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# Rally post-terrorism

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## Abstract

This study examines whether the “rally ’round the flag” phenomenon is present after terrorist attacks, and investigates explanations for this increase in confidence in national political institutions and approval of the country leader’s job performance. I exploit variations in terrorist occurrences and results (success or failure) across sub-national EU regions where at least one attack took place during the data period. I show empirically that both terrorist occurrences and results are plausibly exogenous to the prior political and economic climate. Conducting a difference-in-differences analysis, I compare changes in political confidence and approval among individuals who were exposed to an attack in their region with those who were not. Utilizing another more sophisticated identification, I also compare such political changes after successful attacks with those after failed attacks. I find that post-terrorism, individual political confidence and support significantly increased by more than 10 percentage points, and that this political increment was over 5 percentage points after successful attacks relative to failed ones. Such rally effects were temporary and faded away within a year. Furthermore, I explore various potential channels suggesting patriotism and civic engagement as mechanisms while rejecting perceived economic capture and political acquisition as alternative explanations.

**Keywords** Rally ’round the flag effect · Terrorism · Confidence in institutions · Political approval · Patriotism · Civic engagement · Economic capture · Political acquisition

**JEL Classification** D74 · H12 · P16

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## 1 Introduction

In the political sciences literature, the “rally ’round the flag” effect refers to the phenomenon of a rise in popular support for the national leadership following international crises (Mueller 1970; Hetherington and Nelson 2003). After the 9/11 attacks and despite the increased counterterrorism spending worldwide, both transnational and domestic terrorist incidents have resurged, and the consequences of transnational terrorism have become more disastrous than those of domestic terrorism, especially since 2008 (see Section 2 of Gaibullov and Sandler 2019). Thus, terrorism is likely to have become an important potential source of the rally phenomenon. Such a rally effect following terrorist attacks has important economic implications. For immediate crisis aid or management after terrorism, a government often needs to reallocate economic resources from productive investments toward government spending (Blomberg et al. 2004). Moreover, making counterinsurgency efforts, launching reconstruction and community projects, providing social services and taking large numbers of indiscriminate conciliatory acts are effective measures the government can take in the short- to mid-term to reduce terrorism (Berman 2009; Berman et al. 2011; Dugan and Chenoweth 2012). The success of these measures relies on the civilian rally: popular support for the national leadership and/or civic participation in the projects and services.

The current study examines the possibility of the rally effect by investigating the influences of localized terrorism at the subnational level on individual confidence in national political institutions and political support for the country’s leader in the European Union. Moreover, I explore various potential mechanisms, including patriotism, civic engagement, perceived economic capture and perceived political acquisition by the government. This investigation may facilitate understanding whether such political solidarity is more likely to be voluntary or to be elicited by the political incumbent.

Specifically, I manually assemble a comprehensive survey at the individual level with the universe of terrorist attacks in the EU at the first-order subnational (i.e., NUTS 1) regional level. This is possible through utilizing survey information about interview dates and locations. In this way, I connect the experience of terrorism with individual confidence in political institutions and political approval. I examine both confidence in the national government and approval of the country leader’s performance.

I apply a difference-in-differences (DID) approach to compare changes in political confidence and approval among individuals who were exposed to a terrorist attack in their region with those who were not. I restrict the sample to individuals residing in regions that were hit by at least one attack during the data period of 2008–2016. I impose this restriction because targeted regions may differ from non-targeted ones in various aspects, including the political landscape. Such geographic heterogeneity might also intertwine with local political shocks to trigger terrorist occurrences.

Inspired by Brodeur (2018), I take two steps to verify my identification strategy. First, I show that the occurrence of terrorism is orthogonal to various potential confounding attitudes to, and perceptions of, law and order, politics and economic conditions for 1 year, 6 months, or 3 months before a terrorist incident. Thus, I argue that the attack is plausibly exogenous to the prior political and economic climate that may be correlated with individual political confidence and approval.

Second, in the same manner, I again provide evidence that the success or failure of terrorism (conditional on its occurrence) is also plausibly exogenous to the perceived political and economic situation before an attack. The success or failure of terrorist attacks is defined based on the type of attack that took place, and thus is dependent on the latter factor.<sup>1</sup> The identification of terrorism effects then comes from the “inherent randomness” of the success or failure of an attack (Brodeur 2018). With this more sophisticated strategy, I then compare changes in political confidence and approval after successful attacks with those after failed ones. By these two means, I document a consistent rally effect after terrorism.

I find that in the subsequent months up to 1 year post-attacks, the likelihood of having confidence in the national government increased by 11 percentage points. The likelihood of approval of the country leader’s performance rose by more than 13 percentage points after a terrorist incident. Both effects are sizable, in comparison to around 40% rate of political confidence and approval prior to terrorism. Moreover, the increment was 6.5 percentage points for confidence in the national government, and more than 5 percentage points for approval of the country leader’s performance after successful attacks relative to failed ones. These increments are not trivial, compared with about 50% rate of confidence and 45% rate of approval in the case of failed terrorism. The rally effect is thus exhibited post-terrorism. However, such an effect is short-term and fades away two quarters after the terrorist incident, and one quarter after the successful attack in comparison to the failed attack.

In a second step, I explore potential channels through which terrorism affects individual political confidence and approval. First, I provide suggestive evidence for the mechanisms of patriotism and civic engagement. In regions hit by terrorist attacks, stronger patriotism may prevail among civilians. With proxies for patriotism, I document a significant improvement in nationalist sentiment following terrorism. I also find that the increases in political confidence and approval after attacks launched by domestic perpetrators were only half as large as those after attacks launched by non-domestic terrorists. This evidence may also reflect an element of nationalism. Another mechanism of civic engagement may come into effect if residents participate in activities of community rebuilding and need aid or support from the government. Their impression of the government may improve through mutual cooperation with these activities. I find evidence for enhanced civic engagement and reduced dissent from officials after terrorist incidents, which implies this channel of civic engagement.

I then investigate other alternative explanations related to perceived economic capture and political acquisition by the government. After a terrorist attack, the government may allocate economic resources to the affected region to pacify local civilians and maintain their political support. Without direct measurements of resource allocation, I instead analyze the before/after terrorism variation in a composite index of satisfaction with various aspects of the residents’ area, including infrastructure and housing, as well as variations in confidence in the police and perceived safety in the local region. I do not find any significant effects on the subjective or perceived reallocation of economic resources in the targeted areas. Given the subjective nature of

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<sup>1</sup> Appendix C reports the types of terrorist attacks and their corresponding definitions of success in the Global Terrorism Database. If an attack is not considered successful, it is regarded as failed.

political confidence and approval, perceived economic capture does not seem to play an important role in explaining the political effects of terrorism. In addition, a government may grant more political freedom in order to acquire local support. Examining the perceived freedom of expressing political views and the perceived freedom of the media, I do not find evidence for any corresponding improvement after terrorism. Given that the European Union is already an advanced democracy, there may not be much room in terms of franchise extension for the government to manipulate.

This study addresses several strands of literature. Principally, it adds to the growing academic discussion on the political consequences of terrorism. Godefroidt (2023) conducted a meta-analysis on this literature, concluding that terrorism was associated with out-group hostility, political conservatism and the rally phenomenon, though the effect sizes depended on contexts. The first focus of the discussion is on support for and attitudes toward the incumbent. Gassebner et al. (2011) analyzed more than two thousand cabinets in over 150 countries between 1970 and 2002, and found that on average, terrorism shortened cabinet duration. Using the timing of the terrorist attacks in Madrid on 11 March 2004, only 3 days before the congressional election, Montalvo (2011) compared individuals voting before the terrorist acts with those voting afterwards. He documented a negative impact of the attacks on electoral support for the ruling conservative party. Kibris (2011) used the security force casualties in the fight against terrorists as a measurement of the terrorist intensity in Turkey, and found that Turkish voters were sensitive to these incidents; they blamed the government for the losses. Chowanietz (2011) analyzed the responses of political elites and parties to terrorist acts, and found a rally effect among them. Chanley (2002) and Perrin and Smolek (2009) investigated the aftermath of the 9/11 attacks in the USA and documented an increase in trust in the national government. Similarly, Dinesen and Jæger (2013) examined changes in trust in institutions after the 3/11 Madrid terrorism, and expanded the types of institutions to politics, media and justice. Nussio (2020) studied the attitudinal and emotional consequences of the 2016 Berlin Christmas market Islamist terrorism, and documented unchanged political attitudes but escalated sadness and anger. Somewhat less related is the work of Bozzoli and Müller (2011), who used the London terrorist attacks in 2005 as a shock to examine individual risk perceptions. They found that terrorist-induced risk assessment enhanced the willingness to trade off security for liberties. Linking changes in individual democratic attitudes to regional variations in terrorist attacks in Pakistan, Rehman and Vanin (2017) identified a positive association between persistent exposure to terrorism and lower support for democratic values.

Closest to my work are the papers of Peri et al. (2020, 2021) and Amarasinghe (2023). Peri et al. (2020, 2021) independently studied the link between terrorism and political opinions using European Social Survey data. The authors documented increased trust in the country's parliament and satisfaction with the national government, but little evidence for changes in attitudes to immigration. Amarasinghe (2023) examined how a constructed composite index of public discontent changes after terrorism, with data at the country level for 135 countries. The author found a short-term increase in public discontent following successful attacks, and provided suggestive evidence that such discontent is aimed at the government. Compared with these studies and other prior work, my study adds to the literature in the following aspects: first,

the rich Gallup survey data in my study help to better delineate potential mechanisms of the terrorism-induced rally effect. I am able to simultaneously explore different channels by analyzing proxy variables for patriotism, civic engagement, perceived economic capture and political acquisition by the government. Thus, this study offers the first attempt to empirically disentangle voluntary solidarity from economically or politically elicited solidarity in the context of terrorism. Second, in the empirical analysis, I aim to combine micro-based data at the individual level with specific characteristics of terrorism such as attack types, logistics and salience. This approach facilitates the comparison of attacks of the same class. Given the empirical evidence provided in the paper for plausible exogeneity of the occurrence and result of terrorism, this approach can hence improve the identification of causal effects. Moreover, I exploit two identification strategies using terrorist occurrence and result, respectively, to verify the robustness of my results and conclusions. Finally, leveraging event data at the more precise subnational administrative (i.e., NUTS 1) regional level, I establish the post-localized-terrorism rally effect at the individual level, in terms of both national political institutions and the country's leader. Following localized terrorism in the EU, not only did individual confidence in the national government increase, but individual support for the country leader's performance also improved in the short run.

Another focus of the political discussion is on the corresponding shift of the political landscape post-terrorism. Gould and Klor (2010) relied on geographic variations in terrorism from 1988 to 2006 in Israel to investigate political responses of Israelis. They found that Israelis became more willing to make territorial concessions and shifted their political landscape to the left following terrorist incidents. Even though Israelis tended to vote for right-wing parties, these parties moved to the left after terrorism.<sup>2</sup> Using a German individual panel from 1999 to 2003, Schüller (2015) studied the effect of the 9/11 terrorist attacks on political mobilization and detected a resulting shift in a conservative direction. As for the same incident, Kaushal et al. (2007) found a rise in hate crimes and a reduction in intrastate migration of Arab and Muslim men, and Åslund and Rooth (2005) documented deteriorating attitudes toward certain ethnic minorities in Sweden after the 9/11 attacks in the U.S. Alesina et al. (2019) developed a model showing that voting for parties against criminal organizations decreased after violence conducted by these organizations. They found empirical evidence by analyzing large data in Sicily and across Italian regions. Combining long-term individual panels from several Western countries with global terrorism information over 20 years, Akay et al. (2020) found that global terrorism reduced subjective well-being and raised the intention to vote for conservative parties. Giavazzi et al. (2020) utilized a machine learning method to analyze texts of Twitter users in Germany. They discovered that after terrorism and criminal events, Twitter texts on average became similar to those of the far-right party AfD. They also found an association between shifts in textual similarity and changes in the vote shares in federal elections. The vast majority of the above studies presented a voting inclination toward the right-wing or conservative parties in the mid- or longer-term. By contrast, the current paper deals with the prompt political attitudinal responses to terrorist attacks. I document new

<sup>2</sup> Berrebi and Klor (2006, 2008) and Getmansky and Zeitzoff (2014) also documented an increase in voting for ring-wing parties in response to terrorism in Israel.

evidence for the transitory attitudinal reactions concerning political confidence and approval directly after terrorist incidents. The corresponding rally effect in terms of these political attitudes became nonsignificant within a year following terrorism.

Moreover, my paper complements the literature on the economic impact of conflicts or unrest. With regard to terrorism, Abadie and Gardeazabal (2003) documented a 10 percentage points reduction of GDP per capita in the Basque Country following the outbreak of terrorism in the late 1960s compared with a synthetic control region. Bloom et al. (2007) showed that during periods of high uncertainty, such as after 9/11, the responsiveness of investment by firms to any given policy stimulus may be much weaker. Kaushal et al. (2007) discovered an association between 9/11 and a 10 percentage points temporary decline in the real wage and weekly earnings of Arab and Muslim men. Similarly, Elsayed and De Grip (2018) found that following Islamic terrorist attacks across Europe, Muslim immigrants' attitudes toward integration worsened, and that their (perceived) integration related to segregation and unemployment also deteriorated in the Netherlands. Analyzing Israelis' reactions to terrorism during the "Al-Aqsa" Intifada, Becker and Rubinstein (2011) found that occasional users reduced their demand for goods and services subject to terrorist attacks as a response to fears of future dangers. Brodeur (2018) noted that successful terrorist attacks reduced jobs and total earnings in affected regions relative to failed attacks. The successful terrorist attacks especially diminished housing prices and raised consumer pessimism about business and buying conditions. Terrorism leads to a reallocation of economic resources and an increase in counterterrorism expenditure. For instance, Di Tella and Schargrodsky (2004) and Draca et al. (2011) both documented a notable increase in police deployment immediately after terrorist incidents in targeted regions, and a resulting reduction in local crime rates. According to the calculation by Mueller and Stewart (2014), domestic counterterrorism spending per year was 25 billion US dollars in 2010 before the 9/11 terrorist attacks, where the expenditure increased three-fold in the subsequent decade. In addition to counterterrorism measures, an incumbent may also try to accommodate the crisis in a political way by extending the franchise (Acemoglu and Robinson 2000a, b, 2001; Aidt and Franck 2015; Besley and Persson 2011), or may attempt to acquire support in an economic way by reallocating resources to affected regions (Maffioli 2020; Zhu 2018).<sup>3</sup> In the current study, I not only investigate both channels of perceived economic capture and perceived political acquisition by the government post-crisis, but also analyze whether these strategies work. I document no significant improvements in confidence in the police or perceived safety, no significant perceived reallocation of economic resources and no increase in perceived political freedom in the targeted regions from the perspective of citizens.

Last but not least, the current study is closely related to research on changes in political trust and citizen cooperation corresponding to changes in institutional performance. Some studies in political science, for example, Mishler and Rose (2001), Rothstein and Stolle (2008) and Zmerli and Newton (2008), argued that political trust was endogenous to the performance of political institutions; that is, confidence in political institutions was a consequence rather than a cause of their performance. This

<sup>3</sup> Political connections with firms further facilitate such resource allocations (Faccio 2006; Fisman 2001; Hodler and Raschky 2014; Shleifer and Vishny 1994).



idea was modeled as “consensually strong state equilibrium” by Acemoglu (2005). Among empirical studies in economics, Aksoy et al. (2020) found a persistent negative impact of epidemic exposure in people’s “impressionable years” on confidence in political leadership and institutions. Such results were mainly driven by individuals in weak states incapable of acting against epidemics, thereby disappointing citizens. Dell et al. (2015) documented that in Northern Vietnam, where there was a stronger bureaucratic capacity, citizens were more able to organize and cooperate with the local government. Furthermore, using high-stakes lab-in-the-field experiments in Pakistan, Acemoglu et al. (2020) found that receiving information on the improved service delivery of state courts increased citizens’ willingness to interact with, and trust in, the courts. People with updated information also reduced their interactions with non-state actors. My study, instead, documents increased confidence in political institutions and political approval among citizens in adversely affected regions, who did not even perceive improvements in local community basics following terrorist incidents. This was even the case if a government failed to prevent terrorism (i.e., an attack was successful). However, additional analyses in the current study also suggest that the rally effects are not independent of a government’s performance against terrorism: indeed, an increase in political trust and support diminished if terrorist acts occurred repeatedly in a region over time. Additionally, I provide suggestive evidence for reinforced citizens’ civic engagement, as well as reduced dissent from officials after terrorist incidents.

## 2 Data

In my analysis, I combine the Gallup Worldwide Research survey data with the Global Terrorism Database (GTD). The Gallup Worldwide Research draws a nationally representative random sample of individuals annually from more than 150 countries around the world. Every year it typically surveys at least 1000 individuals in every country, with either a 1-h face-to-face interview or a 30-min telephone interview. These cross sectional data include respondents’ personal characteristics, such as gender, age, highest completed level of education, marital status, number of children living in the household, whether the respondent was born in the surveyed country and employment status. In addition, the survey asks a set of core questions covering topics including, for example, well-being, political opinions and religious opinions. Importantly, the data record the date and the first-order subnational administrative (i.e., NUTS 1) region for when and where the individual interview was conducted.<sup>4</sup> I exploit this information later to merge the Gallup data with the terrorism data. Data are available for the period 2008–2016.

The Global Terrorism Database (GTD) documents over 190,000 international and domestic terrorist attacks that took place around the world from 1970 to 2018. The data define 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.” To be included in the GTD, an incident has to present three

<sup>4</sup> Please refer to Appendix C2 for more detailed information about the Gallup Worldwide Research Survey.



**Table 1** Means of terrorism characteristics by attack type, weapon type and logistics

	Success (%)	Injury	Death	No. obs (%)
<i>Attack type</i>				
Assassination	23.08	1.38	0.92	13 (2.41)
Armed assault	90.67	7.75	1.75	75 (13.89)
Bombing/explosion	45.91	1.54	0.19	257 (47.59)
Facility/infrastructure	94.58	0.18	0.01	166 (30.74)
Unarmed assault	80.95	2.90	0.14	21 (3.89)
Other and unknown	100.00	1.00	0.88	8 (1.48)
<i>Weapon type</i>				
Firearms	86.67	11.56	2.89	45 (8.33)
Explosives/bombs/dynamite	45.45	1.50	0.19	264 (48.89)
Incendiary	93.14	0.32	0.01	175 (32.41)
Melee	93.02	2.02	0.33	43 (7.96)
Other and unknown	69.23	2.83	0.54	13 (2.41)
International logistics	77.14	10.44	1.54	35 (6.48)
Domestic logistics	80.52	0.77	0.04	77 (14.26)
Unknown	65.89	1.63	0.34	428 (79.26)
Total	68.70	2.04	0.38	540 (100)

attributes: it must be intentional, it must entail some level of violence or immediate threat of violence, and the perpetrators of the incident must be subnational actors. In addition, the incident must meet at least two of the three following criteria: first, the act must be aimed at attaining a political, economic, religious, or social goal; second, there must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) than the immediate victims; and third, the action must be outside the context of legitimate warfare activities. In the current study, I follow the above definition and rules.

For the vast majority of terrorist incidents filed, the data include information about the date and location, the type of the attack, whether the attack was successful or not, the weapons used, the nature of the target, the number of casualties, and the identity of the perpetrator(s). The success or failure of terrorist attacks is defined based on the attack type that took place, thus is dependent on the latter factor.<sup>5</sup> For instance, a bombing is regarded as successful if the explosive device detonates, and as failed if it does not detonate. In order to alleviate concerns about the correlation between terrorism results and differences in counterterrorism capacities, I include *country*×*year* fixed effects and region-specific time trends, in addition to region fixed effects, to account for both time-varying and time-invariant geographical variations in counterterrorism capacities.

Table 1 displays the means of some important characteristics of the attacks in my sample. Among the 540 terrorist incidents occurring in EU countries from 2008 to

<sup>5</sup> See Appendix C for the types of terrorist attacks and their corresponding definitions of success in the Global Terrorism Database.

2016, almost 70% were successful. The most frequent types were bombings and infrastructure attacks, accounting for about 80% of the total incidents. The most common weapons used were bombs and incendiary devices, which sum up to more than 80%. An attack is considered internationally logistic if the nationalities of the whole perpetrator group differ from the attacked location. This kind of attacks accounts for 6.5% of all the incidents and is more salient and consequential than the average terrorist incident.

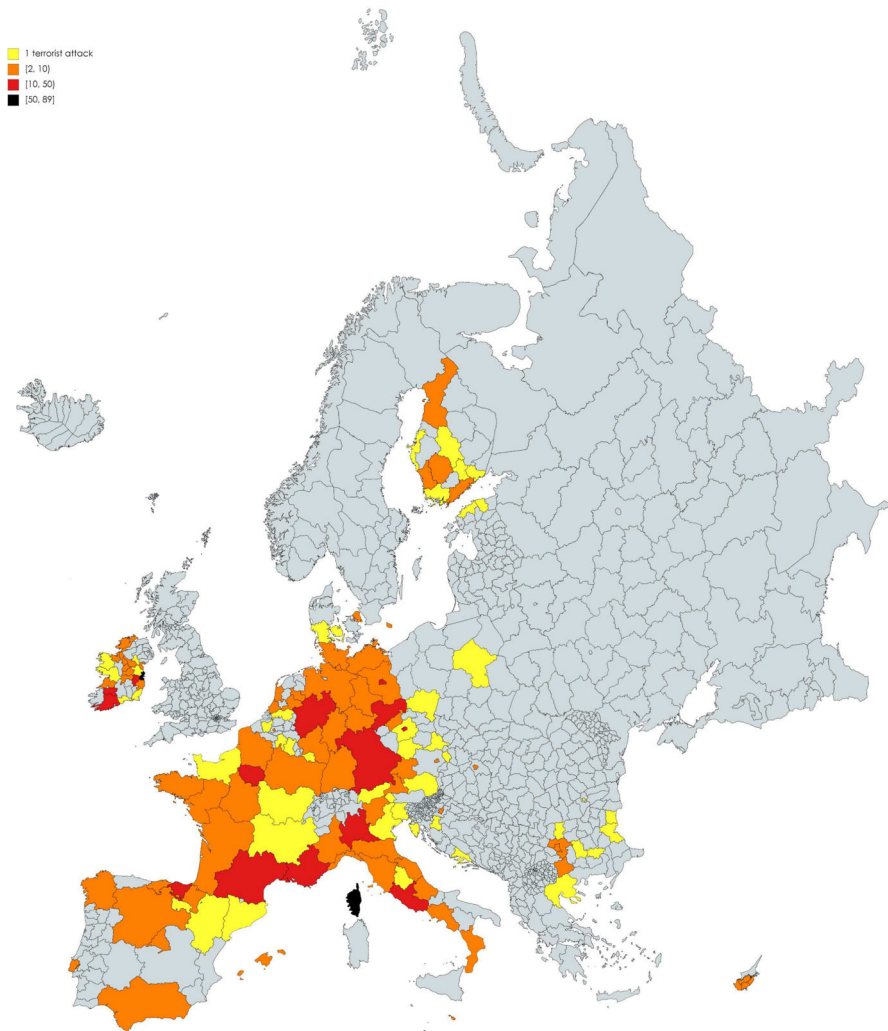
I link the GTD to the Gallup survey with information on the calendar date and the first-order subnational region. Successfully combining the two data sets relies on precise information in the GTD about the date and location of terrorist attacks. If such information is missing for an incident in a country, in order to avoid contamination in the treatment effect, I drop all observations of that country in my sample. I focus on the European Union 27 member states. However, I exclude Greece and Sweden due to missing information for the reasons mentioned previously.<sup>6</sup> Figure 1 illustrates the first-order subnational regions in the estimation sample where terrorist incidents occurred in the period 2008–2016. The darker the color, the more frequently terrorist incidents took place. These incidents are scattered more extensively in Western Europe than Eastern Europe within the EU, and are more concentrated in metropolitan areas, especially the capitals.

To provide an overview of the assembled data, I illustrate the outcome variables by terrorist occurrences in Fig. 2 and by terrorist results in Fig. 3.<sup>7</sup> In both panels of Fig. 2, the bar on the right denotes observations of where and when a terrorist incident took place, and the bar on the left represents observations without terrorism exposure. Since both outcome variables are dummy variables, the bars indicate having political confidence/approval. It is clear that the proportions of having confidence in the national government and satisfaction with the country leader's performance are greater among observations with terrorism exposure than those without. This phenomenon suggests a rally 'round the flag effect after terrorist attacks. Moreover, it is also interesting to note that without terrorism exposure, the majority (about 60%) of my sample had no confidence in their national government and disapproved of their country leader's performance. However, having been exposed to terrorism, the majority (about 55%) of them had confidence in the national government and approved of their country leader's performance.

I then compare political confidence and approval after exposure to successful terrorist attacks with those after exposure to failed ones (see Fig. 3). In every panel, the bar on the right indicates observations with exposure to successful attacks and the bar on the left denotes observations with exposure to failed ones. As shown in the previous figure, the majority of the respondents had confidence in the national government and approved of their country leader's performance after a successful attack. Nonetheless,

<sup>6</sup> The average number of observations, namely "cell size," in 1 year at a NUTS 1 level region, is 88.68 for the estimation sample. To examine the sensitivity of estimates to small cell sizes, I drop observations with the cell size less than 30 and re-estimate the model. The sample size reduces from 61,718 to 58,346, a decrease of 5.46%. The results, reported in Table B6 of Appendix B3.2, are virtually identical to the baseline estimates.

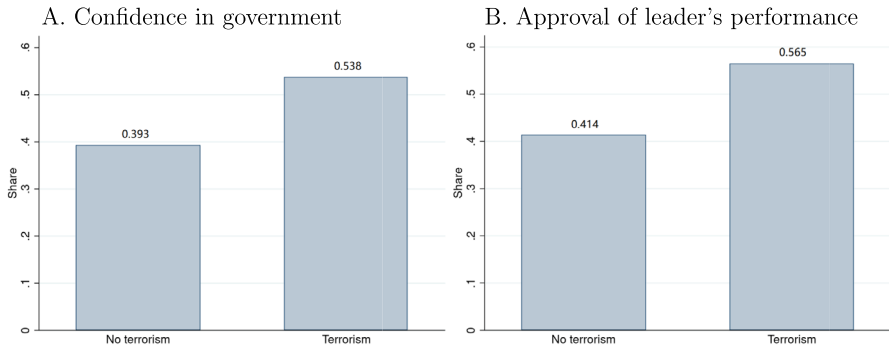
<sup>7</sup> The definitions and descriptives of the relevant variables in the baseline models are provided in Appendix A.



**Fig. 1** Terrorist incidents in the European Union; 2008–2016

in the case of failed attacks, the majority disapproved of the leader's performance, though they still had confidence in the national government. Furthermore, the proportion of having confidence in the national government appears slightly higher after successful attacks than after failed ones.<sup>8</sup>

<sup>8</sup> The unconditional bar graph in Fig. 3A does not necessarily imply no difference in confidence in the national government after a successful terrorist attack relative to a failed one. When comparing variations in these political outcomes, it is necessary to account for the benchmark levels without terrorism exposure as in Fig. 2, for the same region and the same period of time. By this means, one removes influences due to, for example, geographic economic differences or business cycles.

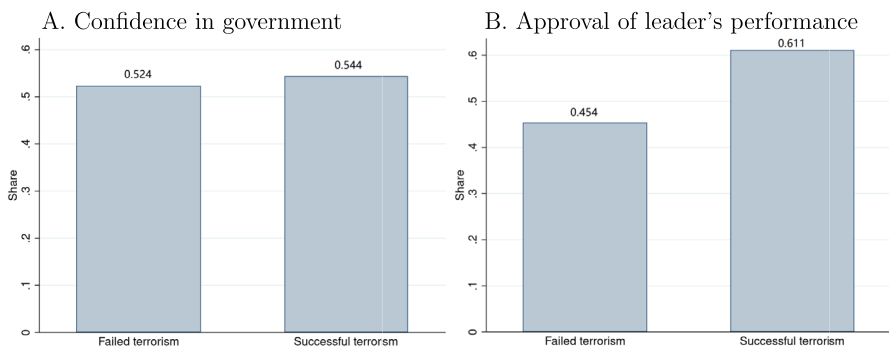


**Fig. 2** Political confidence and approval, by terrorism occurrences. Note: Both outcome variables are dummy variables, so the bars indicate having political confidence/approval

### 3 Empirical strategy

It is difficult to identify the causal effects of terrorism on confidence in political institutions and political approval, as the political landscape of targeted regions may be different from that of non-targeted ones. Moreover, some unobserved political shocks may also trigger the occurrence of terrorism. In line with Brodeur (2018), I address the potential endogenous problem in two steps. First, I restrict the sample to targeted regions only, that is, regions where a terrorist attack was recorded, regardless of whether it was successful or not, in the relevant data period. Second, I show that both the occurrence and the result (i.e., success or failure) of terrorism are orthogonal to the potential confounding attitudes to, and perceptions of, law and order, politics and economic conditions before the terrorist act. At the end of this section, I provide evidence to support my identification strategy.

To begin with, I use OLS in a difference-in-differences (DID) framework to study the effects of terrorist occurrences on confidence in the national government and



**Fig. 3** Political confidence and approval, by terrorism results. Note: Both outcome variables are dummy variables, so the bars indicate having political confidence/approval

support for the country leader's performance.<sup>9</sup> The baseline model is specified as

$$y_{itr} = \beta_T T_{itr} + x' \beta_x + \alpha_t + \theta_r + \epsilon_{itr} \quad (1)$$

in which  $i$  denotes individuals,  $t$  stands for calendar months in different years, and  $r$  refers to the first-order subnational administrative (NUTS 1) regions in my sample of the EU member states.

On the left-hand side,  $y$  represents the dummy variable of having confidence in the national government, or the dummy variable of approval of the country leader's job performance in the main analysis.<sup>10</sup>

On the right-hand side,  $T$  is the dummy variable for the post-terrorism phase if an individual experienced an attack in their region, whether or not it was successful.<sup>11</sup> In the baseline model, I set the post-terrorism period as one quarter after the month of attack—the month when it happened (if the respondent answered the survey after the attack in that month) and the following 3 months.<sup>12</sup>  $\beta_T$  is the parameter of interest that identifies the effects of a terrorist attack.

$x$  denotes the vector for individual demographic and socioeconomic characteristics including the dummy variable for male, the quadratic of age, dummy variables for completed educational levels (i.e., secondary school, college and above) with primary school as the omitted category, dummy variables for marital status (i.e., married, domestically partnered, separated, divorced and widowed) with never married as the reference, number of children living in the household, a dummy variable for being born in the country surveyed and dummy variables for unemployment and being out

<sup>9</sup> De Chaisemartin and d'Haultfoeuille (2020) show that this conventional DID estimator is a weighted sum of the treatment effects in all the treated cells. They argue that the possible negative weights may be an issue if the average treatment effects (ATEs) are heterogeneous across, in the context of our study, regions or periods. Thus, they provide a test computing the weights of the DID estimator to evaluate whether treatment effect heterogeneity is a serious concern or not. Based on their test, for the estimate of terrorist effect on confidence in the national government, 91% of the weights are strictly positive and only 9% are strictly negative; the positive weights sum to 1.002 while the negative weights sum to only  $-0.002$ . Moreover, the estimator and the average treatment on the treated (ATT) may be of opposite signs if the standard deviation of the ATEs across all the treated cells is equal to 0.136; the estimator may be of a different sign than the ATEs of all the treated cells if the standard deviation of those ATEs is equal to 2.036. Both standard deviations require a relatively substantial and unlikely amount of heterogeneity. For the estimate of terrorist effect on approval of the job performance of the country's leadership, the situation is very similar. Therefore, treatment effect heterogeneity is not a serious concern in the current empirical analysis.

<sup>10</sup> Details of specific questions about the outcome variables can be found in Appendix C. In order to investigate whether the nonresponse to the outcome variables is correlated with terrorism, I run two additional regressions with the specification as Eq. 1, by using a dummy variable for missing values of confidence in the national government, and another dummy variable for missing values of approval of the country leader's performance as the outcome variables, respectively. The correlation between terrorism occurrences and nonresponse to confidence in the national government is  $-0.026$  (robust S.E. 0.065), and the counterpart for approval of the country leader's performance is  $-0.024$  (robust S.E. 0.065). Both of them are statistically and economically nonsignificant, so I do not find evidence that nonresponses to the outcome variables are impacted by terrorism.

<sup>11</sup> If residents in neighboring regions of the targeted region were also affected by the attack and hence responded in their political confidence and approval, my model results would be underestimated and the "true" rally effects would be even larger.

<sup>12</sup> I change the bandwidth of the post-terrorism phase as a sensitivity analysis in Section 4.5, and reach the same conclusion.

of labor force, with employment as the omitted category.<sup>13</sup>  $x$  also includes terrorism covariates, such as attack type fixed effects, a dummy variable for logistically international attacks, a dummy variable equal to 1 if it is unknown whether an attack was logistically international or not and another dummy variable for a major attack, specifically an attack resulting in property damage greater than one million US dollars or with more than ten deaths. The terrorism covariates are switched on only during the “treatment” period, that is to say, the post-terrorism phase as discussed previously. It is of importance to include these terrorist characteristics in the model; they provide the capacity to compare attacks of the same class and to explore the potential heterogeneous effects of different classes of terrorist attacks.

Furthermore,  $\alpha_t$  indicates time period fixed effects and  $\theta_r$  represents region fixed effects. These two sets of dummy variables are vital to capture, respectively, time variations common to all regions and time-invariant geographical heterogeneity. For example, the common part of influence of the Great Recession is captured by  $\alpha_t$ . The variations in a region’s capacity to deal with terrorism, or geographically differential economic conditions are accounted for by  $\theta_r$ . For a sensitivity analysis performed in Section 4.5, I include *country*  $\times$  *year* fixed effects to account for country-specific and time-varying unobservables, such as counterterrorism measures and spending. I also include region-specific time trends to identify the developments of political confidence and approval divergent in different regions over time. Lastly,  $\epsilon$  is an error term.

I then adopt a more sophisticated identification strategy, advocated by Brodeur (2018), by comparing successful attacks with failed attacks. This strategy relies on the “inherent randomness” of the success or failure of terrorist incidents conditional on the targeted locations. The model is rewritten as

$$y_{itr} = \beta_S S_{itr} + \beta_T T_{itr} + x' \beta_x + \alpha_t + \theta_r + \epsilon_{itr} \quad (2)$$

where  $S$  indicates a dummy variable for the post-terrorism period if an individual experienced a successful attack in their region.  $\beta_S$  now becomes the parameter of interest that captures the effects of a successful attack relative to a failed attack.<sup>14</sup> All other variables are the same as those in Eq. 1.

In Section 4.1, I will provide evidence for the parallel trends of the outcome variables between individuals before they were exposed to terrorism and those who did not experience such events. I will also show the same type of parallel pre-terrorism trends, distinguishing successful attacks from failed ones. These pieces of evidence justify the application of the DID framework.

Now, I show empirical evidence for the plausible exogeneity of terrorism occurrences and the “inherent randomness” of terrorism results, on which my identification

<sup>13</sup> Since the data on employment status in the Gallup worldwide survey are available only after 2008, the models are thus estimated for the corresponding period.

<sup>14</sup> If a failed attack has smaller effects than a successful one in the same direction, then my estimates are a lower bound for the effects of terrorism; that is, the effects relative to no terrorism exposure. This is verified by the estimates in column (4) of Table 2, and discussed in detail in Section 4.2.

strategy is based. Using regional-level data, Brodeur (2018) showed that the success (or failure) of terrorist attacks was plausibly random. Using a similar method, I verify with my individual-level data that both the occurrence and the result—success or failure—of terrorism are orthogonal to potential confounding factors in respect of (perceived) local law and order, corruption in the government and business, life satisfaction and freedom, opinions about the place of residence and economic conditions, as well as various political attitudes before the occurrence of a terrorist incident. By this means, I argue that terrorism occurrences and results are plausibly exogenous to the political and economic climate pre-incident that may be correlated with individual political attitudes and trust in political institutions.

Specifically, Table B1 in Appendix B displays model estimates in which I regress the occurrence (the first three columns) and the success (the last three columns) of terrorist incidents on all the above potential confounders, as well as covariates in Eq. 1, with observations in the phase of 1 year before to 3 months before a terrorist attack. I utilize observations with terrorist exposure only to predict the success of terrorism, thus the number of observations in the last three columns is considerably smaller than in the first three columns. In the table, only a few coefficients of the potential confounders are significant at the 5 percent level. Even for those, the magnitude is trivial or the significance is not consistent or robust to different pre-terrorist periods.<sup>15</sup> Moreover, the joint *F*-test in the penultimate row of the table accounts for possible correlations between the potential confounders, providing that possible multicollinearity can affect the precision of the coefficient estimates of individual confounders. The *p*-values of such *F*-tests conclude that we cannot reject that all the coefficients of the potential confounders are jointly zero in the first three columns, i.e., the potential confounders cannot jointly predict the occurrence of terrorism. However, in column (6) where the dependent variable is the success of terrorism, we reject that all the coefficients of the potential confounders are jointly zero at the 10% significance level. Thus, some of the potential confounders 1 year before terrorism seem to predict the success of terrorism. From the perspective of the joint test, terrorist occurrences seem more plausibly exogenous than terrorist results to the prior political and economic climate.

In addition, I apply the Holm-Bonferroni method to correcting for multiple statistical tests. The corresponding adjusted *p*-values of the coefficient estimates of the

<sup>15</sup> Specifically, in the first three columns for the terrorism occurrence, 6 of 78 confounder coefficients are marginally significant at the 10% level and another 4 coefficients are significant at the 5% level in total; in the last three columns for the terrorism success, 3 of 78 confounder coefficients are marginally significant at the 10% level and another one coefficient is significant at the 5% level in total. However, a caveat before determining whether the terrorism occurrence or the terrorism success is more plausibly exogenous is that the model specifications, especially the sets of covariates, are different for the terrorism occurrence than for the terrorism success. As mentioned in the table note, terrorist characteristics are included in the last three columns only. After dropping terrorist characteristics in the last three columns, the individual coefficient tests are more comparable between the two model specifications. Without including terrorist characteristics, the last three columns for the terrorism success have 2 of 78 confounder coefficients marginally significant at the 10% level and another 9 coefficients significant at the 5% level in total. Thus, using comparable model specifications, the terrorism occurrence seems more plausibly exogenous than the terrorism success to the prior political and economic climate.



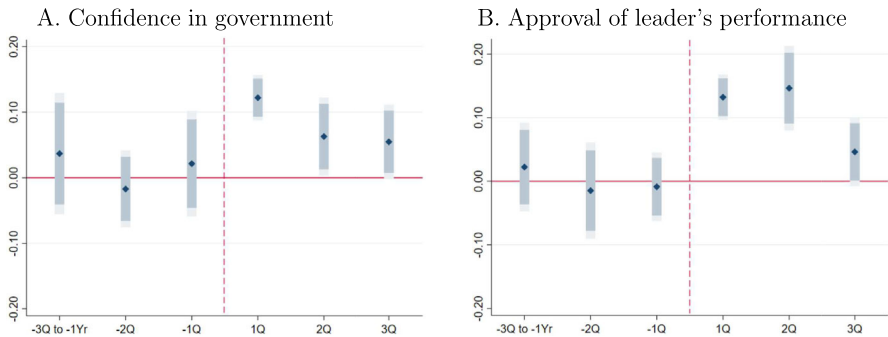
potential confounders are reported in Table B2 of Appendix B. None of them are significant even marginally at the 10% level, whether for the terrorism occurrence or for the terrorism success. Therefore, according to the corrected individual coefficient tests, both the terrorism occurrence and the terrorism success are plausibly exogenous to the political and economic climate prior to terrorism.

The estimates suggest that this large set of potential confounders is considerably balanced between individuals before they were confronted with a terrorist incident and individuals who were not exposed to terrorism, as well as between individuals before they experienced a successful terrorist attack and individuals before they faced a failed one. Therefore, neither the occurrence nor the result of terrorism can be predicted by the perceived political and economic conditions before the incident. I exploit both strategies based on the occurrence and result of terrorist incidents in the empirical analyses. The conclusions drawn from the estimates with the two approaches are in accord, though the rally effects identified based on terrorist results appear more transitory. According to the above statistical tests, terrorist occurrences seem more plausibly exogenous than terrorist results to the politico-economic climate prior to attacks. Furthermore, Eq. 1 based on terrorism occurrences is parsimonious, and the coefficient of successful terrorism relative to failed terrorism in Eq. 2 based on terrorism results underestimates the effect of terrorism which is of interest (reported later in Table 2), estimates based on Eq. 1 are preferred and hence regarded as the baseline.

**Table 2** Effects of terrorism on confidence in government and approval of country leader's performance

	(1)		(2)		(3)		(4)	
A. Confidence in government								
Post-attack	0.081	(0.032)**	0.081	(0.031)***	0.110	(0.013)***	0.045	(0.030)
Success×post							0.065	(0.026)**
B. Approval of leader's performance								
Post-attack	0.057	(0.031)*	0.057	(0.030)*	0.134	(0.021)***	0.084	(0.037)**
Success×post							0.051	(0.030)*
Ind. covariates			Y		Y		Y	
Terror. covariates					Y		Y	
Region FE	Y		Y		Y		Y	
Year×month FE	Y		Y		Y		Y	

Note: Based on 61,718 observations. Individual covariates contain a male dummy variable, the quadratic of age, dummy variables of completed educational levels, dummy variables of marital status, number of children living in the household, a dummy variable of being born in the country surveyed and dummy variables of unemployment and out of the labor force. Terrorism covariates include attack-type fixed effects, a dummy variable of logistically international attack, a dummy variable with the value of 1 if the attack is unknown to be logistically international or not and another dummy variable of the major attack. A constant is also included in every model, but not shown for parsimony. Standard errors clustered at the regional level in parentheses; \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$



**Fig. 4** Confidence in government and approval of country leader's performance across time around the terrorism occurrence. Note: Scale in the horizontal axis is in quarters. The segments denote 90% (dark) and 95% (light) confidence intervals, respectively, of estimated coefficients of interactions of terrorism and time periods around the occurrence of terrorism (the vertical dashed line)

## 4 Parameter estimates

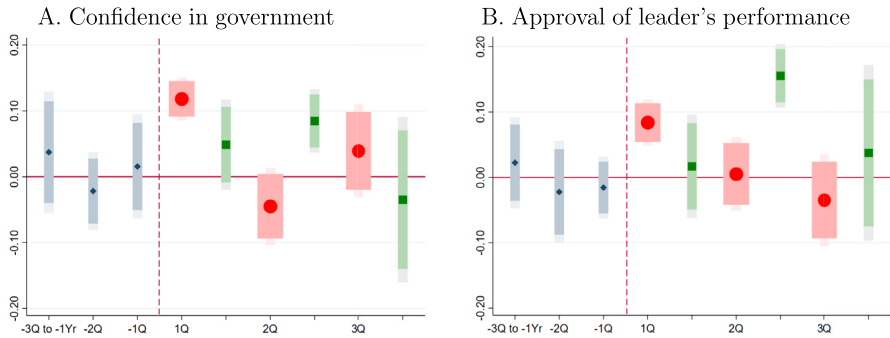
### 4.1 Parallel pre-terrorism trends

To examine the trends of the outcome variables for individuals before they were exposed to terrorism versus those who did not experience such events, I add a set of dummy variables for one quarter, two quarters and three quarters to 1 year before an attack, respectively, in Eq. 1. If the coefficients of these quarterly dummy variables pre-terrorism are not significantly distinguishable from zero, it is evidence of parallel pre-trends. The corresponding estimates are visualized in Fig. 4.<sup>16</sup> The figure shows that all estimates pre-attacks are not significantly different from zero at the 5% level. Moreover, the coefficients for 3 months and 6 months after a terrorist incident are sizable and significant for both outcome variables, while estimates 9 months after attacks shrink and already lose significance at the 5% level. Hence, the results imply that the effects of terrorism on confidence in political institutions and political approval are merely short term.

Similarly, Figs. 4 and 5 display the coefficient estimates in the same type of event study, by separating successful terrorist attacks from failed ones.<sup>17</sup> Following the occurrence of terrorist incidents (the vertical dashed line), the red circle estimates with thick segments denote successful attacks and the green square estimates with thin segments refer to failed ones. The rally phenomenon was evident after successful terrorist attacks within one quarter, and disappeared by the second quarter. It materialized more slowly after failed terrorism: the rally effect gradually emerged, and then became significant in the second quarter after the incidents, but vanished in the third quarter as well. Hence, irrespective of the attack result, terrorism triggered a temporary rally phenomenon which faded away within a year, though it operated significantly for one quarter at a different time depending on the result.

<sup>16</sup> The estimates are reported in Table B3 of Appendix B2.

<sup>17</sup> Likewise, the relevant estimates are also reported in Table B4 of Appendix B2.



**Fig. 5** Confidence in government and approval of country leader's performance across time; separating successful terrorism from failed attacks. Note: After terrorist occurrences (the vertical dashed line), the red circle estimates with thick segments refer to successful terrorism and the green square estimates with thin segments denote failed terrorism; see also note under Fig. 4

## 4.2 Effects of terrorism on political confidence and approval

Table 2 provides an overview of the main parameter estimates for the effects of terrorism on confidence in the national government and on political approval of the country leader's performance.<sup>18</sup> The first column includes region fixed effects and time period fixed effects, without other controls. Column 2 adds individual characteristics, and column 3 further includes terrorism covariates. Column 4 displays the results of the more sophisticated model—the effects of successful terrorist attacks in comparison to failed ones.

Panel A reports estimates for confidence in the national government. In the European Union after terrorist attacks, the probability of having confidence in the national government significantly increased by 8 to 11 percentage points across different model specifications in columns 1 to 3. Despite their qualitative similarity, the divergence in the sizes of the effect indicates the importance of the terrorism covariates. Without taking them into account, the political effects could be neutralized by different classes of attacks. In column 4, the coefficient in the second row shows the *additive* effect of successful terrorism to that of failed terrorism. Thus, compared with failed attacks, successful terrorist incidents significantly increased this probability by 6.5 percentage points; the occurrence of terrorism (also the failed events compared with no terrorism exposure) increased the probability by 4.5 percentage points, though not significantly. If we sum up the two coefficients in column 4, we obtain the effect of successful terrorist attacks relative to no terrorism exposure. The magnitude of the sum is the same as the estimate in column 3 since successful attacks dominate not only the number but also the impact of terrorism (see the descriptives in Table 1). Importantly, I find that the effects and their sizes are consistent between specifications in columns 3 and 4. Hence, both identification strategies in column 3 based on terrorism occurrences and in column 4 based on their results yield the same conclusions. Estimates in columns 3 and 4 may be both interpreted as causal effects. As discussed in the previous section,

<sup>18</sup> Extended baseline estimates are reported in Appendix B3. If not specified otherwise, the analyses later are all based on the same estimation sample as in Table 2.

terrorism occurrences seem more plausibly exogenous than terrorism results to the politico-economic climate prior to terrorist attacks. Additionally, the model specification in column 3 is parsimonious, and the coefficient of successful terrorism relative to failed terrorism in column 4 underestimates the effect of terrorism, i.e., the effect relative to no terrorism exposure, estimates in column 3 are preferred and thus regarded as the baseline.

Likewise, panel B presents the effects on approval of the country leader's performance. The occurrence of terrorist attacks significantly raised the probability of approval of the country leader's performance by 6 to 13.5 percentage points, depending on the model specification. Successful attacks significantly increased the performance approval by about 5 percentage points relative to failed ones (column 4).

The effects of terrorism occurrences in column 3 of both panels are sizable, in comparison to around 40% rate of political confidence and approval prior to terrorism. The relative effects of successful attacks to failed ones, displayed in column 4 of both panels, are also not trivial, compared with about 50% rate of confidence and 45% rate of approval in the case of failed terrorism, respectively. Moreover, the rally effects of successful attacks in comparison to failed attacks, that is, the coefficients of *Success*  $\times$  *post*, are smaller and less statistically significant than their counterparts following (general/any) terrorist incidents, namely the coefficients in column 3. This makes sense in that failed terrorism drove a (milder) rally phenomenon (the coefficients of *Post-attack* in column 4). At the end of Section 3, I have presented empirical evidence that both the occurrence of terrorism and the success of attacks may be plausibly exogenous. In this section, I show that both approaches based on terrorism occurrences and results deliver consistent conclusions, even though the rally effects are more transitory when distinguishing successful attacks from failed ones (see Fig. 5).

### 4.3 Potential mechanisms

In this subsection, I explore potential mechanisms through which terrorist attacks could have affected confidence in national political institutions and political approval of the country's leader. I provide suggestive evidence that terrorism could exert influence by triggering stronger patriotism and civic engagement among citizens. However, I do not find evidence for the alternative channels of perceived economic capture or political acquisition by the government.<sup>19</sup>

#### 4.3.1 Patriotism

Patriotism is one mechanism that may drive the rise in political confidence and approval post-terrorism. This proposed mechanism is inspired by the literature dealing with the rally 'round the flag effect, in which the Patriotism School argues that crisis-induced nationalist sentiment translates into political support for the leadership after (international) crises (Brody and Shapiro 1989).

<sup>19</sup> More discussion on alternative explanations for the mechanisms explored in this section can be found in Appendix B4.

**Table 3** Mechanisms of patriotism, civic engagement, economic capture and political acquisition

	(1)	(2)	(3)	(4)
<b>A. Patriotism</b>				
	Move abroad	Move within year		
Post-attack	-0.087 (0.012)***	-0.074 (0.019)***		
No. obs.	61,718	7333		
<b>B. Civic engagement</b>				
	Donation	Volunteer	Help strangers	Voice opinion
Post-attack	0.031 (0.016)*	0.039 (0.034)	0.064 (0.030)**	-0.041 (0.015)***
No. obs.	59,078			43,650
<b>C. Economic capture</b>				
	Index	Conf. police	Feel. safe	
Post-attack	0.017 (0.012)	0.022 (0.015)	0.004 (0.015)	
No. obs.	59,078			
<b>D. Political acquisition</b>				
	Poli. view free.	Media free.		
Post-attack	-0.189 (0.011)***	-0.086 (0.016)***		
No. obs.	36,451	57,565		

Note: Individual covariates contain a male dummy variable, the quadratic of age, dummy variables of completed educational levels, dummy variables of marital status, number of children living in the household, a dummy variable of being born in the country surveyed and dummy variables of unemployment and out of the labor force. Terrorism covariates include attack-type fixed effects, a dummy variable of logistically international attack, a dummy variable with the value of 1 if the attack is unknown to be logistically international or not and another dummy variable of the major attack. A constant is also included in every model, but not shown for parsimony. Standard errors clustered at the regional level in parentheses; \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

In panel A of Table 3, I use unwillingness to move permanently abroad ideally (after a terrorist attack) as one proxy for patriotism.<sup>20</sup> Dreher et al. (2011) showed that terrorist incidents boosted skilled emigration due to deterioration in local living and working conditions. If, even in an ideal situation, individuals would be less likely to move abroad after a terrorist attack, it may reflect a strong nationalistically attached sentiment. After attacks, the probability of being willing to permanently move abroad in an ideal situation was significantly reduced by 8.7 percentage points. Among the potential emigrants, the likelihood of planning to leave their country within the following year significantly decreased by 7.4 percentage points post-attacks. These results are consistent with the patriotism mechanism: terrorist incidents happening in a person's region of residence improved their country attachment and hence decreased their willingness to move abroad and to move soon. Later, as a heterogeneity analysis, I show that political confidence and approval improved two-fold after attacks launched

<sup>20</sup> The table note means that the same sample and the same covariates as for the baseline model specification in column 3 of Table 2 are used for estimation.

by non-domestic terrorists compared with after attacks launched by domestic perpetrators. This difference is in accord with the idea of the nationalist attachment.

#### 4.3.2 Civic engagement

Next, I study the potential channel of civic engagement. After the occurrence of terrorist incidents in their region, residents may be motivated to participate in rebuilding and enhancing their own local community. Needing support from the government and/or cooperating with the government in reconstruction activities, individuals may have greater political confidence and approval. I examine different dimensions of civic engagement: charity donation, volunteer participation in an organization, provision of help to a stranger and opinion voiced to a public official.

Panel B of Table 3 reports the results. Post-terrorism, the probabilities of charity donation and helping strangers significantly rose by around 3 percentage points and 6.5 percentage points, respectively. However, the likelihood of people voicing their opinion to a public official was significantly reduced by about 4 percentage points. This last result makes sense, in that after a terrorist attack, citizens engage in civic events and cooperate with institutions, and hence are less likely to voice dissenting opinions to public officials.<sup>21</sup> The estimates in panel B provide evidence for enhanced civic engagement among residents in adversely affected regions, and thus support the channel of civic engagement.

#### 4.3.3 Economic capture

After a terrorist incident occurs, in addition to immediate responses such as rescuing victims and hunting for and arresting perpetrators, the government may take strategic measures to pacify civilians, especially in the impacted region, in order to preserve their confidence and support. By allocating economic resources to the targeted region and improving (or at least maintaining the pre-terrorist incident) perceived local economic climate, the government will gain approval from civilians affected by terrorism. I term this strategy “economic capture.” The economic capture in this case goes beyond the necessary measures of crisis aid or management, such as reconstruction of the facilities damaged in an attack.

In panel C of Table 3, I present the estimates for the possible mechanism of perceived economic capture by the government. The dependent variable in column 1 is an economic capture index of area basics. This index is constructed based on dummy variables of satisfaction with a series of elements in the respondents’ area of residence. These elements, or “basics,” include infrastructure, such as roads and highways, the public transportation system, housing availability, the educational system or schools and healthcare availability.<sup>22</sup> If the government allocates economic resources to targeted

<sup>21</sup> Another piece of evidence for less political dissent following terrorism is illustrated in Fig. 4: immediately after attacks (i.e., in the first quarter post-terrorism), not only did the average probabilities of political confidence and approval improve, but their standard errors and hence variances also shrank. This suggests that people became more united with political institutions.

<sup>22</sup> Details of specific questions about these elements and how the index is created can be found in Appendix C.

regions, these basics may improve. Lacking an objective measurement for improvement of these elements, the index constructed of satisfaction with basics provides a perceived composite alternative.

Column 1 in panel C displays the effects of terrorism on the economic capture index. There was a nonsignificant increase in the index of 0.017 (in a range of 0–1) after a terrorist incident. That is to say, on average, civilians' satisfaction with the overall area basics improved by around 1.7 percentage points after their region of residence was hit by an attack; however, the improvement was not significant. Thus, the perceived economic capture mechanism does not seem important in explaining the effects of terrorism on confidence in the government and approval of the country leader's performance.

The government may redeploy more police officers to improve protection in targeted regions after the occurrence of terrorism (Di Tella and Schargrotsky 2004; Draca et al. 2011), and this could be regarded as part of a reallocation of economic resources. Hence, in columns 2 and 3 of panel C, I examine the influence of terrorism on the dummy variables of having confidence in the police and feeling safe while walking alone at night. However, I find neither significant nor sizable effects on confidence in the police or perceived safety.

In this subsection, I do not attempt to argue that a terrorism-besieged government has not tried to economically capture political support or improve the security measures in targeted areas following terrorism. Instead, I document that citizens in impacted regions did not perceive significant improvements in these community basics. Considering the subjective and perceived characteristics of political confidence and approval, I do not find evidence that the increased levels of political trust and support post-terrorism can be attributed to the perceived reallocation of economic resources to the relevant areas.

#### 4.3.4 Political acquisition

Along with economic resource allocation, a government may extend the franchise to acquire local political support after terrorist attacks. In authoritarian regimes, democratization can become a concessionary option under the threat of widespread unrest (Acemoglu and Robinson 2000b; Aidt and Franck 2015). Nevertheless, the room for extending the franchise is limited in advanced democracies such as the EU. Thus, I examine the changes in the (perceived) freedom of expressing political views and the (perceived) freedom of the media, rather than changes related to voting rights.

In the last panel, the negative coefficient estimates of *Post-attack* are significant for both (perceived) freedom indicators. If the government's strategy of franchise extension worked, we would see a significant rise in these measures of political freedom post-terrorism. Hence, political acquisition does not seem to be a mechanism.<sup>23</sup> The significant negative impacts of terrorism occurrences on perceived freedom could

<sup>23</sup> One potential concern is that if implemented, the franchise would be extended at the national level rather than at the regional level. Thus, I replicate this analysis at the country level and obtain a marginally significant negative effect (−0.048) on the freedom of expressing political views, and a nonsignificant effect (0.026) on the freedom of the media.



be interpreted as either the restrictions imposed by the authorities (especially in less-liberal EU member states) or the fears of future revenge and further attacks in the affected regions. Neither of the explanations validates the channel of political acquisition.

Therefore, the exploration of potential mechanisms suggests that patriotism and civic engagement of civilians in targeted regions were likely to build links from terrorist incidents to political confidence and approval. Nonetheless, I do not find evidence that the increase in political trust and support after terrorism was due to the perceived allocation of economic resources or perceived political acquisition by the government.

#### 4.4 Heterogeneity investigation

In this subsection, I examine heterogeneous effects in terms of various individual characteristics such as gender, employment status, educational attainment and age cohort and terrorism characteristics including logistics and geography/institution within the EU. The aim is to explore which specific subgroups of people and countries and which classes of attacks drove this post-terrorism rally effect.

For ease of comparison, in panel A of Table 4, I reproduce the baseline estimates from column 3 of Table 2. First, I explore whether there are differentials between men and women. Perrin and Smolek (2009) documented a stronger rally phenomenon among men than among women; however, my estimates in panel B do not accord with their findings. Consistently, increases in both political confidence and approval after terrorist incidents were significant for both genders and of a slightly larger magnitude among women than men. In the last row of the panel, I test whether the gender difference is significant or not. The corresponding  $p$ -values indicate a nonsignificant gap between men and women in the rally effect.<sup>24</sup>

Second, terrorism adversely affects business conditions and leads to job losses (Brodeur 2018). People laid off after a terrorist incident may blame the government for a lack of capacity to deal with the crisis, and hence their own unemployment. Nonetheless, they may also be angry with terrorists because of their own job loss, and thus support the government's counterterrorism measures. The results in panel C seem to support the second hypothesis. Both the employed and the non-employed present significant rally syndrome after terrorism. Among the non-employed, improvements in political confidence and approval were more sizable than those of the employed. However, such a divergence in magnitude is only significant for approval of the country leader's performance, as shown by the  $p$ -value of the difference test.

Third, in panel D of Table 4, I examine the differences between college degree holders and individuals without such a degree. Surprisingly, the effects of terrorism on political confidence and approval for college degree holders are significantly negative

<sup>24</sup> Heterogeneous effects in terms of gender are significant for neither political confidence nor political approval, and heterogeneous effects regarding labor market status and age cohort are only partially significant. This might not necessarily exclude the possibility of heterogeneities concerning these characteristics. Statistical non-significance of these heterogeneities could also be due to fewer observations with terrorism exposure after sample divisions and hence decreased variations that can be leveraged to compare estimated effects between sub-samples. Unfortunately, it seems infeasible to verify this possibility by increasing the proportion of observations with terrorism exposure.

**Table 4** Effects of terrorism on political confidence and approval–heterogeneity investigation

	(1) Confidence govt.		(2) Approval leader		No. obs
A. Baseline	0.110	(0.013)***	0.134	(0.021)***	61,718
B. Gender					
Men ( $\beta_m$ )	0.108	(0.024)***	0.140	(0.025)***	26,801
Women ( $\beta_w$ )	0.125	(0.022)***	0.155	(0.022)***	34,917
$p$ value ( $\beta_m = \beta_w$ )	0.677		0.438		
C. Labor market status					
Employed ( $\beta_{ep}$ )	0.106	(0.023)***	0.107	(0.017)***	33,635
Non-employed ( $\beta_{nep}$ )	0.125	(0.025)***	0.211	(0.036)***	28,083
$p$ value ( $\beta_{ep} = \beta_{nep}$ )	0.645		0.000***		
D. Educational attainment					
College degree ( $\beta_{cg}$ )	-0.247	(0.035)***	-0.300	(0.027)***	15,930
No college degree ( $\beta_{ncg}$ )	0.135	(0.014)***	0.165	(0.022)***	45,788
$p$ value ( $\beta_{cg} = \beta_{ncg}$ )	0.000***		0.000***		
E. Age cohort					
50 & younger ( $\beta_{50-}$ )	0.082	(0.022)***	0.123	(0.018)***	32,636
Older than 50 ( $\beta_{50+}$ )	0.270	(0.052)***	0.187	(0.054)***	29,082
$p$ value ( $\beta_{50-} = \beta_{50+}$ )	0.006***		0.160		
F. Logistics					
Domestic ( $\beta_{dm}$ )	0.111	(0.013)***	0.135	(0.021)***	60,742
Non-domestic ( $\beta_{ndm}$ )	0.265	(0.039)***	0.246	(0.030)***	61,563
$p$ value ( $\beta_{dm} = \beta_{ndm}$ )	0.000***		0.002***		
G. Geography/institution					
Central and Eastern Europe ( $\beta_{ceu}$ )	0.184	(0.022)***	0.072	(0.039)*	19,782
Western Europe ( $\beta_{weu}$ )	0.114	(0.012)***	0.138	(0.022)***	41,936
$p$ value ( $\beta_{ceu} = \beta_{weu}$ )	0.030**		0.016**		

Note: Only the coefficients of *Post-attack* are presented. Individual covariates contain a male dummy variable, the quadratic of age, dummy variables of completed educational levels, dummy variables of marital status, number of children living in the household, a dummy variable of being born in the country surveyed and dummy variables of unemployment and out of the labor force. Terrorism covariates include attack-type fixed effects, a dummy variable of logistically international attack, a dummy variable with the value of 1 if the attack is unknown to be logistically international or not and another dummy variable of the major attack. A constant is also included in every model, but not shown for parsimony. Standard errors clustered at the regional level in parentheses;

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

and very large. Apparently, the rally phenomenon after terrorism was driven by lower educated people without a college degree while such political trust and support among higher educated individuals declined substantially. The difference tests in the last row of panel D confirm such a significant divergence.

Furthermore, I separate the sample into two age groups: one group of 50 years old and below, and the other older than 50. For both outcome variables, the coefficients are significant for the two groups. However, the terrorism-induced rally syndrome was

more sizable among the older cohort than the younger one. The  $p$ -values show that such age cohort differentials are significant for confidence in the national government, especially.

In addition to individual characteristics, I also examine heterogeneity regarding terrorism logistics. In panel F, I distinguish attacks with domestic logistics from those with international or unknown logistics. The coefficients are significant for both types of attacks, but roughly twice as large for non-domestic terrorism as for domestic terrorism. Hence, residents in affected regions seemed to exhibit a considerably stronger rally syndrome after attacks that were launched by non-domestic perpetrators. This substantial gap is further confirmed by the test conducted in the last row. Such a difference is consistent with the patriotism mechanism: people increased their support for the government and approval of their country leader's performance, particularly when attacked by foreign terrorist groups.

Finally, I investigate differentials between EU member states in Western Europe, and those in Central and Eastern Europe, as the latter are traditionally perceived as less liberal or less maturely democratic.<sup>25</sup> The estimates in panel G show that confidence in the national government improved following terrorist attacks more notably in Central and Eastern Europe, while approval of the country leader's performance in Western Europe increased almost twice as much as in Central and Eastern Europe. The tests in the last row confirm such significant geographic and institutional gaps. These results imply that the rally effects seemed to be exhibited more notably in the form of political institutions—the national government in the current context—than the individual leadership in Central and Eastern Europe. Nevertheless, the rally phenomenon was significantly present regarding both political institutions and individual leadership in Western Europe.

In this subsection, I study heterogeneous rally effects in different subgroups and types of terrorism. I find that after attacks, political confidence and approval increased more substantially among the non-employed, individuals without a college degree and older people. However, political confidence and approval reduced significantly, both economically and statistically, among college degree holders. Moreover, attacks launched by domestic perpetrators had only half the extent of political effects as attacks launched by non-domestic terrorists. This may reflect a nationalistically attached sentiment; a mechanism of the rally syndrome. The rally phenomenon was exhibited significantly in terms of both political institutions and individual leadership in Western Europe, while in Central and Eastern Europe, it was presented more strongly in the form of political institutions.

#### 4.5 Sensitivity analyses

To check the robustness of my estimates, I conduct a range of sensitivity analyses. I extend the post-terrorism window period to explore the persistence of the rally effect. I also include *country*  $\times$  *year* fixed effects and region-specific time trends.

<sup>25</sup> According to the definition from the OECD, Central and Eastern European member states of the EU include Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia and the three Baltic States: Estonia, Latvia and Lithuania.

#### 4.5.1 Different periods post-terrorism

In my baseline analysis, I use the month when a terrorist attack took place and the subsequent quarter as the post-terrorism phase. I replicate the corresponding estimates in column 1 of Table 5 for convenience of comparison. I then change the post-terrorism period to examine the robustness of my estimates. I extend the post-terrorism phase to 6 months and 1 year after the terrorist incident in columns 2 and 3, respectively. As shown in the table, the effects of terrorism on confidence in the national government and approval of the country leader's performance were still significant for longer periods but indeed declined both statistically and economically over time.

#### 4.5.2 Inclusion of country $\times$ year fixed effects

In the baseline model, I include the first-order subnational region fixed effects and *calendar year  $\times$  month* fixed effects to account for geographic divergence and time-varying unobservables, respectively, which may affect individual political confidence and approval. Again for ease of comparison, I reproduce the baseline estimates in column 1 of Table 6. In column 2, I further add *country  $\times$  year* fixed effects to the model to capture country-specific differences over time such as counterterrorism measures and spending.

After removing the influence of the potential country-specific and time-varying unobservables, the coefficient of attacks decreases for confidence in the national government but increases for approval of the country leader's performance. Both estimates still remain significant at the 1% level. Thus, these variable unobserved factors cannot be responsible for the rally effect following terrorism.

**Table 5** Effects of terrorism on political confidence and approval–sensitivity analyses with different window periods post-terrorism

	(1) 3 months Baseline		(2) 6 months		(3) 1 year	
<hr/>						
A. Confidence in government						
Post-attack	0.110	(0.013)***	0.081	(0.033)**	0.063	(0.037)*
B. Approval of leader's performance						
Post-attack	0.134	(0.021)***	0.134	(0.018)***	0.086	(0.036)**

Note: Based on 61,718 observations. Individual covariates contain a male dummy variable, the quadratic of age, dummy variables of completed educational levels, dummy variables of marital status, number of children living in the household, a dummy variable of being born in the country surveyed and dummy variables of unemployment and out of the labor force. Terrorism covariates include attack-type fixed effects, a dummy variable of logistically international attack, a dummy variable with the value of 1 if the attack is unknown to be logistically international or not and another dummy variable of the major attack. A constant is also included in every model, but not shown for parsimony. Standard errors clustered at the regional level in parentheses; \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

**Table 6** Effects of terrorism on political confidence and approval—sensitivity analyses with country  $\times$  year fixed effects and region-specific trends

	(1) Baseline	(2) Country $\times$ year FE	(3) Region trends	(4) (2)+(3)
A. Confidence in government				
Post-attack	0.110*** (0.013)	0.102*** (0.021)	0.162*** (0.017)	0.100*** (0.020)
B. Approval of leader's performance				
Post-attack	0.134*** (0.021)	0.165*** (0.022)	0.166*** (0.026)	0.095*** (0.027)

Note: Based on 61,718 observations. Individual covariates contain a male dummy variable, the quadratic of age, dummy variables of completed educational levels, dummy variables of marital status, number of children living in the household, a dummy variable of being born in the country surveyed and dummy variables of unemployment and out of the labor force. Terrorism covariates include attack-type fixed effects, a dummy variable of logistically international attack, a dummy variable with the value of 1 if the attack is unknown to be logistically international or not and another dummy variable of the major attack. A constant is also included in every model, but not shown for parsimony. Standard errors clustered at the regional level in parentheses; \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

#### 4.5.3 Inclusion of region-specific trends

In column 3 of Table 6, I include region-specific linear time trends to identify developments of political confidence and approval divergent in the first-order subnational regions over time. The results are of a larger magnitude than the baseline.

In column 4, I include both *country* $\times$ *year* fixed effects and region-specific time trends. The effects of terrorist attacks on both outcomes decrease, but remain statistically significant.

All in all, effects on political confidence and approval materialized in the short term up to 1 year after a terrorist incident. They are robust to accounting for the impact of country-specific and time-varying unobservables, and the divergent time trends of different regions. They were also not the result of events happening close in time to a terrorist incident.

## 5 Conclusions

After crises, we often observe an increase in political support for the incumbent government. This political solidarity may be due to patriotism being triggered, when people witness that their country has suffered. However, this increase in approval may also be because of capture by the government. When a crisis occurs, the political incumbent will try to mitigate negative consequences in order to pacify local residents and maintain their political support. In addition to immediate measures of crisis response and management, the government may make efforts to obtain political support, either

through economic strategies by reallocating resources to the impacted regions or with political tactics by extending the franchise.

The current study examines whether this “rally ’round the flag” effect is exhibited in the context of terrorism, and attempts to explore explanations for this potential phenomenon. I compare variations in individual confidence in national political institutions and political approval of the country’s leader across subnational EU regions after terrorist attacks with those without terrorism exposure. I find that such political confidence and approval increased by more than 10 percentage points following terrorist incidents, and that this political increment was over 5 percentage points after successful attacks relative to failed ones. Moreover, the rally effects were temporary and became nonsignificant two quarters after the terrorist incident and one quarter after the successful attack in comparison to the failed attack.

Further explorations of mechanisms provide suggestive evidence that increases in political trust and support were more likely to be driven by patriotism and civic engagement of citizens. Nonetheless, I do not find evidence supporting alternative explanations of perceived economic capture or political acquisition by the government. In an advanced democracy such as the EU, there is indeed little room in franchise extension for the political incumbent to manipulate. This rally effect is important and helpful for a terrorism-besieged government to successfully take both immediate measures of crisis management and resource reallocation efficiently, and short- to mid-term measures of counterterrorism and social service and project provision effectively. However, its unsustainable property also implies that the rally effect may not be substantially useful for the government to advance the social and economic projects in the longer term.

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**Data Availability** Researchers who have obtained the necessary permissions from Gallup to use its World-wide Research Survey data are invited to contact the author to access the replication materials associated with this study. Upon request, the author will provide the Stata code and relevant documentation required to reproduce the results presented in the published article.

## Declarations

**Conflict of interest** The author declares no competing interests.

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