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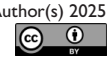

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Strategic aid allocation in response to terrorism

Amber Bosma and Magnus Lundgren

Abstract

This study explores how terrorism influences foreign aid allocation using data from 163 countries between 2001 and 2020. While prior research suggests foreign aid can reduce terrorism, less is known about how terrorism shapes donor decisions. We argue that donors, viewing terrorism as a threat linked to underdevelopment, strategically increase aid to mitigate these risks. Using a two-stage model, we find that terrorism does not significantly affect the probability of a country being selected as an aid recipient. However, once selected, countries with higher levels of terrorist activity receive increased aid, particularly in the security and governance sectors. These findings suggest that donors respond to terrorism by directing aid strategically, targeting sectors best suited to address the root causes of terrorism. This refines our understanding of aid allocation, demonstrating that while terrorism may not influence the initial selection of aid recipients, it strongly shapes how aid is distributed.

Keywords

aid, DAC, development, donors, bilateral aid, terrorism

Introduction

Foreign aid is increasingly viewed as a tool to reduce and prevent terrorism (e.g. Azam and Thelen, 2010; Savun and Tirone, 2018). Yet, significant debate persists over whether donors systematically respond to terrorism by directing more aid to regions experiencing heightened terrorist activity. This study revisits that debate, presenting refined theoretical arguments and expanded empirical data, covering a more comprehensive time frame than previous research. Drawing on the theory of targeted development (Bermeo, 2017), we argue that donors perceive terrorism as a source of negative externalities that could threaten their interests at home. To prevent and mitigate these spillovers, donors are expected to (1) direct aid to countries with growing terrorist threats, (2) prioritise aid where transnational terrorism is dominant, and (3) channel aid to sectors most capable of countering terrorism, such as security, governance, and education.

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We test these propositions using panel data on 163 countries from 2001 to 2020, modelling aid allocation decisions in two separate stages: a 'gatekeeping stage', where donors select aid recipients, and an 'allocation stage', where they distribute aid among these recipients. Our findings confirm that terrorism influences donors' allocation decisions. Specifically, while terrorism does not affect the likelihood of a country receiving aid, it does result in higher aid levels once recipients are selected. We also demonstrate that donors respond similarly to domestic and transnational terrorism, suggesting that their response is not conditioned by the type of terrorism. Finally, we find that donors allocate aid strategically across sectors, targeting domains such as security and governance, which are more central to the countering and mitigation of terrorism.

By addressing questions central to this ongoing debate, we make three primary contributions. First, we analyse data from a more recent period than earlier studies, capturing significant changes in bilateral aid, terrorism, and counterterrorism policies since the early 2010s. These changes include the rise of non-Western donors and a changed aid landscape (e.g. Dreher et al., 2021), the geographic spread of terrorist networks like ISIS (e.g. Warner, 2022), the surge of terrorist attacks in aid-recipient regions (see Appendix A1), and intensified efforts to sanction terrorist actors (Lundgren et al., 2024; Tominaga et al., 2022). Second, unlike much of the existing research, we investigate both transnational and domestic terrorism, allowing us to assess how different types of threats influence the strategic considerations behind aid allocation decisions. Third, by disaggregating aid further than previous studies, we are able to distinguish between different interpretations of the strategic interests that govern aid decisions. In practical terms, our findings suggest that if terrorism becomes a dominant factor in aid allocation, it may divert resources away from core humanitarian needs.

Who gives foreign aid and why?

A key debate in foreign aid research focuses on whether aid allocation is primarily driven by recipient needs or by the strategic interests of donor countries. Numerous studies underscore the dominant role of donor interests (e.g. Bermeo, 2017; Everett and Tirone, 2021; Hoeffler and Outram, 2011; Kuziemko and Werker, 2006). Alesina and Dollar's (2000) influential work shows that political factors like colonial ties, democratisation, and UN voting patterns heavily influence aid distribution. Similarly, Hoeffler and Outram (2011) find that donor interests are the primary drivers of foreign aid. Beyond political interests, others, such as Macdonald and Hoddinott (2004), highlight economic factors like trade relations. Supporting the importance of strategic considerations, research has shown that even aid ostensibly aimed at addressing human needs, such as emergency assistance and humanitarian relief, is largely shaped by donor interests (Nelson, 2012; Strömberg, 2007).

While donor interests significantly influence aid flows, recipient needs also play an important role in aid allocation. For instance, Rabehajaina et al. (2023) show that smaller donors tend to prioritise recipient needs in their aid decisions. In contrast, larger donors – such as the United States, Japan, France, Germany, and the United Kingdom, which collectively account for 66% of bilateral official development assistance (ODA) from the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) – tend to allocate aid based on strategic considerations rather than recipient needs (Harrigan and Wang, 2011).

Beyond strategic interests and recipient needs, aid allocation decisions are also shaped by 'recipient merit'. This perspective argues that aid is allocated to countries with good governance rather than solely based on their needs or strategic value (e.g. Neumayer, 2003). Factors such as corruption levels (In'airat, 2014), democratic performance (Dollar and Levin, 2006), and political stability (Bezerra and Braithwaite, 2016) are believed to influence aid decisions. However, the recipient merit argument has its critics. For example, Hoeffler and Outram (2011) find that recipient merit accounts for only 1% of the variation in aid allocations, suggesting it plays a much smaller role compared to other considerations.

Terrorism and aid

Considering strategic interests are a significant driver of aid allocation, attention has turned to explore how security threats, such as terrorism, factor into these decisions. This literature has developed along two main lines of inquiry, yielding debates on the effectiveness of aid as a counterterrorism tool and the impact of terrorism on aid allocation decisions.

On the first line of inquiry, some studies argue that aid has the potential to reduce terrorism. For example, Azam and Thelen (2010) show that increases in official development assistance (ODA) are linked to reductions in terrorist attacks, while Kim and Sandler (2021) find that aid influences both terrorist activity and the survival of local terrorist groups. There is also evidence that aid directed towards specific sectors can be particularly effective. For instance, Azam and Thelen (2008) suggest that countries with higher educational capital, often bolstered through aid, experience less terrorism. Similarly, Young and Findley (2011) argue that foreign aid helps prevent terrorism when it is targeted at improving education, health, civil society, and conflict resolution. Savun and Tirone (2018) also show that aid to the governance sector decreases terrorism, although only in countries without ongoing civil conflict.

However, other studies challenge this optimistic view, finding that aid does not effectively counter terrorism. Campos and Gassebner (2009) argue that aid's impact on terrorism is minimal, while Boutton (2019) suggests that the effectiveness of aid depends on the recipient's regime type. Azam and Thelen (2012) further argue that the impact of aid varies based on the type of terrorism. Military aid, in particular, is shown to have adverse effects, with Bapat (2011) finding that it perpetuates terrorist activity, and Neumayer and Plümper (2011) showing that US military aid increases terrorist attacks on US citizens.

The second line of inquiry shifts the focus to how terrorism influences aid allocation decisions. An early study by Azam and Delacroix (2006), covering data from 1990 to 2004, finds that terrorism leads to higher levels of ODA. Dreher et al. (2021) explore bilateral aid flows from 22 donors between 1971 and 2008, examining both the likelihood of a country becoming an aid recipient and how terrorism affects aid levels once a country is selected. They find that terrorism does not influence the likelihood of a country receiving aid but it does increase aid levels for the selected recipients. However, their study focuses exclusively on transnational terrorism, overlooking the more prevalent domestic terrorism.

Lis (2013) addresses this gap by examining the impact of both domestic and transnational terrorism on bilateral and multilateral aid across 161 countries from 1973 to 2007.

The results show that multilateral donors reduce aid in response to domestic terrorism, while they increase bilateral aid in response to transnational terrorism. In contrast to Dreher et al. (2021), Lis (2018) finds that countries experiencing transnational terrorism are more likely to receive bilateral aid, although the amount of aid remains unaffected. Kim and Sandler (2023) further investigate transnational terrorism, showing that attacks on a donor's assets result in increases in conflict and governance aid.

Some studies have focused on the United States specifically. Heinrich et al. (2017) find that the United States tends to increase civil society and military aid in countries where terrorist groups are active, using data from 46 African countries between 1996 and 2011. Boutton and Carter (2014) argue that the impact of transnational terrorism on US aid is conditional on whether the terrorist activity directly threatens US interests. Similarly, Bezerra and Braithwaite (2016) find that terrorist violence in Sub-Saharan Africa increases US aid commitments.

Despite the insights these studies provide, the evidence on the impact of terrorism on aid remains inconclusive. This ambiguity is likely due to three main limitations. First, studies have relied on different and often outdated data sources, with most research using data up to 2013, missing significant changes in aid, terrorism, and counterterrorism policies since the early 2010s. These changes include the rise of non-Western donors, the expansion of terrorist networks like ISIS, and the sharp increase in terrorist attacks in developing nations – especially in Sub-Saharan Africa, as noted by recent Global Terrorism Database (GTD) data (START, 2022) (Appendix A1).

Second, the focus on transnational terrorism has led many studies to overlook domestic terrorism, which is far more prevalent. Domestic terrorism, as seen with groups like Boko Haram in Nigeria and the Taliban in Afghanistan, can cause widespread instability and humanitarian crises, potentially prompting increased aid to stabilise these regions. To fully understand the relationship between terrorism and aid, we need to distinguish between domestic and transnational terrorism.

Third, many studies rely on highly aggregated measures of aid, obscuring important variations in how different types of aid are affected by terrorism. While some efforts have been made to disaggregate aid by multilateral and bilateral flows (e.g. Lis, 2013) and donor nationality (Dreher et al., 2021), further disaggregation – particularly by aid sector – can provide more nuanced insights into how terrorism shapes aid allocation.

This article seeks to address these limitations in three ways. First, it uses more recent data (2001–2020) to capture the significant changes in aid and terrorism over the past decade. Second, it distinguishes between domestic and transnational terrorism, allowing for a more nuanced analysis of how different types of terrorism influence aid. Finally, it provides a more disaggregated view of aid allocation across sectors, helping to clarify the strategic interests that guide donors' allocation decisions.

Argument: When and why terrorism increases aid allocations

Drawing on Bermeo's (2017) theory of 'targeted development', we first argue that states use foreign aid strategically to mitigate negative externalities generated by terrorism abroad.[1] We then extend this logic to conditional effects, outlining expectations regarding the impact of various types of terrorism and the strategic deployment of different forms of aid.

The core argument of Bermeo's theory is that, next to moral obligations, countries are guided by self-interest when considering whether and where to distribute their foreign aid budgets. The premise is that political leaders and bureaucrats in donor countries view the world as sufficiently interconnected to discern linkages between the well-being of their own societies and the conditions in developing countries. Specifically, Bermeo argues that countries use development interventions, including foreign aid, to reduce negative spillovers from abroad.

Donors may want to address various issues that could have negative spillover effects, such as environmental degradation, epidemics, drug trafficking, and refugee crises (Bermeo, 2017). As an illustration, consider the European Union's (EU) decision to increase its aid budget to countries linked to the 2015 refugee crises. While this aid has a humanitarian element, it is also intended to control migration to the EU by improving living conditions and stability in the refugees' countries of origin (Davitti and La Chimia, 2017). Like refugee crises, donors may perceive terrorism as a negative spillover they would want to counter. Direct spillovers of terrorism occur when targets of the country's origin, such as airplanes, buildings, and embassies, are directly affected by terrorist activity (Bardwell and Iqbal, 2021). Indirect spillovers occur when terrorism causes the diffusion of political instability (Bapat, 2011), drives transnational migration or drug trafficking (Schmidt, 2010), or in other ways causes cross-border negative externalities.

Foreign aid has emerged as a strategic instrument to decrease the negative externalities of terrorism. Targeting aid to terrorism-prone countries may allow donors to counter terrorism before it extends to the donor country or harms its interests abroad. If this argument is correct, we would expect donors to allocate more bilateral aid to countries with rising terrorism levels.

H1. Increasing terrorist attacks are associated with higher allocation of bilateral aid.

Donors may have varying levels of concern about different types of terrorism, which can be broadly categorised into domestic and transnational. Domestic terrorism involves acts of violence that originate and occur within a single country, involving perpetrators and victims from that country, such as the 2013 Boston Marathon bombing or the 2016 attack on the Holey Artisan Bakery in Dhaka. In contrast, transnational terrorism involves perpetrators, targets, or supporters from multiple countries, as seen in the 2015 Al-Qaeda attack on the Radisson Blu Hotel in Bamako, Mali (Bandyopadhyay et al., 2011).

While transnational terrorist attacks are less frequent than domestic ones (Enders and Sandler, 2011), they tend to receive more attention and have greater economic consequences (Gaibulloev and Sandler, 2008). Donors are particularly focused on countering transnational terrorism, as it poses larger threats to their citizens' security and their global interests. In contrast, the impact of domestic terrorism on aid allocation is less direct since it does not directly target donor countries. Assuming that Western donors prioritise their national security and self-interest, we expect that transnational terrorism will have a more significant impact on aid allocation than domestic terrorism.

H2. The effect of terrorist attacks on aid is stronger for transnational terrorism than for domestic terrorism.

Terrorism is deeply rooted in political instability, weak governance, and unresolved conflicts, which create fertile ground for extremist recruitment (Franks, 2006). Research

suggests that counterterrorism efforts should address these underlying conditions by reducing grievances, strengthening institutions, and promoting long-term stability (Azam and Thelen, 2008; Savun and Tirone, 2018). If donors adopt this approach, they are likely to prioritise aid for sectors best suited to mitigate the conditions that enable terrorism or tackle its root causes.

One critical sector in this respect is conflict, peace, and security ('security aid'). In regions affected by prolonged conflict and weak state authority, individuals – particularly those marginalised or lacking economic and political opportunities – may turn to extremist groups as an alternative source of security, identity, or income. Unresolved conflicts not only provide recruitment opportunities for terrorist organisations but also weaken law enforcement and state institutions, making it harder to counteract extremist movements. Security aid can help mitigate these enabling conditions by improving local conflict resolution mechanisms and supporting post-conflict reconstruction. The strong link between a country's political climate and its levels of terrorism underscores the importance of security aid in managing the underlying drivers of extremism. For example, peace negotiations, reconciliation processes, and post-conflict reconstruction efforts supported by such aid can help stabilise environments, making them less conducive to extremist ideologies and reducing the factors that fuel terrorism (Schumacher and Schraeder, 2021). Consequently, we expect donors to respond to rising levels of terrorism by increasing aid allocated to the conflict, peace, and security sector.

H3a. As the level of terrorist attacks in a country increases, more bilateral aid is allocated to the conflict, peace and security sector.

Aid directed to the government and civil society sector ('governance aid') has also been linked to reducing terrorism. Studies have identified a strong relationship between a country's political climate and its levels of terrorism (Abrahms, 2008; Choi, 2010). Terrorism tends to be more prevalent in states with weak rule of law, high political repression, and limited opportunities for citizens to express discontent (Savun and Tirone, 2018). By investing in improvements to a country's political conditions, governance aid can create alternative outlets for grievances, reducing the incentives for radicalisation. In addition, such aid can strengthen the rule of law and increase public trust in the justice system. States with robust civil societies are less likely to suppress citizens' civil rights, which is a key factor influencing individuals' susceptibility to terrorism. Given that governance aid is associated with reducing terrorism, we expect donors to increase aid to this sector as a response to higher levels of terrorism.

H3b. As the level of terrorist attacks in a country increases, more bilateral aid is allocated to the government and civil society sector.

Finally, addressing the root causes of terrorism can be achieved through investments in education. Poverty, extreme inequality, and unemployment – key drivers of terrorism – stem from a lack of socioeconomic opportunities. Quality education improves these opportunities and, over time, raises living standards in recipient countries, making violence a less appealing option (Lis, 2018). In addition, higher education levels are linked to greater psychological resilience against extremist propaganda, reducing youth involvement in terrorism (ICT, 2021). Education also fosters a sense of belonging and builds respect for cultural, socioeconomic, and religious diversity (Nordbruch, 2016). As donors

aim to reduce or prevent terrorism in recipient countries, we expect them to respond to rising terrorism by increasing aid earmarked for education.

H3c. As the level of terrorist activity in a country increases, more bilateral aid is allocated to the education sector.

Data and methods

To test the relationship between terrorism and bilateral aid allocation, we use aid data from the OECD/DAC and data on terrorism attacks from the Global Terrorism Database (GTD). We construct a time-series cross-sectional dataset with yearly observations of 163 countries from 2001 to 2020.[2] In this section, we first explain how the dependent, independent and control variables are conceptualised and operationalised, and then describe and motivate our estimation strategy.

Dependent variable: Bilateral aid

We operationalised bilateral aid with ODA figures from the OECD/DAC's online Credit Reporting System (CRS).[3] Data are collected based on individual projects. ODA includes both bilateral aid delivered directly from donors to recipient countries, and aid channelled through multilateral institutions such as the United Nations (UN) or the World Bank (WB). Since we are interested in understanding how terrorism affects aid allocation from donors to recipient countries, we focus on the bilateral component. While ODA is a widely accepted measure of aid, this operationalisation also has some limitations. Particularly, ODA does not capture military aid, debt relief, and aid with commercial purposes. We examine bilateral aid from DAC members, who contribute the majority of ODA, to evaluate whether previous conclusions on aid allocation remain valid in the evolving context of foreign aid. This is particularly relevant as new donors have emerged which may have influenced the dynamics of foreign aid. We follow the literature on terrorism and aid and use data on aid commitments instead of aid disbursements (e.g. Dreher et al., 2021; Lis, 2018).

We operationalised bilateral aid allocation in a set of dependent variables. First, we construct a dichotomous indicator *aid recipient* which takes value 1 if aid was committed by at least one DAC donor (aid commitments >0) to a country in a given year, and 0 otherwise. Second, we construct the variable *aid commitments* as an aggregate measure of yearly ODA commitments by DAC donors in millions of constant 2020 US dollars. Finally, to test how terrorism affects aid to different sectors, we construct the variables *security aid*, *education aid* and *governance aid* by extracting aid commitments disaggregated by sector based on the CRS aid codes used for conflict, peace and security (152), education (110), and government/civil society (150). More specifically, the variable *security aid* represents yearly ODA commitments to recipient countries' conflict, peace and security sector, *education aid* represents yearly ODA commitments to recipient countries' education sector, and the variable *governance aid* represents yearly ODA commitments to recipient countries' government and civil society sector. As is common practice in the literature, we account for the non-normal distribution of the aid variables by using their natural logs.

Independent variable: Terrorist attacks

To measure terrorist attacks, we use GTD data which provides information on terrorist attacks between 1970 and 2020 (START, 2022). The GTD is a widely used dataset in studies on terrorism and it offers longer time series than the alternatives, and, in contrast to some other datasets, allows us to distinguish between domestic and transnational terrorism.

To operationalise *terrorist attacks*, we construct a continuous variable which records the annual number of terrorist attacks in a country. This variable varies considerably across countries and over time and two key patterns stand out (see online Appendices A2 and A3). First, a significant share of terrorist attacks has occurred in just three countries, Afghanistan, Iraq, and Pakistan. Second, there is an overall upward trend in terrorist attacks over time – especially in regions with aid recipients, such as Sub-Saharan Africa – which supports our claim that there is important temporal variation in terrorism that previous studies have not yet captured.

To test for differences in terrorism type, we construct variables for *domestic terrorist attacks* and *transnational terrorist attacks*. More specifically, *domestic terrorist attacks* is a count of terrorist attacks that takes value 0 on variable *INT_ANY* in the GTD. *INT_ANY* has been coded 0 if the nationalities of the perpetrator group are the same as the location of the attack (the attack is logistically domestic) or if any of the nationalities of the perpetrator group are the same as the nationalities of the target(s)/victim(s) (the attack is ideologically domestic). Consequently, *transnational terrorist attacks* is a count of terrorist attacks that take value 1 on variable INT_ANY in the GTD. INT_ANY has been coded 1 if the nationalities of the perpetrator group differ from the location of the attack (logistically international) or if all of the nationalities of the perpetrator group differ from the nationality of the target(s)/victim(s) (ideologically international). To be able to test conditional effects related to the type of terrorism, we construct a ratio variable *transnational terrorism* which represents transnational terrorist attacks as a proportion of the total number of attacks in a given year.

Control variables

We adjust for potential confounders likely to influence both aid allocation and terrorism.

First, we control for factors relating to recipient needs. A strong finding in the literature is that less developed countries are more likely to receive foreign aid. Meanwhile, lower levels of development are identified as a correlate of terrorism. Therefore, we control for *GDP per capita* (logged) using WB World Development Indicators (WDI) data (2022).

We also control for *population*. Countries with growing populations generally require more aid, and they may be more susceptible to terrorism. We again use WB (2022) data to record a variable measuring the total population (logged) in a country in a given year.

Armed conflict increases the need for aid through among others displacement, health emergencies, and food insecurity and may also increase terrorism. We control for *armed conflict* by including a dummy variable that takes value 1 when a country experienced an armed conflict in a given year and 0 otherwise, using data from the Uppsala Conflict Data Program (UCDP) (Davies et al., 2022).

To account for recipient merit, we control for *level of democracy*, operationalised as a continuous measure of liberal democracy running from less democratic (0) to more democratic (1) using V-Dem data (Coppedge et al., 2023).

Finally, it has also been found that commercial interests influence aid allocation (Macdonald and Hoddinott, 2004). We control for *economic openness*, a continuous variable drawn from the WDI data (2022) which measures exports of goods and services as a percentage of GDP, where a higher value implies higher economic openness.

Combining the data described above results in a balanced time-series cross-section dataset with 163 countries covering the period from 2001 to 2020. Summary statistics are presented in Online Appendix A4.

Estimation method

Aid allocation is typically modelled as a two-stage process, consisting of a 'gatekeeping stage' and an 'allocation stage' (e.g. Boutton and Carter, 2014). In the gatekeeping stage, donors decide which countries will receive aid. In the allocation stage, they determine how to distribute their aid budgets among the selected recipients. We estimate these stages separately in the main analysis but also include two-stage selection models (Heckman correction) in the online appendix (Tables II–V) to check for potential selection bias. Since our key results remain the same across methods, we use the simpler separate-stage approach in the main paper.

Gatekeeping stage

To estimate the effect of terrorism on aid during the *gatekeeping stage*, where the outcome is binary, we use a logit model. We include year-fixed effects to account for temporal shocks affecting all countries. Furthermore, it is likely that factors that cannot directly be measured or observed influence aid allocation decisions. For instance, there are many country-specific time-invariant variables that are relevant in the context of aid allocation, such as cultural or linguistic ties with donor countries, country size, religion, or colonial history, which could bias the results if excluded from the analysis. The low within-variation in the *aid recipient* variable prevents us from using a fixed effects estimator as it reduces the sample size to only eight countries. To still account for unobserved heterogeneity, we use a random effects estimator in the logit model. While random and fixed effects estimators both address issue of unobserved heterogeneity, the random effects approach is preferred in this context as it maintains a larger sample size. All explanatory variables are lagged by 1 year to account for delayed effects of terrorism and to account for simultaneity. Finally, to account for dependence arising from multiple measurements of the same units, we use robust standard errors clustered at the country level.

Thus, the econometric model underlying the logistic regression model of the gatekeeping stage can be written as follows:

$$L_{i,t} = \alpha + \beta_1 Terrorist\ Attacks_{i,t-1} + \beta_2 X_{i,t-1} + \theta_t + \mu_i$$

where $L_{i,t}$ represents the likelihood of country i becoming an aid recipient in year t denoted in log-odds, α represents the constant, $Terrorist\ Attacks_{i,t-1}$ represents the one-year lag of (the natural log of) terrorist attacks occurring in a country i in a given year t, and $X_{i,t-1}$ a vector of lagged control variables. The coefficients β_1 and β_2 capture the

effects of variable $Terrorist\ Attacks_{i,t-1}$ and the control variables, respectively. θ_t denote time-specific effects to account for temporal shocks that affect all recipient countries and μ_i represent the country level random effects to control for time-invariant unobserved factors.

Allocation stage

To investigate the influence of terrorism on aid during the *allocation stage*, we use a linear regression model with recipient fixed effects (FE). In this model, the dependent variable is a continuous measure of aid commitments to selected recipient countries. We are particularly interested in examining how terrorist activity impacts aid commitment levels to the same country over time, making the fixed effects (within) estimator the most suitable method. A formal Hausman test confirmed that the fixed effects estimator was the most suitable choice for the allocation stage model (Appendix A5). The primary advantage of using fixed effects is that it can control for time-invariant factors that cannot be observed. As described earlier, there are many country-specific time-invariant variables that are relevant in the context of aid allocation, which could bias the results if excluded from the analysis. The fixed effects estimator accounts for these time-invariant factors and as such provides a better estimate of the relationship between terrorist activity and aid levels. A drawback of the fixed effects estimator is that it only estimates the effect of those variables that change over time. It is therefore a prerequisite that variables included in the analysis have enough within-unit variation, which is the case for the variables included in our model. To control for temporal shocks, we also include time-fixed effects at the allocation stage. Explanatory variables are lagged by one year and we use robust standard errors clustered at the recipient country level.

Thus, the econometric model underlying the linear regression model of the allocation stage can be written as follows:

$$Y_{i,t} = \alpha + \beta_1 Terrorist\ Attacks_{i,t-1} + \beta_2 X_{i,t-1} + \theta_t + \eta_i + \epsilon_{i,t}$$

where $Y_{i,t}$ represents the natural log of bilateral ODA commitments in constant 2020 US dollars to recipient country *i* in year *t*, α represents the constant, $\beta_1 Terrorist\ Attacks_{i,t-1}$ represents the one year lag of (the natural log of) of terrorist attacks in a given country *i* in year *t*, and $\beta_2 X_{i,t-1}$ is a vector of lagged control variables. θ_t denote the time-specific effects to account for temporal shocks that affect all recipient countries, and η_i represent the recipient country-level fixed effects to control for time-invariant factors that may drive aid allocation decisions. Finally, $\epsilon_{i,t}$ denotes recipient country clustered error terms. Note that the allocation stage equation is conditional on a country being an aid recipient ($Y_{i,t} > 0$).

Results

Table 1 reports the main results. Recall that we use two methods to capture the impact of terrorism at the two stages of the aid allocation process. Models 1 and 3 use logistic regression to evaluate the impact of terrorism on the likelihood of a country receiving aid (the gatekeeping stage). Models 2 and 4 use linear regression to evaluate the impact of terrorism on aid levels (the allocation stage). Robustness checks are discussed after the main results have been presented, and are displayed in Appendix A6.

Table 1. Determinants of aid, logistic and linear regression, 2001–2020.

	(1)	(2)	(3)	(4)
	Gatekeeping stage	Allocation stage	Gatekeeping stage	Allocation stage
Terrorist attacks	0.564	0.0765***	0.992	0.0940***
	(0.375)	(0.0263)	(0.670)	(0.0336)
GDP per capita	–6.845***	–0.672**	–6.922***	–0.674**
	(1.986)	(0.281)	(2.019)	(0.278)
Armed conflict	–0.619	0.0719	–0.613	0.0671
	(0.971)	(0.0534)	(0.956)	(0.0528)
Level of democracy	–10.83***	0.659**	–10.56***	0.678**
	(3.377)	(0.320)	(3.284)	(0.318)
Economic openness	–0.0640**	–0.00121	–0.0649**	–0.00125
	(0.0317)	(0.00353)	(0.0308)	(0.00357)
Population	–1.315**	–0.718	–1.343**	–0.740
	(0.533)	(0.479)	(0.523)	(0.475)
Transnational terrorism			4.115***	0.298
			(1.577)	(0.200)
Terrorist attacks × Transnational terrorism			–0.829	–0.0291
			(0.853)	(0.0569)
Constant	46.46***	16.95**	44.83***	17.17**
	(13.71)	(7.745)	(13.47)	(7.690)
Log Likelihood	3.280***		3.281***	16.28**
R^2		0.0995		0.102
Observations	2932	2078	2932	2078
Countries	163	124	163	124

Standard errors clustered at the country level. Independent variables lagged by 1 year. Year fixed effects not reported. Terrorist attacks, GDP/capita and Population are logged.
*p < 0.1, **p < 0.05, ***p < 0.01.

Our first hypothesis was that higher levels of terrorism would motivate donors to provide more aid. The coefficient for *terrorist attacks* in Model 1 is positive but statistically insignificant, suggesting that terrorist activity is not a systematic determinant of aid recipiency. Model 2 displays the results of model estimating the impact of terrorism on the level of aid committed to selected aid recipients (the allocation stage). The positive and statistically significant coefficient ($p < 0.01$) suggests that, all else equal, higher terrorist activity is associated with more aid commitments in the next year. More specifically, model 2 predicts that a 1% increase in terrorist attacks is associated with a 0.08% increase in aid commitments. These findings lend partial support to hypothesis 1: terrorism does not seem to increase the likelihood that a country will be selected to receive aid, but rising terrorist activity is associated with small increases in aid once a country has been chosen as an aid recipient.

Hypothesis 2 was that transnational terrorism has a more pronounced impact on foreign aid than does domestic terrorism. We examine this conditional effect by using an interaction term, reported in models 3 and 4. The coefficients are negative but insignificant, suggesting that the association between terrorist activity and aid is not conditioned by the type of terrorism, regardless of stage. Figure 1, panel (a), illustrates this in the form of predicated probabilities of donor recipiency as a function of increasing terrorist attacks

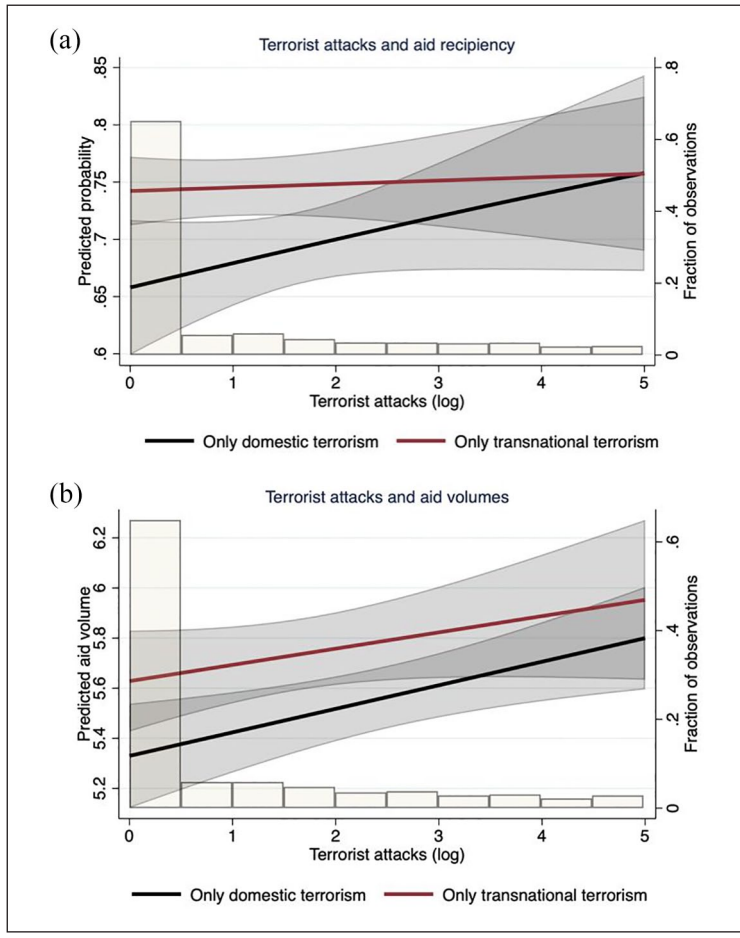

Figure 1. Adjusted predictions of (a) aid recipiency and (b) aid commitments as a function of terrorist attacks, by type of terrorism.
Adjusted predictions estimated with 95% confidence intervals. Robust standard errors clustered on recipient countries. Control variables held at reference values. Histograms show the distribution of terrorist attacks (log) in the sample used for model estimation.

for domestic-only and transnational-only terrorism scenarios. Figure 1, panel (b), illustrates predicted aid volumes for the same scenarios, showing that increases in both types of terrorism are associated with higher aid volumes, but that there is no significant difference between types regardless of the level of attacks.

To summarise, the results from models 3 and 4 suggest that the type of terrorism predominant in a country does not systematically moderate the relationship between terrorism and aid. As such, the evidence does not lend consistent support for hypothesis 2.

Turning to hypotheses 3a-3c, we examine whether and to what extent terrorism influences the distribution of sectoral aid. Our theoretical proposition was that donors who seek to reduce terrorism will channel aid to those sectors with greater potential for countering factors driving or enabling terrorism.

Table 2. Determinants of sectoral aid, logistic and linear regression, 2001–2020.

	(1)	(2)	(3)	(4)	(5)	(6)
	Gatekeeping stage	Allocation stage	Gatekeeping stage	Allocation stage	Gatekeeping stage	Allocation stage
	Conflict, Peace & Security		Government & Civil Society		Education	
Terrorist attacks	0.246*	0.245***	0.608*	0.166***	0.564	0.0279
	(0.146)	(0.0682)	(0.364)	(0.0406)	(0.375)	(0.0205)
GDP per capita	–2.662***	–1.950***	–7.178***	–1.043***	–6.845***	0.0352
	(0.387)	(0.552)	(1.936)	(0.368)	(1.986)	(0.217)
Armed conflict	0.438	0.386***	–0.847	0.148**	–0.619	–0.0109
	(0.337)	(0.135)	(0.879)	(0.0726)	(0.971)	(0.0420)
Level of democracy	–1.203	2.716**	–10.81***	2.479***	–10.83***	0.624
	(1.302)	(1.097)	(3.164)	(0.653)	(3.377)	(0.458)
Economic openness	–0.0108	0.0112	–0.0638**	–0.00320	–0.0640**	–0.000310
	(0.00965)	(0.00792)	(0.0272)	(0.00448)	(0.0317)	(0.00288)
Population	0.207	0.311	–1.295**	–0.947	–1.315**	–0.477
	(0.190)	(0.975)	(0.521)	(0.736)	(0.533)	(0.464)
Constant	–0.914	–5.190	45.51***	17.66	46.46***	10.26
	(3.275)	(15.98)	(12.79)	(11.83)	(13.71)	(7.450)
Log Likelihood	2.261***		3.303***		3.280***	
R^2		0.134		0.188		0.132
Observations	2932	1793	2932	2074	2932	2078
Countries	163	119	163	124	163	124

Clustered standard errors at the country level in parentheses. Independent variables lagged by 1 year. Year fixed effects not reported. Terrorist attacks, GDP per capita and Population are logged.
*p < 0.1, **p < 0.05, ***p < 0.01.

Models 1 and 2 in Table 2 examine whether increasing levels of terrorism are associated with more aid to the conflict, peace and security sector (H3a). The estimated coefficient in the gatekeeping equation is positive, as expected, and significant at the $p < 0.1$ level. This indicates that there is evidence for a positive correlation between terrorist attacks and the likelihood of receiving security aid. In Figure 2, panel (a), we note the predicted probability increases from around 55% for a country without terrorist attacks to around 60% for countries with 20 terrorist attacks (log = 3). In the allocation stage (model 2), we observe evidence of a positive and systematic correlation, as the coefficient on terrorist attacks is both positive and precisely estimated ($p < 0.001$). In substantive terms, a 1% increase in terrorist attacks is associated with a 0.25% increase in aid earmarked for conflict, peace and security one year later. Combined, these two results indicate that donors allocate aid strategically, increasing aid for the conflict, peace, and security sector of aid recipients in response to terrorist attacks.

We find similar results with regard to the relationship between terrorism and governance aid (H3b). The coefficients in models 3 and 4 suggest that terrorism increases the probability of a country receiving such aid while also increasing the aid volumes. As illustrated in Figure 2, panel (b), the baseline probability of a country receiving aid in the governance sector is higher than observed for security aid, but the impact of increasing terrorist attacks is somewhat smaller. A comparable increase in terrorist attacks (20 attacks) is associated with a 3.5% increase in the probability of aid recipiency. Model 8 suggests that a 1% increase in terrorist activity is associated with a 0.17% increase in a

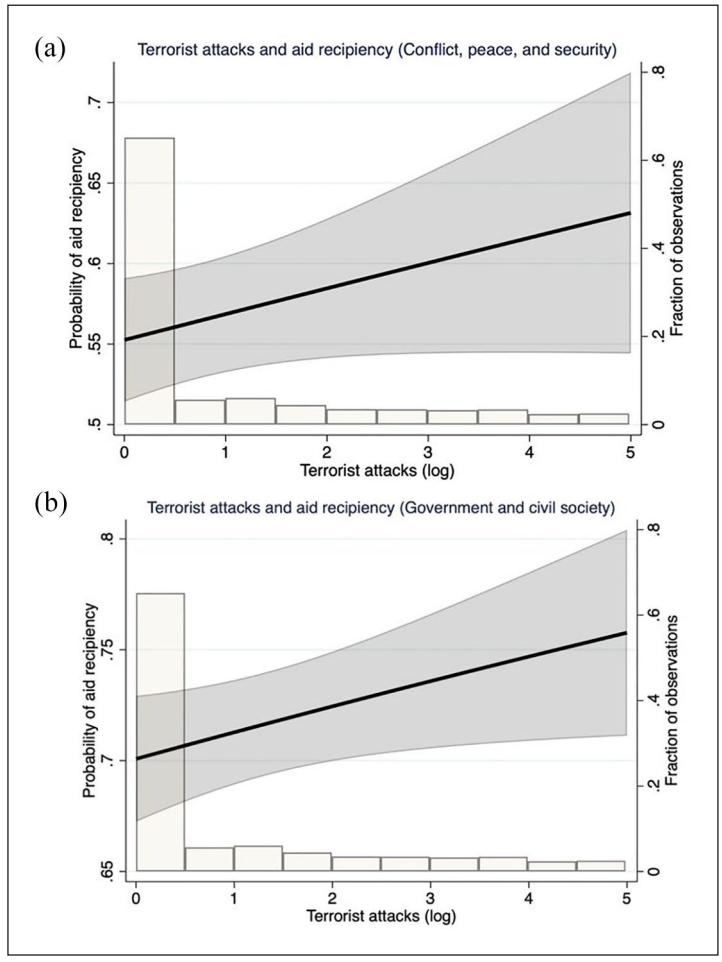

Figure 2. Adjusted predictions of aid recipiency, aid relating to (a) conflict, peace, and security, and (b) government and civil society.
Adjusted predictions estimated with 95% confidence intervals. Robust standard errors clustered on recipient countries. Control variables held at reference values. Histograms show the distribution of terrorist attacks (log) in the sample used for model estimation.

country's governance aid a year later. Combined, these results suggest that donors employ governance aid strategically in response to terrorism, but that its allocation is less affected than aid to the security sector.

In contrast, the data suggest no systematic association between terrorism and aid to the education sector (H3c). The relevant coefficients in models 5 and 6 (Table 2) are positive but the large standard errors suggest that there is too much variation to rule out a chance relationship. Based on this result, we cannot conclude that higher terrorist activity affects a country's probability to be selected as an education aid recipient or levels of aid committed to the education sector.

The results for the control variables are largely consistent with previous studies. We find that, overall, countries are less likely to become aid recipients and receive lower aid

with increasing GDP per capita. Our results suggest that population is unrelated to aid volumes, which is consistent with previous studies. Armed conflict predicts higher levels of aid in the security and governance sectors. The findings for these controls suggest that aid allocation decisions are partially responsive to recipient needs. A country's level of democracy has clear influence on the probability of receiving aid and its amount. The results for overall aid (Table 1) suggest that the more democratised a country is, the less likely a country is to become an aid recipient, but democracy predicts higher aid volumes among aid recipients ($p < 0.01$). These results are also reflected in the models for sectoral aid. Finally, there is some evidence that economic openness impacts the probability of a country receiving aid, with more open countries less likely to become aid recipients.

Robustness checks

To gauge whether our results are sensitive to choices regarding operationalisation and statistical modelling, we perform a series of robustness checks, reported in Online Appendix F.

First, we estimate our models using the Heckman sample selection correction, both for general aid and sectoral aid (Tables II–V). Across all models, our key results remain unchanged, demonstrating their robustness to selection bias.

Second, there is a possibility that the results are driven by a small number of countries that experience very high levels of terrorism. Recall that the vast majority of terrorist attacks occurred in just three countries (Afghanistan, Iraq and Pakistan). As a robustness check, we repeat the analysis on a sample that excludes these outliers. As displayed in Tables VI and VII, the results reveal no major differences from our main results.

Third, recognising that the DAC is a heterogeneous group and that the United States has consistently been the largest donor (in absolute figures), we show that our results hold up to the exclusion of US aid (Table VIII). Estimating our models of sectoral aid on data that excludes US aid (Table IX), we find that terrorism affects not only aid to the security and governance sectors but that it also increases the likelihood of receiving such aid in the first place (gatekeeping stage).

Fourth, we examine how terrorism specifically targeting OECD countries affects aid allocation (Tables X and XI). If only terrorist attacks against OECD targets are considered, associations between attacks and aid tend to be weaker and less precise, both for general aid and sectoral aid. While further research would be required, this may suggest that donors respond more consistently to overall terrorist activity within recipient countries, indicating that they view perceived negative spillovers from terrorism in a broader security framework rather than as direct threats to donor states.

Conclusion

Taken together, our analysis reveals four key findings. First, we found that the impact of terrorism on aid is stage-dependent. Consistent with previous research (Dreher et al., 2021; Lis, 2018), we find that terrorism does not affect the initial selection of aid recipients. However, once a country has been selected as an aid recipient, terrorism increases the level of aid it receives One possible explanation for the limited response at the initial selection stage is that donors typically choose aid recipients for extended periods as part of long-term strategies, whereas they review the distribution of aid budgets among selected recipients more frequently.

Second, sector-wise, we found that donors target aid sectors with larger potential to reduce terrorism. In particular, we found that increased terrorism levels result in more aid to the government and civil society sector of recipient countries ('governance aid'), suggesting that donors seek to facilitate state capacity and civil society resilience to help combat terrorism. Donors also respond to terrorism by increasing aid to the conflict, peace and security sector ('security aid'), suggesting that aid is used to assist countries' ability to resolve underlying political grievances or to prevent future attacks. These findings extend and qualify earlier research regarding the impact of terrorism on sectoral aid.

Third, contrary to suggestions in the literature (Lis, 2018), we found no evidence indicating that donors differentiate between transnational and domestic terrorism. This finding suggests that donors may prioritise the overall political stability of potential aid recipient countries and regions over the specific origins of attacks. It is also possible that the impacts of domestic and transnational terrorism have become more similar, and that previous findings reflect a time when differences between domestic and transnational terrorism were more pronounced then they are today.

These findings have three main implications. First, the study contributes to the literature on terrorism and aid. Our results reinforce the key finding that terrorism leads to an increase in aid to recipient countries. This association remains consistent in our extended time series, while also providing a more nuanced understanding of the impact of terrorism types and sectoral aid. Second, the study points to ways in which we can improve the study of terrorism and aid. Future research should assess whether donor responses to terrorism vary based on the strategic importance of recipient countries and investigate how the growing role of non-DAC donors, such as China, influences aid allocation and potentially reshapes traditional donor strategies. Finally, our findings raise the concern that counterterrorism agendas may militarise aid (cf. Heinrich et al., 2017), at the sacrifice of core humanitarian needs. Further research is warranted to determine if these concerns are legitimate.

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Supplementary Information

Additional supplementary information may be found with the online version of this article.

Contents

Notes

1. We understand terrorism 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' (LaFree and Dugan, 2007).
2. After adjustment for missingness and lagging. Using 2001 as a starting point is motivated on both substantive grounds (it has been argued that 9/11 has triggered securitisation of aid) and for methodological reasons (GTD has reliability issues before 2000).
3. OECD, Creditor Reporting System (CRS), https://stats.oecd.org/Index.aspx?DataSetCode=crs1.

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