WORKING PAPER

LEAVING TERRORISM BEHIND? IMPACT OF TERRORIST ATTACKS ON MIGRATION INTENTIONS AROUND THE WORLD

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Leaving terrorism behind?
Impact of terrorist attacks on migration
intentions around the world[*]

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Abstract

Terrorism is a global phenomenon with devastating consequences for the individuals involved and society in general. The adverse impacts of terrorist attacks may act as a driver for migration, both within and across borders. Yet, empirical evidence on the causal impact of terrorism on migration is scarce. The contribution of our paper is twofold. First, we construct various indicators of terrorist activity at a fine level of spatial and temporal granularity, which allow to fairly accurately identify individuals' exposure to terrorist threat. Second, we use these geo-localized indicators to empirically analyse the role played by terrorist attacks in shaping intentions to migrate either internally or internationally. Specifically, we use a multilevel approach combining these indicators with individual survey data on migration intentions in and from 133 countries, spanning the period 2007-2015. Our results indicate that terrorist attacks spur both internal and international migration intentions, though the effect is stronger for the latter. International migration intentions are, however, not necessarily responsive to the frequency of terrorist attacks, but rather to the intensity of these attacks, measured as the number of fatalities and wounded. In addition, the impact on migration intentions is heterogeneous, varying with both individual and country characteristics

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1. Introduction

The impact of terrorism has been felt in virtually every corner of the globe. While the number of deaths from terrorism fell in 2018 for the fourth consecutive year, the Global Terrorism Index (GTI) indicates an increase in the spread of terrorism, with 103 countries recording at least one terrorist incident in 2018, and 71 countries suffering at least one fatality in the same year (the second highest number ever reported) (Institute for Economics and Peace, 2019). The majority of terrorist attacks take place in developing countries, which are more prone to corruption, poor governance, and a deficient rule of law – all known to spur terrorism - and have fewer resources to effectively fight it (OECD, 2017).

Terrorism comes with devastating direct and indirect consequences for the victims involved and society in general. Not only does it affect physical integrity, individual liberty, and life satisfaction, it can also destabilize governments and jeopardize peace, security and socioeconnomic development. These adverse impacts may act as drivers for migration, to flee from the direct experiences of violent extremism, but also to escape from its indirect effects, even when there has been no direct exposure to terrorist threat (Connor, 2016; Koser and Cunningham, 2018). Moreover, terrorism might prompt people to migrate because they no longer see a viable future in a country in which the government is unable to protect its citizens from frequent terrorist attacks (Koser and Cunningham, 2015). Such displacements are sometimes unintended by-products of insurgent terrorism, but might also be part of a deliberate strategy to make profit from the controlled smuggler market (Schmid, 2016).

For some populations, the causal impact of terrorist threat on migration is quite clear. For instance, after the Islamic State in Iraq and Syria (ISIS) declared being a Caliphate of the fabricated "Islamic State" in Mosul (Iraq) in 2014, most inhabitants were forced to leave the city due to ISIS's terrorism campaign, leading to a rapid population decline from 2.5 to 1 million (Schmid, 2016). Violent extremism also prompted an exodus of Christians of at least a million in Iraq and half a million in Syria since 2003 (Koser, 2015). Another example concerns the displacement (either internal or international) of an estimated 3.3 million people since 2013 in northern Nigeria, which has been shown to comprise a deliberate strategy for Boko Haram (UNHCR, 2021), as was also the case for the Lord's Resistance Army in northern Uganda (Koser and Cunningham, 2018).

Moreover, there appears to be a correlation between the number of first-time asylum seekers in Europe and the number of deaths from terrorism in the countries of origin (Schmid, 2016). In fact, according to UNHCR, the top three nationalities of migrants, among the over one million people who crossed the Mediterranean Sea between January 2015 and March 2016, were Syrian (46.7%), Afghan (20.9%), and Iraqi (9.4%). Together with Nigeria and Pakistan, these are also the countries suffering the highest levels of terrorism (Institute for Economics and Peace, 2019).

Yet, despite abundant anecdotal evidence, empirical research has yet to confirm the role played by terrorism in driving population movements. Evidence on the causal impact of terrorism on migration is surprisingly scarce. To the best of our knowledge, only one study has empirically investigated the role played by terrorist attacks in shaping migration patterns. Specifically, Dreher *et al.* (2011) estimate a gravity model of migration to assess the impact of terrorist attacks on emigration from 153 origin countries to 6 OECD destination countries between 1976 and 2000. The authors find no evidence for an increase in overall migration following terrorist attacks, though a positive significant effect is found for the high-skilled.

In this paper, we empirically investigate the impact of terrorist attacks on worldwide intentions to migrate in and from 133 countries between 2007 to 2015 using a multilevel approach. Specifically, we create various geo-local measures of the exposure to terrorist threat at a detailed level of temporal and spatial granularity (including a region-month variant of the GTI, which will be our main variable of interest) and combine these with individual data documenting migration intentions at specific dates in specific spatial units. This allows us to fairly accurately identify individuals exposed to terrorist threat and to shed light on how terrorism spurs both internal and international migration intentions (regardless of destination).

Overall, we find robust evidence that terrorism increases intentions to migrate both internally and internationally, though the effects remain quite small. The positive and significant effect of our region-month indicator of terrorism is robust to modifications to the sample and empirical specification. Furthermore, we show that migration intentions are not necessarily responsive to the *frequency* of terrorist attacks, but rather to the *intensity* of these attacks in terms of the number of fatalities and wounded they bring about. Stronger effects are found for former migrants, high-skilled respondents, and those living in urban areas, while a weaker impact is found for the religious. Furthermore, country-specific regressions reveal differential impacts across countries, with significant effects appearing mostly in sub-Saharan Africa (SSA), the Middle East, Southeast Asia, and Europe.

The remainder of this paper is organised as follows. Section 2 discusses the various strands of related literature. Section 3 elaborates the data and presents descriptive statistics on migration intentions as well as terrorist attacks in our sample. Section 4 presents the theoretical framework and the empirical specification. Section 5 provides the results. Section 6 concludes.

2. Related literature

As mentioned above, the empirical literature on the impact of terrorism on migration is virtually non-existent. As far as we know, the only study that has empirically explored the migration response to terrorism is that by Dreher *et al.* (2011). Their focus on migration towards a small number of OECD countries (US, UK, Germany, France, Canada and Australia), however, implies that many important migration corridors, particularly those involving developing countries and internal migration flows, are not considered.

Nonetheless, several studies have explored the impact of violent conflict on migration. The evidence from this strand of the literature suggests that countries experiencing violent conflict tend to have higher emigration and refugee flows (Abel *et al.*, 2019). Hatton and Williamson (2003), for instance, document strong effects for various types of war and upheaval on the number of refugees from 40 SSA countries between 1987-1992, though the size of the effect varies with the type of violence. Focusing on migration corridors *within* SSA, Ruyssen and Rayp (2014) show that the occurrence of multiple regional wars in a decade spurred migration between African countries between 1980-2000. In contrast, Beine and Parsons (2015) find that more frequent episodes of international violence beget higher migration flows to developed countries, though not towards developing countries. Also, for the recent asylum flows from Africa to Europe, Weber (2019) show an association between violent conflicts and asylum migration, though the effect seems to be decreasing over time. Alternatively, Coniglio and Pesce (2015) provide evidence for an indirect impact only working through the reduction in origin countries' GDP per capita.

In addition, the migration response to violent conflict seems to depend on its geographical scope and intensity. Bohra-Mishra and Massey (2011) demonstrate that armed violence during a period of civil conflict in south-central Nepal fosters migration only when the level of violence is extreme, i.e. when the threats to safety outweigh the risks of travel, while low to moderate levels of violence tend to reduce migration rates. Looking into internal displacement in Columbia, Lozano-Gracia *et al.* (2010) show that individuals from regions with more extreme violence levels tend to relocate to more distant locations. This is confirmed by Moore and Shellman (2007), who show that refugee flows are greater in the face of state (sponsored) genocide/politicide than they are in response to other state coercion, dissident campaigns of violence, or civil wars, which produce relatively more internally displaced persons. In contrast, Melander and Öberg (2007) show that the threat perceived by potential migrants is more related to where the fighting is taking place (a.o. the extent to which urban centres are affected) than to the overall intensity of the fighting.

It is important to note, however, that violent conflicts are mostly concentrated in a relatively small number of countries, while terrorism is a much more global phenomenon (Bove and Böhmelt, 2016). The probability of being a victim of a terrorist attack is, nonetheless, still relatively low, though people tend to overestimate the likelihood of terrorist events as opposed to other more frequent risks that they may face in their daily lives (Sunstein, 2003). This fear, rational or not, exacerbates the potential direct and indirect reactions induced by the very possibility of terror, in addition to the consequences of actual attacks. In fact, the creation of such anxiety not just among its actual victims but also among the larger population is exactly the purpose of terrorism and what distinguishes it from conventional and guerrilla warfare (LaFree *et al.*, 2010).

Consequently, terrorism comes with specific effects that are different from those of conflicts and other types of violence. As put forward in a 2019 editorial in *The Lancet*, terrorist acts of

violence "generate not only physical injury and mental trauma in their victims but a process of dehumanisation to which no individual - on either political side or in any profession - is immune".[1] In general, a distinction can be made between the physical and psychological effects of terror (direct effects) and economic consequences (indirect effects). In what follows, we provide a non-comprehensive overview of the evidence on both types of effects.

Becker *et al.* (2004) find that an exogenous increase in the risk of terrorist events not only affects utility by changing the probability of attacks, but also by reducing the utility enjoyed from the consumption of risky activities. Similarly, Frey *et al.* (2009) observe that terrorism exerts a large, negative, and lasting effect on people's self-reported life satisfaction. Gassebner and Luechinger (2011) show that terrorism may affect individual utility differently depending on the type of attack, the frequency, and the intensity of violence. In contrast, Romanov *et al.* (2012) show that the life satisfaction of Israelis was unaffected during a period of severe violence with Palestinians. Assessing the 2013 Boston Marathon Bombing, Clark *et al.* (2017) find that the negative psychological effect of terror only lasted for one week, suggesting that life satisfaction may be resilient to terrorism. Also Bonanno (2004) indicate that the majority of individuals exposed to terrorist attacks do not exhibit psychological distress, and that the occurrence of such trauma depends on specific individual characteristics. Also, the occurrence of post-traumatic stress disorders has been found to be more likely if the exposure to violence is high (Galea *et al.*, 2003), and if the victims are afterwards exposed to images of the attack (Pfefferbaum *et al.*, 2000; Ahern *et al.*, 2002). The long term effect of terrorism on wellbeing thus remains inconclusive.

This is less the case for the impact of terorism on economic outcomes, for which empirical research shows rather large effects. Terrorist events reduce human and physical capital stocks, partially due to higher levels of uncertainty, thereby reducing among others foreign direct investments (Enders and Sandler, 1996; Abadie and Gardeazabal, 2008), trade (Nitsch and Schumacher, 2004) and tourism (Enders *et al.*, 1992). Terrorism also creates a future over-estimation of the probability for new attacks by the population previously impacted (Sunstein, 2003), possibly affecting consumption behaviour. In addition, counter-terrorism programs lead to a reallocation of resources from productive to security sectors (Enders and Sandler, 2011). In contrast, Ahern (2018) finds that terrorist attacks increase economic output and household income at the macroeconomic level despite a negative effect of terrorism on trust, wellbeing, and chronic health problems.

Finally, our paper is also related to studies exploring drivers of migration intentions. Several studies have so far relied on the Gallup World Polls (GWP) to investigate the patterns and determinants of migration intentions. Docquier *et al.* (2014) empirically analyse the country-specific and dyadic factors governing the size and composition of the bilateral pool of intending

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[1] See The Lancet Psychiatry (editorial), Terrorism and conflict: effects beyond trauma, 6(1), January 2019, pp 1, https://doi.org/10.1016/S2215-0366(18)30478-4.

migrants, as well as the probability that these migration intentions are realised. They show that migration intentions are shown good predictors of future actual migration flows. Bertoli and Ruyssen (2018) quantify the effect of migrant networks on migrants' destination choices. Ruyssen and Salomone (2018) investigate whether gender discrimination fosters women's migration intentions and plans. Docquier et al. (2020) explore whether intended migrants from MENA countries self-select on cultural traits such as religiosity and gender attitudes. Bekaert *et al.* (2021) analyse migration intentions in response to environmental stress, also distinguishing between internal and international moves.

3. Data and descriptives

To empirically study the impact of terrorism on migration, we combine individual data on migration intentions collected through the Gallup World Polls (GWP), with geo-local information on terrorist attacks compiled from the Global Terrorism Database (GTD). The GWP contain information on individual migration intentions, as well as personal and household characteristics, covering 99 percent of the world's population aged 15 and over. A typical GWP survey annually interviews approximately 1,000 individuals randomly selected from within the entire country, including rural areas.[2] Our total sample size amounts to 470,080 individuals at active age (i.e. between 15 and 50 years old) interviewed in 2,121 regions in 133 countries between 2007-2015 with valid information on all the variables of interest used in the model. In what follows, we explain in detail how the variables used in the empirical analysis have been constructed.

2.1.   Migration intentions

The GWP is probably the most comprehensive dataset on worldwide migration intentions. Interestingly, it allows users to investigate international as well as internal migration intentions, which are rarely explored simultaneously in the literature (exceptions include Carling and Collins, 2018; Bekaert *et al.*, 2021). Comparable figures on internal migration are scarce and difficult to construct (Bell and Muhidin, 2009). Yet, as the number of internal migrants worldwide is roughly three times that of international migrants, such an omission might be quite serious (Dustmann and Okatenko, 2014).

The GWP includes three relevant questions which we combine to distinguish between intentions to stay, to migrate internally, and to migrate internationally within the next 12 months after the survey (see also Manchin and Orazbayev, 2018; Bekaert et *al.*, 2021).[3] The migration

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[2] This is with the exception of areas where the safety of the interviewing staff is threatened, scarcely populated islands in some countries, and areas that interviewers can reach only by foot, animal, or small boat. For a full description of the methodology and codebook, see Gallup (2015).

[3] For more information on the construction of the dependent variable, see Online Appendix Section A.1.

intentions spelled out are stricter than pure wishful thinking, since they use a stronger formulation, directly asking for concrete plans to migrate in the short-run. Additionally, the GWP provide information on the exact timing of the survey as well as on respondents' region of residence so that we can associate each respondent to a region contained in the Database of Global Administrative Areas (GADM).

Figure 1 shows the regional distribution of the shares of respondents intending to stay in their region of origin (panel a), intending to move internally (panel b), and intending to move abroad (panel c), between 2007 and 2015. The plots reveal that most of the respondents intend to stay in their region of origin (the overall share of respondents intending to stay stands at 0.81). The global share of respondents intending to migrate internally in the coming year stands at 0.17, which far exceeds the share of those intending to move abroad in the coming year, standing at 0.02. Those intending to move, either internally or internationally, are mostly located in Africa, South America, and the Middle East.

2.2.   Terrorist attacks

The Global Terrorism Database has gathered complete information on internal and international terrorist events throughout the world since 1970 based on reports from a variety of open media sources. It defines a terrorist attack as the threat 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.[4]

We rely on the GTD to create several indexes of past exposure to terrorism at the region-month level, considering events up to five years before the interview using time-decaying weights. Specifically, we create a region-month level variant of the country-year Global Terrorism Index (GTI) produced annually by the Institute for Economics and Peace, applying the methodology used to construct the 2019 version of the GTI.[5] This region-month GTI is to be interpreted as an indicator of the frequency and/or intensity of terrorist attacks over the last 5 years rather than of the mere occurrence of such attacks.

Figure 2 represents the distribution of the region-month GTI in our sample. It is important to note that most of the regions have relatively low levels of terror. The most impacted regions seem to be located in sub-Saharan Africa, Western and Southern Asia, as well as in the Global North and parts of South America. Comparing Figure 2 to Figure 1 reveals significant overlap between the most impacted regions and the shares of respondents intending to migrate, either internally or internationally. This is particularly the case for regions in sub-Saharan Africa and Western and South Asia.
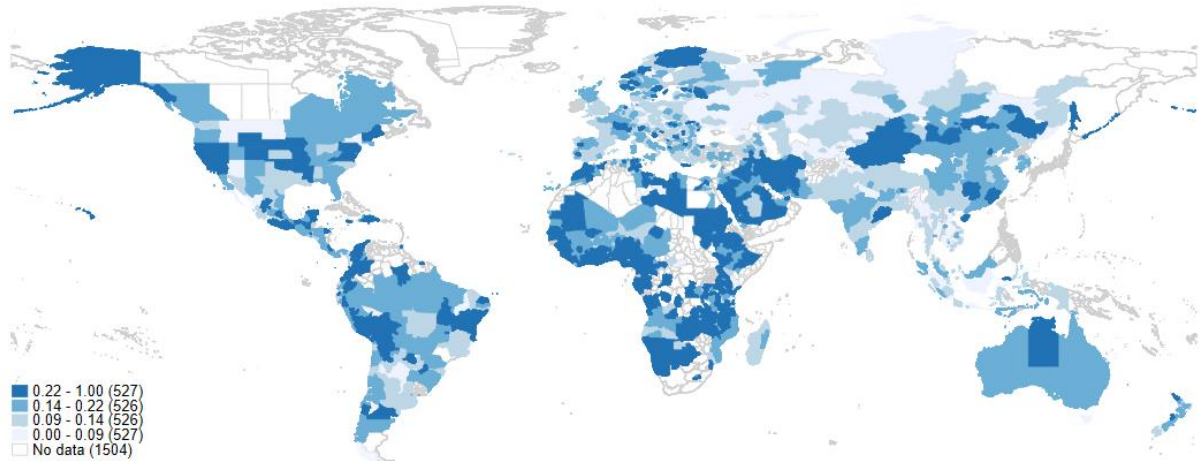
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[4] For more details, see the GTD codebook provided by the Institute for Economics and Peace (2019).

[5] See Online Appendix Section A.2 for a description of the construction of these variables.
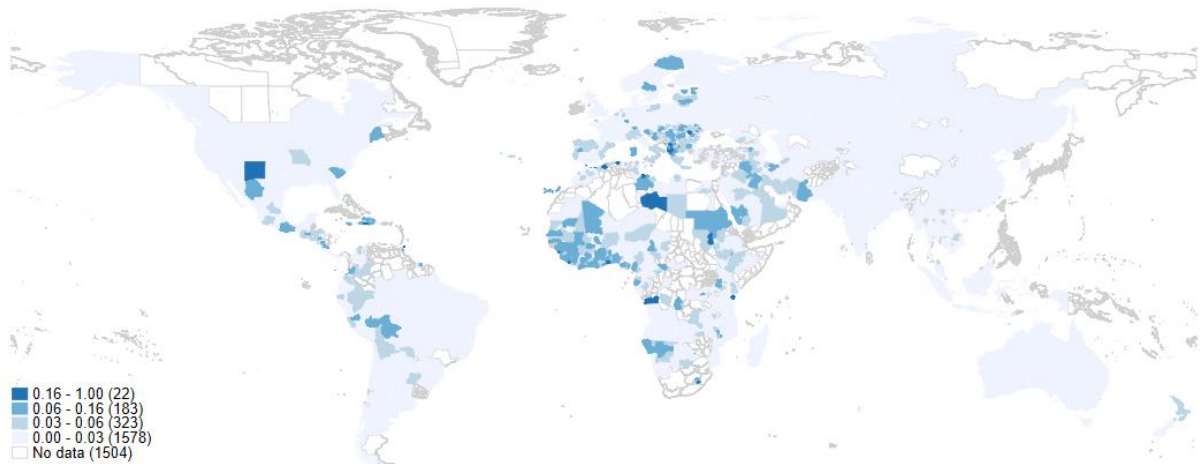
Figure 1: Share of respondents intending to stay, to migrate internally and abroad, 2007-2015
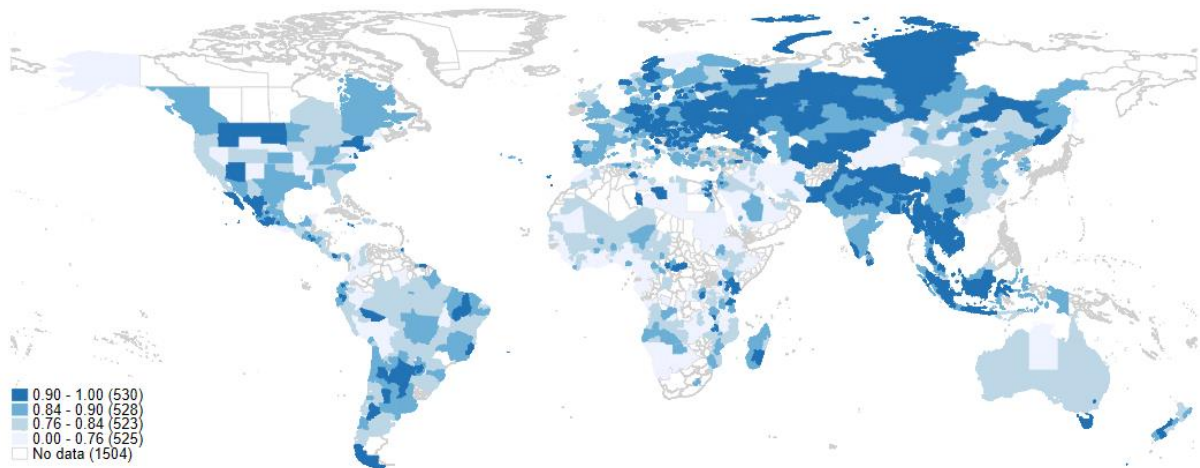
(a) Share of respondents intending to stay by region

(b) Share of respondents intending to migrate internally by region

(c) Share of respondents intending to migrate abroad by region

Notes: Plot of the share of respondents interviewed between 2007 and 2015 expressing no intentions to migrate in the next 12 months (panel a), expressing intentions to migrate internally within the next year (panel b), and expressing intentions to migrate internationally in the next year (panel c). Darker shades of blue reflect higher shares. Thresholds correspond to the 25, 50 and 75 percentile values in panels a and b, and to the 75, 90 and 99 percentile values in panel c. *Source:* author's calculations based on the GWP.

Figure 2: Average region-month score by region GTI between 2007 and 2015
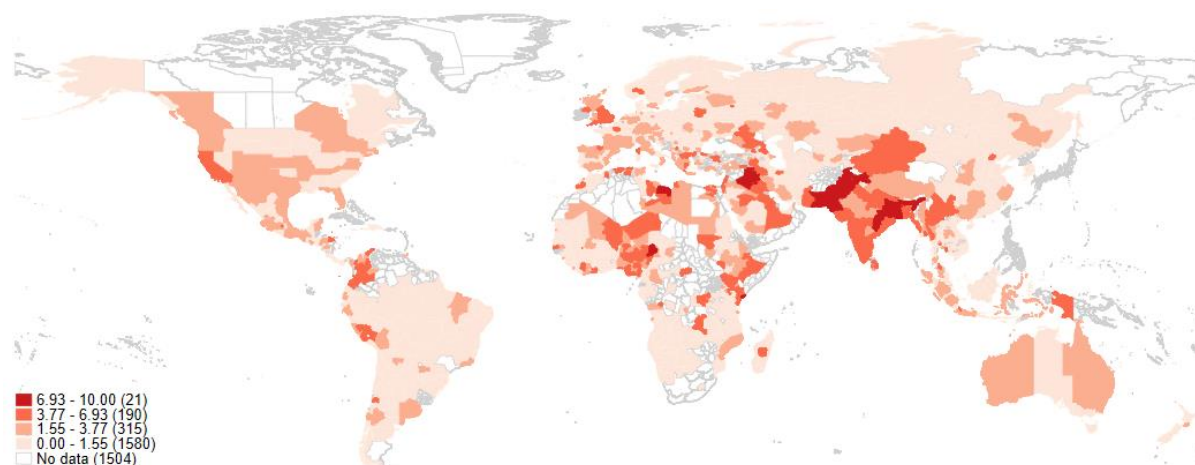
Notes: Plot of the average region-month GTI between 2007 and 2015 for the regions in our estimation sample. Darker shades of red reflect higher scores (and hence a higher prevalence and/or intensity of terrorist attacks) in a given region. Thresholds correspond to the 75, 90 and 99 percentile values. *Source:* author's calculations based on the GTD.

The same methodology is used to construct indexes capturing specific aspects of the region-month GTI index, namely the number of terrorist attacks, the number of victims (combination of fatalities and wounded), and the number of bombings. Finally, we construct a dummy for the occurrence of at least one terrorist attack in the region during the year preceding the interview.

2.3.   Control variables

We also keep track of individual and household characteristics, available in the GWP. In particular, we control for respondents' gender and age, education level (i.e. whether or not they have completed four years of education beyond high school and/or received a 4-year college degree), residential area (i.e. whether or not they live in an urban area defined as a large city or suburb of a large city), connections abroad as a proxy for network effects (i.e. whether or not they have friends or relatives abroad whom they can count on if needed), as well as for the number of children under 15 and the number of adults (aged 15 and above) in the respondent's household.

Furthermore, we control for a number of country characteristics including the one-year lagged value of the log of GDP per capita (in constant 2017 US dollars), taken from the World Bank Development Indicators. To isolate the effect of terror from that of conflict, we control for the prevalence of armed conflict in the country using the UCDP/PRIO Armed Conflict Dataset Version 4-2013 (Gleditsch, 2002). The conflict dummy equals one if there was at least one conflict with more than 1,000 battle-related deaths within the country during the year before the GWP interview. Furthermore, we include an indicator for the country's level of democracy

and a dummy capturing whether the country has experienced episodes of political instability to control for (the lack of) potential political incentives to undertake antiterrorist operations, and the lack of governance. Both are extracted from the Polity IV project (Marshall et al., 2016). The level of democracy is measured during the year before the interview using the polity2 index scores ranging between -10 (autocratic) and +10 (democratic). The political instability dummy equals one if the level of democracy score has changed by at least three in the previous three years before the year of interview, and zero otherwise.[6]

4. Theoretical and empirical framework

The model that we bring to the data to analyse the impact of terrorist attacks on migration intentions is a random utility maximisation model of migration. Consider an individual i, residing in region r of country j. At this stage, we leave the country index aside, and consider only one time dimension t. The choice set D of individual i includes his or her home region (which we refer to as $k=0$ without loss of generality), the rest of the country, i.e. $R_j/\{r\}$ where R_j is the set of regions in country j (we refer to this second alternative in the choice set as $k=1$), and the set $W/\{j\}$ of other countries of the world ($k=2$). Thus, the choice set D includes three alternatives: staying put, migrating internally, and migrating to an international destination.

Let $U_{i,k,t}$ denote the utility that individual i would derive from opting for alternative $k \in D$ at time t. We assume that this alternative-specific utility includes a deterministic component $V_{i,k,t}$ and a stochastic component $\epsilon_{i,k,t}$. If the stochastic component follows an independent and identically distributed Extreme Value Type 1 (EVT-1) distribution, then the probability $p_{i,k,t}$ that $k \in D$ will be the utility-maximising alternative is given by:

$$p_{i,k,t} = \frac{e^{V_{i,k,t}}}{\sum_{l \in D} e^{V_{i,l,t}}} \tag{1}$$

The relative probability of migrating internally ($k=1$) over staying at origin ($k=0$) writes as:

$$\frac{p_{i,1,t}}{p_{i,0,t}} = e^{V_{i,1,t}-V_{i,0,t}} \tag{2}$$

The relative probability of migrating abroad ($k=2$) over staying at origin ($k=0$) writes as:

$$\frac{p_{i,2,t}}{p_{i,0,t}} = e^{V_{i,2,t}-V_{i,0,t}} \tag{3}$$

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[6] Descriptive statistics and pairwise correlations for the variables considered in the empirical analysis can be found in Appendix Tables A.1 and A.2.

Hence, the relative probability of intending to move (irrespective of the destination) over staying at origin is given by:

$$\frac{p_{i,1,t}+p_{i,2,t}}{p_{i,0,t}} = \frac{e^{V_{i,1,t}}+e^{V_{i,2,t}}}{e^{V_{i,0,t}}} \tag{4}$$

Relative choice probabilities are solely determined by the difference in the levels of utility associated to each pair of alternatives (and not by the levels themselves). Hence, we can normalise the utility associated to the baseline option (staying) to zero. Thus, the estimated coefficient for all the regressors gives the differential effect of each variable on the attractiveness of moving versus staying.

Denoting the country-of-origin index by j, and decomposing time t into year y and month m, the reduced-form expression for the utility differential between moving options and staying is given by:

$$V_{i,r,j,y,m} = \beta Terror_{r,m-1} + \gamma X_i + \delta Z_{j,y-1} + \alpha_y + \alpha_j + \epsilon_i \tag{5}$$

The variable $Terror_{r,m-1}$ represents the monthly lagged region-month GTI, with r corresponding to the region and m-1 to the month before interview. As explained above, this index is computed over the five years preceding the month of the GWP interview.

X_i contains individual-specific controls, including dummies for age groups (with 15 to 19 being the omitted category), for males, for being highly educated, for living in an urban area and for having a connection abroad. We also include the number of adults (aged 15 and above) and children (below 15) in the household to which individual i belongs. $Z_{j,y-1}$ denotes lagged country-specific controls in country j, including the log of GDP per capita, a dummy for the occurrence of conflict, the level of democracy, and a dummy for the occurrence of political instability events in the year preceding that of the interview.

Finally, the deterministic component of the utility associated to moving intentions also includes a dummy for the year y in which individual i was interviewed (α_y), to control for global time-varying determinants of these intentions; as well as a country of origin dummy (α_j) to control for time-invariant unobserved spatial heterogeneity in the intentions to move. ϵ_i is an idiosyncratic error term.

Let $d_{i,r,m}$ represent the dependent variable, which takes the values 0, 1, or 2 if individual i residing in region r of country j and interviewed in month m of year y expresses respectively no intention to move, an intention to move internally, or an intention to move abroad within the next 12 months. We estimate the following multinomial logit model:

$$Pr\big(d_{i,r,j,y,m} = c\big) = \frac{e^{\alpha_j+\alpha_y+\beta_c Terror_{r,m-1}+\gamma X_i+\delta Z_{j,y-1}}}{\sum_{k=1}^{K} e^{\alpha_j+\alpha_y+\beta_k Terror_{r,m-1}+\gamma X_i+\delta Z_{j,y-1}}} \tag{6}$$

where $c = \{0,1,2\}$. A positive $\beta_1 (\beta_2)$ coefficient associated to the variable $Terror_{r,m-1}$ indicates that terrorist attacks increase intentions to migrate internally (internationally) relative to staying in the current region of residence.

The econometric analysis is conducted on prime-age individuals (i.e. between 15 and 49 years old). Each individual is matched to past terrorist attacks conditions prevailing in the GADM level 1 region in which he or she is interviewed.

A possible concern in our empirical approach is the following: if an individual considers moving to a neighbouring region, then terrorist threat at origin could be positively correlated with terrorist activity at destination, which confounds the effect of the estimated coefficient, possibly biasing it towards zero and reducing its statistical significance. Thus, when a person has incentives to migrate, potential (internal) destinations can look less attractive. This concern is much less pressing when considering intentions to migrate abroad, as the attractiveness of foreign destinations should be largely unaffected by local terrorist attacks.

A further concern related to the data is that individuals might have moved between the occurrence of a terrorist attack and the date in which they are interviewed by Gallup. If individuals with the highest propensity to migrate abroad have already moved by the time of the survey, then we would be missing them entirely. If they had moved internally, they might still be included in the sample, but we would be incorrectly matching them to the wrong degree of terrorist threat (the GWP do not provide information on the individual's past migration history), i.e. that prevailing in the region to which they moved rather than that in their region of origin. Our conjecture is that migration takes time so that potential migrants remain in the pool of respondents in the first month following a terrorist attack.

5. Empirical results

The empirical model defined in Equation 6 is estimated using a multinomial logit estimator with country and year dummies.[7] The tables displaying our estimation results present exponentiated coefficients, which can be interpreted as relative risk ratios. The latter indicate by how much the probability of intending to migrate (either internally or internationally) varies relative to the baseline option (intending to stay), following a unit change in a right hand side variable, holding all else constant. Values greater than one indicate an increase in the likelihood of expressing migration intentions, while coefficients smaller than one indicate that migration

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[7] Fixed effects logit models typically produce biased coefficients and standard errors due to the incidental parameter problem. Consistent estimates may, however, be obtained from estimation with country of origin dummies provided that the number of observations per country is sufficiently large. This requirement is satisfied in our empirical analysis: the average number of observations per country of origin in our sample amounts to 3,533 (varying from 305 observations in Jamaica to 23,329 in India).

intentions are less likely. Standard errors (reported between brackets) are robust to heteroskedasticity and serial correlation and clustered by country.

5.1. Benchmark results

Table 1 reports the estimation results for a regression only including individual and household characteristics and country of origin controls (columns 2-3), as well as those from our benchmark regression including also the region-month level GTI, our variable of interest (columns 4-5).

Focusing on individual controls first, we find that, in line with the literature, individuals above 30 are less likely than younger respondents to express intentions to migrate in the coming year, both internally and internationally. Migration intentions are generally larger among men, among the high-skilled, and among those living in urban areas, particularly when it comes to intentions to migrate abroad. Furthermore, having family or friends abroad whom one can rely on when needed considerably increases the likelihood of expressing intentions to migrate both internally and internationally. Internal migration intentions seem to be lower among larger households (both in terms of the number of children and the number of adults), while intentions to migrate abroad are only marginally lower among households with more children.

Controlling for country and year fixed effects, none of the country characteristics appear with a significant effect on intentions to migrate internally, whereas GDP per capita appears to positively impact intentions to migrate internationally. This is probably because these variables are relatively stable during the rather short time period characterising our sample (2007-2015) and the fact that not all countries have had a GWP survey on a yearly basis. The sign and significance of the controls is largely preserved in the remainder of our analysis.

The estimates from our benchmark model (columns 4-5) indicate that the relative probability of intending to migrate versus staying in the next 12 months is higher for those living in more terror-prone regions, and this for both internal and international migration, though the coefficient for the first is only marginally significant. The estimated relative risk ratios for internal (international) migration intentions amount to 1.015 (1.037). In other words, if the region-month GTI increases by 1, then the probability of intending to move internally (internationally) increases relative to the probability of intending to stay by 1.5% (3.7%).[8]

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[8] Online Appendix Section A.3 provides average marginal effects for our variable of interest.

Table 1: Impact of traditional controls and terrorism

	Controls		Benchmark	
	Internal	Abroad	Internal	Abroad
GTI			1.015*	1.037**
			(1.76)	(2.40)
Aged 20 to 29	1.062***	1.263***	1.062***	1.262***
	(2.95)	(5.04)	(2.94)	(5.03)
Aged 30 to 39	0.775***	0.862**	0.775***	0.861**
	(-9.08)	(-2.21)	(-9.11)	(-2.23)
Aged 40 to 49	0.578***	0.507***	0.578***	0.507***
	(-15.42)	(-9.65)	(-15.43)	(-9.67)
Male	1.148***	1.478***	1.148***	1.478***
	(6.15)	(8.11)	(6.14)	(8.10)
High-skilled	1.163***	1.191***	1.162***	1.186***
	(7.56)	(3.74)	(7.52)	(3.65)
Urban	1.096***	1.463***	1.087**	1.428***
	(2.68)	(8.17)	(2.45)	(7.24)
Network	1.300***	3.229***	1.300***	3.230***
	(13.82)	(21.44)	(13.83)	(21.43)
Nr children	0.991*	0.967***	0.991*	0.968***
	(-1.91)	(-2.79)	(-1.89)	(-2.75)
Nr adults	0.977***	1.006	0.977***	1.005
	(-4.66)	(0.54)	(-4.70)	(0.48)
Ln GDP pc	0.628	3.822**	0.635	3.914**
	(-0.84)	(2.18)	(-0.82)	(2.28)
Conflict	1.203	1.084	1.193	1.061
	(1.53)	(0.65)	(1.44)	(0.49)
Democracy	0.991	0.967	0.991	0.967
	(-0.90)	(-1.55)	(-0.87)	(-1.51)
Pol instab	1.034	0.844	1.028	0.833
	(0.56)	(-1.15)	(0.47)	(-1.23)
Observations	469,872	469,872	469,872	469,872

Notes: The table displays exponentiated coefficients (a.k.a. relative risk ratios) and *t*-statistics in parentheses. Each regression includes country and year fixed effects. Standard errors are robust to heteroskedasticity and serial correlation and clustered by country. *, **, and ***, respectively, denote significance at the 90, 95, and 99 percent confidence level.

5.2. Robustness checks

5.2.1. Robustness in terms of data

Table 2 provides estimation results from a number of robustness checks. First, we have interpreted the absence of terrorist events in the GTD as a total absence of terrorist activity (in which case the GTI is given the value zero). Yet, as the construction of the GTD relies to a large extent on the media coverage of terrorist attacks, some events might still have been missed,

which would induce measurement error. In this case, the zero values should be treated as missing observations resulting in a reduced sample size. As a first robustness check, we therefore re-estimate our benchmark model on the reduced sample of observations for which the GTD actually provides data (columns 2-3).[9] This procedure preserves and even magnifies the positive and significant effect of terrorism on both internal and international migration intentions. The estimated coefficient for internal migration intentions is now even positively significant at the 95 percent confidence level.

Subsequently, as argued in Section 2, it may not be straightforward to single out the effect of terrorism from that of conflict (even if we explicitly control for the occurrence of conflict). Conflict may act as a confounding factor influencing both migration intentions and terrorism, hence biasing our results. To test for this, we drop from our sample the countries that have been impacted by at least one conflict during the entire sample period relying again on the UCDP/PRIO Armed Conflict Dataset (columns 4-5). Reassuringly, leaving out these countries preserves our main results so that we can safely conclude that the elevated migration intentions following terrorist attacks as revealed by our benchmark estimates are not necessarily related to the prevalence of conflict.

Finally, we have so far assumed that the impact of terrorism on migration intentions is linear, but this might not be the case. The impact of terrorism on migration intentions might, for instance, be negative at relatively small levels of terrorist threat and positive only at high levels of terrorist activity (or vice versa). To test for this, we add the squared GTI (columns 6-7).[10] The estimated coefficients for the latter remain, however, insignificant so that we can safely ignore the quadratic term in the remainder of the analysis.

5.2.2. Redefining the variable of interest

Table 3 presents estimation results obtained from various regressions in which the region-month GTI is replaced by alternative indicators of regional-level exposure to terrorist attacks. In columns 2-3, the terrorism index is similar to that used in the benchmark regression except that now, an equal weight is given to terrorist events taking place shortly before the interview and those that occurred earlier in the year preceding the date of the interview. It forms the region-year counterpart of the GTI used in the benchmark regression and hence comes closer to the country-year GTI produced annually by the Institute for Economics and Peace. Our results seem robust to this change in the weighting scheme: both in qualitative and quantitative terms, the estimated effects are very similar to those obtained in the benchmark regression.

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[9] To reach convergence, we only retained countries (clusters) with at least 150 observations after this modification to the dataset, hence dropping Jamaica and Vietnam (which had only 75 and 108 observations left, respectively).

[10] Actually, we take the squared term of the GTI centered at its mean to avoid structural multicollinearity (the pairwise correlation between GTI and its square stands at 0.95 which prohibits accurate identification of the effect of these separate terms).

Table 2: Robustness in terms of data

	No Missing GTD data		No conflict countries		Non-linear effect	
	Internal	Abroad	Internal	Abroad	Internal	Abroad
GTI	1.022**	1.043**	1.017*	1.037**	1.010	1.050***
	(2.28)	(2.43)	(1.84)	(2.41)	(1.04)	(2.61)
GTI²					1.003	0.993
					(0.57)	(-0.72)
Aged 20 to 29	1.058**	1.214***	1.077***	1.273***	1.062***	1.262***
	(2.27)	(3.10)	(3.31)	(5.58)	(2.94)	(5.03)
Aged 30 to 39	0.807***	0.844*	0.764***	0.832***	0.775***	0.861**
	(-6.22)	(-1.66)	(-8.24)	(-3.23)	(-9.12)	(-2.22)
Aged 40 to 49	0.611***	0.500***	0.550***	0.491***	0.578***	0.507***
	(-11.38)	(-6.85)	(-14.55)	(-10.26)	(-15.45)	(-9.66)
Male	1.155***	1.522***	1.137***	1.469***	1.148***	1.478***
	(5.42)	(7.15)	(5.37)	(7.39)	(6.14)	(8.09)
High-skilled	1.154***	1.221***	1.171***	1.207***	1.162***	1.186***
	(6.35)	(3.71)	(6.63)	(3.58)	(7.48)	(3.65)
Urban	1.097**	1.441***	1.093**	1.432***	1.088**	1.422***
	(2.47)	(6.10)	(2.50)	(7.34)	(2.51)	(7.35)
Network	1.308***	3.230***	1.302***	3.229***	1.300***	3.228***
	(12.28)	(20.7)	(12.38)	(19.12)	(13.87)	(21.47)
Nr children	0.99	0.963**	0.992	0.968***	0.991*	0.968***
	(-1.56)	(-2.21)	(-1.39)	(-2.74)	(-1.89)	(-2.74)
Nr adults	0.978***	1.005	0.978***	0.998	0.977***	1.005
	(-3.95)	(0.42)	(-3.69)	(-0.17)	(-4.72)	(0.50)
Ln GDP pc	0.526	4.936***	0.769	2.74	0.638	3.894**
	(-1.13)	(2.78)	(-0.57)	(1.55)	(-0.81)	(2.27)
Conflict	1.133	1.152			1.191	1.066
	(1.01)	(0.85)			(1.42)	(0.52)
Democracy	0.995	0.978	0.994	0.942**	0.991	0.966
	(-0.43)	(-0.93)	(-0.39)	(-2.32)	(-0.86)	(-1.51)
Pol instab	0.985	0.787	1.007	0.991	1.029	0.832
	(-0.21)	(-1.45)	(0.12)	(-0.07)	(0.48)	(-1.24)
Observations	301,572		358,951		469,872	

Notes: See Table 1. In columns 6 and 7, the variable GTI has been centred at its mean before computing its squared term to reduce multicollinearity.

Table 3: Redefining the variable of interest

	Region-year GTI		Terror occurrence		Attacks index		Victims index		Bombings index	
	Internal	Abroad	Internal	Abroad	Internal	Abroad	Internal	Abroad	Internal	Abroad
Terrorism index	1.016*	1.039**	1.035	1.065	1.013	1.028	1.020**	1.032*	1.01	1.017
	(1.78)	(2.55)	(1.25)	(0.82)	(1.36)	(1.56)	(2.08)	(1.93)	(1.25)	(0.85)
Aged 20 to 29	1.062***	1.262***	1.062***	1.263***	1.062***	1.262***	1.062***	1.262***	1.062***	1.263***
	(2.94)	(5.03)	(2.94)	(5.04)	(2.95)	(5.04)	(2.94)	(5.04)	(2.95)	(5.04)
Aged 30 to 39	0.775***	0.861**	0.775***	0.862**	0.775***	0.861**	0.774***	0.861**	0.775***	0.861**
	(-9.12)	(-2.23)	(-9.09)	(-2.21)	(-9.10)	(-2.22)	(-9.13)	(-2.22)	(-9.09)	(-2.21)
Aged 40 to 49	0.578***	0.507***	0.578***	0.507***	0.578***	0.507***	0.578***	0.507***	0.578***	0.507***
	(-15.44)	(-9.67)	(-15.42)	(-9.66)	(-15.43)	(-9.67)	(-15.45)	(-9.68)	(-15.42)	(-9.66)
Male	1.148***	1.478***	1.148***	1.478***	1.148***	1.478***	1.148***	1.478***	1.148***	1.478***
	(6.14)	(8.10)	(6.14)	(8.10)	(6.14)	(8.10)	(6.14)	(8.09)	(6.15)	(8.10)
High-skilled	1.162***	1.186***	1.163***	1.190***	1.162***	1.188***	1.161***	1.187***	1.163***	1.190***
	(7.52)	(3.65)	(7.56)	(3.73)	(7.55)	(3.68)	(7.50)	(3.68)	(7.56)	(3.72)
Urban	1.086**	1.425***	1.093***	1.455***	1.090**	1.443***	1.086**	1.439***	1.093***	1.457***
	(2.44)	(7.23)	(2.61)	(7.87)	(2.53)	(7.46)	(2.43)	(7.45)	(2.62)	(7.94)
Network	1.300***	3.229***	1.300***	3.230***	1.300***	3.230***	1.300***	3.230***	1.300***	3.229***
	(13.83)	(21.43)	(13.84)	(21.45)	(13.84)	(21.46)	(13.82)	(21.43)	(13.82)	(21.44)
Nr children	0.991*	0.968***	0.991*	0.967***	0.991*	0.967***	0.991*	0.967***	0.990*	0.967***
	(-1.89)	(-2.74)	(-1.90)	(-2.79)	(-1.90)	(-2.78)	(-1.89)	(-2.76)	(-1.91)	(-2.79)
Nr adults	0.977***	1.005	0.977***	1.006	0.977***	1.005	0.977***	1.005	0.977***	1.005
	(-4.70)	(0.48)	(-4.66)	(0.54)	(-4.68)	(0.51)	(-4.70)	(0.49)	(-4.69)	(0.53)
Ln GDP pc	0.635	3.911**	0.633	3.881**	0.633	3.867**	0.633	3.823**	0.632	3.856**
	(-0.82)	(2.28)	(-0.82)	(2.22)	(-0.82)	(2.23)	(-0.82)	(2.22)	(-0.82)	(2.22)
Conflict	1.192	1.059	1.2	1.08	1.196	1.069	1.189	1.064	1.199	1.079
	(1.43)	(0.47)	(1.50)	(0.62)	(1.47)	(0.54)	(1.41)	(0.51)	(1.49)	(0.61)
Democracy	0.991	0.967	0.991	0.967	0.991	0.968	0.991	0.967	0.991	0.967
	(-0.87)	(-1.51)	(-0.89)	(-1.53)	(-0.86)	(-1.48)	(-0.85)	(-1.50)	(-0.86)	(-1.52)
Pol instab	1.029	0.834	1.03	0.838	1.03	0.835	1.027	0.834	1.033	0.841
	(0.47)	(-1.22)	(0.50)	(-1.17)	(0.49)	(-1.20)	(0.44)	(-1.22)	(0.54)	(-1.16)
Observations	469,872		469,872		469,872		469,872		469,872	

Notes: See Table 1.

Subsequently, we consider the pure occurrence of terrorist attacks in the 12 months before the interview. The results (presented in columns 4-5) show an insignificant effect for this dummy, both for internal and international migration intentions, suggesting that the latter are primarily affected by the intensity and frequency of terrorist attacks rather than their mere occurrence. To explore this further, we replace the region-month GTI by alternative indicators either capturing the weighted number of terrorist attacks, the number of victims (fatalities and wounded) from terrorist attacks, or the number of terrorist attacks making use of bombings (columns 6-11). It appears that the impact of terrorism on migration intentions is not driven by the weighted number of attacks in the past five years, nor do we find a significant effect from filtering out attacks involving bombings, which could be considered an indicator for more

severe attacks. However, defining instead the variable of interest in terms of the weighted number of victims from attacks taking place in the past five years preserves the significant positive effect on both internal and international migration intentions. The effect for internal migration intentions now becomes significant at 5 percent. Hence, we can conclude that migration intentions are not necessarily responsive to the *frequency* of terrorist attacks, while they do seem driven by the *intensity* of these attacks in terms of the number of fatalities and wounded they create.

5.3. Exploring heterogeneous migration responses
5.3.1. Heterogeneous impact by individual and household characteristics

In Table 4, we re-estimate our benchmark regression on various subsamples of respondents with specific individual or household characteristics. First, we consider only former migrants, who might be more likely to turn to migration again in order to escape terrorist threat, thereby showing different migration behaviour than natives. Rerunning our benchmark model on respondents born in another country than the one in which they currently reside (columns 2-3) reveals that former migrants are indeed relatively more likely to intend to migrate abroad in the face of terrorist threat, and they are unlikely to intend to move internally.

Limiting our sample to highly skilled respondents (columns 4-5) reveals similar results. Respondents with at least four years of college education are more likely than average to develop intentions to migrate abroad in the year following the interview in response to increased terrorist threat - confirming the earlier findings of Dreher *et al.* (2011) – the latter does not seem to increase their intentions to migrate internally.

When we consider only respondents living in urban areas (i.e. in a large city or a suburb of a large city), the relative risk ratios for the region-month GTI are also somewhat larger and more significant than those in the benchmark regression (i.e. on the whole sample of respondents) (columns 6-7).

Lastly, religiosity has been shown to play an important role in how people cope with the increased salience of terrorism (Fischer *et al.*, 2006), thereby potentially reducing incentives to migrate in the aftermath of terrorist events. To test for this, we consider only people who indicate that they are religious (i.e. who named a specific religion in reply to the question "Could you tell me what your religion is?") and indeed find a relatively lower tendency to develop intentions to migrate in the coming year following terrorist attacks (columns 8-9).

Table 4: Exploring heterogeneity in individual & households characteristics

|	Non-natives		High-skilled		Urban		Religious	
	Internal	Abroad	Internal	Abroad	Internal	Abroad	Internal	Abroad
GTI	1.026	1.106***	1.004	1.082***	1.021**	1.051**	1.013	1.031*
	(1.37)	(3.60)	(0.34)	(3.68)	(2.24)	(2.58)	(1.42)	(1.84)
Aged 20 to 29	0.984	0.866	1.313**	1.166	1.214***	1.380***	1.051**	1.257***
	(-0.19)	(-0.98)	(2.42)	(0.67)	(7.17)	(6.08)	(2.28)	(4.53)
Aged 30 to 39	0.779***	0.571***	0.937	0.783	0.954	1.011	0.759***	0.864**
	(-2.97)	(-2.89)	(-0.56)	(-1.00)	(-1.46)	(0.16)	(-9.81)	(-1.99)
Aged 40 to 49	0.538***	0.400***	0.641***	0.409***	0.726***	0.628***	0.564***	0.505***
	(-7.03)	(-4.60)	(-3.86)	(-3.77)	(-8.34)	(-6.93)	(-16.10)	(-8.96)
Male	1.304***	1.414***	1.130***	1.184***	1.090***	1.323***	1.153***	1.469***
	(6.88)	(3.42)	(4.48)	(2.73)	(3.90)	(6.44)	(5.76)	(7.24)
High-skilled	1.089	1.184*			1.081***	1.120**	1.190***	1.160***
	(1.42)	(1.78)			(3.63)	(2.23)	(8.38)	(3.24)
Urban	0.943	1.138	0.928*	1.161*			1.112***	1.454***
	(-0.95)	(0.98)	(-1.76)	(1.93)			(3.02)	(7.17)
Network	1.118***	2.025***	1.281***	3.421***	1.255***	3.324***	1.311***	3.132***
	(2.94)	(6.57)	(8.69)	(16.99)	(10.75)	(21.6)	(13.77)	(20.03)
Nr children	0.979	0.944*	0.946***	0.885***	1.004	0.945***	0.992	0.975**
	(-1.40)	(-1.90)	(-4.90)	(-5.13)	(0.55)	(-3.71)	(-1.53)	(-2.11)
Nr adults	0.976	1.005	0.963***	0.99	0.961***	0.995	0.978***	1.003
	(-1.51)	(0.19)	(-5.01)	(-0.40)	(-6.06)	(-0.36)	(-4.06)	(0.25)
Ln GDP pc	0.898	0.82	0.868	3.45	0.978	5.363**	1.496	3.786**
	(-0.27)	(-0.15)	(-0.40)	(1.52)	(-0.07)	(2.17)	(1.11)	(2.20)
Conflict	1.153	1.093	0.964	1.189	1.114	1.145	1.063	1.021
	(1.03)	(0.32)	(-0.32)	(0.81)	(1.38)	(0.99)	(0.95)	(0.18)
Democracy	1.108**	1.118	0.976	0.963	0.986	0.971	0.995	0.97
	(2.17)	(1.36)	(-1.20)	(-1.62)	(-1.41)	(-1.19)	(-0.60)	(-1.36)
Pol instab	0.977	0.643**	0.991	0.680*	1.004	0.817	1.022	0.812
	(-0.12)	(-2.25)	(-0.09)	(-1.92)	(0.06)	(-1.26)	(0.42)	(-1.36)
Observations	19,659		68,882		188,836		397,551	

Notes: See Table 1.

5.3.2. Country-specific estimations

Finally, we re-estimate our benchmark model separately for each country. The estimated coefficients for the region-month GTI are displayed in Figure 3. For internal migration intentions, the estimated relative risk ratio of the region-month GTI exceeds 1 for 55 out of the 101 countries for which the model reaches convergence, and significantly so at the 5 percent confidence level for 17 countries. For international migration intentions, this number lies even higher with a positive coefficient for 61 countries, and significantly so at 5 percent for 16 countries. For 15 (8) countries in our sample, terrorist attacks seem to have had a negative significant impact on internal (international) migration intentions.[11] It is important to note, however, that these regressions imply a drastic reduction in the sample size compared to the

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[11] A negative impact of terroristic attacks on internal migration intentions is not counterintuitive. To the extent that migration typically occurs from rural to urban areas, terrorist attacks in cities might discourage internal migration flows. In addition, spatial correlation in terrorist activity might reduce the attractiveness of nearby regions and hence also the likelihood that people intend to migrate internally.

benchmark regression (the number of observations in these country-specific regressions ranges from 305 for Jamaica to 23,329 for India).[12] The resulting reduced statistical power may lower the accuracy of the estimates and the chance to find a significant impact.

Figure 3: Estimated country-specific exponentiated coefficients for the region-month GTI
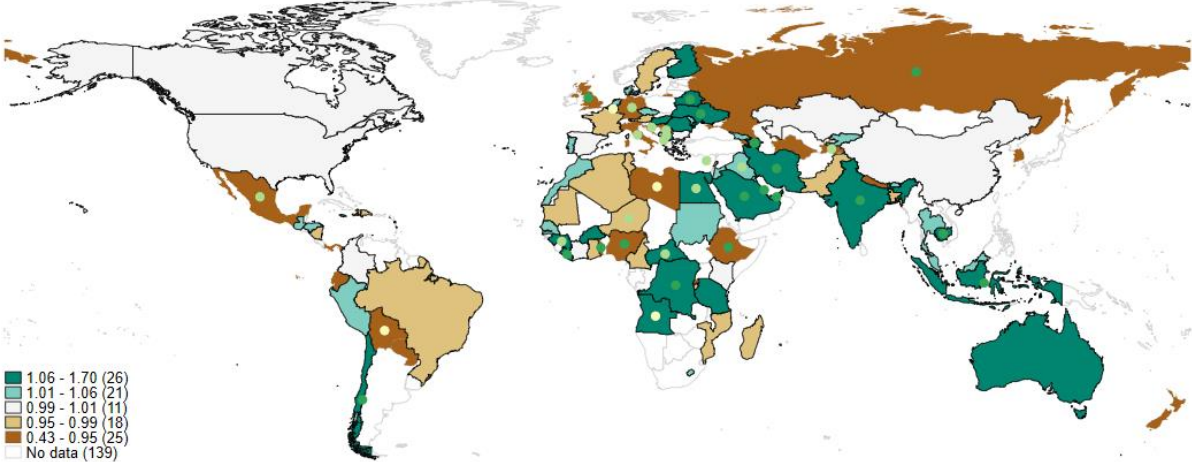
(a) Impact on internal migration intentions
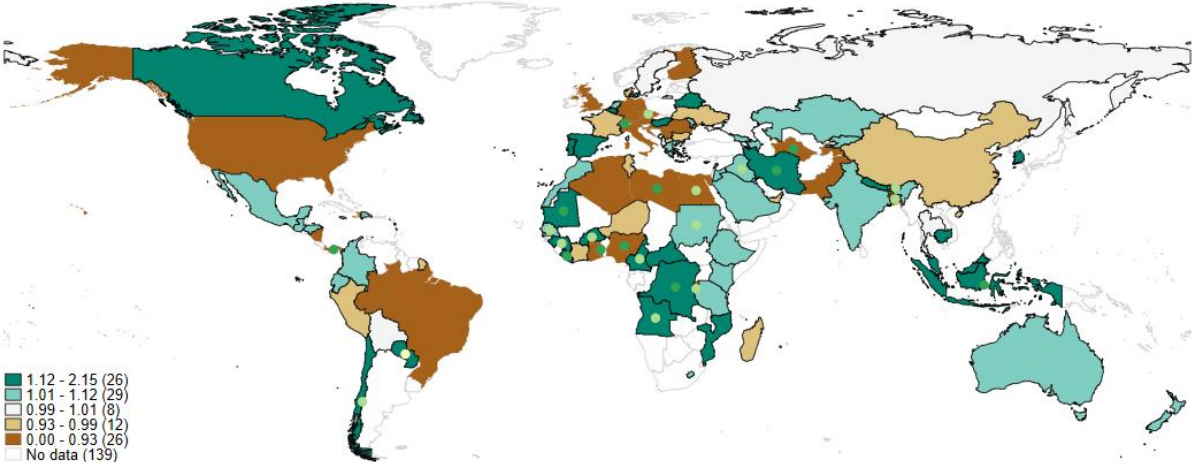
(b) Impact on international migration intentions

Notes: Plot of the estimated relative risk ratios (i.e. exponentiated coefficients) for the region-month GTI. Green (brown) colours indicate a positive (negative) impact on internal migration intentions (panel a) or on international migration intentions (panel b). Yellow, light green, and dark green dots indicate significance at the 10, 5, and 1 percent significance levels, respectively. Thresholds correspond to the value at p25, 0.99, 1.01, and the value at p75.

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[12] Switzerland is an outlier (estimated relative risk ratios are extremely high, probably due to the small number of observations) and hence not considered in the remainder.

The estimated effect is predominantly significant in non-OECD countries. The only OECD countries for which we obtain a significant impact of terrorist attacks on internal (international) migration intentions are Germany, Italy, and the UK (Czechia). The estimated coefficient is on average also higher in non-OECD countries than in OECD countries, for both internal and international migration intentions (the average relative risk ratio stands at 1.005 in non-OECD and 0.880 in OECD countries for internal migration intentions, and at 1.094 and 0.558 respectively for international migration intentions). Moreover, the estimated effects of terrorist attacks on internal migration intentions tend to be particularly large in a number of sub-Saharan African countries, the Middle East, Eastern Europe, and Southeast Asia.[13]

6. Conclusion

The 2018 World Migration Report proposes that "a more integrated approach to tackling the causes of displacement and migration should include interventions specifically focused on countering and preventing violent extremism - there is growing evidence that preventing violent extremism may be one way to address the drivers of migration" (Koser and Cunningham, 2015). Yet, despite apparent connections between terrorism and migration, there is a significant gap in the academic literature regarding the causal impact of this particular type of violence on migration.

This paper tries to fill this gap by empirically estimating the impact of terrorist attacks on migration intentions in and out of 133 countries around the world, using a multilevel analysis. To that end, we first developed various geo-local indicators of regional exposure to terrorist activity. These fine-grained terrorism indicators were then combined with individual survey data on migration intentions and individual and household controls taken from the Gallup World Polls, as well as information on various country characteristics.

Our results indicate that terrorism indeed increases intentions to migrate both within and across countries, though the overall effects are rather small. The estimated effects are robust to modifications in the sample (either ignoring observations that were missing in the GTD or dropping countries in conflict) as well as the inclusion of a non-linear term. Substituting our main variable of interest - the region-month GTI - by alternative measures of regional terrorism exposure, revealed that intentions to migrate respond primarily to the intensity of terrorist attacks (in terms of the associated number of casualties) rather than to their mere occurrence or

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[13] In Online Appendix Section A.4, we explore also other potential patterns of heterogeneity in the country-specific effect of the region-month GTI. We find that the impact of terrorism on domestic migration intentions is significantly correlated with the occurrence of conflict. Furthermore, running country-specific regressions separately for low-skilled and high-skilled individuals, we do not observe a clear geographical pattern for the high-skilled, but for the low-skilled there is again a large concentration of (positive) significant effects in Africa, the Middle East, and Southeast Asia, and this for both domestic and international migration intentions.

frequency. Furthermore, we find stronger than average effects on intentions to migrate abroad for former migrants, high-skilled respondents, and those living in rural areas, while the effect is significantly smaller for the religious. Accounting for heterogeneity in the estimated effect across countries also reveals considerable differences. In general, estimated effects are strongest in sub-Saharan Africa, the Middle East, Eastern Europe, and Southeast Asia.

Our analysis reveals that policymakers should avoid oversimplified conclusions about the causal impact of terrorism on migration. Whereas we do find evidence for a positive effect on both internal and international migration intentions on average, the effects are rather small and there are pertinent distinctions across countries and population groups. In setting out the actions to counter terrorism, these heterogeneous connections should be taken into account, as efforts to prevent terrorist threat might affect migration (intentions) in various ways.

Finally, it is important to keep in mind that migration intentions - even if the ones that we specified in this study are more firm than common in the literature and have been shown to be good predictors for actual migration - might not always materialise. Also, the distinction between internal and international migration intentions might be less evident for respondents living close to a border, especially in porous regions like Western Africa. Hence, an interesting pathway for future research could be to explore how migration (intentions) might be affected by terror in neighbouring regions, thereby accounting for the distance from attacks.

Acknowledgements

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Appendix

Table A.1: Summary statistics of the variables used in the empirical analysis

Variable	N	Mean	St Dev	Min	Max
Dependent variable	469872	1.204	0.453	1	3
GTI	469872	1.714	2.385	0	10
Aged 20 to 29	469872	0.32	0.466	0	1
Aged 30 to 39	469872	0.293	0.455	0	1
Aged 40 to 49	469872	0.245	0.43	0	1
Male	469872	0.463	0.499	0	1
High-skilled	469872	0.147	0.354	0	1
Urban	469872	0.402	0.49	0	1
Network	469872	0.346	0.476	0	1
Nr children	469872	1.596	1.86	0	60
Nr adults	469872	3.333	1.861	0	54
Ln GDP pc	469872	9.027	1.095	7	12
Democracy	469872	3.716	5.923	-10	10
Conflict	469872	0.236	0.425	0	1
Pol instab	469872	0.08	0.271	0	1
Relig	418105	0.951	0.216	0	1
GTI method B	469872	1.72	2.388	0	10
Terror occurrence	469872	0.257	0.437	0	1
Attacks index	469872	1.517	2.271	0	10
Victims index	469872	1.416	2.263	0	10
Bombings index	469872	1.133	2.044	0	10

Table A.2: Pairwise correlation coefficients on estimation sample

Variable	1	2	3	4	5	6	7	8	9	10
1. Dependent variable	1.000									
2. GTI	-0.020***	1.000								
3. Aged 20 to 29	0.080***	0.004***	1.000							
4. Aged 30 to 39	-0.020***	0.010***	-0.441***	1.000						
5. Aged 40 to 49	-0.088***	-0.003***	-0.390***	-0.366***	1.000					
6. Male	0.046***	0.016***	-0.005***	-0.014***	0.001	1.000				
7. High-skilled	0.007***	0.008***	0.024***	0.071***	0.024***	-0.002	1.000			
8. Urban	0.030***	0.093***	0.013***	0.011***	-0.002	-0.005***	0.181***	1.000		
9. Network	0.111***	-0.041***	0.019***	-0.012***	-0.023***	0.009***	0.100***	0.088***	1.000	
10. Nr children	0.027***	-0.006***	-0.061***	0.103***	-0.048***	-0.019***	-0.114***	-0.137***	-0.017***	1.000
11. Nr adults	0.021***	0.040***	0.055***	-0.140***	-0.047***	0.039***	-0.094***	-0.052***	-0.003***	0.300***
12. Ln GDP pc	-0.062***	-0.047***	-0.065***	0.028***	0.107***	-0.028***	0.248***	0.302***	0.073***	-0.317***
13. Democracy	-0.002	0.121***	-0.025***	-0.002	0.029***	-0.018***	0.031***	-0.024***	0.081***	-0.078***
14. Conflict	-0.012***	0.417***	0.018***	0.004***	-0.018***	0.018***	-0.021***	-0.006***	-0.114***	0.050***
15. Pol instab	-0.007***	0.121***	0.001	-0.001	-0.008***	0.000	-0.057***	-0.048***	-0.021***	0.096***
16. Relig	0.008***	0.077***	0.011***	-0.004***	-0.018***	-0.024***	-0.070***	-0.065***	-0.012***	0.091***
17. Region-year GTI	-0.020***	0.997***	0.004***	0.010***	-0.003***	0.016***	0.007***	0.094***	-0.041***	-0.006***
18. Terror occurrence	-0.020***	0.825***	0.000	0.011***	0.000	0.012***	0.010***	0.071***	-0.029***	-0.014***
19. Attacks index	-0.026***	0.967***	-0.001	0.012***	0.002	0.012***	0.012***	0.082***	-0.036***	-0.014***
20. Victims index	-0.021***	0.958***	0.009***	0.008***	-0.009***	0.018***	-0.007***	0.070***	-0.053***	0.007***
21. Bombings index	-0.038***	0.873***	-0.007***	0.013***	0.009***	0.006***	0.016***	0.085***	-0.037***	-0.031***

Notes: *Continued on next page*

Variable	11	12	13	14	15	16	17	18	19	20	21
11. Nr adults	1.000										
12. Ln GDP pc	-0.215***	1.000									
13. Democracy	-0.090***	0.114***	1.000								
14. Conflict	0.095***	-0.155***	0.041***	1.000							
15. Pol instab	0.070***	-0.170***	-0.038***	0.086***	1.000						
16. Relig	0.090***	-0.203***	-0.074***	0.107***	0.060***	1.000					
17. Region-year GTI	0.042***	-0.050***	0.122***	0.423***	0.120***	0.078***	1.000				
18. Terror occurrence	0.018***	-0.013***	0.143***	0.332***	0.110***	0.055***	0.808***	1.000			
19. Attacks index	0.031***	-0.017***	0.156***	0.395***	0.123***	0.068***	0.959***	0.864***	1.000		
20. Victims index	0.055***	-0.090***	0.096***	0.437***	0.128***	0.088***	0.959***	0.758***	0.912***	1.000	
21. Bombings index	0.026***	0.028***	0.144***	0.367***	0.105***	0.062***	0.869***	0.761***	0.924***	0.846***	1.000

Notes: *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively.