondary, post-secondary, and tertiary. The categorization is done based on the International Standard Classification of Education (ISCED), as maintained by the United Nations Educational, Scientific and Cultural Organization (UNESCO). We create two groups – one with low education, completed the primary or lower secondary level; and the other with high education, who have completed the upper secondary, post secondary or tertiary level. According to our definition, 72 percent have received high level of education.

While collecting information on household income, for the first 3 rounds, ESS created 12 income brackets and asked an interviewee to choose one of the groups depending on his/her net total household income. From round 4 onwards the net household income categories created by ESS are based on the deciles of the country-round-specific household income distribution. For

some countries the household income is reported separately. In order to evade the inconsistency problem across rounds and also across countries, we have created a new household income variable using the available information. The values of this variable correspond to the quintiles to which the respondent's household income belongs in his/her own country. The quintiles are based on the weighted (using survey design weights for each country-round) country-round-specific distributions. If an individual's household income falls in the first or second quintile we categorize them under low income, whereas if one's household income is in the third, fourth or fifth quintile we consider that as high income.

ESS categorizes respondents into one of the following groups – working a paid job, student, involved in household work, part of community or military services, unemployed, retired, disabled, or not in labor force. Almost 51 percent of the people reported that they are engaged in some paid work, 24 percent are retired, 6.5 go to school, and 4 percent are unemployed. We generate the fifth category – “other type of engagements” by combining household work, community or military services, disabled, and not in labor force.

We also control for an individual's religious affiliation. The sample consist of about 56 percent Christians, while 41 percent people expressed that they do not follow any denomination. We combine the other reported religions, such as Islam, Judaism, Eastern religions, and other non-Christian religions under the “Other” group. We are also interested in the area a respondent resides. He/she can choose from the following five categories – a big city, suburbs or outskirts of big city, town or small city, country village, and farm or home in countryside. 31 percent of the sample inhabit in a town, followed by 30 percent in village, and 20 percent in a city.

For some of the specifications, we utilize the information whether an individual was born in the same country as he/she is being interviewed. Ninety-one percent of the interviewed persons

are born within the country. Eighty-five percent of the respondents reported that both their father and mother were born in the same country.

Terrorism Data

The terrorism information is obtained from the Global Terrorism Database (GTD), which defines terrorist attacks as “the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation”. Hence, any violent incident is listed as an act of terrorism if it satisfies the following traits:

- 1) The incident must be intentional.
- 2) The incident must entail some level of violence or immediate threat of violence.
- 3) The perpetrators of the incidents must be sub-national actors.⁵

Following these criteria, GTD reports detailed information on more than 150,000 terrorist events from all over the world covering a period of 1970 to 2016. As we are analyzing the effect of terrorism on anti-immigrant attitude, it is crucial to differentiate the attacks based on the nationality of the perpetrator(s) and that of the target(s)/victim(s). GTD identifies the perpetrator nationality for groups or organizations, not for individual ones. For cases where the perpetrator group is unidentified, or the attack was carried out by unaffiliated individuals, the nationality of the perpetrator group is labelled “unknown”. An attack is categorized international, if the nationality of the perpetrator group differs from the nationality of the target(s) or the victim(s). In cases where perpetrator groups represent non-contiguous contested territory (e.g. Corsica, Northern Ireland), the nationality of the perpetrator group is coded as the parent country and attacks against the parent country are considered as domestic. We restrict our research sample to 1,410

⁵ Global Terrorism Database (<https://www.start.umd.edu/gtd/>)

international attacks conducted within a time period of 2001 to 2016. The countries that experienced such incidents and were also included in the ESS in are Austria, Belgium, Czech Republic, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Spain, Sweden, Switzerland, Turkey, and United Kingdom. Table 2.3 presents the annual number of terrorist attacks, the number of people killed and wounded in these incidents for each of these 15 countries. We use the number of casualties – sum of number of people killed and wounded, as the main explanatory variable.

Country level attributes

We also control for the time-varying country attributes. They have been taken from the World Development Indicators (WDI) dataset compiled by the World Bank. The WDI dataset provides information on various country attributes from 1960 to 2016. We consider three time-variant country attributes - the population, the rate of unemployment and the per capita GDP. The unemployment rate reported here is provided by the International Labor Organization (ILO). The per capita GDP numbers are PPP adjusted (in constant 2011 international \$) and expressed in 10,000 units, whereas the population numbers are expressed in millions. As the numbers in Table 2.1 indicate, the country level average of annual GDP per capita is around \$37,000; while that of annual population is around 21 million. On average, the annual unemployment rate is around 8 percent for a country. Other country level attributes, such as Ethno-linguistic fragmentation, Polity IV, Individualism index, the legal origin, the governance related indicators, the Freedom house measures do not change considerably over a small span of time as ours. As we are already including country fixed effects, so we do not control for these time invariant attributes.

Table 2.3. Annual country level information on terrorism

Country	Year	Number of attacks	Number of people killed	Number of people wounded
Austria	2016	1	0	0
Belgium	2014	1	4	0
Belgium	2016	2	35	270
Czech Republic	2014	1	0	0
Finland	2016	1	0	0
France	2006	4	0	0
France	2007	2	2	3
France	2010	1	0	0
France	2011	2	0	1
France	2013	2	0	1
France	2014	2	0	0
France	2015	11	149	428
France	2016	1	0	0
Germany	2002	1	0	2
Germany	2003	1	0	0
Germany	2004	2	1	22
Germany	2005	2	2	0
Germany	2006	3	2	0
Germany	2010	1	0	0
Germany	2011	1	0	0
Germany	2014	1	0	0
Germany	2015	3	0	1
Germany	2016	1	0	1
Greece	2009	1	0	0
Ireland	2003	1	0	0
Ireland	2010	2	0	1
Ireland	2011	1	1	0
Ireland	2012	1	0	0
Ireland	2014	1	0	0
Ireland	2015	2	0	0
Ireland	2016	2	2	2
Italy	2013	1	0	0

Note: Table continued

Country	Year	Number of attacks	Number of people killed	Number of people wounded
Netherlands	2003	2	0	0
Netherlands	2008	1	0	0
Netherlands	2011	1	0	0
Netherlands	2016	2	1	3
Spain	2002	28	4	69
Spain	2003	11	3	19
Spain	2004	26	191	1811
Spain	2005	19	0	81
Spain	2006	17	2	24
Spain	2007	6	0	5
Spain	2008	32	3	58
Spain	2009	15	3	48
Spain	2013	1	0	0
Sweden	2005	2	0	0
Sweden	2010	2	1	2
Sweden	2011	1	0	0
Switzerland	2011	2	0	2
Turkey	2005	3	0	33
Turkey	2006	7	1	38
Turkey	2008	2	6	2
Turkey	2009	1	3	8
United Kingdom	2002	2	0	5
United Kingdom	2008	1	0	0
United Kingdom	2009	3	2	5
United Kingdom	2010	4	0	0
United Kingdom	2011	1	0	0
United Kingdom	2012	5	1	0
United Kingdom	2013	6	2	0
United Kingdom	2014	18	0	0
United Kingdom	2015	6	0	1
United Kingdom	2016	5	3	1

Reporting annually aggregated information of international terrorist attacks in countries which are included in that year's ESS. We aggregate the number of people killed and wounded to generate the number of casualties, which is used in our analysis.

^x Brussels bombings on 22 March 2016

^y Series of coordinated attacks on 13 November 2015

^z Madrid bombings on 11 March 2004

Immigrant information

To understand whether the terrorism induced negative sentiments towards immigrants is influenced by presence of immigrants, we utilize both the stock of immigrant population in a country. We obtain this information on immigrants from the OECD database. This database reports the immigrant population for 24 countries⁶ and till 2015. The summary statistics reported in Table 2.1 indicate that on average, for every 1,000 citizens in a host country, there are 72 immigrants residing in that country in our research sample.

GTD reports the exact date and location a terrorist attack. ESS documents the dates of all the interviews. This enables us to match each individual to the terrorist attacks that happened in his/her country in the last “n” days and use the number of casualties from the attack(s) as the main explanatory variable.

2.3. Empirical Framework

Benchmark Model

We use the following model:

$$Attitude_{irct} = \alpha + \beta Terrorism_{ct-n} + X_{irct} \delta + K_{ct} \eta + \mu_r + \lambda_t + \gamma_m + \epsilon_{irct} \quad (1)$$

where $Attitude_{irct}$ captures individual i 's attitude towards immigrants, who lives in region r of country c , and interviewed on date t . For each country c ESS reports r , where an individual resides. From round 4 onwards, ESS follows the NUTS levels to report the regions.⁷ But the level of NUTS

⁶ The 24 countries are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, and United Kingdom.

⁷ NUTS or Classification of Territorial Units for Statistics (NUTS; French: *Nomenclature des unités territoriales statistiques*) is a geocode standard for referencing the subdivisions of countries for statistical purposes.

regions varies across different survey rounds.⁸ In order to maintain consistency, we use NUTS 1 level as the “region” for ESS data for all countries and across all 8 rounds. $Attitude_{irct}$ is denoted by six different outcome variables – “Allow many immigrants of same race/ethnic group as majority”, “Allow many immigrants of different race/ethnic group as majority”, “Allow many immigrants from poorer country”, “Immigration good for economy”, “Cultural life enriched by immigrants”, and “Immigrants make country better place”. Each outcome variable is binary and takes the value of 1 if the response is categorized as affirmative and 0 if it is negative. In this model, $Terrorism_{ct-n}$ is measured by the number of casualties, i.e. killed or injured in terrorist attacks occurring in country c in the last “ n ” days from interview date t . We use different values of n , such as 60, 120, and 180 days.⁹ For example, if an individual is interviewed on 1st December 2010 in France, then we are investigating the effect of the terrorist attacks in France in the last 2 months of October and November, when n is 60. Vector X consists of individual characteristics such as age, gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income. Vector K consist of time variant country attributes such as the unemployment rate, per capita GDP, and population.

We include NUTS 1 level region fixed effects (μ_r)¹⁰, survey year (λ_t)¹¹ and survey month (γ_m) dummies. The standard errors are clustered at the year-by-country level. We also weight the regression by “design weight” to rectify the error from unequal probabilities of selection due to the sampling design. In this model, an individual i residing in a region r of country c is affected by

⁸ For example, ESS reports NUTS 1 level regions in ESS4, and NUTS 2 level from ESS5 onwards. (<http://www.europeansocialsurvey.org/data/multilevel/guide/essreg.html>)

⁹ The point estimates are close to zero and insignificant after $n = 180$ days.

¹⁰ NUTS 1 level regions refer to different administrative subdivisions for different countries. For example, NUTS 1 level region for Denmark refers to the whole country, whereas they refer to the states in Germany.

¹¹ The years from 2002 to 2017.

the same number of casualties related to terrorist attacks in the last $(t - n)$ days occurring in country c , as another individual j ($j \neq i$) in another region q ($q \neq r$) from the same country c .

Impact of personal attributes on effect of terrorism

We focus on finding out how the reaction to terrorism varies across individuals depending on different micro and macro level attributes. The following model is used for this purpose:

$$Attitude_{irct} = \alpha + \beta_1 (Terrorism_{ct-n} * D_{irct}) + \beta_2 Terrorism_{ct-n} + \beta_3 D_{irct} + X_{irct} \delta + K_{ct} \eta + \mu_r + \lambda_t + \gamma_m + \varepsilon_{irct} \quad (2)$$

where D_{irct} denotes different personal attributes like citizenship status of a respondent, gender, educational qualification, and household income level. D_{irct} is a dummy variable that takes the value 1 if an individual is the following - not a first generation; not a second-generation migrant; female, has attained primary or lower secondary level of education only; reports his/her household income that falls in the first and second quintile¹². $Terrorism$ is measured by the number of casualties in the same way as the benchmark model. Likewise, we control for the same individual and the country level attributes and include the region and survey year and month fixed effects. The standards errors are clustered at the year-by-country level.

Impact of presence of migrants on effect of terrorism

To estimate the impact of presence of migrants in a country on the effect of terrorism on the host country's residents, we use equation (2). In this case, instead of D_{irct} , we use M_{ct} , where M measures the stock of immigrant population in a country. We divide the stock of immigrant population by that country's population and use the per capita numbers while estimating the regressions. The other specifications of the estimation equation are same as explained in the previous sub section.

¹² Each personal attribute is implemented in a different regression and its impact is estimated on the effect of terrorism on each of the 6 immigrant-related attitudes.

2.4. Results

Benchmark Model

Table 2.4 presents the results of the benchmark model obtained by estimating equation (1). Here, we use the number of casualties related to international terrorist attacks occurring in the last 60 days from an interview date as the main explanatory variable, and name it *Casualties60*. The first 3 columns deal with a respondent's judgement on whether his/her country should allow immigrants from different groups, such as - same race/ethnicity as majority (Column 1), different race/ethnicity as majority (Column 2), and poorer country (Column 3). The last 3 columns consider an individual's perception regarding immigrants' influence on host country's economy (Column 4), cultural life (Column 5), and overall condition (Column 6). Besides including individual and country level attributes, we include NUTS 1 level region fixed effects and survey year and month fixed effects. The standard errors are clustered at the year-by-country level. We find that a rise in violence related to terrorism significantly increases an individual's anti-immigrant attitude. With a 10 unit rise in casualties, one's opinion regarding allowing more immigrants decreases by 3 to 4 percentage points (5 to 6 percent). But terrorism is found to have relatively smaller impact on one's impression about the positive influence of immigrants on the host country's economy, culture and the country as a whole. When the casualties increase by 10 units an individual's positive notion about immigrants' influence reduces by 1 to 2 percentage points (2 to 2.5 percent). Interestingly, the magnitude of the coefficients exhibit that with increase in violence related to international terrorism, people become much more unaccepting towards the immigrants than they consider immigrants to do harm to the host country's economy or culture or overall condition. The natives simply tend to prefer stricter immigration rules because of rising terrorism.

Table 2.4 also reports how an individual's point of view regarding immigrants varies according to his/her socio-economic background. Age has a quadratic relationship with an individual's attitude towards immigrants. The results show that women tend to be relatively more sympathetic towards immigrants than men. Both education and household income are important personal attributes that shape one's attitude. Here the coefficients reveal that lower levels of educational attainment and lower household income make one to gravitate more towards harboring negative sentiments towards immigration. Compared to the individuals who do not follow any religious denomination, followers of Christianity feel more strongly against immigrants. We can also see that individuals with paid jobs, retired or unemployed express relatively more adverse opinion towards welcoming the immigrants or regarding their contribution to the host country, compared to the students. We also observe that individuals residing in a city or town are more tolerant towards immigrants than those living in a village, farm or in the suburbs. Another conclusion is that countries with higher rate of unemployment influence their residents in an adverse way when it comes to their immigration related attitude. We investigate multiple outcomes in Table 2.4 assess different but related individual attitudes towards immigrants. Hence, we adjust the p-values of the *Casualties60* for multiple hypothesis testing (Newson 2010, Benjamini and Yekutieli 2001). The adjusted p-values, following both Simes and Hochberg correction, reported in the footnote of Table 2.4, affirm that our inference is not altered.

Table 2.4. Benchmark Model with $n=60$ days

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Casualties60	-0.041 *** (0.011)	-0.026 *** (0.008)	-0.029 *** (0.009)	-0.016* (0.008)	-0.013 *** (0.005)	-0.011* (0.006)
Age	-0.001 *** (0.000)	-0.001 *** (0.000)	-0.002 *** (0.000)	0.000 (0.000)	-0.000** (0.000)	-0.001 *** (0.000)
Age2	0.000 *** (0.000)	0.000 *** (0.000)	0.000 *** (0.000)	-0.000 (0.000)	0.000* (0.000)	0.000 *** (0.000)
Female	0.006** (0.003)	0.014 *** (0.003)	0.022 *** (0.003)	-0.020 *** (0.003)	0.021 *** (0.003)	0.008 *** (0.003)
Married	0.001 (0.005)	-0.003 (0.005)	-0.005 (0.005)	-0.002 (0.004)	0.005 (0.004)	0.002 (0.004)
Divorced, Separated, Single	-0.011* (0.006)	-0.010* (0.006)	-0.007 (0.006)	-0.016 *** (0.005)	-0.008* (0.004)	-0.007 (0.005)
Low education	-0.110 *** (0.004)	-0.113 *** (0.005)	-0.089 *** (0.005)	-0.118 *** (0.004)	-0.101 *** (0.004)	-0.104 *** (0.004)
Low household income	-0.046 *** (0.004)	-0.035 *** (0.005)	-0.024 *** (0.005)	-0.048 *** (0.004)	-0.034 *** (0.004)	-0.037 *** (0.004)
Christianity	0.002 (0.003)	-0.032 *** (0.004)	-0.029 *** (0.004)	-0.001 (0.003)	-0.016 *** (0.003)	-0.011 *** (0.003)
Other religions	0.052 *** (0.009)	0.098 *** (0.009)	0.077 *** (0.010)	0.109 *** (0.011)	0.124 *** (0.009)	0.133 *** (0.009)
Paid work	-0.101 *** (0.006)	-0.096 *** (0.007)	-0.083 *** (0.006)	-0.081 *** (0.006)	-0.050 *** (0.005)	-0.076 *** (0.006)
Unemployed	-0.128 *** (0.008)	-0.130 *** (0.009)	-0.109 *** (0.009)	-0.131 *** (0.008)	-0.075 *** (0.008)	-0.117 *** (0.008)
Retired	-0.124 *** (0.007)	-0.137 *** (0.008)	-0.122 *** (0.008)	-0.106 *** (0.008)	-0.080 *** (0.007)	-0.108 *** (0.007)
Other engagements	-0.128 *** (0.007)	-0.126 *** (0.007)	-0.110 *** (0.007)	-0.112 *** (0.007)	-0.080 *** (0.006)	-0.111 *** (0.007)
Large household	0.004 (0.003)	0.005 (0.003)	0.009 *** (0.003)	0.000 (0.003)	-0.001 (0.003)	0.004 (0.003)
Urban living area	0.019 *** (0.003)	0.031 *** (0.003)	0.022 *** (0.003)	0.026 *** (0.003)	0.022 *** (0.003)	0.024 *** (0.003)

Note: Table continued

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
GDP per capita	-0.072*** (0.027)	-0.090*** (0.026)	-0.084*** (0.026)	0.028* (0.016)	0.027** (0.013)	0.015 (0.016)
Population	-0.008 (0.007)	0.000 (0.006)	-0.002 (0.007)	0.007 (0.007)	0.005 (0.006)	0.008 (0.006)
Unemployment rate	-0.002 (0.002)	-0.004* (0.002)	-0.004* (0.002)	-0.006*** (0.002)	0.002 (0.001)	-0.001 (0.002)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

The main explanatory variable *Casualties60* is the number of casualties occurring in each country in the last 60 days from an ESS interview date, and it is divided by 10.

Research sample includes all 32 countries observed from 2002 to 2017.

NUTS 1 level region, survey year and survey month fixed effects are included. Adjusted p-values for multiple-hypothesis testing using the Simes adjustment are 0.001, 0.002, 0.002, 0.067, 0.011, 0.080 for column 1 through 6, respectively. Adjusted p-values for multiple-hypothesis testing using the Hochberg adjustment are 0.001, 0.005, 0.005, 0.080, 0.022, and 0.080 for column 1 through 6, respectively. Standard errors are clustered at year-by-country level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

We are also interested in understanding how long the effect of terrorism influences one's perception. So, we estimate the benchmark model using number of casualties related to terrorist attacks occurring the last 120 days, and 180 days. Table 2.5 presents the results of the regressions using *Casualties120* and *Casualties180* as the explanatory variables, along with the previous ones with *Casualties60*. The coefficients reveal that the magnitude of the impact diminishes with time. Violence related to the attacks occurring in the last 60 days has a much stronger effect on people's attitude towards the immigrants compared to the ones occurring 120 days before. As the number of days gap increases to 6 months, we do not find any significant impact of terrorism on anti-immigrant attitude.

Table 2.5. Impact of international terrorism on pro-immigrant attitude (Benchmark Model)

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Casualties60	-0.041*** (0.011)	-0.026*** (0.008)	-0.029*** (0.009)	-0.016* (0.008)	-0.013*** (0.005)	-0.011* (0.006)
Casualties120	-0.026** (0.012)	-0.020*** (0.008)	-0.028*** (0.007)	-0.012 (0.008)	-0.011** (0.005)	-0.010** (0.005)
Casualties180	-0.008 (0.005)	-0.005 (0.005)	-0.008 (0.006)	-0.003 (0.004)	-0.001 (0.002)	-0.001 (0.003)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

Casualties60, *Casualties120*, *Casualties180* are the number of casualties occurring in each country in the last 60 days, 120 days, 180 days from an ESS interview date respectively, and they are divided by 10.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

Impact of person attributes on effect of terrorism

Tables 2.6 and 2.7 report the results from estimating equation (2). Table 2.6 considers different individual attributes that can amplify or mitigate the effect of terrorism on an individual's attitude towards immigrants. Panel A utilizes the information regarding the birthplace of a respondent. We can observe that individuals who are born in the same country as they are residing in express negative opinion towards immigrants. Also, the adverse effect of terrorism is

significantly magnified for this group of people. Note that those who were born in a different country and migrated here are not at all negatively affected by international terrorism.

The estimation model of Panel B considers those individuals none of whose parents migrated to their residing country. This group also exhibits similar attitude towards immigrants as the previous one. Not only they assert anti-immigrant sentiments, they are also significantly more influenced by terrorism committed by foreign perpetrators.

In Panel C presents the coefficients from estimating the differential behavior of men and women in this scenario. As we can see, women are more welcoming towards immigrants and harbor positive opinion. But they are more sensitive to the effect of terrorism. As casualties increase, they are significantly more affected by that and demonstrate anti-immigrant attitudes.

In Panel D reports the results from studying the impact of education. We categorize the respondents into the two groups – one with high educational qualification and the other with low educational qualification.¹³ Note that people with lower levels of educational attainment not only express anti-immigrant sentiments but are also significantly more affected by terrorism. Those with higher educational attainment are almost not influenced by terrorism.

In Panel E, we are looking at the influence of household income. People who report low levels of net household income also demonstrate anti-immigrant attitude.¹⁴ But we do not find any differential impact of terrorism for the two groups of high and low income.

Impact of presence of migrants on effect of terrorism

To investigate how the presence of migrants in a country can influence the adverse effect of terrorism on its residents, we estimate equation (2), where M_{ct} measures the per capita stock of

¹³ Individuals with Primary or Lower secondary level of education are grouped as ones with low education, while those with Upper secondary, Post secondary or Tertiary level of education are grouped as one with high education.

¹⁴ If the reported net total household income falls in the first or second quintile, then it is categorized as low income.

immigrant population in a country and present the results in Table 2.7. The coefficients indicate that an increase in immigrant population among the citizens has a positive influence on the host country's residents' attitude. But we find that the residents are more adversely impacted by the terrorism inflicted violence.

Table 2.6. Impact of individual attributes on the effect of terrorism (micro level attributes)

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Panel A Birthplace of respondent						
Casualties60	-0.005 (0.014)	0.024*** (0.007)	0.018*** (0.007)	0.003 (0.008)	-0.003 (0.017)	0.015 (0.010)
Casualties60*Born in country	-0.039* (0.022)	-0.055*** (0.009)	-0.052*** (0.008)	-0.021*** (0.007)	-0.011 (0.020)	-0.028** (0.013)
Born in country	-0.057*** (0.006)	-0.065*** (0.008)	-0.055*** (0.007)	-0.082*** (0.007)	-0.077*** (0.007)	-0.100*** (0.006)
Panel B Birthplace of respondent's parents						
Casualties60	0.000 (0.008)	0.020*** (0.007)	0.014* (0.008)	0.000 (0.006)	-0.001 (0.014)	0.014 (0.013)
Casualties60*Parents born in country	-0.046*** (0.013)	-0.053*** (0.005)	-0.048*** (0.006)	-0.018 (0.011)	-0.014 (0.016)	-0.028* (0.016)
Parents born in country	-0.045*** (0.005)	-0.055*** (0.006)	-0.048*** (0.005)	-0.060*** (0.006)	-0.058*** (0.005)	-0.074*** (0.005)
Panel C Gender of respondent						
Casualties60	-0.040*** (0.010)	-0.022*** (0.008)	-0.018* (0.010)	-0.012 (0.010)	-0.003 (0.005)	-0.004 (0.008)
Casualties60*Female	0.002 (0.004)	-0.007 (0.004)	-0.018*** (0.006)	-0.006 (0.007)	-0.018*** (0.007)	-0.011 (0.008)
Female	0.001 (0.003)	0.009*** (0.003)	0.018*** (0.003)	-0.027*** (0.003)	0.017*** (0.003)	0.002 (0.003)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

Note: Table continued

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Panel D Educational qualification of respondent						
Casualties60	-0.005 (0.014)	0.024*** (0.007)	0.018*** (0.007)	0.003 (0.008)	-0.003 (0.017)	0.015 (0.010)
Casualties60*Low education	-0.039* (0.022)	-0.055*** (0.009)	-0.052*** (0.008)	-0.021*** (0.007)	-0.011 (0.020)	-0.028** (0.013)
Low level of education	-0.057*** (0.006)	-0.065*** (0.008)	-0.055*** (0.007)	-0.082*** (0.007)	-0.077*** (0.007)	-0.100*** (0.006)
Panel E Household income level of respondent						
Casualties60	-0.035*** (0.013)	-0.019** (0.010)	-0.019** (0.010)	-0.017** (0.008)	-0.011 (0.010)	-0.008 (0.008)
Casualties60*Low income level	-0.010 (0.007)	-0.013* (0.008)	-0.017** (0.007)	0.002 (0.003)	-0.004 (0.018)	-0.003 (0.008)
Low income level	-0.030*** (0.004)	-0.017*** (0.004)	-0.007* (0.004)	-0.030*** (0.004)	-0.020*** (0.004)	-0.021*** (0.004)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

Casualties60 is the number of casualties occurring in each country in the last 60 days from an ESS interview date, and it is divided by 10. Each of the variables interacted with *Casualties60* is a dummy variable that takes the value of 1 when an individual is born in the same country as he/she is surveyed (Panel A), an individual's father and mother both are born in the same country as he/she is surveyed (Panel B), an individual is female (Panel C), an individual has attained only Primary, or Lower secondary level education (Panel D), an individual belongs to the first or second quintile of net household income level (Panel E)

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

Table 2.7. Impact of hosting immigrants on the effect of terrorism

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Casualties60	0.105*** (0.037)	0.093*** (0.025)	0.081** (0.035)	0.111*** (0.042)	0.088** (0.041)	0.078*** (0.021)
Casualties60*Flow of immigrants p c	-1.289*** (0.323)	-1.075*** (0.219)	-0.982*** (0.306)	-1.130*** (0.355)	-0.883** (0.342)	-0.798*** (0.196)
Per capita flow of immigrants	0.306 (0.191)	0.344* (0.192)	0.157 (0.187)	0.387** (0.169)	0.609*** (0.176)	0.636*** (0.180)
Observations	185,118	185,042	184,690	183,333	183,740	183,707
Mean of Dependent Variable	0.673	0.527	0.490	0.634	0.727	0.646

Casualties60 is the number of casualties occurring in each country in the last 60 days from an ESS interview date, and it is divided by 10. Research sample includes years from 2002 to 2015. The stock of immigrant population is obtained from the OECD database. Due to lack of data availability, 24 countries are considered in this research sample - Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, and United Kingdom. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. Panel B also controls for per capita flow of immigrants. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Extension

While analyzing the impact of international terrorism, one concern is that it might not be the terrorist attacks directly causing an increase in anti-immigration attitude. Rather it is some institutional change caused by the attacks that is leading to an increased negative sentiment towards the immigrants. To check this, we analyze whether the terrorist attacks occurring in the neighboring countries create any impact on the anti-immigrant attitude of an individual who does not reside in any of these countries. For this analysis, we only consider those countries that share

a common geographical border with the *source* country.¹⁵ We aggregate the number of terrorism-related casualties from these neighboring countries. For example, Spain has 5 border sharing neighbors - Morocco, Andorra, France, Portugal, and Gibraltar. Among these 5 neighbors France, Morocco, and Portugal have encountered terrorist attacks within our timeline. We aggregate the number of casualties from terrorist attacks in these 3 countries occurring in the last 60, 120, and 180 days from an interview date occurring in the source country. This enables us to match an individual interviewed in Spain to the terrorist attacks occurring in Spain in the last n days and also to the ones happening in any one or more of the neighboring countries in the last n days. Table 2.8 presents the results from estimating the effect of neighboring countries' terrorism on an individual's attitude towards immigrants, after controlling for the impact of his/her own country's terrorism. Here, we report the coefficients related to the neighboring countries' terrorism-related casualties only.

Next, we consider only those individuals, who are not exposed to any terrorist attacks in their own country in the last n days, since they were interviewed. The coefficients reported in Table 2.9, reveal the effect of international terrorism occurring in the neighboring countries only. As the value of n changes, the size of research sample changes as well. The results from both the tables show that the magnitude of impact is smaller when we consider the neighboring countries' terrorism-related casualties as the main explanatory variable, but there is a significant decrease in pro-immigrant attitude because of an increase in terrorism. Hence, we can conclude that it is the

¹⁵ We consider the same 32 *source* countries as used in our benchmark model - Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom.

terrorist attacks conducted by foreign perpetrators that provoke anti-immigrant attitudes in people, and not the institutional change in response to the attacks.

Table 2.8. Impact of neighboring countries' international terrorism on pro-immigrant attitude (controlling for own country's casualty numbers)

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Neighbors' Casualties60	-0.0084*** (0.0026)	-0.0057*** (0.0020)	-0.0064*** (0.0018)	-0.0066*** (0.0014)	-0.0055*** (0.0012)	-0.0046*** (0.0011)
Neighbors' Casualties120	-0.0006 (0.0004)	-0.0004 (0.0004)	-0.0004 (0.0004)	-0.0009*** (0.0003)	-0.0003 (0.0002)	-0.0004* (0.0003)
Neighbors' Casualties180	-0.0006** (0.0003)	-0.0003 (0.0003)	-0.0004 (0.0003)	-0.0008*** (0.0002)	-0.0004** (0.0002)	-0.0004** (0.0002)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

Neighbors' Casualties60, Neighbors' Casualties120, Neighbors' Casualties180 are the aggregate number of casualties occurring in the border sharing neighboring countries of each of the 32 countries in the last 60 days, 120 days, 180 days from an ESS interview date respectively, and they are divided by 10. We control for own country's number of casualties in each of the regressions, but they are not presented here.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

Table 2.9. Impact of neighboring countries' international terrorism on pro-immigrant attitude (no own country's attacks)

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Neighbors' Casualties60	-0.0079*** (0.0026)	-0.0052** (0.0020)	-0.0059*** (0.0018)	-0.0064*** (0.0016)	-0.0053*** (0.0013)	-0.0045*** (0.0012)
Observations	235,414	234,983	234,241	232,270	232,824	231899
Mean of Dependent Variable	0.689	0.537	0.497	0.631	0.718	0.651
Neighbors' Casualties60	-0.0003 (0.0005)	-0.0001 (0.0004)	-0.0001 (0.0004)	-0.0006* (0.0003)	-0.0002 (0.0002)	-0.0003 (0.0003)
Observations	222,413	221,978	221,242	219,290	219,835	218,902
Mean of Dependent Variable	0.69	0.537	0.497	0.631	0.72	0.652
Neighbors' Casualties60	-0.0005 (0.0004)	-0.0001 (0.0003)	-0.0001 (0.0003)	-0.0007*** (0.0002)	-0.0003* (0.0002)	-0.0004* (0.0002)
Observations	207,414	206,973	206,261	204,339	204,866	203,893
Mean of Dependent Variable	0.694	0.539	0.499	0.634	0.723	0.655

Neighbors' Casualties60, Neighbors' Casualties120, Neighbors' Casualties180 are the aggregate number of casualties occurring in the border sharing neighboring countries of each of the 32 countries in the last 60 days, 120 days, 180 days from an ESS interview date respectively, and they are divided by 10. There are no terrorist attacks reported within the same time frame in an individual's own country.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

2.5. Falsification Tests

We have carried out two falsification tests. One, we use the casualties from future terrorist attacks as the explanatory variable. So, instead of going “n” days back from an ESS interview date, we go “n” days ahead. For example, if an individual was surveyed on 1st December 2010 in France, then we are investigating the effect of the terrorist attacks in France in the next 2 months of December 2010 and January 2011. Here, we are analyzing the effect of some incident that happened after a person was surveyed by the enumerators of ESS. The results presented in Table 2.10, consistent with our expectation, show that the terrorist attacks of a future date do not have any impact on an individual’s attitude towards immigrants. the point estimates are close to zero and are not significant.

Second, we want to ensure that it is the fear of foreigners causing violent incidents that is driving up the anti-immigrant attitude among the residents. So, we use those terrorist attacks that are categorized as domestic attacks.¹⁶ This implies that the perpetrator(s) of these domestic attacks are not of foreign nationality. The results in Table 2.11 indicate that there is no negative impact of domestic terrorism on an individual’s perception towards immigrants. The residents are adversely affected only when the attacks are caused by perpetrators of different nationality.

¹⁶ Following GTD’s definition, an attack is domestic if the nationality of the perpetrator group is same as the nationality of the target(s)/victim(s).

Table 2.10. Impact of future terrorism on pro-immigrant attitude

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Future Casualties60	-0.001 (0.011)	-0.008 (0.006)	-0.007 (0.007)	-0.008 (0.008)	-0.003 (0.006)	-0.004 (0.008)
Future Casualties120	-0.005 (0.007)	-0.007 (0.005)	-0.004 (0.006)	-0.004 (0.007)	-0.004 (0.004)	-0.006 (0.006)
Future Casualties180	-0.003 (0.006)	-0.005 (0.005)	-0.003 (0.006)	0.000 (0.007)	-0.002 (0.004)	-0.004 (0.005)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

Future Casualties60, Future Casualties120, Future Casualties180 are the number of casualties in terrorist attacks that happened 60 days, 120 days, 180 days after an ESS interview date respectively, and they are divided by 10.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

Table 2.11. Impact of domestic terrorism on pro-immigrant attitude

	(1)	(2)	(3)	(4)	(5)	(6)
	Allow many immigrants			Immigrants		
	Of same race/ethnic group	Of different race/ethnic group	From poorer country	Good for economy	Enrich cultural life	Make country better
Domestic Casualties60	0.037** (0.017)	0.018 (0.019)	0.012 (0.017)	0.026*** (0.009)	0.021*** (0.008)	0.022** (0.011)
Domestic Casualties120	0.020*** (0.006)	-0.003 (0.005)	-0.007 (0.005)	0.009 (0.006)	-0.000 (0.004)	0.010* (0.006)
Domestic Casualties180	-0.002 (0.003)	0.003*** (0.001)	0.003*** (0.001)	0.002 (0.002)	0.002* (0.001)	-0.000 (0.002)
Observations	251,195	250,773	250,042	248,054	248,576	247,746
Mean of Dependent Variable	0.686	0.537	0.497	0.633	0.716	0.650

Domestic Casualties60, *Domestic Casualties120*, *Domestic Casualties180* are the number of casualties in terrorist attacks that are carried out by perpetrators of same nationality as the target. happened 60 days, 120 days, 180 days after an ESS interview date respectively, and they are divided by 10.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year-by-country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

Placebo treatment

Here, we implement placebo tests for the treatment. If the results presented in the previous section are spurious, then terrorism should trigger negative sentiments among the residents in general. We try to capture this, by utilizing one's opinion regarding the following 3 issues -

- i. *Gays and lesbians free to live life as they wish*
- ii. *Government should reduce differences in income levels*
- iii. *Modern science can be relied on to solve environmental problems*¹⁷

¹⁷ European Social Survey (<http://www.europeansocialsurvey.org/data/>)

For all the three questions, the answer choices provided are – agree strongly, agree, neither agree nor disagree, disagree, and disagree strongly. We convert the responses to all three questions to binary ones, where the value is 1 if an individual chooses “agree strongly” or “agree”; whereas it is 0 if the choice is “neither agree nor disagree” or “disagree” or “disagree strongly”. ESS documents the responses of the first two questions for all the 8 rounds. But the last question was included in the first 5 rounds only. To present a consistent analysis, we restrict the sample for this section to the first 5 rounds only. Table 2.12 presents the results where the dependent variables are the aforementioned questions. As we can observe, there is no significant impact of international terrorism on an individual’s opinion regarding the LGBT rights, the Government’s role in reducing income differences or even whether modern science is competent enough to solve environmental problems. These results affirm that terrorism adversely affects one’s opinion towards immigrants only.

Table 2.12. Placebo Test

	(1)	(2)	(3)
	Gays and lesbians live freely	Government reduce income difference	Science can solve environmental problems
Casualties30	-0.003 (0.004)	0.002 (0.004)	-0.008 (0.008)
Casualties60	-0.004 (0.003)	0.003 (0.004)	-0.011 (0.008)
Casualties90	-0.004 (0.003)	-0.001 (0.004)	-0.010 (0.007)
Observations	158,100	162,439	156,932
Mean of Dependent Variable	0.680	0.728	0.476

To maintain consistency in data availability, the research sample is restricted to first 5 ESS rounds.

Casualties30, *Casualties60*, *Casualties90* are the number of casualties occurring in each country in the last 30 days, 60 days, 90 days from an ESS interview date respectively, and they are divided by 10.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, level of education, and household income of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year and survey month fixed effects are included. Standard errors are clustered at year by country level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

2.6. Conclusion

It is well established in the literature that extreme violence can alter the preference of a rational human being. In this paper, we study how extreme violence inflicted by terrorist attacks can prejudice an individual against a certain group of people - specifically, immigrants. We conclude that when the residents of a country are more exposed to international terrorism, not only their skepticism towards welcoming more immigrants increase, they also express negative opinions regarding the effect of immigration. We find that an individual's demographic characteristics such as citizenship status, gender, education level, and household income earned, can amplify or alleviate the impact of terrorism on one's attitude. An individual who is himself/herself a first-generation or second-generation immigrant is not influenced by the terrorism. Although women are found to be more sympathetic towards immigrants, terrorism-related violence affects them more adversely than men. Our analysis indicates that terrorism has less detrimental effect on a more educated person, or one with higher level of income. Moreover, when a country hosts substantial number of immigrants, the residents are more threatened by a rise in terrorism, and express stronger negative sentiments.

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CHAPTER 3. IMPACT OF TERRORISM ON TRUST IN INSTITUTIONS

3.1. Introduction

Terrorism affects the masses not only through physical and mental trauma, but also through a widespread economic turmoil (Frey, Luechinger, Stutzer 2007; Sandler and Enders 2008). During the last few decades researchers have tried to understand, both the economic costs of terrorism and the motivation behind terrorist activities. Thus, one branch of literature is concentrated on understanding the rationale behind the terrorist activities, the other has focused on analyzing the direct and indirect consequences of terrorism. Our work in this study is a contribution towards the latter. We investigate the influence of terrorism inflicted violence on an individual's level of trust in institutions.

Research has shown that terrorist activities cause extensive damage to the affected country's economy. For example, the GDP of the Basque country diminished as a direct consequence of the ETA (Euskadi Ta Askatasuna) uprising in the late 1960s (Abadie and Gardeazabal 2003). Economic growth of a country can be hampered by reallocating government funds to strengthen national security (Gupta et al. 2004) or by digression of expenditure towards government spending from other investments (Blomberg et al. 2004). Furthermore, a rise in risk of terrorism reduces the flow of Foreign Direct Investment (Abadie and Gardeazabal 2008), depreciates the affected country's currency (Maitha et al. 2017), lowers the volume of bilateral trade (Nitscha, and Schumacher 2004), raises the financial risk in stock market (Drakos 2004). Besides these, tourism industry is another area that is heavily affected by terrorist attacks (Bac et al. 2015). Along the same line Saha and Yap (2013) analyze a cross country panel data of 139 countries and conclude that terrorism along with political instability can cause severe damage to the tourism industry.

Besides disrupting a country's economic activities, increased stress attached to terrorism affect human health. Terrorist attacks adversely affect maternal health leading to premature delivery and low birth weight infants (Sherrieb and Norris 2013). Not only physical health, Hobfoll et al. (2006) find strong evidence from studying the reactions of around 900 Israeli individuals that terrorist attacks create an impact on human psyche. After controlling for institutional changes, Ahern (2018) establishes that it is the psychological channel through which terrorist activities can affect macroeconomic outcomes like income and wage rates of a country. Economists have examined a shift in an individual's political ideology following terrorist activities. Such instances have been observed in Israeli elections (Gould and Klor 2010, Berrebi and Klor 2008) after Palestinian attacks. Jaeger et. al (2012) study the way violence can influence the political preferences of a Palestinian constituency that has been identified as a disturbed one. Also, the Madrid bombings in 2004 played an important role in determining the socialist party's win in the immediate Presidential election (Montalvo 2011). After studying 800 electoral results from 115 countries, Gassebner et al. (2008) conclude that these occurrences are not restricted to any particular country, rather can overturn the interim government of any country.

Our work in this paper analyzes whether exposure to terrorism in one's own country influences his/her trust in the effectiveness of institutions. Grosjean (2014) observes that living in a country involved in warfare or civil conflicts can modify an individual's belief in economic establishments. Sangnier and Zylberberg (2017) show that geographical proximity to social protests can alter an individual's trust in the country's leader as well as institutions for a brief time period. Akay et. al (2018) find a significant negative effect of global terrorism on the well-being of individuals residing in different countries, such as Australia, Germany, Russia, Switzerland, the UK and the US. After the 2004 Madrid train bombing and the 2005 London metro attacks, there

was a decline in trust, subjective well-being, and the importance of creativity and freedom (Ahern 2018). We examine similar effects in the aftermath of terrorist incidents and to the best of our knowledge, this paper is the first study to investigate the impact of terrorism on individual trust in institutions.

We hypothesize that when an individual is exposed to terrorism-related violence, he/she tends to lose confidence in the effectiveness of institutions. To test this, we analyze the self-reported trust levels of more than 250,000 individuals from 22 European countries¹⁸, after they were being exposed to terrorist incidents leading to human casualties. We refer to the violence administered by terrorist attacks. Since, the residents of a country do not have any prior knowledge about the occurrence of an attack before it actually happens, we can safely assume that he/she cannot revise the trust level a priori. The terrorism related information is obtained from the Global Terrorism Database (GTD), which covers around 150,000 events from all over the world since 1970. As we intend to examine the effect of violence on one's expectations, we restrict to only those attacks which are associated with at least one human casualty, i.e. in these attacks a human being was killed or injured. We label these attacks as "serious". Our empirical methodology exploits the variation in timing of the individual interviews around the occurrence of such attacks. The main explanatory variable is an indicator variable which takes the value of 1 if an individual is exposed to *serious* attacks occurring in his/her country in the last n days¹⁹. Both ESS and GTD

¹⁸ 22 countries considered are Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, and United Kingdom.

¹⁹ Different values of "n" are considered - 60, 120, and 180 to study the impact.

report the exact date of an interview and an attack respectively, which enables us to link each individual to the attack(s) occurring in his/her country in the last n days.

After controlling for a number of micro as well as macro attributes, we find that when an individual is exposed to terrorist attacks that resulted in human casualties, his/her distrust in institutions significantly increases. More specifically, on an average the level of trust of the treated group reduces by 6 percent compared to that of the control group. The impact is strongest when n takes the value of 60, i.e. when an individual is surveyed within 60 days of being exposed to *serious* terrorist attack(s) occurring in his/her own country.

Not only temporal proximity, we also examine how spatial proximity to terrorist incidents can influence one's confidence in institutions. For this, we exploit the *serious* terrorist attacks taking place in the border sharing neighboring countries. After controlling for the impact of one's own country's attacks, we do not find any evidence of significant effect from the neighboring countries' attacks on one's faith in various institutions. Hence, we can conclude that the detrimental effect of terrorism leading to increased distrust in institutions, reduces with increase in both time gap and geographical distance.

We are also interested in examining whether the quality of a country's existing institutions can influence its residents' reaction. The ranks for the Worldwide Governance Indicators²⁰ assigned by the World Bank are utilized to measure the institutional quality of the countries. The residents of a country with better institutional qualities are significantly less adversely influenced by terrorism compared to the ones living in countries with relatively poorer institutional condition.

²⁰ World Bank provides indicators of six broad dimensions of governance - Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Finally, we run a number robustness checks, falsification test and sensitivity analyses to validate our findings.

The rest of the paper is organized as follows – Section 2 describes the data in detail, Section 3 explains our estimation method, Section 4 reports the results of the regression analysis, Section 5 discusses various robustness checks and finally Section 6 provides a conclusion.

3.2. Data

European Social Survey

The micro level data are obtained from the European Social Survey (ESS) database. The ESS is a cross-national survey conducted every alternate year since 2002, with cross-sectional samples from 35 European countries²¹. We use the data from all 8 waves - 2002 to 2017, conducted in the 27 European Union member countries – Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom.

The ESS records an individual's self-reported level of trust in institutions. We concentrate on the following ESS question – *“Using this card [card shown by enumerator to the interviewee], please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust.”* The institutions referred to are – *country's parliament, the legal system, the police, politicians, political*

²¹ The 35 countries are Albania, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kosovo, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom.

*parties, the European Parliament, and the United Nations*²². We convert the responses to these 7 questions into binary ones. Each of these 7 outcome variables takes the value of 1 if the response is equal to or greater than 5; and 0 if it is less than 5²³. Table 3.1 describes the summary statistics of the outcome variables, the explanatory variables, and both the individual and country level control variables. As Table 3.1 indicates around 54 percent of the respondents have faith in their own country's parliament. A slightly larger proportion, more than 64 percent and almost 77 percent of the individuals in our sample trust the legal system and the police of their country, respectively. But when it comes to politicians or political parties the number of respondents expressing positive opinion is much smaller, only around 40 percent have faith in either of them. As we move to the non-national organizations, 55 percent of the individuals indicate that they have faith in the European Parliament, and 67 percent trust the United Nations.

²² European Social Survey (<http://www.europeansocialsurvey.org/data/>)

²³ The results remain unchanged if we consider a response equal to or greater than 6 as 1; and 0 if it is less than 6.

Table 3.1. Descriptive Statistics

Variables	Mean	Std. Dev.	N
Level of trust in institutions			
Parliament	0.536	0.499	224,891
Legal system	0.637	0.481	225,020
Police	0.768	0.422	226,190
Politicians	0.393	0.488	225,738
Political parties	0.386	0.487	199,679
European parliament	0.553	0.497	219,961
United Nations	0.673	0.469	226,912
Individual Attributes			
Age	47.64	18.16	226,912
Female	0.516	0.500	226,912
Marital Status			
Married	0.516	0.500	226,912
Single	0.252	0.434	226,912
Other (Widowed, Divorced, Separated)	0.218	0.413	226,912
Household size			
Small (3 or less)	0.719	0.450	226,912
Large (more than 4)	0.281	0.450	226,912
Main activity in last 7 days			
Working (paid work)	0.507	0.500	226,912
Student	0.085	0.279	226,912
Unemployed	0.042	0.200	226,912
Retired	0.231	0.422	226,912
Disabled, Military, Household work, not in labor force, other	0.134	0.341	226,912
Level of education			
High education (Tertiary, Post secondary, Upper secondary)	0.720	0.449	226,912
Low (Primary, Lower secondary)	0.278	0.448	226,912
Religion			
No denomination	0.427	0.495	226,912
Christianity	0.550	0.498	226,912
Islam, Judaism, Eastern religions, other non-Christian religions	0.024	0.152	226,912
Area of living			
Urban (city, town)	0.523	0.499	226,912
Rural (suburb, village, farm)	0.477	0.499	226,912

Note: Table continued

Variables	Mean	Std. Dev.	N
Terrorism information			
Exposed to serious attacks in last 60 days	0.156	0.363	226,912
Exposed to serious attacks in last 120 days	0.224	0.417	226,912
Exposed to serious attacks in last 180 days	0.280	0.449	226,912
Country level attributes			
Controls			
GDP per capita (in 10,000 USD)	3.596	0.962	213
Population (in million)	24.753	25.853	213
Unemployment rate (ILO definition)	8.281	3.683	213
Governance indicators (Percentile Rank)			
Voice and Accountability	88.465	9.963	213
Political Stability and Absence of Violence/Terrorism	74.619	14.908	213
Government Effectiveness	86.784	11.100	213
Regulatory Quality	88.900	8.346	213
Rule of Law	86.764	12.457	213
Control of Corruption	85.385	13.588	213

The statistics above reflect our research sample, from 22 European countries from 2002 to 2017.

^a European Social Survey (<http://www.europeansocialsurvey.org/data/>)

^b Global Terrorism Database (<https://www.start.umd.edu/gtd/>)

^c World Development Indicators (<https://datacatalog.worldbank.org/dataset/world-development-indicators>)

^d Worldwide Governance Indicators (<http://info.worldbank.org/governance/wgi/#home>)

We are interested in understanding the variation in level of trust in institutions across different countries. The trust level for each country is calculated as the weighted average²⁴ of individual responses. The choropleth maps provided in Figures 3.1 through 3.7 help us to visualize the variation, where the darker shade portrays a higher level of trust. Table 3.2 provides the average trust values for the bottom 3 countries and the top 3 countries. The country level averages vary over a vast range of values. Only 15 percent of the Latvians are found to have trust in their country's parliament whereas 80 percent of the Danish express positive sentiment. When it comes to the legal system or the police, the residents demonstrate a higher level of trust in general. But

²⁴ ESS advises the use of both population and design weight while comparing the data of two or more countries and with reference to their averages. The combined weight is obtained by simply multiplying the two weights.

compared to the Bulgarians, the residents of Denmark and Finland harbor much higher levels of trust in either of them. Again, in general individuals demonstrate less faith in politicians or the political parties. Within that also, only around 12-13 percent of the Latvians or the Bulgarians harbor positive opinion, while around 70 percent of Danish or Dutch people have faith in their politicians or political parties. The variation in level of trust across the countries is relatively smaller, when we consider the European Parliament or the United Nations. Only 38 percent of United Kingdom's residents have faith in the European Parliament, compared to around 67 percent of Belgian people. But when it is the United Nations, the Greek have lowest level of trust, only 44 percent, whereas 85 percent of Finnish say that they trust this institution.

To control for an individual's socio-economic characteristics in the regression models, we use different demographic attributes reported by the ESS such as age, age squared, gender, religion, level of education, employment status, marital status, household size, and area of living. From Table 1 we see that the average age of the respondents is around 48 years, where almost 52 percent are female. In our sample, 52 percent individuals are married, 25 percent single, and 22 percent fall in the "other type of marital status" group including widowed, divorced or separated individuals. Based on the number of inhabitants in a particular household, we denote the size to be small if three or less people regularly reside in that house, and large when the number is more than three. Most of the households, about 72 percent are small ones, while the rest are large ones. Next, we employ the information of an individual's main activity in the last 7 days. ESS categorizes respondents into one of the following groups – working a paid job, student, involved in household work, part of community or military services, unemployed, retired, disabled, not in labor force, or involved in some other type of employment. Almost 51 percent of the people reported that they are engaged in some paid work, 8 percent go to school, 4 percent are unemployed, and 23 percent

are retired. We generate a fifth category by combining individuals involved in household work, or community or military services, or some other type of work, and include anyone who is disabled or not in labor force.

In the ESS, the respondents are assigned to one of the five groups depending on their educational attainment – primary, lower secondary, upper secondary, post-secondary, and tertiary. The categorization is done based on the International Standard Classification of Education (ISCED), as maintained by the United Nations Educational, Scientific and Cultural Organization (UNESCO). We create two groups – one with low education, completed the primary or lower secondary level; and the other with high education, who have completed the upper secondary, post secondary or tertiary level. According to our definition, 72 percent have high education.

We also control for an individual's religious affiliation. The sample consists of almost 43 percent individuals who report that they do not follow any religious denomination. 55 percent of the respondents are Christian, while the remaining follow Islam, Judaism, Eastern religions, or other non-Christian religions. Moreover, we are also interested in the area a respondent resides. He/she can choose from the following five categories – a big city, suburbs or outskirts of big city, town or small city, country village, and farm or home in countryside. We categorize city and towns as “urban” area and suburbs, village and farms as “rural” area. 52 percent of the respondents live in the urban area, i.e. either in a city or a town.

Table 3.2. Country averages of trust in different institutions

Country's Parliament		Legal System		Police	
Latvia	0.148	Bulgaria	0.212	Bulgaria	0.381
Bulgaria	0.183	Croatia	0.320	Romania	0.501
Croatia	0.230	Poland	0.397	Croatia	0.517
:		:		:	
Finland	0.750	Sweden	0.793	Germany	0.861
Sweden	0.760	Finland	0.869	Denmark	0.941
Denmark	0.802	Denmark	0.904	Finland	0.957
Politicians		Political Parties		European Parliament	
Latvia	0.123	Latvia	0.117	United Kingdom	0.381
Bulgaria	0.130	Bulgaria	0.130	Croatia	0.386
Croatia	0.140	Croatia	0.147	Austria	0.450
:		:		:	
Finland	0.593	Sweden	0.614	Netherlands	0.642
Netherlands	0.683	Netherlands	0.698	Romania	0.653
Denmark	0.714	Denmark	0.728	Belgium	0.667
United Nations					
Greece	0.438				
Croatia	0.465				
Austria	0.544				
:					
Sweden	0.842				
Denmark	0.851				
Finland	0.854				

The country level averages are weighted averages of the individual responses, using both the population and design weight. For each variable, after arranging all the 22 countries in ascending order, only the lowest three and the highest three are presented here.

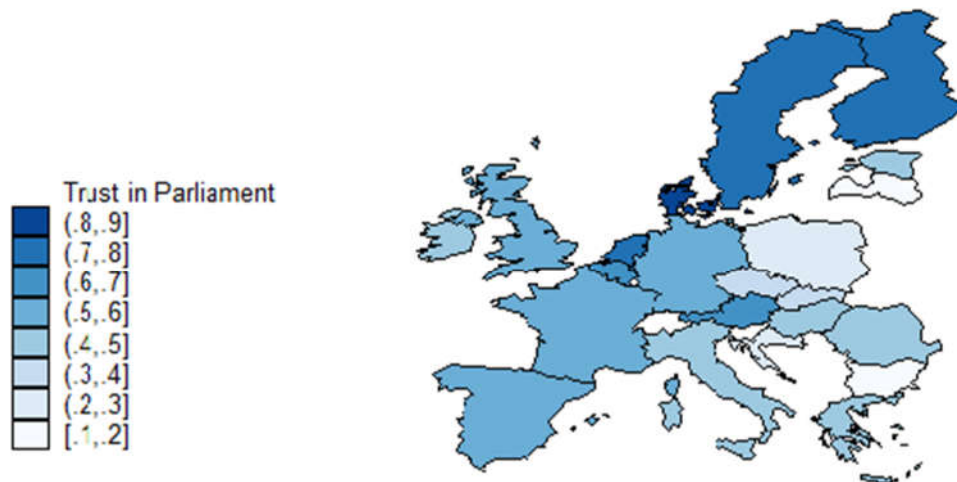


Figure 3.1. Country level average – Trust in country's parliament



Figure 3.2. Country level average – Trust in the legal system



Figure 3.3. Country level average – Trust in country's police

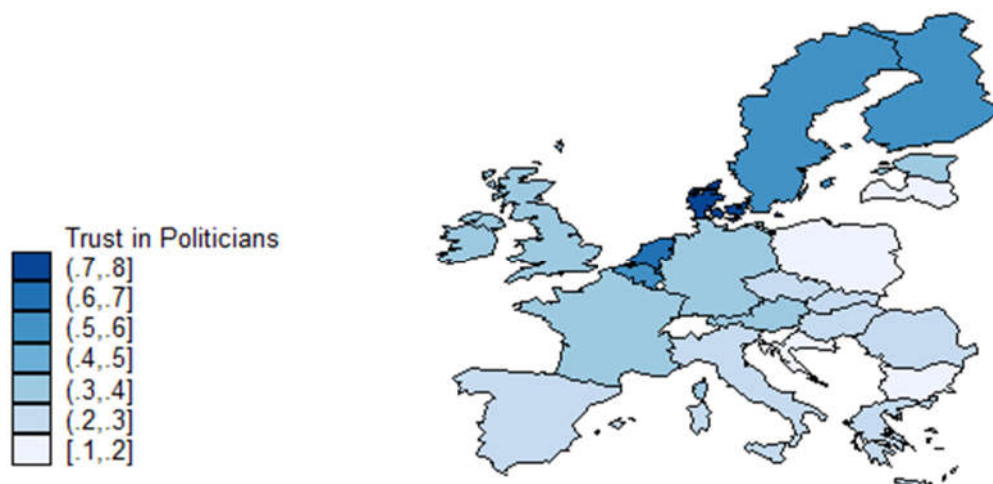


Figure 3.4. Country level average – Trust in country's politicians



Figure 3.5. Country level average – Trust in country’s political parties

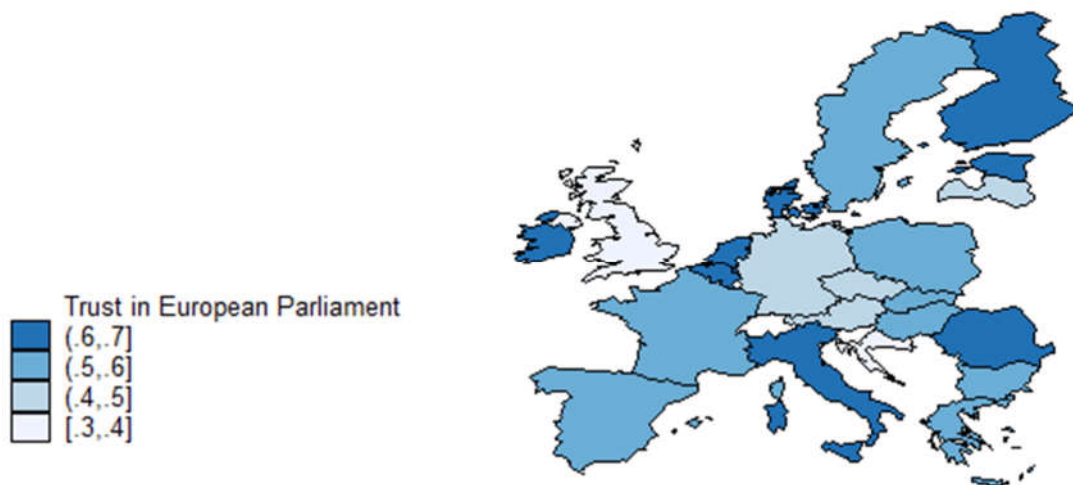


Figure 3.6. Country level average – Trust in the European Paliament

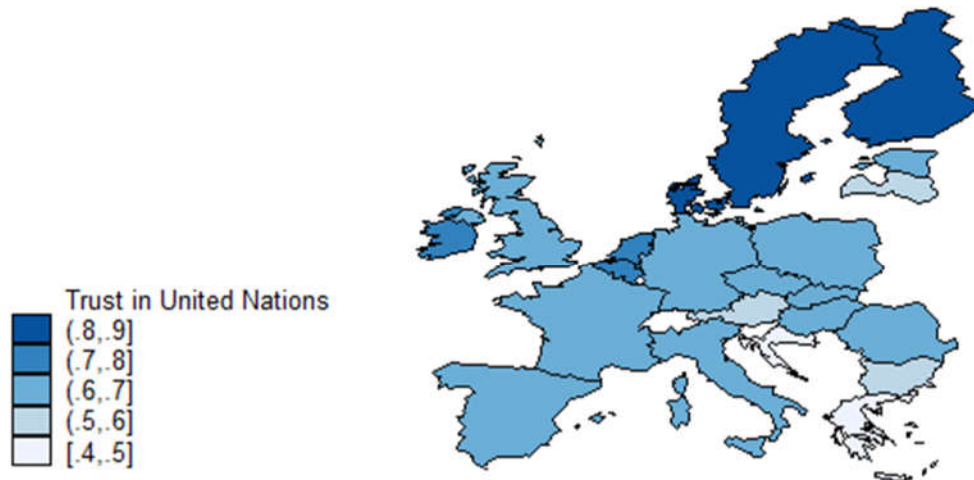


Figure 3.7. Country level average – Trust in the United Nations

Terrorism data

The terrorism information is obtained from the Global Terrorism Database (GTD), which defines terrorist attacks as “the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation”. Hence, any violent incident is listed as an act of terrorism if it satisfies the following criteria:

- 4) The incident must be intentional.
- 5) The incident must entail some level of violence or immediate threat of violence.
- 6) The perpetrators of the incidents must be sub-national actors.²⁵

Following these, GTD reports the detailed information on more than 150,000 terrorist events from all over the world covering a period of 1970 to 2017. Among these, 3897 attacks occurred in between 2001 and 2017, which are relevant for our analysis. Within them 1622 attacks

²⁵ Global Terrorism Database (<https://www.start.umd.edu/gtd/>)

resulted in at least one human casualty, i.e. someone was injured or killed, and we label them as “serious”. Among the 27 countries, considered in our sample, 3 countries have not experienced any terrorist attack - Lithuania, Luxembourg, and Slovenia; and an additional 2 have not experienced any serious attack - Cyprus, and Portugal in between 2001 and 2017. Our main explanatory variable is an indicator variable which takes the value 1 when an individual is exposed to *serious* attacks in his/her own country, and 0 otherwise.

GTD reports the exact date and location a terrorist attack. ESS documents the dates of all the interviews. This enables us to match each individual to the *serious* terrorist attacks that happened in his/her country in the last “n” days. We include only those 22 countries²⁶ that have ever experienced serious terrorist attacks within 2001 to 2017.²⁷

Country level attributes

We also control for the time variant country attributes. They are taken from the World Development Indicators (WDI) dataset compiled by the World Bank. In the WDI dataset, the World Bank provides information on various country attributes from 1960 to 2016. We consider three time-variant country attributes - the population, the rate of unemployment and the per capita GDP. The unemployment rate reported here is provided by the International Labor Organization (ILO). The average unemployment rate for the 22 countries in our sample is around 8 percent. The per capita GDP numbers are PPP adjusted (in constant 2011 international \$) and expressed in 10,000 units, whereas the population numbers are expressed in millions. The average level of GDP per capita is \$36,000 and average population is around 25 million. Other country level attributes,

²⁶ Countries included in research sample - Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, and United Kingdom.

²⁷ Including the countries which never experienced any *serious* attack does not change the results.

such as ethno-linguistic fragmentation, level of democracy given by Polity IV scores, Individualism index, the legal origin, the governance related indicators, the Freedom house measures are not found to change considerably over a small span of time as ours. As we are already including country fixed effects, so we do not control for these time invariant attributes.

Governance Indicators

We examine whether the conditions of a country's existing institutions can influence the impact on terrorism on one's confidence in institutions. The World Bank provides aggregate indicators of six broad dimensions of governance - Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. We use these six Worldwide Governance Indicators (WGI) in our analysis. The World Bank defines these indicators as²⁸:

- i. **Voice and accountability** - the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
- ii. **Political Stability and Absence of Violence/Terrorism** - the likelihood of political instability and/or politically motivated violence, including terrorism.
- iii. **Government effectiveness** - the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

²⁸ The WGIs are created using over 30 individual data sources generated by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms. (<http://info.worldbank.org/governance/wgi/#home>)

- iv. **Regulatory quality** - the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
- v. **Rule of law** - the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
- vi. **Control of corruption** - the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

The country level variation in the institutional quality can be observed in Table 3.3, where we report the 3 lowest ranked and the 3 highest ranked countries along with their respective 15-year average. Figures 3.8 through 3.13 illustrates the country level variation in institutional quality using choropleth maps. Here the darker shade implies better institution for that country.

Table 3.3. Average country ranks for Governance Indicator

Voice and Accountability		Political Stability		Government Effectiveness	
Romania	60.839	Spain	46.115	Romania	47.692
Bulgaria	63.192	Greece	50.471	Bulgaria	59.972
Croatia	63.967	Romania	52.735	Italy	68.785
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Netherlands	97.622	Austria	90.042	Sweden	97.579
Denmark	98.490	Sweden	90.638	Finland	98.914
Sweden	98.673	Finland	96.491	Denmark	98.916
Regulatory Quality		Rule of Law		Control of Corruption	
Croatia	66.782	Bulgaria	52.252	Romania	51.287
Romania	67.009	Romania	55.127	Bulgaria	52.800
Bulgaria	71.005	Croatia	59.136	Greece	60.700
:		:		:	
Denmark	97.152	Sweden	98.494	Sweden	98.270
Netherlands	97.374	Denmark	98.985	Finland	99.163
Finland	97.488	Finland	99.492	Denmark	99.545

The average rank for each of the countries is constructed from the annually reported ranks. For each indicator, after arranging all the 22 countries in ascending order, only the lowest three and the highest three are presented here.



Figure 3.8. Country level rank – Voice and Accountability



Figure 3.9. Country level rank – Political Stability and Absence of Violence/Terrorism



Figure 3.10. Country level rank – Government Effectiveness



Figure 3.11. Country level rank – Regulatory Quality

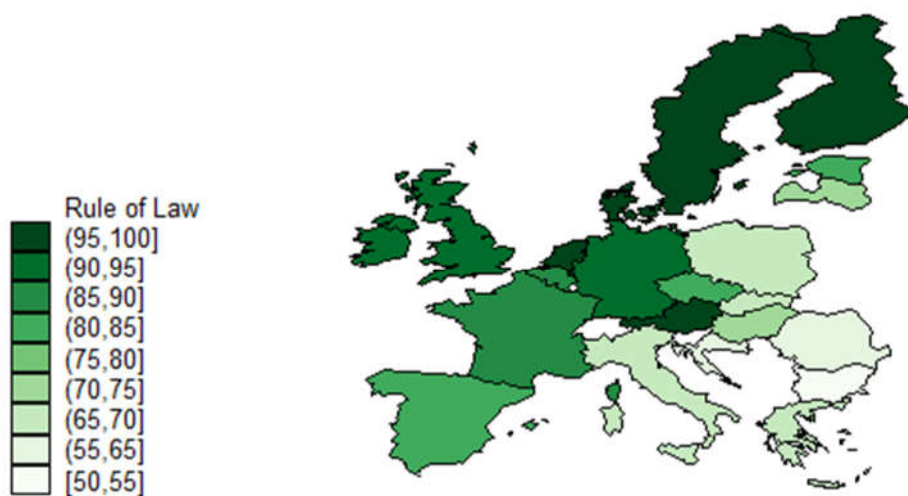


Figure 3.12. Country level rank – Rule of Law

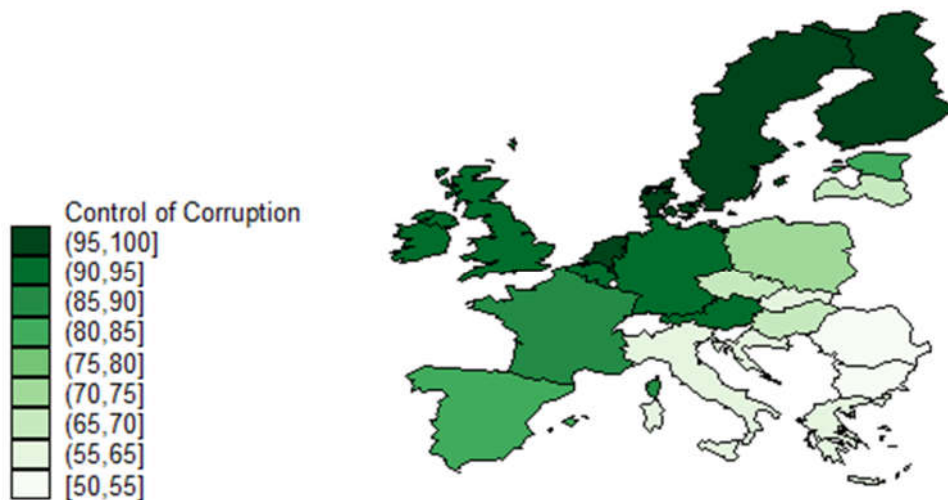


Figure 3.13. Country level rank - Control of Corruption

3.3. Empirical Framework

Exposure

We estimate the following model:

$$Trust_{ircdmt} = \alpha + \beta E_{c(d-n)mt} + X_{ircdmt} \delta + K_{ct} \eta + \mu_r + \lambda_t + \gamma_m + \rho_d + \psi_{dow} + \varepsilon_{ircdmt} \quad (1)$$

where $Trust_{ircdmt}$ captures an individual i 's level of trust in institutions, who lives in region r of country c , and surveyed on day d , month m , year t . For each country c ESS provides the information of region r , where an individual resides. Since 2008, i.e. round 4, ESS reports the NUTS level regions.²⁹ Also, the level of NUTS regions varies across different survey rounds.³⁰ In order to maintain consistency, we use NUTS 1 level as the “region” for ESS data for all countries and across all 8 rounds. The institutions considered are country's parliament, the legal system, the police, politicians, and political parties, the European Parliament, and the United Nations. $E_{c(d-n)mt}$ is an indicator variable that takes the value of 1 when an individual is exposed to *serious* attack(s) occurring in his/her own country c in the last n days from an interview date dmt . We classify an attack as a “serious” one when there is at least one human casualty involved, i.e. at least one person is killed or injured. Vector X consists of individual characteristics such as age, gender, marital status, area of living, household size, employment status, religious affiliation, and level of education. Vector K consist of time variant country attributes such as the unemployment rate, per capita GDP, and population. We control for the time invariant region-specific characteristics by including the NUTS 1 level region fixed-effects (μ_r)³¹. We include survey year (λ_t)³², survey month

²⁹ NUTS or Classification of Territorial Units for Statistics (NUTS; French: *Nomenclature des unités territoriales statistiques*) is a geocode standard for referencing the subdivisions of countries for statistical purposes.

³⁰ For example, ESS reports NUTS 1 level regions in ESS4, and NUTS 2 level from ESS5 onwards. (<http://www.europeansocialsurvey.org/data/multilevel/guide/essreg.html>)

³¹ NUTS 1 level regions refer to different administrative subdivisions for different countries. For example, NUTS 1 level region for Denmark refers to the whole country, whereas they refer to the states in Germany.

³² The years from 2002 to 2017.

(γ_m) , and survey day (ρ_d) dummies to incorporate the impact of different surveys dates. To control for the effect of the day of the week the interview was conducted, we include ψ_{dow} . The standard errors are clustered at the NUTS1 region level. We weight the equation by “design weight” to rectify the error from unequal probabilities of selection due to the sampling design used. In this model, an individual i residing in a region r of country c is affected by the same number of casualties related to terrorist attacks in the last $(d - n)$ days occurring in country c , as another individual j ($j \neq i$) in another region q ($q \neq r$) from the same country c .

In the above setup, to identify how an individual’s average level of confidence in institutions changes after being exposed to *serious* terrorist attacks, we make a key assumption. It is that the timing of a *serious* terrorist incident is not systematically related to the within-country unobserved factors affecting a citizen’s trust in his/her country’s institutions. In the event of failure of this assumption, the point estimates from the abovementioned model will no longer be unbiased and hence, unfit for establishing a causal relation. To test the existence of such contamination, we introduce a simple modification to equation (1), by including the leads and the lags as

$$Trust_{ircdmt} = \alpha + \sum_{q=0}^p \beta_{-q} E_{c(m-q)t} + \sum_{q=1}^p \beta_{+q} E_{c(m+q)t} + X_{ircdmt} \delta + K_{ct} \eta + \mu_r + \lambda_t + \gamma_m + \rho_d + \psi_{dow} + \epsilon_{ircdmt} \quad (2)$$

Equation (2) allows us to test for the existence of parallel trends for both p months lag and lead. For our analysis a window of 3 months, i.e. $p = 3$, before and after an attack month is considered and the month prior to an attack is the omitted category. But each of the countries in our sample experiences more than one *serious* terrorist attack during the analysis period. To resolve this issue, we consider only the most significant incident, i.e. one with the maximum number of casualties as our main event of interest.

Impact of country characteristics on effect of terrorism

We intend to investigate how the reaction to terrorism varies across countries depending on the quality of the existing institutions. The following model is used for this purpose:

$$Trust_{ircdmt} = \alpha + \beta_1 (E_{c(d-n)mt} * G_{ct}) + \beta_2 E_{c(d-n)mt} + \beta_3 G_{ct} + X_{ircdmt} \delta + K_{ct} \eta + \mu_r + \lambda_t + \gamma_m + \rho_d + \psi_{dow} + \varepsilon_{ircdmt} \quad (3)$$

where G_{ct} denotes different the rank of country c in year t for each of the six Governance Indicators - Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.³³ Similar to the benchmark model, $E_{c(d-n)mt}$ is an indicator variable that takes the value of 1 when an individual is exposed to serious attack(s) occurring in his/her own country c in the last n days from an interview date dmt . Likewise, we control for the same individual and the country level attributes and also include NUTS 1 level region, year, month, day, day-of-the-week fixed effects. The standards errors are clustered at the NUTS 1 level region.

3.4. Results

Benchmark Model

The results of the benchmark model are provided in Table 3.4. the main explanatory variable is an indicator variable capturing whether an individual was exposed to serious terrorist attacks in the last 60 days in his/her own country. Columns (1) through (7) report the coefficients related to an individual's trust in institutions - the parliament, the legal system, the police, the politicians, political parties in general, the European Parliament and the United Nations

³³ Each Governance Indicator is implemented in a different regression and its impact is estimated on the effect of terrorism on trust in all the 7 institutions.

respectively. Besides including individual and country level attributes, we include NUTS 1 level region fixed effects, survey day, month, year fixed effects and day of the week fixed effects. The standard errors are clustered at the NUTS 1 level. We observe that, when an individual is exposed to *serious* attacks in the last 60 days occurring in his/her own country, the level of trust in parliament, legal system, police, the European Parliament and the United Nations, significantly reduces by around 3 percentage-points compared to the control group. Under similar circumstances, one's trust in politicians decreases by 2 percentage points, while we do not find any significant effect on trust in political parties in general. If we consider the pre-attack average level of trust in institutions as the benchmark, then the estimated impact implies a reduction in trust by 5% for parliament, 4% for legal system, 4% for police, 5% for politicians, 6% for the European Parliament, and 4% for the United Nations.

The coefficients related to the control variables, presented in Table 3.4 establish the importance of personal traits in determining an individual's confidence in various organizations. An individual's distrust in institutions increases with age. The results show that married people express a higher level of trust in their own country's establishments compared to the singles ones. We find that lower levels of education deepen the skepticism towards the effectiveness of all the seven institutions. Individuals with paid jobs, retired or even unemployed express relatively less faith in all the different establishments, compared to the students. But the coefficients related to these 3 groups reveal that the unemployed group feels more strongly against the system compared to the others. Individuals belonging to large households (more than 4 members) demonstrate more trust in all the institutions. Another conclusion is that countries with higher rate of unemployment influence their residents in an adverse way when it comes to their faith in any institution. On the

other hand, a higher level of per capita GDP induces positive impact on an individual's trust in all the institutions, except police.

Table 3.4. Benchmark Model with n=60 days

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure last 60 days	-0.027*** (0.010)	-0.026*** (0.008)	-0.028*** (0.007)	-0.018** (0.009)	-0.007 (0.008)	-0.031*** (0.010)	-0.029*** (0.008)
Age	-0.006*** (0.001)	-0.005*** (0.001)	-0.002*** (0.001)	-0.006*** (0.001)	-0.008*** (0.001)	-0.011*** (0.001)	-0.006*** (0.001)
Age2	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Female	-0.010** (0.004)	0.004 (0.003)	0.021*** (0.002)	-0.001 (0.005)	-0.005 (0.005)	0.025*** (0.005)	0.007* (0.003)
Married	0.023*** (0.006)	0.017*** (0.005)	0.026*** (0.005)	0.017** (0.007)	0.013** (0.006)	0.008 (0.006)	0.001 (0.005)
Divorced, Separated, Single	-0.016*** (0.006)	-0.015*** (0.004)	-0.010* (0.005)	-0.016*** (0.005)	-0.015*** (0.004)	-0.019*** (0.006)	-0.025*** (0.006)
Low education	-0.062*** (0.007)	-0.052*** (0.007)	-0.022*** (0.005)	-0.036*** (0.007)	-0.024*** (0.007)	-0.057*** (0.005)	-0.060*** (0.004)
Christianity	0.063*** (0.006)	0.044*** (0.006)	0.045*** (0.007)	0.060*** (0.006)	0.054*** (0.006)	0.046*** (0.006)	0.046*** (0.007)
Other religions	0.107*** (0.018)	0.090*** (0.020)	0.042* (0.025)	0.102*** (0.016)	0.106*** (0.018)	0.104*** (0.013)	-0.013 (0.017)
Paid work	-0.084*** (0.006)	-0.061*** (0.006)	-0.026*** (0.004)	-0.066*** (0.005)	-0.064*** (0.004)	-0.084*** (0.006)	-0.064*** (0.009)
Unemployed	-0.146*** (0.011)	-0.126*** (0.009)	-0.091*** (0.006)	-0.108*** (0.008)	-0.105*** (0.008)	-0.135*** (0.008)	-0.118*** (0.011)
Retired	-0.109*** (0.009)	-0.096*** (0.007)	-0.040*** (0.006)	-0.074*** (0.008)	-0.070*** (0.007)	-0.113*** (0.008)	-0.094*** (0.008)
Other engagements	-0.122*** (0.009)	-0.098*** (0.007)	-0.053*** (0.006)	-0.086*** (0.008)	-0.081*** (0.007)	-0.114*** (0.007)	-0.098*** (0.008)
Large household	0.018*** (0.004)	0.017*** (0.005)	0.014*** (0.003)	0.015*** (0.004)	0.015*** (0.004)	0.011*** (0.003)	0.007** (0.003)
Urban living area	0.008* (0.005)	0.004 (0.004)	-0.010*** (0.004)	0.007 (0.004)	0.006 (0.004)	0.021*** (0.005)	0.006 (0.004)

Note: Table continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
GDP per capita	0.071*** (0.023)	0.052*** (0.014)	-0.017 (0.017)	0.052*** (0.019)	0.031* (0.016)	0.062*** (0.018)	0.040*** (0.012)
Population	0.001 (0.004)	0.008* (0.004)	0.007 (0.004)	-0.005* (0.003)	-0.011** (0.004)	0.009** (0.004)	0.012*** (0.003)
Unemployment rate	-0.012*** (0.002)	-0.006*** (0.002)	-0.003*** (0.001)	-0.009*** (0.002)	-0.011*** (0.001)	-0.006*** (0.002)	-0.002 (0.001)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

The main explanatory variable *Exposure in last 60 days* is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days from an ESS interview date, and 0 otherwise.

Research sample includes all 22 countries observed from 2002 to 2017.

NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Adjusted p-values for multiple-hypothesis testing using the Simes adjustment are 0.0131, 0.004, 0.0011, 0.0467, 0.3663, 0.0061, and 0.0011 for column 1 through 7, respectively. Adjusted p-values for multiple-hypothesis testing using the Hochberg adjustment are 0.028, 0.0087, 0.0015, 0.08, 0.3663, 0.014, and 0.0019 for column 1 through 7, respectively. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

In Table 3.5, we present the results of the benchmark model with different values of “n” – 60 days, 120 days, 180 days. The coefficients reported here indicate that the magnitude of the impact reduces with decrease in temporal proximity, i.e. as the gap between a terrorist incident and an interview increases. We further partition each of the 3 temporal windows of 60, 120, and 180 into 30-day ones.³⁴ By doing this, we can identify the window when the impact of violence is strongest with more precision. The coefficients presented in Table 3.6 demonstrate that it is the first two 30-day subdivisions, i.e. the closest 60 days, when the impact is significant. Thus, an

³⁴ The 60 days window is subdivided into two 30-day windows, 120 days window is subdivided into four 30-day windows, and 180 days window is subdivided into six 30-day windows.

individual expresses significant distrust in institutions, when he/she is interviewed within 60 days of being exposed to *serious* terrorist attack(s).

Table 3.5. Impact of exposure to terrorism related violence on trust in institutions (different values of n)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure in last 60 days	-0.027*** (0.010)	-0.026*** (0.008)	-0.028*** (0.007)	-0.018** (0.009)	-0.007 (0.008)	-0.031*** (0.010)	-0.029*** (0.008)
Exposure in last 120 days	-0.016 (0.010)	-0.017** (0.008)	-0.023*** (0.007)	-0.016 (0.010)	-0.006 (0.009)	-0.021** (0.010)	-0.015** (0.007)
Exposure in last 180 days	-0.013 (0.010)	-0.014* (0.008)	-0.018*** (0.007)	-0.012 (0.009)	-0.003 (0.009)	-0.014 (0.009)	-0.012* (0.007)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

Table 3.6. Impact of exposure to terrorism related violence on trust (Temporal windows subdivided)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure 60 days(first 30)	-0.018* (0.010)	-0.019** (0.008)	-0.017*** (0.007)	-0.014* (0.008)	-0.007 (0.008)	-0.029*** (0.010)	-0.024*** (0.008)
Exposure 60 days(last 30)	-0.017** (0.008)	-0.022*** (0.007)	-0.027*** (0.007)	-0.011 (0.008)	0.001 (0.008)	-0.016* (0.009)	-0.019*** (0.006)
Exposure 120 days(first 30)	-0.019* (0.010)	-0.018** (0.008)	-0.016** (0.006)	-0.014* (0.008)	-0.007 (0.007)	-0.030*** (0.010)	-0.025*** (0.008)
Exposure 120 days(second 30)	-0.017** (0.008)	-0.022*** (0.007)	-0.026*** (0.007)	-0.011 (0.008)	0.000 (0.008)	-0.016* (0.009)	-0.018*** (0.006)
Exposure 120 days(third 30)	0.006 (0.006)	-0.003 (0.008)	-0.007 (0.007)	-0.006 (0.007)	-0.007 (0.007)	0.010 (0.008)	0.014* (0.008)
Exposure 120 days(last 30)	0.004 (0.007)	-0.007 (0.008)	-0.015** (0.007)	0.001 (0.007)	0.010 (0.007)	0.005 (0.008)	-0.009 (0.007)
Exposure 180 days(first 30)	-0.016* (0.009)	-0.013* (0.007)	-0.012* (0.006)	-0.012 (0.008)	-0.006 (0.007)	-0.027*** (0.010)	-0.021*** (0.008)
Exposure 180 days(second 30)	-0.016** (0.008)	-0.020*** (0.007)	-0.024*** (0.006)	-0.010 (0.008)	0.000 (0.008)	-0.015* (0.009)	-0.017*** (0.006)
Exposure 180 days(third 30)	0.009 (0.006)	0.003 (0.008)	-0.003 (0.006)	-0.004 (0.007)	-0.007 (0.007)	0.012 (0.008)	0.018** (0.008)
Exposure 180 days(fourth 30)	0.006 (0.007)	-0.002 (0.008)	-0.011* (0.007)	0.004 (0.007)	0.010 (0.007)	0.007 (0.007)	-0.006 (0.007)
Exposure 180 days(fifth 30)	-0.016** (0.007)	-0.034*** (0.006)	-0.027*** (0.006)	-0.012 (0.007)	-0.003 (0.006)	-0.012 (0.008)	-0.021*** (0.007)
Exposure 180 days(last 30)	-0.003 (0.007)	-0.010 (0.007)	-0.007 (0.005)	-0.007 (0.007)	0.001 (0.007)	-0.004 (0.007)	-0.006 (0.007)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Note: Table note continued

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is subdivided into two 30-day windows, four 30-day windows, and six 30-day windows respectively. For each group, the first 30-day window is the closest to the interview date.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

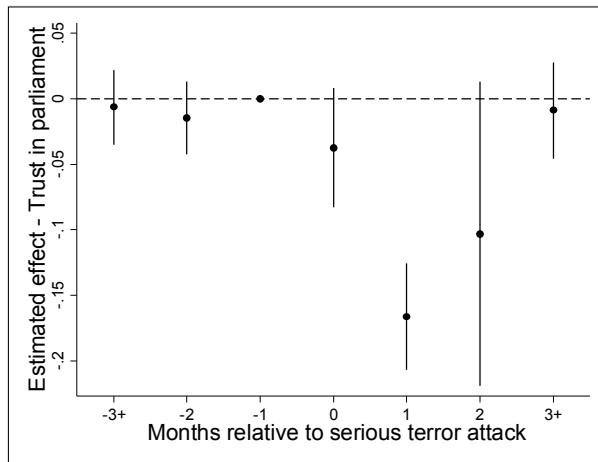
The results from estimating equation (2) is presented in Table 3.7 and Figure 3.14. In Figure 14, the height of the bars extending from each point represents the bounds of the 90% confidence interval. Each of the panels in the figure shows coefficient estimates for trust in each of the 7 institutions. It can be observed that the estimated effects of terrorism on lagged terms are all small in magnitude for almost all institutions and mostly are statistically insignificant.

Table 3.7. Impact of exposure to terrorism related violence on trust in institutions by months elapsed from attack - Event Study

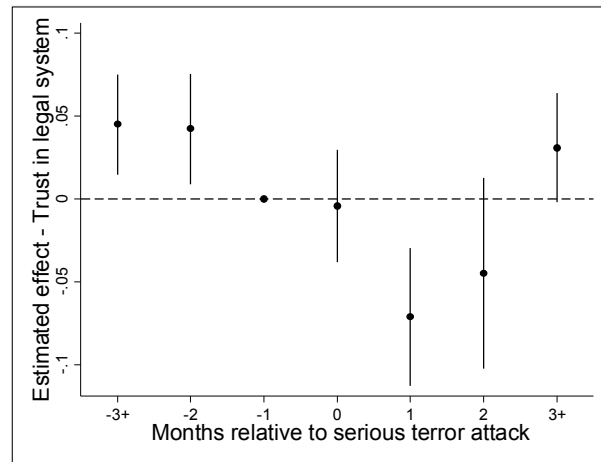
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Month of attack	-0.037 (0.027)	-0.004 (0.020)	-0.048* (0.025)	-0.048 (0.036)	-0.032 (0.031)	-0.030 (0.028)	-0.044** (0.018)
1st month post attack	-0.166*** (0.024)	-0.071*** (0.025)	-0.092*** (0.024)	-0.149*** (0.021)	-0.145*** (0.022)	-0.143*** (0.030)	-0.097*** (0.022)
2nd month post attack	-0.103 (0.070)	-0.045 (0.035)	-0.097** (0.048)	-0.119 (0.078)	-0.132** (0.061)	-0.064 (0.089)	0.054 (0.072)
3rd month or more post attack	-0.009 (0.022)	0.031 (0.020)	0.011 (0.023)	-0.030* (0.017)	-0.054** (0.021)	-0.044* (0.023)	0.007 (0.021)
1st month prior to attack - omitted
2nd month prior to attack	-0.015 (0.017)	0.042** (0.020)	0.000 (0.018)	-0.014 (0.021)	-0.020 (0.014)	-0.000 (0.026)	0.031 (0.021)
3rd month or more prior to attack	-0.007 (0.017)	0.045** (0.018)	0.025 (0.022)	-0.017 (0.015)	-0.032* (0.016)	0.002 (0.019)	0.035* (0.020)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

1st month post attack is a dummy variable that takes the value 1 if an individual is surveyed in the 1st month after a serious terrorist attack. Likewise, *2nd month post attack* and *3rd month post attack* are generated. *1st month prior to attack* is a dummy variable that takes the value 1 if an individual is surveyed in the 1st month before a serious terrorist attack. Likewise, *2nd month prior to attack* and *3rd month prior to attack* are generated. *Month of attack* is a dummy variable that takes the value 1 if an individual is surveyed in the same month as a serious terrorist attack. *1st month prior to attack* is the omitted category. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Also included NUTS 1 level region specific time trends. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

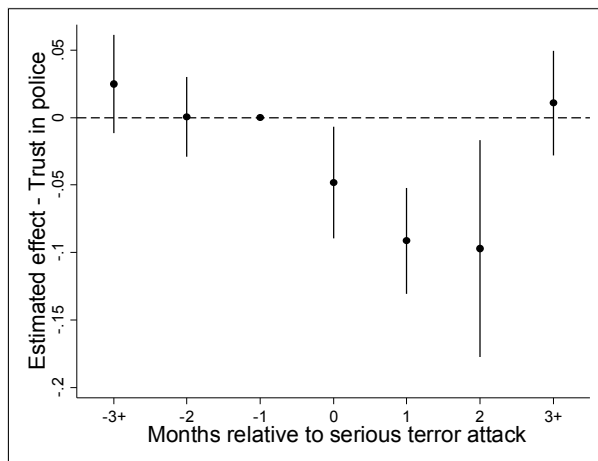
Panel A: Parliament



Panel B: Legal system



Panel C: Police



Panel D: Politicians

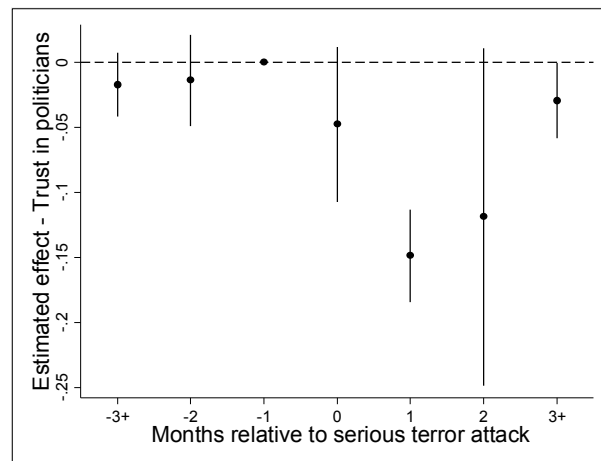
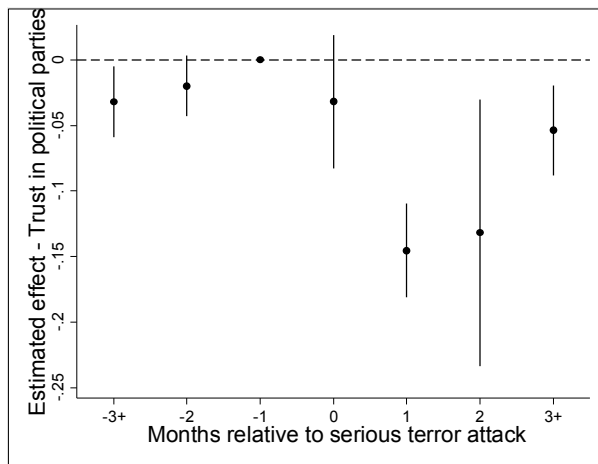


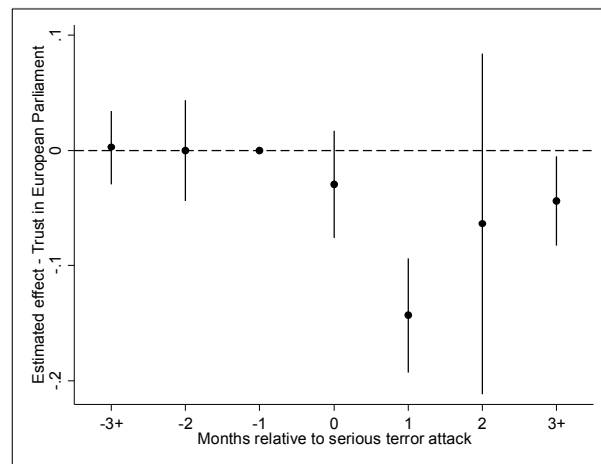
Figure 3.14. Dynamic effects of terrorism on trust in institutions

Note: Figure continued

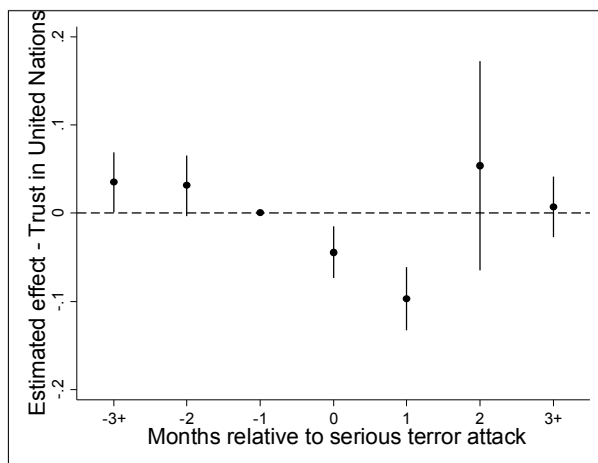
Panel E: Political parties



Panel F: European Parliament



Panel F: United Nations



Spatial proximity

Next, we plan to study how the spatial proximity to terrorist incident(s) influence the effect of violence. GTD provides the exact GPS co-ordinate for each terrorist incident included in their database. Unfortunately, ESS does not do so. The smallest geographical region to which a respondent can be located is the NUTS 1 level regions. But for some countries, like Denmark the NUTS 1 level is the whole country itself. Hence, instead of calculating the physical distance between an individual and an incident, we utilize the neighboring countries. We restrict to only the border sharing neighbors of each of the 22 *source* countries.³⁵ Then, we create a dummy variable that takes the value of 1 when an individual i interviewed on date dmt , residing in country c is exposed to *serious* terrorist attack(s) occurring in one or more of its neighboring countries in the last n days. For example, Spain has 5 border sharing neighbors - Morocco, Andorra, France, Portugal, and Gibraltar. Among these 5 neighbors, France and Morocco have encountered *serious* terrorist attacks within our timeline. So the dummy variable takes the value 1 if an individual residing in Spain is exposed to serious attacks in Morocco and/or France in the last 60, 120, and 180 days from an interview date occurring in the source country. The coefficients presented in Table 3.8 illustrate the effect neighboring countries' terrorism on an individual's trust level, while controlling for his/her own country's terrorism's influence. The results imply that, individuals are negatively affected by violence only when the attacks are occurring in their own country. We do not observe any significant negative effect of violence imposed by terrorism as the spatial distance increases between an attack and a survey location.

³⁵ We consider the same 22 *source* countries as used in our benchmark model - Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, and United Kingdom.

Table 3.8. Impact of exposure to neighboring countries' terrorism on trust in institutions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure to neighbors' attacks in last 60 days	-0.007 (0.005)	-0.002 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.001 (0.005)	-0.006 (0.006)	-0.001 (0.004)
Exposure to own country's attacks in last 60 days	- 0.033*** (0.009)	- 0.027*** (0.007)	- 0.027*** (0.006)	- 0.022*** (0.008)	-0.013* (0.008)	- 0.033*** (0.010)	- 0.030*** (0.007)
Exposure to neighbors' attacks in last 120 days	-0.009* (0.004)	-0.004 (0.005)	-0.004 (0.004)	-0.004 (0.006)	0.001 (0.006)	-0.006 (0.006)	-0.005 (0.005)
Exposure to own country's attacks in last 120 days	-0.021** (0.010)	-0.018** (0.008)	- 0.022*** (0.007)	-0.018** (0.009)	-0.010 (0.008)	-0.023** (0.009)	-0.016** (0.006)
Exposure to neighbors' attacks in last 180 days	-0.009 (0.007)	-0.008 (0.007)	-0.000 (0.008)	-0.005 (0.008)	-0.003 (0.009)	-0.010 (0.009)	-0.007 (0.006)
Exposure to own country's attacks in last 180 days	-0.015* (0.009)	-0.014* (0.007)	- 0.017*** (0.006)	-0.012 (0.009)	-0.006 (0.008)	-0.017** (0.008)	-0.014** (0.006)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Exposure to neighbors' attacks in last 60 days, Exposure to neighbors' attacks in last 120 days, Exposure to neighbors' attacks in last 180 days are dummy variables that take the value of 1 if an individual is exposed to *serious* terrorist attack(s) occurring in at least one of their border-sharing neighboring countries in the last 60 days, 120 days, 180 days from an ESS interview date respectively. Here each individual is exposed to both own and neighboring countries' *serious* terrorist attacks.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Impact of country characteristics on effect of terrorism

Tables 3.9 reports the results from estimating equation (3). Here we interact the *Exposure60* variable with different Governance Indicator ranks assigned to the countries. We are interested in understanding how the quality of the existing institutions influences the impact of terrorism. Each of the six panels of Table 3.9 utilizes each of the six indicators. The coefficients of the interaction terms presented reveal that the adverse effect of exposure to violence is significantly curbed as the rank of a country with respect to any of the indicators increases. Thus, our benchmark result that when an individual is exposed to extreme violence inflicted by terrorist attacks his/her distrust in institutions significantly increases remains good, but this increment is relatively less for the residents of countries with better institutional quality.

Table 3.9. Impact of existing institutional conditions on effect of terrorism related violence on trust in institutions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Panel A: Voice and Accountability							
Exposure in last 60 days	-0.571*** (0.114)	-0.412*** (0.099)	-0.371*** (0.102)	-0.514*** (0.108)	-0.450*** (0.099)	-0.645*** (0.092)	-0.401*** (0.075)
Exposure60*Voice&Accountability	0.006*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	0.007*** (0.001)	0.004*** (0.001)
Voice&Accountability	0.003* (0.001)	0.002 (0.001)	-0.001 (0.001)	0.003** (0.001)	0.002 (0.002)	0.004*** (0.001)	0.000 (0.001)
Panel B: Political Stability and Absence of Violence/Terrorism							
Exposure in last 60 days	-0.114*** (0.033)	-0.126*** (0.031)	-0.069** (0.030)	-0.117*** (0.033)	-0.120*** (0.032)	-0.150*** (0.040)	-0.107*** (0.029)
Exposure60*Political Stability	0.001*** (0.000)	0.002*** (0.000)	0.001 (0.000)	0.002*** (0.001)	0.002*** (0.000)	0.002*** (0.001)	0.001*** (0.000)
Political Stability	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.000)
Panel C: Government Effectiveness							
Exposure in last 60 days	-0.343*** (0.090)	-0.247*** (0.070)	-0.201*** (0.075)	-0.317*** (0.086)	-0.301*** (0.079)	-0.422*** (0.090)	-0.222*** (0.064)
Exposure60*Govt Effectiveness	0.004*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.005*** (0.001)	0.002*** (0.001)
Govt Effectiveness	0.002 (0.001)	0.001 (0.001)	-0.000 (0.001)	0.001 (0.001)	0.001 (0.002)	0.001 (0.001)	-0.000 (0.001)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Note: Table continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Panel D: Regulatory Quality							
Exposure in last 60 days	-0.498*** (0.092)	-0.313*** (0.086)	-0.259*** (0.092)	-0.454*** (0.088)	-0.393*** (0.088)	-0.589*** (0.090)	-0.298*** (0.080)
Exposure60*Regulatory Quality	0.005*** (0.001)	0.003*** (0.001)	0.003** (0.001)	0.005*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.003*** (0.001)
Regulatory Quality	0.001 (0.001)	0.002 (0.001)	0.001 (0.001)	0.002 (0.001)	0.001 (0.001)	0.002 (0.002)	-0.000 (0.001)
Panel E: Rule of Law							
Exposure in last 60 days	-0.349*** (0.090)	-0.216*** (0.071)	-0.199*** (0.073)	-0.304*** (0.086)	-0.265*** (0.081)	-0.392*** (0.093)	-0.225*** (0.065)
Exposure60*Rule of Law	0.004*** (0.001)	0.002*** (0.001)	0.002** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	0.002*** (0.001)
Rule of Law	0.003** (0.001)	0.005*** (0.002)	0.004** (0.002)	0.002* (0.001)	-0.001 (0.002)	0.001 (0.002)	0.001 (0.001)
Panel F: Control of Corruption							
Exposure in last 60 days	-0.313*** (0.068)	-0.196*** (0.060)	-0.190*** (0.060)	-0.275*** (0.063)	-0.240*** (0.061)	-0.362*** (0.065)	-0.216*** (0.049)
Exposure60*Control of Corruption	0.003*** (0.001)	0.002*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	0.002*** (0.001)
Control of Corruption	0.004*** (0.001)	0.006*** (0.002)	0.003* (0.001)	0.002 (0.001)	0.001 (0.001)	0.004** (0.002)	0.002 (0.001)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Exposure in last 60 days / Exposure60 is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days from an ESS interview date, and 0 otherwise. *Exposure60* is interacted with each of the rank of each country with respect to the six Worldwide Governance Indicators - Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. (Continued)

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses.

*significant at 10%, **significant at 5%, ***significant at 1%.

3.5 Robustness Checks

We estimate different versions of the main specification, described by equation 1 to investigate the robustness of the results. First, we include a NUTS1 level region specific time trend in Table 3.10. Second, we include the non-European Union member countries in the research sample.³⁶ The result of the benchmark model (equation 1) after including Norway, Switzerland, Turkey, and Ukraine, is presented in Table 3.11. Both these exercises do not alter our main findings.

Next, our concern is that residents of the countries which experience relatively more terrorist attacks might have developed some unobservable characteristics that will affect their reaction to terrorism. So, we control for total number of *serious* terrorist attacks occurring in each of the countries in the previous 3 years and report the results in Table 3.12. Finally, in Table 3.13 we control for the total number of attacks of the previous 3 years. Again, we find that they do not change our results.

We also run a falsification test by utilizing exposure to future terrorist attacks. This implies if an individual was surveyed on 1st December 2010 in France, we are investigating the effect being exposed to the attacks in France in the next 2 months of December 2010 and January 2011. Here, we are analyzing the effect of exposure to violence inflicted by attacks occurring after a person was interviewed. In Table 3.14 and Table 3.15, the main explanatory variable is a dummy variable

³⁶ We only consider those countries that are surveyed two or more times, which excludes Albania and Kosovo. Israel is removed from our sample because it is outside Europe. We do not include Russia due to its long history of unrest. Since Iceland has never been exposed to any serious terrorist attack, we exclude it as well.

that takes the value 1 if an individual can be linked to *serious* terrorist attack(s) occurring in his/her own country n days after he/she is interviewed. The coefficients in Table 3.15 are obtained after controlling for the influence of past attacks. The results from both the tables, consistent with our expectation, show that the point estimates are close to zero and are not significant.

Table 3.10. Impact of exposure to terrorism related violence on trust in institutions (included NUTS1 level region specific time trend)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure last 60 days	-0.023** (0.009)	-0.022*** (0.007)	-0.015** (0.006)	-0.015* (0.008)	-0.002 (0.007)	-0.017** (0.008)	-0.021*** (0.007)
Exposure last 120 days	-0.015 (0.010)	-0.018** (0.008)	-0.012* (0.007)	-0.015 (0.009)	0.004 (0.008)	-0.019** (0.008)	-0.012* (0.006)
Exposure last 180 days	-0.011 (0.009)	-0.019** (0.007)	-0.012** (0.006)	-0.010 (0.008)	0.008 (0.007)	-0.014** (0.007)	-0.012** (0.006)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Also included NUTS 1 level region specific time trends. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Table 3.11. Impact of exposure to terrorism related violence on trust in institutions (including non-EU member countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure last 60 days	-0.032*** (0.009)	-0.027*** (0.007)	-0.026*** (0.006)	-0.022*** (0.008)	-0.013* (0.007)	-0.033*** (0.010)	-0.030*** (0.007)
Exposure last 120 days	-0.019** (0.009)	-0.017** (0.008)	-0.022*** (0.007)	-0.018* (0.009)	-0.010 (0.008)	-0.022** (0.009)	-0.016** (0.006)
Exposure last 180 days	-0.014 (0.009)	-0.013* (0.007)	-0.017*** (0.006)	-0.012 (0.009)	-0.005 (0.008)	-0.016** (0.008)	-0.013** (0.006)
Observations	283422	283738	287476	285444	251935	261386	262534
Mean of Dependent Variable	0.544	0.639	0.761	0.400	0.392	0.552	0.675

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise. After including Norway, Switzerland, Turkey, and Ukraine, research sample includes 26 countries.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Table 3.12. Impact of exposure to terrorism related violence on trust in institutions (controlling for serious attacks of last 3 years)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure last 60 days	-0.027*** (0.010)	-0.026*** (0.008)	-0.027*** (0.007)	-0.017* (0.009)	-0.009 (0.008)	-0.033*** (0.010)	-0.030*** (0.008)
Exposure last 120 days	-0.016 (0.010)	-0.018** (0.008)	-0.022*** (0.007)	-0.014 (0.010)	-0.009 (0.009)	-0.023*** (0.009)	-0.017** (0.007)
Exposure last 180 days	-0.012 (0.010)	-0.014* (0.007)	-0.016** (0.006)	-0.011 (0.009)	-0.005 (0.009)	-0.015* (0.008)	-0.013* (0.007)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. The aggregate number of *serious* terrorist attacks occurring in the last three years is included. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Table 3.13. Impact of exposure to terrorism related violence on trust in institutions (controlling for all attacks of last 3 years)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure last 60 days	-0.023** (0.009)	-0.025*** (0.007)	-0.020*** (0.006)	-0.015* (0.008)	-0.006 (0.008)	-0.029*** (0.009)	-0.026*** (0.007)
Exposure last 120 days	-0.010 (0.010)	-0.015* (0.008)	-0.014** (0.007)	-0.011 (0.009)	-0.003 (0.008)	-0.018** (0.008)	-0.011 (0.006)
Exposure last 180 days	-0.009 (0.009)	-0.012* (0.007)	-0.012* (0.006)	-0.009 (0.009)	-0.001 (0.008)	-0.012 (0.008)	-0.009 (0.006)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. The aggregate number of all terrorist attacks occurring in the last three years is included. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Table 3.14. Impact of violence from future terrorist attacks on trust in institutions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure next 60 days	0.003 (0.007)	0.010 (0.006)	-0.001 (0.005)	-0.001 (0.007)	0.002 (0.007)	0.009 (0.008)	-0.001 (0.005)
Exposure next 120 days	-0.001 (0.007)	0.004 (0.006)	-0.005 (0.006)	0.000 (0.007)	0.003 (0.008)	0.011 (0.009)	0.006 (0.005)
Exposure next 180 days	-0.009 (0.007)	-0.002 (0.007)	-0.007 (0.007)	-0.009 (0.007)	-0.008 (0.008)	0.014 (0.010)	0.004 (0.006)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Each of the main explanatory variables *Exposure in next 60 days*, *Exposure in next 60 days*, *Exposure in next 60 days* is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the next 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise.

Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Also included NUTS 1 level region specific time trends. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Table 3.15. Impact of violence from future terrorist attacks on trust in institutions (controlling for past attacks' effect)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Trust in institutions						
	Parliament	Legal System	Police	Politicians	Political parties	European Parliament	United Nations
Exposure next 60 days	0.005 (0.007)	0.011* (0.006)	0.001 (0.004)	0.000 (0.007)	0.003 (0.007)	0.011 (0.008)	0.000 (0.005)
Exposure last 60 days	-0.027*** (0.010)	-0.026*** (0.008)	-0.028*** (0.007)	-0.018** (0.009)	-0.008 (0.008)	-0.032*** (0.010)	-0.029*** (0.008)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673
Exposure next 120 days	-0.002 (0.007)	0.003 (0.006)	-0.006 (0.006)	-0.000 (0.007)	0.003 (0.008)	0.010 (0.009)	0.005 (0.005)
Exposure last 120 days	-0.016 (0.011)	-0.016** (0.008)	-0.023*** (0.007)	-0.016 (0.010)	-0.005 (0.009)	-0.020** (0.010)	-0.015** (0.007)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673
Exposure next 180 days	-0.011 (0.008)	-0.004 (0.007)	-0.009 (0.007)	-0.010 (0.008)	-0.009 (0.008)	0.012 (0.010)	0.003 (0.006)
Exposure last 180 days	-0.014 (0.010)	-0.014* (0.008)	-0.019*** (0.007)	-0.013 (0.009)	-0.004 (0.009)	-0.013 (0.009)	-0.012* (0.007)
Observations	244,105	244,458	247,504	245,995	216,717	227,746	226,912
Mean of Dependent Variable	0.528	0.631	0.766	0.385	0.377	0.551	0.673

Each of the main explanatory variables *Exposure in next 60 days*, *Exposure in next 60 days*, *Exposure in next 60 days* is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the next 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise.

Each of the main explanatory variables *Exposure in last 60 days*, *Exposure in last 120 days*, *Exposure in last 180 days*, is a dummy variable that takes the value 1 if an individual is exposed to *serious* terrorist attacks occurring in his/her own country in the last 60 days, 120 days, 180 days respectively from an ESS interview date, and 0 otherwise. Control variables included in each of the regressions are age, age², gender, marital status, area of living, household size, employment status, religious affiliation, and level of education of an individual; unemployment rate, per capita GDP, and population of a country. NUTS 1 level region, survey year, survey month, survey day and day-of-the-week fixed effects are included. Also included NUTS 1 level region specific time trends. Standard errors are clustered at NUTS 1 level and reported in the parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

3.6. Conclusion

In this paper, we use individual level data of more than 250,000 individuals from 22 European Union member countries to estimate the effect of violence experienced in the aftermath of terrorist attacks on an individual's level of trust in various institutions like parliament, the legal system, police, politicians, political parties, the European Parliament and the United Nations. After controlling for personal characteristics, time variant country characteristics, along with country and survey year dummies, we find that there is a significant negative correlation between the two. When an individual is exposed to extreme violence, we find a significant increase in his/her distrust in institutions. Thus, our findings imply that acts of terrorism make the residents more skeptical about both the national and the non-national institutions. Moreover, this adverse influence of terrorism reduces with decreased temporal as well as spatial proximity of a respondent to the attacks. We also observe that residents of countries with improved institutional conditions are less detrimentally affected when exposed to extreme violence. We also carry out some robustness checks to ensure that our results are not coincidental. Thus, we can conclude that people express less confidence in institutions immediately after being exposed to terrorism-related violence occurring in their close proximity.

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CHAPTER 4. CONCLUDING REMARKS

In this dissertation, we have tried to understand how random shocks to the economy can shape an individual's perception. The two previous chapters discuss how exposure to violence can influence one's beliefs and preferences. More specifically, how violence can instigate negative sentiments in an entire nation. Mathematically modeling the factors affecting human psyche will help us to undertake better public policy decisions. We have utilized the variation in timing of terrorist events and surveys conducted in different European countries to identify the impact of terrorism-related violence. Since the timing of the surveys is not related to the timing of the attacks, we can safely assume that the terrorist events are exogenous shocks.

In the second chapter, we have established that terrorism can increase anti-immigrant sentiments. When an individual observes a rise in casualties in his/her own country in terrorist attacks carried out by foreign perpetrators, he/she becomes less welcoming towards immigrants in his/her own country. This detrimental effect of terrorism is found to be short-lived, but a sharp rise in anti-immigrant feeling can influence various economic outcomes. We also find evidence of spillover effects from neighboring countries. This reinforces the conclusion that it is indeed terrorism that instigates negative attitudes and not some other underlying factors related to institutions. Moreover, the adverse effect varies from person to person depending on his/her citizenship status, gender, educational qualification, income and actual contact with immigrants.

In the third chapter, we conclude that exposure to terrorist attacks that result in human casualties, can lower an individual's confidence in the effectiveness of his/her own country's institutions. This is also a short-term effect. But in this case, we do not find any evidence of spillover effects. Hence, both close temporal and spatial proximity are important for this effect. Also, the existing institutional quality of a country can alter the effect of terrorism.

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