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Abstract

Global terrorist organizations attract radicalized individuals across borders and constitute a threat for both sending and receiving countries. We use unique personnel records from the Islamic State in Iraq and the Levant (Daesh) to show that unemployment in sending countries is associated with the number of transnational terrorist recruits from these countries. The relationship is spatially heterogeneous, which is most plausibly attributable to travel costs. We argue that poor labor market opportunities generally push more individuals to join terrorist organizations, but at the same time limit their ability to do so when longer travel distances imply higher migration costs.

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1 Introduction

A new wave of terrorism has surged in the past two decades, characterized by transnational attacks and global recruitment, and spearheaded by multinational terror groups such as Al-Qaida and the Islamic State in Iraq and the Levant (ISIL, a.k.a. ISIS or Daesh, its Arabic acronym). Over 25,000 foreign fighters travelled to Iraq and Syria between the start of the Syrian Civil War in 2011 and September 2016 to fight for Daesh or for the Al-Nusra Front (Soufan Group 2015). These foreign fighters come from a much more diverse set of countries than in previous wars: United Nations (2017) reports that Daesh recruited fighters from over 100 countries. Some of these fighters have engaged in extreme levels of violence in Iraq and Syria, others have perpetrated terrorist attacks in third countries, and those who ultimately return to their home countries are viewed as threats to domestic security (The Atlantic 2017).

Quantitative evidence on the economic drivers of the recruitment into trans-border terrorist organizations is scarce. Current knowledge on the determinants of international terrorist recruitment mostly relies on qualitative insights and case studies (Hegghammer 2010; Zelin 2018; Saradzhyan and Duffy 2016; Weggemans et al. 2014; Gates and Podder 2015; Holman 2016). The more extensive literature on domestic terrorism—reviewed in Gaibulloev and Sandler (2019)— has not reached a consensus on the effect of economic opportunities on terrorism, and is only partially relevant to the study of international terrorism. This point is emphasized by Bandyopadhyay and Younas (2011) and Enders and Hoover (2012), who observe that domestic and transnational terrorism may respond differently to local economic conditions. In particular, engaging in domestic terrorism can be a part-time occupation and does not require the recruit to travel long distances. By contrast, enlisting as a foreign fighter for an international terror group involves migration costs in addition to forgoing earning opportunities at home and hence constitutes a stronger commitment in light of the difficulty of returning home.

This paper exploits a unique data set of Daesh's personnel records to study how eco-

nomic opportunities and migration costs shape the spatial pattern of foreign participation in transnational terrorist organizations. The data set contains individual information on 3,965 foreign recruits from 61 countries. Dodwell et al. (2016a) estimate that these data account for approximately 30 percent of the total number of foreign recruits who entered Syria or Iraq between early 2013 and late 2014. Our main explanatory variable is the unemployment rate in the countries of origin of these foreign recruits, a first-order measure of economic opportunities.

In contrast to previous studies on transnational terrorism (e.g., Li and Schaub 2004; Lai 2007; Benmelech and Klor 2018) or on civil conflicts generally speaking (see survey from Blattman and Miguel 2010), we have detailed and plausibly representative individual information on terrorist recruits, allowing us to draw inference from sub-national variation. Specifically, we link the number of Daesh recruits from a particular country and education group to the unemployment rate faced by workers in that same country and with the same education level. We run panel regressions that include country and education-level fixed effects so that our estimated coefficients rely on the extent to which the within-country schooling gradients of the unemployment rate are correlated with the relative numbers of recruits in the three schooling attainment groups. The data thus allow us to move beyond cross-country correlations and control for any observed and unobserved country characteristics that may affect both terrorism participation and labor market opportunities, such as institutions, government policies, and state capacity (Fearon and Laitin 2003; Sanchez de la Sierra 2020).

Theoretically, the level of unemployment has an ambiguous effect on the recruitment of foreign fighters. On the one hand, unemployment lowers the economic opportunity cost of participation in terrorist activities and exacerbates grievances against the government (Collier and Hoeffler 1998, 2004; Blattman and Miguel 2010). On the other hand, unemployed individuals may face liquidity constraints that can hamper their ability to travel to Daesh territory in Iraq or Syria. This mechanism is more relevant in distant

countries where travel costs are higher. Indeed, there is ample evidence that Daesh foreign recruits from different regions paid for their own travel to Syria or Iraq (Lemon et al. 2018; FATF 2015; NATO 2016). In its recruitment materials, Daesh specifically emphasized the importance of performing *hijra* (migration), i.e. fulfilling the historical obligation of leaving one's home country and travel to Daesh territory (NATO 2016).

After controlling for country and education-level fixed effects we find that the average conditional correlation of unemployment with recruitment is insignificant. However, this result masks substantial heterogeneity across space. For the sample of close countries, higher unemployment rates are associated with more recruits joining Daesh, with a semi-elasticity of 0.15. Given the total flow of fighters from that area in the period covered by our data, a causal interpretation of this conditional correlation would imply that 1,200 fewer recruits would have joined Daesh during that time if the unemployment rate had been 1 percentage point lower in all countries in the sample. On the other hand, among countries furthest away from Syria or Iraq (more than 2500 miles away), unemployment rates are *negatively* associated with recruitment into Daesh, with a semi-elasticity of -0.23, consistent with the theoretical tension between opportunity and migration costs.

In the absence of exogenous variation in geographical distance, we cannot rule out that some correlated unobserved factors drive the spatial heterogeneity result, but we reject a large number of competing factors. The distance-unemployment interaction in our regression dominates interactions between unemployment and GDP per capita, the share of the Muslim population, regional dummies, political variables (fractionalization, polity score, political rights etc), and social and government regulation of religion. We provide a number of additional robustness checks that include using airfare prices instead of geodesic distance to proxy for travel costs and conducting the analysis separately for Muslim-minority and Muslim-majority countries. Overall, our results suggest that migration costs between countries of origin and the headquarters of the terrorist organization offer the most plausible explanation for why the correlation between unemployment and

Daesh foreign recruitment declines with distance and eventually becomes negative.

Our findings speak to a broader literature on the economic determinants of participation in violence. In an important contribution, Berman et al. (n.d.) find that higher wages are associated with more rather than less violence in Iraq. Their somewhat counter-intuitive finding lends support to a community-centric model of participation in violence, whereby higher wages make it harder for the government to financially incentivize communities to participate in counter-insurgency efforts. The emphasis of our paper is on transnational rather than domestic terrorism and provides suggestive evidence that the international market for terrorists is subject to economic forces similar to those at play in global labor markets (Clemens 2014). Our finding that economic opportunities at home reduce participation in terrorism *ceteris paribus* is consistent with the literature on micro-economic drivers of violent conflict (Verwimp et al. 2018); similar findings emerged in many different local contexts and for various forms of violence. For instance, the violence-dampening effect of improved labor market opportunities has been found among youths susceptible to crime in Chicago (Davis and Heller 2019), Liberian ex-combatants (Blattman and Annan 2010), Indian villagers affected by the Maoist rebellion (Fetzer 2019; Dasgupta et al. 2017), or insurgents in Afghanistan, Iraq, and Pakistan (Guardado and Pennings 2019).

Finally, our work adds to the emerging scholarship on the economic drivers of transnational terrorism. While our empirical strategy is similar to Krueger and Malečková (2009), our paper is most closely related to Verwimp (2016) and Benmelech and Klor (2018). Benmelech and Klor (2018) ask a question similar to ours, but use a country-level measure of terrorist recruitment based on expert estimates. Therefore, their results rely on a different source of data and on cross-country, rather than within-country variation. We nonetheless replicate their results by aggregating our individual records by country as a data check exercise. The study by Verwimp (2016) emphasizes the gap in labor market outcomes between EU natives and non-EU immigrants and finds that larger gaps are associated with

higher numbers of foreign fighters. As in Benmelech and Klor (2018), the analysis relies on cross-country variations, which makes it vulnerable to country-level confounders, unlike our fixed effects estimates. Admittedly, our measure of labor market opportunities is not specific to the Muslim or non-native population as in Verwimp (2016), but we conduct a large number of robustness checks in Section 5.2 to ensure that discrepancies between Muslim and non-Muslim unemployment rates are not driving our results. In particular, running our regressions within sub-samples of Muslim-majority and Muslim-minority countries yields similar results.

The rest of the paper is organized as follows. In Section 2, we describe the data sources used in the paper and provide evidence that our Daesh personnel records are consistent with the information on Daesh recruitment available in the literature. Section 3 discusses our empirical strategy. Section 4 measures the correlation between unemployment and Daesh recruitment and examines the spatial heterogeneity in that relationship. A battery of robustness tests are presented in Section 5. Section 6 concludes.

2   Context and Data

Daesh recruited Muslims from all over the world to join its self-proclaimed Caliphate. The majority of these recruits were fighters and suicide bombers, but some served as administrators. While recruits sometimes brought families along and it is well-known that single women also joined Daesh to support the organization (Windsor 2018), our study is limited by the data we have access to and thus focuses on male recruits. This section first discusses Daesh recruitment strategies, then presents the Daesh personnel records we use, and finally introduces the macro data we draw on. Detailed variable definitions and their sources are provided in Table A1.

2.1 Daesh Foreign Recruitment

Information on Daesh's recruitment strategies is available through both anecdotal accounts (e.g., Homeland Security Today 2020; Inkyfada 2018), systematic in-depth interviews with hundreds of fighters (Speckhard and Ellenberg 2020) and analyses of recruitment brochures and social media posts (NATO 2016). Recruitment was conducted through several channels. First, recruiters leveraged local networks through mosques, Islamic institutions or advocacy groups to interact face-to-face with potential recruits, screen them, and provide references to smugglers (Syriahr 2015). Recruiters were often returnees. Rosenblatt (2020) describes the functioning of Daesh recruitment networks in different countries and how the network structure adjusts to law enforcement efforts.

Second, Daesh distributed videos, social media postings and brochures painting a narrative of struggle and injustice (Homeland Security Today 2020; Inkyfada 2018). These recruitment materials were translated from Arabic into many local languages. Messages were often tailored to their audiences by country or cultural background, with a common emphasis on the importance for followers to consider travelling to Syria or Iraq despite financial or security obstacles (NATO 2016). Third, the targeted recruitment efforts by Daesh were often synergistic with individuals' self-radicalization on social media (e.g. Mitts 2019). Daesh also tapped into this by having recruiters contact individuals who had liked or otherwise engaged with their social media posts (Speckhard and Ellenberg 2020).

As discussed in the introduction, it was common for recruits to pay for their own travel, including by selling all their belongings, as is documented in accounts from various countries (Lemon et al. 2018; FATF 2015; NATO 2016; Speckhard and Ellenberg 2020).

2.2 Daesh Personnel Records

Daesh personnel records were obtained by a number of news organizations including Syria's Zaman al Wasl, Germany's Süddeutsche Zeitung, Westdeutscher Rundfunk, and

Norddeutscher Rundfunk, Britain's Sky News, and U.S.' NBC News. These news organizations described a Daesh defector as their source for the documents. Our data are identical to the ones analyzed in Dodwell et al. (2016a), who provide a detailed description of their origin and were able to corroborate 98 percent of the records with data maintained by the U.S. Department of Defense. The personnel records contained entry and exit forms that were administered to 4604 male Daesh recruits who travelled to Syria and/or Iraq between in 2013-2014. Therefore, only so-called male "foreign fighters" are represented, while women and Daesh operatives who stayed in their countries of residence are not.

To gain insight into the representativity of these data, Dodwell et al. (2016a) compare the number of unique records in the forms to available estimates of the total flow of fighters to Syria and/or Iraq. These estimates were compiled by the Soufan Group, an intelligence and security consultancy, from official government figures and other non-official sources such as United Nations reports and academic studies.[1] Adding numbers from these sources puts the total number of fighters who came to Syria and/or Iraq from the start of the conflict in 2011 until December 2015 at around 30,000 (Soufan Group 2015). Dodwell et al. (2016a) argue, citing Zelin, Aaron (2015) and a statement by Peter Neumann from January 26, 2015, that 15,000 of these 30,000 fighters arrived during the time period spanned by the forms. Therefore, the number of recruits in our data corresponds to 31 percent of the inflow of all foreign fighters into Syria during 2013-2014. However, not all foreign fighter who travelled to Syria joined Daesh. An unknown proportion joined other competing organizations such as the Al-Nusra Brigades, and changes of allegiance between the numerous factions fighting against the Assad regime were common. Therefore, 31 percent is a lower bound for the fraction of the flow of fighters to Daesh specifically that is captured in the forms.

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[1] We are not aware of competing estimates and therefore rely on them for an order of magnitude of the foreign fighters inflow, despite the lack of details on the exact methodology and the heterogeneity of the underlying sources.

The analysis in this paper uses the information on 3,965 recruits from 61 countries contained in the entry forms; we ignore exit forms. The entry forms recorded individual characteristics such as country of residence, citizenship, age, marital status, and education. These data have been used in a few descriptive studies (e.g. Dodwell et al. 2016a,b; Jayakumar and Sumpter 2019; Morris 2020; Evans et al. 2020).[2] Table 1 provides a breakdown of records by country of last residence; other characteristics are summarized in Table 2, Panel A; patterns of missingness in key variables are examined in Table A2; and the geographic distribution of recruits is displayed in Figure A1. In our analysis, we exclude records with missing information on the country of residence (418 records), missing education (another 541 records) and those where Syria or Iraq is the country of residence (another 75 records). This leaves us with a sample of 2,931 fighters from 58 countries.

Although the nature of the sample selection cannot be precisely established, the breakdown by countries of residence – our main outcome variable – is very similar in our sample and in the official expert estimates for the total population of foreign fighters gathered by the Soufan group and used by Benmelech and Klor (2018). Figure A2 shows a high correlation between our personnel records and their estimates, with a slope of 0.78 in the full sample and a slope of 0.99 when we drop one outlier, i.e. South Africa. Half of the variation in our data is absorbed by variation in their estimates; most data points are closely aligned with the predicted values from a linear regression.

As an additional data check, we replicate estimations of the country-level determinants of Daesh recruitment of Benmelech and Klor (2018) in Tables A3 and A4. Table A3 uses a dummy outcome indicating if any recruit is coming from a given country, and Ta-

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[2]Dodwell et al. (2016a) and Dodwell et al. (2016b) provide the earliest descriptions of the data, summarizing the different variables and comparing them to an earlier trove of foreign fighters records, the "Sinjar" records. Jayakumar and Sumpter (2019) compare the characteristics of the subset of Southeast Asian fighters with contingents from other regions. Morris (2020) and Evans et al. (2020) analyze the characteristics associated with desiring specific roles in the organization (e.g. suicide bomber).

ble A4 uses the log of one plus the number of recruits, as in Benmelech and Klor (2018), Table 8. In both tables, we construct the outcome variable in columns 1-4 using our personnel records and in columns 5-8, we use the same estimates as Benmelech and Klor (2018). We find that the predictors for Daesh recruitment are similar in both data sets; these comparisons fail to reveal any particular bias in our data.

Key to our empirical strategy, the personnel records contain individual information on a recruit's education (either no education or primary, high school or university level education). We can thus construct recruitment statistics by country of residence and level of education, distinguishing primary education and below, secondary, and tertiary. As shown in Table 2, almost 52 percent of the recruits report having a secondary education and 31 percent a tertiary education. In most countries, Daesh recruits are more likely to have a secondary or tertiary education than the average worker in their country of last residence. Conversely, there are fewer recruits that have only a primary education or less, relative to the labor force in their country of last residence. These findings reinforce the conclusions of Krueger and Malečková (2003), and later Abadie (2006), Krueger (2007) and Krueger and Laitin (2008) who argued that terrorist recruits are not uneducated, and often come from middle-class backgrounds or have some college education.

2.3 Macroeconomic Data

We combine the Daesh personnel records with labor market data at the country*education level and with other macroeconomic variables at the country-level. Table 2, Panel B, provides summary statistics on these variables. The country-level variables include total population, Muslim population, GDP per capita, Human Development Index, political freedom measures, corruption index, religion variables and geodesic distance to Syria or Iraq, whichever is smaller. We will henceforth simplify our phrasing by writing "travel/distance to Syria" when we actually mean "travel/distance to either Syria or Iraq". Our full dataset consists of 168 countries and 504 country*education observations.

To measure labor market conditions at the country*education level, we use ILOSTAT unemployment data, yielding 177 country*education level observations. We use data from 2013 to best match the Daesh personnel records. If data from 2013 are missing, we use the nearest available year.[3] Table A5 summarizes patterns of missingness of the unemployment rate by region, GDP per capita, and distance to Syria or Iraq. As one might expect, the unemployment rate is more likely to be missing in poorer vs. richer countries, which is also reflected in the regions that exhibit the most missingness: Africa, South Asia, and East Asia. However these regions account for a small fraction of the countries of residence of Daesh fighters. In addition to unemployment rates, we also use wage data at the country*education level. This data is available for a small subset of countries, as evidenced in Table A6, so we use it only in robustness tests, as described in Section 5.4.

3   Empirical strategy

Our empirical approach incorporates two main ingredients. First, we leverage our detailed individual data on Daesh recruits and propose a strategy that improves on the existing cross-country analyses of the economic drivers of terrorism. Second, we exploit variation in the distance travelled by Daesh fighters to join the terror group in Syria or Iraq to provide empirical support for an economic mechanism specific to transnational terrorist recruitment. In what follows, we present our econometric specifications that incorporate these two elements, and then discuss the identification assumptions and potential limitations of the strategy.

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[3]To maximize the number of observations, we use the total unemployment rate in our main results, but obtain similar results when using the male unemployment rate or the youth unemployment rate.

3.1 Econometric Specifications

To control for the unobserved country-level confounders that plagued the earlier literature on the macroeconomic determinants of terrorism, we exploit the unique features of our data – namely the availability of the number of Daesh recruits and the unemployment rate for each country and education category (primary, tertiary and secondary education). This allows us to implement an empirical strategy that leverages within-country variation across education groups, hence constructing conditional correlations that are more restrictive than in the previous literature. Specifically, we estimate

$$N_{ce} = \alpha + \mu_c + \gamma_e + \beta \cdot Unemp_{ce} + \xi \cdot X_{ce} + \epsilon_{ce}, \tag{1}$$

where the outcome is the number (or log number) of Daesh recruits from country c with education level e, μ_c and γ_e represent fixed effects for each country and the three education-level categories; β captures the conditional association of the unemployment rate specific to a country-education cell with the number of Daesh recruits; and ϵ_{ce} is an error term. We control for the size of the labor force in the country-education cell, X_{ce}. In additional robustness checks, we will also control for the average wage in each country-education cell. The inclusion of country fixed effects allows us to control for any country-level characteristics affecting individuals' propensity to join Daesh, such as those related to distance to Syria, state capacity, institutions and political representation, as long as the effect of these country-level characteristics on Daesh participation is constant across the three education-level categories.

We observe that the theoretical prediction about the impact of unemployment on participation in transnational terrorism is ambiguous. On the one hand, unemployment lowers the economic opportunity cost of participation in terrorist activities and might also generate or exacerbate grievances against the government. Both predict a positive relationship between unemployment and Daesh enrollment. For simplicity, we refer to this

mechanism as the opportunity-cost channel.[4] On the other hand, unemployment can be an obstacle to participation in a transnational terrorist organization whenever joining the latter is economically costly and unemployment exacerbates liquidity constraints. There is ample evidence that Daesh foreign recruits from different regions paid for their travel to Syria, which constitutes a non-trivial cost (Lemon et al. 2018; FATF 2015; NATO 2016). Some fighters were also required to pay for their living expenses while with Daesh, thus transferring considerable sums from their home country. Other fighters were requested to bring specific supplies, e.g. military equipment, from their home country. Funds for covering any of these expenses would have been less accessible to unemployed recruits. The cost of joining the terrorist group is analogous to the cost of migration considered in the labor and migration literature (World Bank 2018), but has not previously been considered in the conflict literature. We henceforth refer to this mechanism through which unemployment may negatively affect participation in transnational terrorism as the liquidity-constraint channel.

The interaction between opportunity-cost/grievance and liquidity-constraint channels implies that the impact of unemployment should diminish for countries further away from Syria, as travel costs are higher. Not surprisingly, Daesh recruits the majority of its fighters from nearby Muslim countries. A look back at Table 1 shows that the closest 10 countries in the list account for almost 45 percent of Daesh's foreign recruits in our data set. Despite a few more distant large providers such as Tunisia, Morocco, or France, recruitment in a country declines with distance. Thus, to disentangle

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[4]An alternative explanation suggests that employment is correlated with young adults' ability to form a family; unemployment thus generates frustration that may add to existing grievances. The academic literature on the link between sexual frustration and terrorism is mostly anecdotal, as far as we have been able to identify. Caluya (2013) posits that terrorism is caused by sexual frustration of non-western men. Hudson and den Boer (2004) conjecture that high male-to-female ratios in Asian countries can precipitate domestic and inter-state violence, as the surplus men are unable to secure stable social bonds.

the liquidity-constraints channel from the opportunity-cost channel, we estimate the extended model

$$N_{ce} = \alpha + \mu_c + \gamma_e + \beta \cdot Unemp_{ce} + \delta \cdot Unemp_{ce} \cdot Distance_c + \xi \cdot X_{ce} + \epsilon_{ce}, \quad (2)$$

where $Distance_c$ is the shortest distance in miles from country c to the nearest border point of Syria or Iraq. The liquidity-constraint mechanism implies that the coefficient δ on the interaction term between distance and unemployment should be negative. The relative size of δ compared to β measures the extent to which liquidity constraints (here, difficulty to cover travel costs) counteract the role of unemployment as a driver of enrollment into Daesh.

Our preferred measure of distance is geodesic distance, as it can be obtained easily and transparently for all countries. However, as this measure might not fully reflect the actual migration cost, we also use alternative measures of distance that include airfare cost (for non-contiguous countries) and administrative barriers such as visa requirements to enter Turkey.

3.2   Identification Assumption and Limitations

The consistency of the "within" estimator we employ relies on a strict exogeneity condition (combined with the i.i.d. sampling of outcomes and regressors across the panels and the linear structure of the model). Under this condition, ϵ_{ce} must be orthogonal to the vector of schooling-specific unemployment rates, $\{Unemp_{ce}\}_e$, conditional on the country and education level fixed effects. Heuristically, unobserved determinants of recruitment in a country-education cell must be independent of the way unemployment rates for each schooling level deviate from the average in that country. By contraposition, any competing rationale for our results (e.g. ideology, religious fanaticism, counter-terrorism state capacity, historical jihad networks, marriage market dynamics, prevalence of mental ill-

ness, etc.) would need to generate education-group-specific variation in recruitment. This variation would also need to be correlated with the patterns of unemployment across education groups. Such correlation could operate through determinants of education-level-specific labor demand (for example the industry composition of employment in the country), labor supply, or perhaps sources of wage rigidities. Since we cannot rule out that such a story could be contrived, we henceforth interpret our results as correlations (or lack thereof) that are robust to unobserved country and education level factors.

Another limitation of our empirical strategy is that we cannot exploit the panel structure of the data to identify the interaction between unemployment and distance, as we do for the main effect of unemployment, since distance does not vary within a country. Therefore, our approach is to rule out a large array of potential confounders, including GDP, fraction of Muslims in the population, ethnic, linguistic and religious fractionalization, political rights, corruption, polity fragmentation, and social and government regulation of religion. This is the objective of the "horse races" that we run in Section 4.2.

4   Unemployment and the Recruitment of Foreign Fighters

In this section, we analyze the statistical association between Daesh foreign recruitment and the level of unemployment in sending countries. To isolate how our data and empirical strategy contribute to the existing literature, we first use our personnel records to analyze the cross-country associations documented in previous studies. We then apply the fixed effects specification introduced in equation (1) to compute the conditional correlation of unemployment with recruitment. Then we move to the augmented model of equation (2) and present our main results, which highlight the spatial heterogeneity in the relationship between unemployment and Daesh foreign recruitment. Section 4.2 rejects potential confounders of geographical distance. Finally, Section 4.3 describes the variation that identifies the coefficient of unemployment in the fixed effects model.

4.1 Average Correlation and Spatial Heterogeneity

Most of the quantitative literature on the determinants of terrorism relies on cross-country variation (see review by Gaibulloev and Sandler 2019). The conditional correlation between Daesh recruitment specifically and country-level factors is analysed in Benmelech and Klor (2018) using the country-level fighter counts collected by the Soufan group (see Section 2.2). In Table 3, Panel A, columns 1-3, we examine whether our personnel records data, once aggregated at the country level, exhibit similar patterns as in their main specification. [5] The results confirm that Daesh recruitment is positively correlated with the unemployment rate, the size of the Muslim population, and GDP per capita, and negatively correlated with distance to Syria, as in Benmelech and Klor (2018). Note that the association with unemployment is driven by the extensive margin of recruitment (columns 1 and 2), and disappears when we focus on the intensive margin among countries with at least one Daesh recruit (column 3).

In column 4-8 we zoom in on the role of unemployment, a variable for which subnational variation is available. The dependent variable is now the log number of fighters for each country and education group (primary, secondary, or tertiary). Column 4 estimates equation (1), but omits fixed effects. In this pooled regression of 114 country-by-education-level observations across 47 countries, the point estimate on unemployment is small and negative and statistically indistinguishable from zero, which is consistent with the cross-country findings in column 3.[6] The pattern is unchanged when we add dummies for the three education level groups in column 5 and country fixed effects in column 6. The point estimate on unemployment becomes even smaller when we control for the size of the labor force by country and education group in column 7. Adding this control reduces the number of observations to 105, as labor force by education level is not

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[5] Besides, Tables A3 and A4 provide a systematic comparison with Benmelech and Klor (2018).

[6] As we use the logarithm of the number of Daesh recruits on the left-hand side, country-education cells that do not have at least one foreign recruit are dropped from the regression.

available in all countries.

As argued in Section 3, significant travel costs and liquidity constraints associated with unemployment would imply that the relationship between unemployment and Daesh recruitment should vary with the geographic distance to Syria. In nearby countries, travel costs are low and unemployment should be associated with a greater likelihood of joining Daesh, as unemployment lowers the opportunity cost and can arouse grievances. In countries afar, recruits face a high financial cost of joining Daesh, which can make liquidity constraints bind. By that argument, individuals from more distant countries would be less likely to join Daesh when unemployment in their education group is high. Therefore, the lack of overall correlation in the specifications estimated thus far could reflect offsetting effects in close versus faraway countries. To test this insight, we estimate equation (2), which includes an interaction term between distance and unemployment (column 8 of Table 3, Panel A). The association between unemployment and recruitment indeed declines as distance increases, as indicated by the negative and statistically significant point estimate on the unemployment*distance interaction term.

Estimating equation (1) separately for close countries (first quartile of distance, 1050 miles away or less) and distant countries (fourth quartile of distance, 2500 miles away or more) confirms this result.[7] Table 3, Panel B, show the results for close countries, which comprise Syria's and Iraq's immediate neighbors in the Middle East, countries in the Gulf and North Africa, as well as some countries in Central Asia and southeastern Europe (see Table 1 for the list of countries ranked by distance to Syria).[8] In this sample, where the liquidity-constraint channel is minimized, we find that unemployment is significantly

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[7]The quartiles split allows for the most flexibility while keeping group sizes large enough for inference. We explore alternative groupings in table 4.

[8]Almost all country-education cells in the group of close countries have recruits, leaving us with a sample of 34 observations across 13 countries. We follow Bertrand et al. (2004) and apply Moulton's parametric correction to re-compute the standard errors in all regressions with 40 or fewer clusters (Moulton 1986).

and positively associated with recruitment. If we assumed a causal interpretation, the semi-elasticity of 0.15 (Panel B, column 7) implies that a 1 percentage point reduction in the unemployment rate leads to a 15.8 percent reduction in Daesh enrollment. Dodwell et al. (2016a) estimate that the total number of foreign recruits arriving during our sample period is about 15,000, and our data indicate that around 50 percent of that flow stems from the sample of close countries, as defined here. Therefore, the point estimate suggests that around 1200 fewer fighters would have joined Daesh from these countries over the period 2013-2014, if the unemployment rate had been 1 percentage point lower in these countries, from a sample average of 9.6 percent. Note that the size of the point estimate is biased downwards when we omit education and country fixed effects. This implies that country characteristics that favor recruitment are associated with lower unemployment.

Conversely, in distant countries, unemployment is significantly and negatively associated with recruitment (Table 3, Panel C). The fourth quartile of the distribution of distance is a heterogeneous set of countries among which the largest suppliers of fighters are Morocco, Russia, Indonesia, and Britain. The point estimate on unemployment is robust to controlling for country-specific and schooling-specific unobservable factors and increases in absolute value when controlling for the size of the labor force.

To find out precisely how the relationship between unemployment and Daesh recruitment changes with distance, we estimate the extended regression model in equation (2) with different specifications for the interaction term. Table 4, column 1 reproduces the continuous interaction specification from Table 3, Panel A, column 8, which shows that the association of unemployment with recruitment goes down with distance. In columns 2-4, we group countries based on the median, terciles, or quartiles of the distance distribution, and interact unemployment with group dummies. The results are robust across specifications: the conditional correlation of unemployment with recruitment is positive in close countries, decreases and eventually becomes negative in distant countries. The quartiles specification in column 4 is our preferred option, as it allows for substantial

non-linearity in the unemployment-recruitment relationship. Estimating this specification confirms that the positive correlation with unemployment is concentrated in the first quartile and the negative correlation is concentrated in the fourth distance quartile. In the second and third distance quartiles, the effect of the opportunity cost (or grievance) mechanism is exactly offset by the liquidity constraints mechanism and the association between unemployment and recruitment becomes insignificant. Note that bootstrapping standard errors in column 4 yield similar results (Table A7).

4.2 Confounders of Geographical Distance

The documented spatial heterogeneity relies on an interaction term that could instead reflect heterogeneity with respect to any factor that systematically varies with distance. In the absence of a valid instrument for travel costs applicable to our data, this section presents evidence to rule out a large set of competing stories.

Geographically more distant countries, such as OECD countries, may have stronger social welfare systems, reducing the social and economic exclusion associated with unemployment. More distant countries are also less likely to be Muslim-majority countries, and hence less relevant or costlier as a pool for Daesh recruiters. Geographical distance might also capture some more general form of cultural distance, implying non-monetary costs that would not interact with unemployment through credit constraints. Finally, there are very few individuals with only primary education in OECD countries, so the unemployment rate for this education category could be measured less precisely there.

A general argument against the above-mentioned stories is that they can produce an attenuated or zero effect of unemployment in more distant countries, but not the negative effect that arises in the farthest quartile of countries.

We can also rule out a number of specific confounders of the distance variable. In Table 5, we conduct a horse race between distance and four alternative variables correlated with distance: GDP per capita, the fraction of Muslims in a country's population,

and dummies for the MENA region and the OECD. That is, we interact these alternative variables with the unemployment rate, and include them individually or jointly together with the interaction with distance. The physical distance interaction trumps all other interactions. Only the OECD interaction and Muslim-fraction interaction are marginally significant when used individually (column 3), but loose significance once the distance interaction is added (columns 6 and 7).

We test other potential confounders in a similar way in the appendix. Our results are robust to all these alternatives. In Tables A8-A12, we run the "horse race" between the distance interaction and interactions with ethnic and linguistic fractionalization, religious and government fractionalization, political and institutional variables (political rights, corruption, the polity index, polity fragmentation), and social and government regulation of religion. In all cases, the distance interaction remains consistently significant and large, trumps all other interactions, and hardly any of the other interactions with unemployment are significant.

In addition, we show regressions in Table A13 in which we interact unemployment with each region dummy individually, and a fully saturated model with all unemployment*region interactions. There is no region where the point estimate on unemployment is statistically significant, emphasizing again that the relevant driver of the interaction is physical distance rather than institutional characteristics of a country or region. Indeed, each region is spread across various distance quartiles.

4.3   Identifying Variation in the Fixed Effects Estimator

A useful way to visualize the variation that identifies our results is to apply the Frisch-Waugh-Lovell (FWL) procedure to partial-out country and education fixed effects and other regressors from the dependent and independent variables of interest. Figure 1 plots the residualized variables against each other to show the slope identified by the cloud of points. For each distance quartile, residualized Daesh recruitment is plotted against

19

the residualized unemployment rate. Each country contributes up to three points to the graphs: red circles, blue squares and green triangles identify observations corresponding to primary, secondary, and tertiary education. Note that the slopes obtained through the FWL procedure for quartiles 1 and 4 correspond to the coefficients in Table 3, Panels B and C column 4.

It is useful to read the figure in two different ways. The first way is to consider separately the "sub-clouds" of points that correspond to each education group and examine the slope that would be obtained if the regression was run on each of them. This first source of identification is the within-education, cross-country variation after removing country fixed effects. Taking the first quartile as an example, all three education-specific sub-clouds appear upward sloping, exhibiting similar slopes to the fitted lines. In other words, recruitment within each schooling level, net of country fixed effects, exhibits a similar cross-country correlation with the unemployment rate.

Alternatively, we can focus on the within-country, across-education variation. The identification here comes from the correlation between each country's unemployment-education gradient and the education gradient of the number of Daesh recruits each country produces. This is reflected in the slope formed by that country's two or three points. In Figure 1, most countries align their two or three points along each quartile's fitted line, reinforcing the within-education, cross-country identification. See for example in quartile 1, Egypt, Azerbaijan, Kuwait, Kingdom of Saudi Arabia, North Macedonia, West Bank Gaza, and Jordan.

Summary statistics for this within-country variation (disaggregated by geographical distance) are found in Table A14. An important takeaway from this table is that while the unemployment-education gradient tends to be positive in closer countries, it does not decrease linearly with distance and cannot be suspected to be driving our spatial heterogeneity result. Instead, it is comparably negative in quartiles 2, 3 and 4. In addition, all quartiles contain countries with positive and negative gradients. More importantly, these

two types of countries tend to align along the same slope. In quartile 1, for example, countries with a positive unemployment-education gradient (Egypt, Saudi Arabia, West Bank Gaza, and Jordan) send more highly-educated fighters. But countries with a *negative* unemployment-education gradient (Azerbaijan, North Macedonia, and Kuwait), also contribute to the positive association of unemployment with recruitment because they send more fighters with *low* education levels. In quartile 4, the reverse happens. For example, in Indonesia, unemployment is higher at lower education levels but Daesh recruits are relatively more likely to be highly educated. In Morocco, the unemployment rate is higher at higher education levels, (as in closer Arab countries like Egypt or Saudi Arabia), but primary educated individuals are more likely to join Daesh. There again, both types of countries contribute to the unemployment coefficient (this time negatively).

Overall, the fact that all dimensions of variation identify similar slopes lends support to our econometric specification, which can plausibly explain patterns within countries with positive and negative unemployment-education gradients, as well as patterns across countries.

5   Robustness Tests

We now conduct robustness tests to confirm that both the association between unemployment and Daesh recruitment and its spatial heterogeneity hold under various alternative specifications, refuting a broad array of potential concerns with the empirical strategy.

5.1   Alternative Measures of Travel Costs

As geographic distance is an imperfect measure of travel costs, we begin by showing that our results are robust to using a measure of actual travel costs. Determining travel costs requires some assumptions about the mode of travel, as we discuss below, and travel cost data are unavailable for some countries. The specifications using geographic distance are

21

therefore still our preferred specification.

We obtain transaction-level flight ticket prices from OAG Analytics for 2013. We focus on economy-class tickets and calculate the average ticket price from each country to Turkey and to Iraq. We use the cheaper of the travel cost to Turkey and to Iraq, which most often means using the travel cost to Turkey. The vast majority of flights to Turkey go into Istanbul, followed by Antalya and Ankara. Figure A3, Panel A, shows that flight ticket prices are tightly correlated with geographic distance, with an R2 of 0.5.

Daesh recruits from countries immediately bordering Syria or Iraq can likely travel to Daesh territory by land, and there is anecdotal evidence that this happened.[9] As it is not possible to determine travel costs by car or bus in a consistent way for all countries, we set the travel cost to a small constant, USD20, for immediate neighbors. The results are insensitive to the exact constant we pick.[10] Having defined the travel cost, we construct the interactions of unemployment with the continuous travel cost measure and with travel cost quantiles and replicate the analysis conducted in Table 4, columns 1-4.

The results are shown in Table 6. The point estimates on the travel-cost*unemployment interaction are slightly lower than those on the distance*unemployment interaction in Table 4, consistent with the presence of measurement error in the travel cost variable. Yet the qualitative pattern is identical to that in Table 4, and the level of significance is mostly the same. We can easily reproduce the result with the continuous interaction and the result from our preferred specification with quartiles (columns 1 and 4). In the tercile interaction specification, only the point estimate of the interaction term on the first quartile is statis-

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[9]For instance, see a report from Al-Azhar Observatory (2016) on recruits from Iran, Milton-Edwards (2017) for recruits from Jordan, and SOHR (2015) for recruits traveling via Saudi Arabia.

[10]In addition, for a few countries, ticket price data is unavailable and has to be imputed. For Kosovo, we use the price for neighboring Montenegro; for Trinidad and Tobago, we use 2019 ticket price data, as it is the earliest available; for Palestine, we impute the price at USD20, as we do for countries neighboring Syria or Iraq. The results are robust to dropping these countries for which we had made imputations.

tically significant, but the point estimate on the third tercile is negative, as is the point estimate on the above-median indicator (columns 2 and 3).[11] Overall, these results confirm that the spatial heterogeneity of the association between unemployment and Daesh recruitment is driven by the cost of travel to Daesh territory.

In addition to using flight ticket prices, we also use an indicator for visa-free entry to Turkey as an alternative to our geographic distance measure. Visa-free travel is more prevalent among less distant countries in the full sample, but this correlation is much weaker among countries with Daesh fighters (Figure A3, Panels B and C). Table 6, column 5, replicates our main empirical specification, interacting unemployment with the visa-free travel dummy instead of the distance measure. There is no statistically significant interaction. It is important to consider that the cost of a visa (at less than USD100) is typically dwarfed by the monetary cost of travel to Turkey. The minimum ticket price across countries in our sample is USD95 and the mean and median ticket price are USD511 and USD438, respectively. The insignificance of the unemployment*visa-free-travel interaction thus confirms our interpretation of the unemployment*distance interaction as driven by monetary rather than non-monetary travel barriers.[12]

5.2   Muslim-majority vs. Muslim-minority Countries

We now refute concerns related to the fact that our unemployment variable is not measured among Muslims only. Under the assumptions that Muslims constitute the pool of potential Daesh recruits, and that Muslims face different unemployment rates than non-Muslims, unemployment rates would be mis-measured in countries with large non-

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[11]The results are similar when dropping immediate neighbors, as the travel cost from these countries is difficult to determine; allocating immediate neighbors to the first quantile and constructing the upper quantiles based on the remaining observations; using the flight ticket price for all countries; and using the median rather than the mean ticket price.

[12]Table A15 shows that our results are unchanged when varying the way in which distance is measured.

Muslim populations. Depending on the correlation between Muslim and non-Muslim unemployment rates, and how it varies with distance, the mis-measurement could lead to a falsely significant coefficient or the wrong sign.

We provide three pieces of evidence against these concerns. First, Figure A5, Panel A, shows that the Muslim male unemployment rate (as measured in Gallup survey data) is strongly correlated with the general male unemployment rate. Although the Gallup data does not allow disaggregating unemployment by education categories, the observed positive correlation suggests that the negative point estimate on unemployment in the fourth distance quartile is *prima facie* inconsistent with a measurement error hypothesis, as classical measurement error would bias the coefficient to zero.

In addition, in Table A16, we rerun our main estimation, with the continuous distance interaction and the quartile interaction, after dropping countries with a more than 40 percent (or more than 20 percent) deviation between the Muslim male unemployment rate and the general male unemployment rate (columns 3-4 and columns 5-6 respectively). The results are highly robust to this sample modification. This is consistent with the fact that the deviation between Muslim male and general male unemployment does not systematically vary with distance, as shown in Figure A5, Panel B.

Third, and crucially, our results are not driven exclusively by Muslim-majority countries, as we demonstrate in Table 7. Columns 1 and 2 in this table split the sample by whether Muslims constitute more or less than 50 percent of the population. As this leads to a slightly unequal split of the sample, we repeat the exercise in columns 3 and 4 by splitting the sample exactly at the median of the Muslim population share. In all sub-samples, the coefficients on unemployment and on the unemployment*distance interaction are remarkably similar, and the standard errors suggest that we cannot reject the null hypothesis that the coefficients in all specifications are identical.[13] In Tables A17 and

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[13]A similar result holds if we instead restrict to countries such that Muslims account for at least 1 percent of their entire population. There are 41 such countries in our sample.

, we provide additional evidence, allowing for interactions between unemployment (or unemployment*distance) and dummies indicating Muslim majority countries (or an above-median share of Muslim, or MENA or OECD regional dummies). Our main results are unchanged in these specifications and none of the interaction terms between Muslim majority and unemployment or unemployment*distance are significant, hence rejecting the hypothesis of differential patterns in Muslim-minority vs. Muslim-majority countries. Finally, columns 5-6 of Table 7 show that our results are robust to – and actually slightly stronger – when dropping Iran or dropping all Shia-majority countries (Iran, Azerbaijan and Bahrain), consistent with the fact that Daesh recruits among Sunni Muslims.

5.3 Domestic Terrorism vs. International Jihad

An alternative to international jihad is domestic terrorism, which might provide similar ideological benefits to radicalized individuals without requiring a migration cost (Hegghammer 2013). Indeed, substitution across various types of terrorism is not uncommon, as Enders and Sandler (2004) show.

In this section we consider whether the geographical distribution of domestic terrorist opportunities could be an alternative explanation of the negative interaction between distance and unemployment. If radicalized individuals in more distant countries substituted joining Daesh with domestic terrorism, the occurrence of local terrorist events should have increased more in distant countries relative to less distant countries, in the period in which Daesh was recruiting. The substitution effect should be particularly strong in countries with high rates of unemployment. We test this by estimating the following triple-difference model:

$$Ln(T_{ct}) = \alpha + \mu_c + \rho_t + \beta_1 \cdot Unemp_{ct} + \beta_2 \cdot Distant_c \cdot Post_t + \beta_3 \cdot Distant_c \cdot Unemp_{ct}$$
$$+ \beta_4 \cdot Post_t \cdot Unemp_{ct} + \beta_5 \cdot Post_t \cdot Unemp_{ct} \cdot Distant_c + \epsilon_{ct},$$

$$(3)$$

where T_{ct} is the number of terrorist events per country and year from the Global Terrorism Database, $Distant_c$ indicates countries in the fourth distance quartile (the remaining countries are in the second and third distance quartile, as the first quartile is affected by more direct spillovers from Daesh and hence dropped), $Post$ indicates the years after Daesh emergence, and the unemployment rate is measured at the country-year level. We control for country and year fixed effects, μ_c and ρ_t . As the outcome data is at the country level, we cannot run our main specification with education-group disaggregation.

Table A19 displays the results. We find that there was indeed an increase in terrorist events in distant countries after Daesh emerged, and the likelihood of a terrorist incident is generally higher in distant countries with high levels of unemployment. However, the coefficient on the triple interaction is always insignificant, suggesting there is no evidence for substitution from Daesh to local terrorism. The results change little when we vary how the Daesh-time indicator $Post$ is measured as shown in the different columns, or when using a dummy indicating any terrorist event as outcome. In addition, we show in Table A20 that our main results from estimating equation 2 with country and education-group fixed effects are unchanged when controlling for additional interactions between unemployment, distance and domestic terrorism. The coefficients on these additional interactions are not statistically significant. We thus fail to detect any evidence of a substitution between domestic and transnational terrorism.

5.4   Controlling for Wage Levels

Conceptually, the labor market opportunity cost of joining Daesh is composed not only of the probability of being unemployed, but also of the wage level available at home to potential recruits. Our main specification does not include wages as a regressor, because education-specific wage data are available only for a small subset of the countries producing Daesh fighters. Therefore wages are part of the regression's error term. If wages are correlated with unemployment (Blanchflower and Oswald 1994), the coefficient on

unemployment should be interpreted as the conditional correlation with labor market opportunities at home broadly construed, including both unemployment and wages. Note, however, that our specification includes country and education fixed effects. Therefore, the coefficient on unemployment will be affected by the omission of wages only if these two variables are still correlated after partialling out country and education fixed effects.

To test this, and examine the robustness of our results to including wages, we use the International Income Distribution Data Set (I2D2) to compute the median wage by education level for each country. The data set is a global harmonized household survey database compiling data from household surveys and labor force surveys (Montenegro and Hirn 2009). We take median wage data for the year 2013 and replace the missing values with the closest lead or lag during 2010-2016. Since we compute relative wages, we do not deflate or convert the nominal wage information. For robustness, we also use a second version of the wage variable, specific to 18-36 year old males.

Figure A4 shows that wages and unemployment rates are uncorrelated, after partially out country and education fixed effects, for the subset of 28 observations in 12 countries for which education-specific wage levels and unemployment rates are available and that register at least one Daesh recruit. This suggests the exclusion of wages should not affect our main results. We verify that this is the case in Table A21. To maximize power in this smaller sample, we focus on the specification that includes a continuous interaction between unemployment and distance. The results for that specification estimated on the full sample are reproduced for comparison purposes in column 1, Table A21. In column 2, we show the results for the sub-sample of 28 countries for which education-level wage data is available. The coefficients of interest retain the same sign and order of magnitude but loose statistical significance in this small sub-sample. In column 3, we add the logarithm of the median wage in each country and education-level group as an additional regressor. The coefficient on the wage variable itself is not significant. The conditional correlation of unemployment with Daesh participation remains qualitatively similar to

27

column 1, and the point estimates are very similar to those in column 2. If the standard errors in column 3 were comparable to those in column 1, the point estimate of the coefficient on unemployment would be statistically significant. This, together with the results in column 2, shows that the difference in statistical significance between columns 1 and 3 is due to the change in sample size. In column 4, we use an alternative wage variable that takes the median value of wages for males aged 18-36, which is the appropriate comparison group for Daesh foreign recruits. Here again, the coefficients on unemployment and its interaction with distance remain consistent with our main specification in column 1.

5.5   Other Robustness Tests

Leave-one-out Test   Next we show that our main results are not driven by one or two influential countries. To show this, we estimate our preferred specification (Table 4, column 4) forty-four (44) times, each time leaving out one country. Figure A6 displays the distribution of point estimates from this exercise. The distribution is clearly concentrated around the main effect we estimate in the full sample, and has short tails. The t-statistics are concentrated around 4.5 for the first distance quartile interaction, and around -3 for the fourth quartile interaction. Figure A7 shows results for a similar exercise, in which we drop two countries from our sample in each iteration.

Poisson Specification   While we have so far used a log-linear OLS estimation with the log number of Daesh recruits as the outcome variable, Table A22 shows that the results are very similar when estimating a Pseudo Poisson Maximum Likelihood (PPML) model according to Santos Silva and Tenreyro (2006) with the number of Daesh recruits as outcome. This model has the advantage of utilizing all observations from countries with any recruits, whereas the log-linear model uses only country-education cells with any recruits. The PPML thus increases the sample from 105 to 132 observations.

28

Censoring at 0 Next, we address the concern that our main specification sample is mechanically censored at 0 recruits in a given country-education cell. First, note that a censoring rule based on the total number of fighters from a given country would not be problematic, since the expectation of the error term conditional on that rule would be absorbed in the fixed effects. Using this insight, we find the lowest country-level threshold such that all countries with a number of recruits equal to or above the threshold have recruits in all three education categories. This happens for countries with more than 33 fighters. The results from the estimation in this sample, displayed in column 7 of Table 7, is similar to our main result despite the fact that this restriction lowers the number of countries under consideration to 12 and the total number of observations to 36.

Furthermore, columns 8 and 9 show that results are robust to varying either the country-level cutoff or the country-education-level cutoff away from 0. Column 8 uses countries that have at least ten Daesh recruits. This increases the sample to 28 countries, compared to column 7. In column 9, we instead consider all countries that have at least one recruit in each of the three education levels being considered, even if they have less than 33 fighters overall. This selection leads to a regression based on 25 countries.

Patterns by Desired Role in Daesh Finally, we show that our main result also applies within subgroups of fighters that report the same desired role within Daesh — fighter, suicide fighter, or administrator. Conceptually, the outside option now includes staying in the home country or joining Daesh in a different role. Table A23 reports the results of our main regression specification (Table 4, column 1) applied separately to the contingents of fighters, suicide fighters and administrators. The levels of significance differ (as standard errors are increased due to the smaller sample size), but the coefficient patterns obtained for the whole sample carry through. The main effect of unemployment is positive, the interaction with distance is negative, and both coefficients are of the same order of magnitude (or bigger) for the three roles compared to the whole sample.

29

6 Conclusion

We used a unique data set of Daesh personnel records to shed light on the factors associated with transnational terrorist recruitment. We document a strong conditional correlation of higher unemployment rates with recruitment into the terror group. Exploiting detailed information on foreign recruits' countries of origin and education levels, we are able to establish this finding under weaker identification assumptions than those previously used in the literature. More specific to the question of transnational terrorism, we show that travel costs to Syria and Iraq matter due to their interaction with unemployment. This is because limited labor market opportunities simultaneously generate a *substitution* effect by lowering the opportunity costs of joining the terror group and an *income* effect, which exacerbates liquidity constraints for candidates who need to travel long distances to join. This generates spatially heterogeneous associations of economic conditions with recruitment.

The tension between opportunity costs and liquidity constraints is novel to the literature on terrorism and applies not only to Daesh but to transnational terrorist recruitment more generally. This result is relevant beyond counter-terrorism policy — see e.g. Clemens and Postel (2018) on the relation between foreign aid and migration— and has implications for the design of interventions to limit transnational terrorist recruitment: policies that improve socio-economic outcomes have income and substitution effects that can go in opposite directions.

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7 Tables

Table 1: Daesh Recruits by Country of Last Residence

Country	Region	Number of Fighers	Fighters per million Muslims	Distance to Syria (miles)	Distance Quartile	Per-capita GDP (USD)	Labor Force (millions)	Muslim Proportion (%)
Mean	All	58.30	13.10	2081	1.900	21083	37.80	51.70
St. Dev	All	128.5	16.40	1616	1	26021	121.6	43.10
Palestine	MENA	21	4.900	174.7	1	2992	1	97.50
Lebanon	MENA	14	5.500	190.7	1	8389	1.900	59.70
Jordan	MENA	56	8.800	332.9	1	4656	1.900	93.80
Turkey	MENA	209	2.800	354.9	1	10800	27.80	98.60
Georgia	Fmr Soviet	3	6.800	573.2	1	4274	2	10.50
Azerbaijan	Fmr Soviet	92	10.50	598.1	1	7812	4.900	98.40
Kuwait	MENA	34	12.90	625.4	1	48463	1.900	86.40
Egypt	MENA	203	2.500	735.5	1	3264	29	94.70
Saudi Arabia	MENA	731	28.70	838.9	1	24646	11.80	97.10
Iran	MENA	13	0.200	861.2	1	6631	26.60	99.70
Bulgaria	Europe	1	1.700	910.2	1	7657	3.300	78
Bahrain	MENA	24	27.70	915.5	1	24379	0.700	70.20
Qatar*	MENA	9	7.700	977.9	1	96077	1.600	77.50
Ukraine	Fmr Soviet	3	7.600	1022	1	3986	23.10	0.800
Macedonia	Europe	16	32	1047	1	5220	0.900	33.30
Kosovo*	Europe	36	22.70	1113	2	3890	.	95.60
Albania	Europe	9	4.800	1114	2	4412	1.300	58.80
Serbia	Europe	1	4.400	1150	2	6354	3.100	2.800
Turkmenistan*	Fmr Soviet	5	1	1171	2	7480	2.300	93.30
Bosnia	Europe	4	2.200	1297	2	4748	1.500	50.70
Libya*	MENA	123	19.40	1419	2	10454	2.300	96.60
Yemen, Rep.*	MENA	16	0.700	1457	2	1408	7.300	99
Uzbekistan*	Fmr Soviet	42	1.600	1459	2	1878	13.30	96.50
Austria	Europe	1	1.700	1537	2	50558	4.400	6.800
Poland	Europe	1	50	1538	2	13777	18.30	0.100
Sudan*	SSA	6	0.200	1614	2	1726	12.10	97
Afghanistan*	Asia	1	0	1635	2	653.3	8	99.80
Tunisia	MENA	609	54.40	1678	2	4249	4	99.80
Kazakhstan	Fmr Soviet	21	2.400	1699	2	14310	9.200	70.20
Pakistan	Asia	21	0.100	1788	2	1276	63.60	96.40

Country	Region	Number of Fighers	Fighters per million Muslims	Distance to Syria (miles)	Distance Quartile	Per-capita GDP (USD)	Labor Force (millions)	Muslim Proportion (%)
Switzerland	Europe	2	5	1797	3	84669	4.700	5
Tajikistan*	Fmr Soviet	55	7.900	1800	3	1049	3.600	99
Germany	Europe	84	52.50	1816	3	45601	42.80	2
Sweden	Europe	12	26.70	1975	3	60283	5.100	5
Kyrgyzstan	Fmr Soviet	38	7.700	1985	3	1282	2.700	88.80
Denmark	Europe	17	73.90	2031	3	60362	2.900	4.100
Belgium	Europe	26	39.50	2038	3	46623	5	5.900
Netherlands	Europe	22	26.70	2044	3	51425	9	5
France	Europe	148	29.50	2067	3	42571	30.10	7.500
Somalia*	SSA	1	0.100	2102	3	521.2	3	98.90
Norway	Europe	4	24.50	2162	3	102910	2.700	3
Algeria	MENA	26	0.600	2240	3	5492	12.10	98.20
Spain	Europe	12	6.400	2351	3	29371	23.40	4.100
Kenya*	SSA	3	1	2410	3	1261	17	10
Britain	Europe	63	20.30	2456	3	42295	32.80	4.800
Cameroon*	SSA	2	0.400	2543	4	1331	8.900	20.90
Ireland	Europe	1	14.30	2612	4	51815	2.200	1.100
India	Asia	6	0	2617	4	1456	487.9	14.20
Morocco	MENA	275	8.500	2650	4	3154	12.30	99
Mauritania*	SSA	1	0.200	3164	4	1458	1.200	100
Russia	Fmr Soviet	171	18.20	3374	4	15544	76.90	6.500
China*	Asia	50	2.300	3608	4	6992	801.8	1.800
Malaysia	Asia	1	0.100	4534	4	10974	13	61.40
South Africa*	SSA	3	4.600	4641	4	6882	19.40	1.500
Indonesia	Asia	73	0.400	5404	4	3632	122.1	87.20
Canada	Americas	18	17.10	5839	4	52266	19.50	1.900
TrinidadTobago	Americas	3	38.50	6373	4	20217	0.700	5.800
United States	Americas	11	4.200	6689	4	52660	159.8	0.800
Australia	Asia	13	27.30	7456	4	67653	12.20	2.200

Note: This table is based on the Daesh personnel records, and lists the number of Daesh recruits by country of last residence, with country characteristics. The countries marked with a star do not appear in our main panel regressions, as they lack data on either unemployment rate by education level or education level of Daesh fighters. The data sources are described in Sections 2.2 and 2.3 and the table is also discussed in Sections 3.1 and 4.1.

Table 2: Summary Statistics

Variable	Mean (%)	Std. Error (%)	Min	Max	N (#)
Panel A: Characteristics of Daesh Recruits					
Age					
< = 20 years	13.8	0.6			3,344
21 -30 years	67.6	0.8			3,344
31+ years	23.8	0.7			3,344
Education					
Primary	17.7	0.7			2,827
Secondary	51.7	0.9			2,827
Tertiary	30.6	0.9			2,827
Knowledge of Sharia					
Low	68.7	0.9			2,634
Intermediate	26.2	0.9			2,634
High	5.1	0.4			2,634
Previous Occupation					
No Job, Student, Retired or Illegal	27.2	0.8			3,178
Craftsperson, Manual/Ag work, Security	11.9	0.6			3,178
Shop owner, Employee	31.1	0.8			3,178
Manager, Prof. Worker	20.6	0.7			3,178
Jihad Experience	11.0	0.6			3,121
Desired Role					
Admininstrator	6.8	0.8			1,024
Fighter	54.2	1.6			1,024
Suicide Fighter	39.0	1.5			1,024
Panel B: Macroeconomic Variables					
Country Level Variables					
Distance to Syria	3254.33	2253.69	174.67	10030.88	168
Per capita GDP	14620.79	20879.63	259.37	113726.64	164
Human Development Index	0.68	0.16	0.33	0.94	161
Total Muslim pop (Millions)	9.67	29.77	0.001	204.85	166
Total pop (Millions)	42.93	149.41	0.32	1357.38	165
Corruption Index	41.79	19.73	8	91	162
Index of political rights	3.54	2.12	1	7	162
Ethnic fractionalization	0.46	0.26	0	0.93	157
Linguistic fractionalization	0.40	0.29	0.002	0.92	154
Religious fractionalization	0.43	0.24	0.002	0.86	158
Average self-reported religiosity	0.74	0.24	0.14	0.99	162
Government Restrictions Index	3.35	2.20	0.2	9.1	164
Social Hostilities Index	2.66	2.49	0	9	164
Country-Education Level Variables					
Relative Wage	0.69	0.47	0.05	5	155
Unemployment rate	9.72	7.86	0.1	45.4	359

Note: This table displays summary statistics. Panel A focuses on the characteristics of Daesh recruits captured in the personnel records (entry forms). For the purpose of this table, we work with the full sample of the 3,965 recruits, without applying restrictions with regards to non-missingness in key variables or country of residence. As the last column in the table shows, the number of missing observations varies across variables. Panel B displays summary statistics of country-level and country-education level macro variables. The data sources for this are described in Table A1. The relative wage is normalized to 1 for tertiary education. Panel A of this table is discussed in Section 2.2, Panel B is discussed in Section 2.3.

Table 3: Unemployment and Foreign Recruitment into Daesh

VARIABLES	(1) $\mathbb{1}_{N_c>0}$	(2) $log(N_c+1)$	(3) $log(N_c)$	(4) $logN_{ce}$	(5) $logN_{ce}$	(6) $logN_{ce}$	(7) $logN_{ce}$	(8) $logN_{ce}$
				Panel A: All Countries				
Unemployment rate	0.013***	0.029**	0.020	-0.012	-0.005	-0.015	0.000	0.668***
	(0.005)	(0.013)	(0.028)	(0.017)	(0.018)	(0.021)	(0.024)	(0.140)
Total population (log)	0.036	0.088	-0.005					
	(0.029)	(0.087)	(0.194)					
Muslim population (log)	0.156***	0.677***	0.841***					
	(0.033)	(0.123)	(0.204)					
Per capita GDP (log)	0.109***	0.395***	0.616***					
	(0.020)	(0.064)	(0.182)					
Distance to Syria (log)	-0.149***	-0.413***	-0.450*					
	(0.046)	(0.126)	(0.235)					
Total Labor Force (log)							0.083	-0.000
							(0.122)	(0.082)
Interaction between unemployment and								
Distance to Syria (log)								-0.091***
								(0.020)
Observations	160	160	57	114	114	114	105	105
Mean Outcome	.356	1.009	2.648	23.9	23.9	23.9	25.4	25.4
Number of Countries	160	160	57	47	47	47	44	44
Education Dummies	N	N	N	N	Y	Y	Y	Y
Country FE	N	N	N	N	N	Y	Y	Y
Adj. R-squared	.43	.47	.35	-.004	.03	.802	.801	.832

				Panel B: Close Countries (First Distance Quartile)				
				$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	
Unemployment rate				0.003	-0.001	0.134***	0.148***	
				(0.048)	(0.049)	(0.042)	(0.045)	
Total Labor Force (log)							0.094	
							(0.127)	
Observations				39	39	39	36	
Mean N_{ce}				32.6	32.6	32.6	35	
Number of Countries				15	15	15	14	
Education Dummies				N	Y	Y	Y	
Country FE				N	N	Y	Y	
Adj. R-squared				-.027	-.03	.87	.862	

				Panel C: Distant Countries (Fourth Distance Quartile)				
				$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	
Unemployment rate				0.110	0.128*	-0.096*	-0.232*	
				(0.064)	(0.072)	(0.048)	(0.114)	
Total Labor Force (log)							-0.548	
							(0.419)	
Observations				20	20	20	20	
Mean N_{ce}				23.2	23.2	23.2	23.2	
Number of Countries				10	10	10	10	
Education Dummies				N	Y	Y	Y	
Country FE				N	N	Y	Y	
Adj. R-squared				.102	.021	.814	.831	

Note: This table displays OLS estimates of equations 1 and 2. Columns 1-3 are run on a cross-country data set. Columns 4-8 are run on a country-education-level panel data set. The dependent variable is noted in the column headings. For columns 4-8, it is the log number of foreign recruits to Daesh by country and education category. Panel A is for all countries, Panel B is for countries in the first distance quartile (at less than 1050 miles distance from Syria), Panel C is for countries in the fourth distance quartile (at more than 2500 miles distance from Syria). Standard errors are in parentheses, clustered at the country level and corrected for small number of clusters whenever the number of clusters ≤ 40 using the Moulton correction factor. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 4.1. See Tables A3 and A4 for a systematic comparison of cross-country regression results using our personnel records data vs the expert estimates from Benmelech and Klor (2018).

Table 4: Unemployment and Foreign Recruitment into Daesh - Distance Interaction

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$ Total	(3) $logN_{ce}$ Total	(4) $logN_{ce}$ Total
Unemployment rate	0.668***			
	(0.140)			
Total Labor force(log)	-0.000	0.024	0.005	-0.002
	(0.082)	(0.086)	(0.091)	(0.084)
Interaction between unemployment and				
Distance to Syria (log)	-0.091***			
	(0.020)			
Distance to Syria - First Half		0.068*		
		(0.034)		
Distance to Syria - Second Half		-0.051		
		(0.037)		
Distance to Syria - First Tercile			0.081**	
			(0.036)	
Distance to Syria - Second Tercile			-0.005	
			(0.032)	
Distance to Syria - Third Tercile			-0.080	
			(0.049)	
Distance to Syria - First Quartile				0.123***
				(0.027)
Distance to Syria - Second Quartile				-0.009
				(0.017)
Distance to Syria - Third Quartile				-0.040
				(0.041)
Distance to Syria - Fourth Quartile				-0.111***
				(0.035)
Observations	105	105	105	105
Mean N_{ce}	25.4	25.4	25.4	25.4
Country FE	Y	Y	Y	Y
Number of countries	44	44	44	44
Education Dummies	Y	Y	Y	Y
Adj. R-squared	.83	.81	.82	.83

Note: This table displays OLS estimates of equation 2. The dependent variable is the log number of foreign recruits to Daesh by country and education category. Standard errors are in parentheses, clustered at the country level. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 4.1.

Table 5: Foreign Recruitment into Daesh - Robustness of Distance Interaction

Panel A: Alternative Interactions with GDP per capita and Muslim Fraction

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$	(6) $logN_{ce}$	(7) $logN_{ce}$
Unemployment rate	0.668***	0.324	-0.057	0.745***	0.558***	0.002	0.622*
	(0.140)	(0.226)	(0.043)	(0.193)	(0.198)	(0.330)	(0.312)
Total Labor force (log)	-0.000	0.069	0.080	0.001	0.009	0.078	0.007
	(0.082)	(0.108)	(0.107)	(0.082)	(0.083)	(0.108)	(0.082)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.083***	-0.079***		-0.080***
	(0.020)			(0.024)	(0.024)		(0.024)
Per capita GDP (log)		-0.034		-0.014		-0.006	-0.006
		(0.024)		(0.025)		(0.032)	(0.031)
Muslim fraction			0.131*		0.053	0.117	0.038
			(0.067)		(0.074)	(0.087)	(0.083)
Observations	105	105	105	105	105	105	105
Mean N_{ce}	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Number of countries	44	44	44	44	44	44	44
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.81	.81	.83	.83	.81	.83

Panel B: Alternative Interactions with Region Indicators

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment rate	0.668***	-0.029	0.045	0.663***	0.598***	0.034	0.634***
	(0.140)	(0.033)	(0.030)	(0.168)	(0.144)	(0.045)	(0.181)
Total Labor force(log)	-0.000	0.078	0.083	0.000	0.011	0.082	0.010
	(0.082)	(0.110)	(0.112)	(0.084)	(0.086)	(0.111)	(0.089)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.091***	-0.079***		-0.082***
	(0.020)			(0.022)	(0.021)		(0.023)
MENA region dummy		0.081		0.003		0.022	-0.026
		(0.065)		(0.069)		(0.072)	(0.077)
Official OECD region dummy			-0.095*		-0.047	-0.088	-0.055
			(0.052)		(0.053)	(0.055)	(0.055)
Observations	105	105	105	105	105	105	105
Mean N_{ce}	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Number of countries	44	44	44	44	44	44	44
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.8	.81	.83	.83	.81	.83

Note: This table displays OLS estimates of equation 2 with additional interaction terms between unemployment and country characteristics. The dependent variable is the log number of foreign recruits to Daesh by country and education category. Standard errors are in parentheses, clustered at the country level. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 4.2.

Table 6: Foreign Recruitment into Daesh - Using Travel Cost Instead of Distance

VARIABLES	(1) $logN_{ce}$ Total	(2) $logN_{ce}$ Total	(3) $logN_{ce}$ Total	(4) $logN_{ce}$ Total	(5) $logN_{ce}$ Total
Unemployment rate	0.300***				0.064
	(0.087)				(0.049)
Total Labor force(log)	0.039	0.054	0.014	-0.003	0.086
	(0.101)	(0.108)	(0.096)	(0.092)	(0.118)
Interaction between unemployment and					
Distance to Syria (log)	-0.060***				
	(0.019)				
Interaction between unemployment and					
Visa-Free Entry to Turkey					-0.084
					(0.059)
Travel Cost to Syria - First Half		0.027			
		(0.024)			
Travel Cost to Syria - Second Half		-0.054			
		(0.048)			
Travel Cost to Syria - First Tercile			0.049**		
			(0.023)		
Travel Cost to Syria - Second Tercile			-0.072		
			(0.047)		
Travel Cost to Syria - Third Tercile			-0.060		
			(0.040)		
Travel Cost to Syria - First Quartile				0.084**	
				(0.039)	
Travel Cost to Syria - Second Quartile				-0.024	
				(0.034)	
Travel Cost to Syria - Third Quartile				-0.064	
				(0.059)	
Travel Cost to Syria - Fourth Quartile				-0.083**	
				(0.037)	
Observations	105	105	105	105	105
Mean N_{ce}	25.4	25.4	25.4	25.4	25.4
Mean NF_{ce}	x	x	x	x	x
Mean NS_{ce}	x	x	x	x	x
Mean NA_{ce}	x	x	x	x	x
Country FE	Y	Y	Y	Y	Y
Number of countries	44	44	44	44	44
Education Dummies	Y	Y	Y	Y	Y
Adj. R-squared	.82	.81	.82	.82	.8

Note: This table is similar to Table 4, except that it uses travel costs instead of geographic distance to Syria. The travel cost is the average economy flight ticket price to Turkey or Iraq in 2013, except for immediate neighbors of Syria and Iraq from which land travel is possible. For these countries we impute a constant travel cost of 20 USD. The results are insensitive to the choice of the constant. This table is discussed in Section 5.1.

Table 7: Foreign Recruitment into Daesh - Robustness Across Sub-Samples

VARIABLES	(1) $logN_{ce}$ Muslim Majority	(2) $logN_{ce}$ Muslim Minority	(3) $logN_{ce}$ Muslim Prop. < Median	(4) $logN_{ce}$ Muslim Prop. > Median	(5) $logN_{ce}$ Drop Iran	(6) $logN_{ce}$ Drop Shia Countries	(7) $logN_{ce}$ $N_c >= 33$	(8) $logN_{ce}$ $N_c >= 10$	(9) $logN_{ce}$ $N_c >= 0$
Main effects									
Unemployment rate	0.620**	0.668	0.584	0.593**	0.659***	0.648***	1.012**	0.587**	0.639***
	(0.263)	(0.432)	(0.400)	(0.261)	(0.140)	(0.141)	(0.416)	(0.221)	(0.214)
Total Labor Force (log)	-0.0476	-0.0822	-0.0220	0.0580	0.00402	0.0104	0.071	0.075	0.012
	(0.182)	(0.161)	(0.155)	(0.192)	(0.0855)	(0.0866)	(0.222)	(0.156)	(0.108)
Interaction between unemployment and									
Distance to Syria (log)	-0.0817**	-0.0868	-0.0812	-0.0740*	-0.0898***	-0.0883***	-0.141**	-0.080**	-0.088***
	(0.0377)	(0.0558)	(0.0522)	(0.0376)	(0.0197)	(0.0199)	(0.057)	(0.030)	(0.029)
Constant	3.629	-0.302	0.640	-4.631	1.139	1.029			
	(3.315)	(2.144)	(1.917)	(2.919)	(1.208)	(1.234)			
Observations	55	50	53	52	102	100	36	76	75
Mean N_{ce}	39.8	9.6	9.1	42	26	26.3	65.7	34.4	33.6
Number of countries	21	23	24	20	43	42	12	28	25
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.841	.744	.746	.833	.837	.841	.732	.793	.838

Note: This table displays OLS estimates of equation 2 for various sub-samples. The dependent variable is the log number of foreign recruits to Daesh by country and education category. Columns 1 and 2 are estimated on countries in which Muslims account for more or less than 50 percent of the population. Columns 3 and 4 are estimated on countries below and above the median of the Muslim population share. In column 5, we use the full sample of countries but drop Iran. In column 6 we drop all Shia-majority countries (Iran, Azerbaijan and Bahrain). Columns 7-9 test the robustness of our results to censoring. The threshold for N_c in column 7 is set such that countries with a number of recruits at or above this thresholds have at least one recruit in all three education categories. In column 8, we include all countries with at least ten recruits. In column 9, we include all countries that have at least one recruit in each education category. Standard errors are in parentheses, clustered at the country level and corrected for small number of clusters whenever the number of clusters ≤ 40 using the Moulton correction factor. This table is discussed in Sections 5.2 (columns 1-6) and 5.5 (columns 7-9).
***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

44
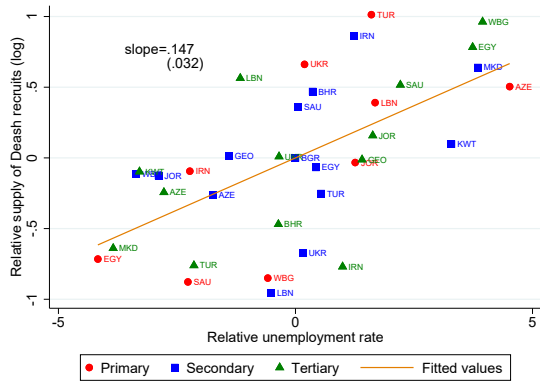
8 Figures

(a) Countries in Distance Quartile 1
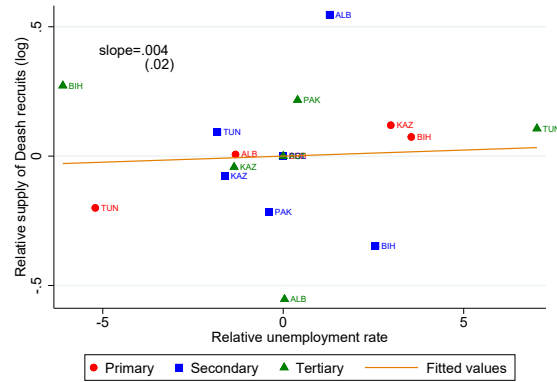
(b) Countries in Distance Quartile 2
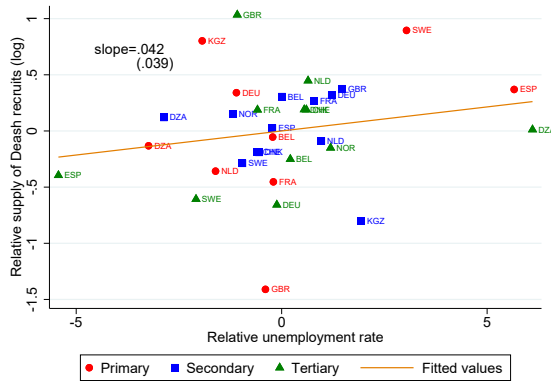
(c) Countries in Distance Quartile 3
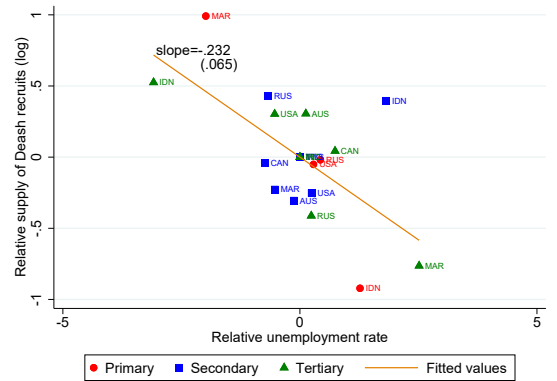
(d) Countries in Distance Quartile 4

Figure 1: Relative Supply of Daesh Recruits and Relative Unemployment Rate

Note: This figure displays scatterplots of the residuals from a regression of unemployment (log number of foreign Daesh recruits) on country and education-category fixed effects and total labor force. The countries are divided into four quartile samples according to their distance from Syria. Each panel pertains to a different quartile. This figure is discussed in Section 4.3.

45

A Appendix

Table A1: Variable Descriptions

Variable name	Description	Source
LogNce	Log of number of Daesh recruits from country c by education categories: No education/Primary, Secondary and Tertiary level. Authors calc.	Daesh personnel records
LogNFce	Log of nb. of Daesh recruits who aspire to be fighters from country c by education categories: No educ./Prim., Sec. and Tertiary level. Authors calc.	Daesh personnel records
LogNSce	Log of nb. of Daesh recruits who aspire to be suicide fighters from country c by education categories: No educ./Prim., Sec. and Tertiary level. Authors calc.	Daesh personnel records
LogNAce	Log of nb. of Daesh recruits who aspire to be administrators from country c by education categories: No educ./Prim., Sec. and Tertiary level. Authors calc.	Daesh personnel records
Unemployment rate	Number of unemployed persons as a percentage of the total number of persons in the labor force by education categories: No education/Primary, Secondary and Tertiary level. Missing values were replaced from World Bank data.	ILOSTAT
Total Labor force (log)	Log of sum of the number of persons employed and the number of persons unemployed.	ILOSTAT
Median wage (log)	Median wage for men of all age groups and men aged 18-36	I2D2 (World Bank)
1{Nc >1}	Dummy variable which is one when a country sends at least one Daesh recruit and zero otherwise.	Daesh personnel records
Distance to Syria (log)	Log of air (flying) distance between centroid of a country and centroid of Syria in miles.	DistanceCalculator.net
Travel Cost to Syria	Average Economy-class ticket price (in USD) for 2013 from country of residence to Turkey and Iraq (whichever is cheaper)	https://www.oag.com/
Visa-Free Entry to Turkey	Dummy variable which is one when ordinary passport holders from a country are exempted from visa for their travels to Turkey.	Ministry of Foreign Affairs, Republic of Turkey
Per capita GDP (log)	Log of Gross Domestic Product divided by midyear population. Data are in current U.S. dollars.	The World Bank Database
Muslim Pop. (log)	Log of Muslim population in a country divided by (1+1000000). Year: 2010.	Pew Research Center
Total Population (log)	Total population counts all residents regardless of legal status or citizenship. The values are midyear estimates and are logged.	The World Bank Database
Human Development Index	The index is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions.	The World Bank Database
Index of political rights	Political rights enable people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate. The specific list of rights considered varies over the years. Countries are graded between 1 (most free) and 7 (least free).	Freedom House

Note: This table presents the variables used in our analysis and is discussed in Section 2.

Variable name	Description	Source
Corruption Index	The corruption perception index focuses on corruption in the public sector and defines corruption as the abuse of public office for private gain. The CPI Score relates to perceptions of the degree of corruption as seen by business people, risk analysts and the general public and ranges between 100 (highly clean) and 0 (highly corrupt).	Transparency International
Ethnic fractionalization	Reflects probability that two randomly selected people from a given country will not belong to the same ethnic group.	Alesina et al., 2003
Linguistic fraction.	Reflects probability that two randomly selected people from a given country will not belong to the same linguistic group.	Alesina et al., 2003
Religious fraction.	Reflects probability that two randomly selected people from a given country will not belong to the same religious group.	Alesina et al., 2003
Average religiosity	Proportion of people who agree that religion is an important part of their daily life.	Gallup World Poll
Government Restric. Index	The Government Restrictions Index (GRI) measures - on a 10-point scale - government laws, policies and actions that restrict religious beliefs or practices. The GRI is comprised of 20 measures of restrictions, including efforts by governments to ban particular faiths, prohibit conversions, limit preaching or give preferential treatment to one or more religious groups.	Pew Research Center's Global Restrictions on Religion study
Social Hostilities Index	The Social Hostilities Index (SHI) measures - on a 10-point scale - acts of religious hostility by private individuals, organizations and social groups. This includes mob or sectarian violence, harassment over attire for religious reasons and other religion-related intimidation or abuse. The SHI includes 13 measures of social hostilities.	Pew Research Center's Global Restrictions on Religion study
Domestic terrorism	Domestic terrorism is a dummy variable that indicates if any terrorist event took place in the country in 2013.	Global Terrorism Database
Government fractionalization	The probability that two deputies picked at random from among the government parties will be of different parties	Quality of Government Basic dataset
Polity index	The POLITY score is a unified polity scale ranging from +10 (strongly democratic) to 10 (strongly autocratic). It is computed by subtracting an indicator of autocracy from an indicator of democracy, both derived from codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive.	Polity IV project
Polity fragmentation	This variable codes the operational existence of a separate polity, or polities, comprising substantial territory and population within the recognized borders of the state and over which the coded polity exercises no effective authority	Polity IV project
Government Regul. of Religion	The government regulation index is a comparative measure of the actions of the state that deny religious freedoms including any actions that impinge on the practice, profession, or selection of religion. A higher GRI score indicates greater religious regulation.	The Religion and State project (ARDA)
Social Regulation of Religion	The social regulation index is a comparative measure of the restrictions placed on practice, profession, or selection of religion by other religious groups or associations or the culture at large. A higher SRI score indicates greater social regulation.	The Religion and State project (ARDA)

Note: This table presents the variables used in our analysis and is discussed in Section 2.

Table A2: Patterns of Missingness in Key Variables in the Daesh Personnel Records

VARIABLES	(1) All Rs	(2) Rs w/ residence non-missing	(3) Rs w/ non-missing education	(4) Rs w/residence non-missing and non-missing education	(5) Rs w/ residence non-missing and not in Iraq or Syria	(6) Rs w/ residence non-missing and non-missing education and not in Iraq or Syria
No of Obs	3965	3547	3247	2987	3472	2931
Rs w/ OECD residence	.	.182	.148	.161	.186	.164
Rs w/ MENA residence	.	.585	.599	.651	.576	.644
Rs w/ SA residence	.	.008	.005	.006	.008	.006
Rs w/ EA residence	.	.035	.027	.030	.036	.030
Rs w/ ECA residence	.	.140	.092	.100	.143	.102
Rs w/ Africa residence	.	.003	.002	.002	.003	.002
Avg age of Rs	26.211	26.104	26.167	26.123	26.158	26.159
Rs w/ prim/no educ	.153	.153	.187	.181	.150	.177
Rs w/ sec educ	.419	.433	.512	.514	.438	.519
Rs w/ tert educ	.247	.257	.301	.305	.256	.304
% of sample	100	89.5	81.9	75.3	87.6	73.9

Note: This table displays patterns of missingness in key variables in the Daesh personnel records. Rs refers to Daesh recruits and residence is the country of last residence. This table gives insight into the sample selection we impose by limiting our analysis to Daesh recruits with non-missing education status, non-missing country of last residence and recruits not from Iraq or Syria. The first row gives the total number of observations (Daesh recruits) for each subsample. The last row shows the share of the full sample (column 1) which we are left with in each column. For average age in row 8, we dropped recruits less than 10 years of age. This table is discussed in Section 2.2.

Table A3: Cross-Country Analysis of Foreign Recruitment into Daesh, Extensive Margin

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Personnel Records				Expert Estimates		
	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$	$\mathbb{1}_{N_c>0}$
Total population (log)	0.036	0.022	0.013	0.011	0.082***	0.056*	0.032	0.029
	(0.029)	(0.030)	(0.031)	(0.031)	(0.028)	(0.030)	(0.032)	(0.032)
Muslim population (log)	0.156***	0.169***	0.169***	0.167***	0.092**	0.117***	0.127***	0.131***
	(0.033)	(0.040)	(0.039)	(0.039)	(0.037)	(0.042)	(0.040)	(0.041)
Unemployment rate	0.013***	0.011**	0.007	0.008	0.003	0.003	0.002	0.002
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Distance to Syria (log)	-0.149***	-0.144***	0.035	0.039	-0.051	-0.052	0.083	0.080
	(0.046)	(0.052)	(0.074)	(0.074)	(0.045)	(0.054)	(0.079)	(0.079)
Per capita GDP (log)	0.109***	0.132***	0.068**		0.127***	0.108***	0.013	
	(0.020)	(0.028)	(0.031)		(0.023)	(0.031)	(0.040)	
Human Development Index				0.842**				0.293
				(0.370)				(0.473)
Index of political rights		0.026	0.031*	0.033*		-0.001	0.015	0.019
		(0.017)	(0.018)	(0.019)		(0.016)	(0.017)	(0.019)
Ethnic fractionalization		0.206	0.329*	0.236		-0.350	-0.137	-0.117
		(0.163)	(0.184)	(0.166)		(0.235)	(0.240)	(0.269)
Linguistic fractionalization		-0.283*	-0.283	-0.150		-0.028	-0.136	-0.144
		(0.149)	(0.191)	(0.172)		(0.225)	(0.262)	(0.294)
Religious fractionalization		0.193	0.224	0.238		0.243*	0.296**	0.281**
		(0.141)	(0.155)	(0.155)		(0.143)	(0.129)	(0.131)
Observations	160	148	148	147	160	148	148	147
Adjusted R-squared	0.411	0.412	0.465	0.472	0.301	0.318	0.382	0.381
Mean Outcome	.356	.358	.358	.354	.288	.304	.304	.306
Region FE	N	N	Y	Y	N	N	Y	Y

Note: This table presents OLS estimations of Daesh enrollment (dummy) on country-level characteristics. Columns 1-4 and 5-8 respectively replicate columns 1-4 of Table 7 in Benmelech and Klor (2018). In columns 1-4, we use our Daesh personnel records to construct the outcome variable, in columns 5-8 we use the expert estimates from Benmelech and Klor (2018). We drop South Africa as Figure A2 shows it is an outlier. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 2.2.

Table A4: Cross-Country Analysis of Foreign Recruitment into Daesh, Intensive Margin

VARIABLES	(1)	(2) Personnel Records	(3)	(4)	(5)	(6) Expert Estimates	(7)	(8)
	Log(N+1)	Log(N+1)	Log(N+1)	Log(N+1)	Log(N+1)	Log(N+1)	Log(N+1)	Log(N+1)
Total population (log)	0.088	0.033	0.060	0.049	0.375***	0.241*	0.186	0.173
	(0.087)	(0.084)	(0.082)	(0.082)	(0.132)	(0.132)	(0.129)	(0.129)
Muslim population (log)	0.677***	0.737***	0.672***	0.691***	0.708***	0.850***	0.868***	0.888***
	(0.123)	(0.141)	(0.129)	(0.133)	(0.188)	(0.212)	(0.201)	(0.207)
Unemployment rate	0.029**	0.028*	0.017	0.016	0.033	0.040	0.033	0.032
	(0.013)	(0.015)	(0.014)	(0.014)	(0.029)	(0.031)	(0.032)	(0.033)
Distance to Syria (log)	-0.413***	-0.330**	0.371	0.361	-0.370	-0.368	0.237	0.226
	(0.126)	(0.144)	(0.255)	(0.255)	(0.239)	(0.276)	(0.457)	(0.460)
Per capita GDP (log)	0.395***	0.446***	0.059		0.736***	0.623***	0.087	
	(0.064)	(0.095)	(0.097)		(0.104)	(0.148)	(0.175)	
Human Development Index				1.203				1.695
				(1.126)				(1.993)
Index of political rights		0.165***	0.143***	0.157***		0.034	0.106	0.123
		(0.063)	(0.050)	(0.053)		(0.092)	(0.092)	(0.099)
Ethnic fractionalization		-0.006	-0.065	0.028		-2.280**	-1.969*	-1.913
		(0.566)	(0.503)	(0.524)		(1.081)	(1.079)	(1.175)
Linguistic fractionalization		-1.212***	-0.747	-0.797		-0.097	0.005	0.021
		(0.425)	(0.463)	(0.521)		(0.944)	(1.048)	(1.181)
Religious fractionalization		0.490	0.702*	0.637		0.971	1.287*	1.220*
		(0.435)	(0.394)	(0.400)		(0.740)	(0.698)	(0.732)
Observations	160	148	148	147	160	148	148	147
Adjusted R-squared	0.456	0.497	0.593	0.594	0.379	0.414	0.466	0.465
Mean Outcome	1.009	1.033	1.033	1.036	1.436	1.524	1.524	1.534
Region FE	N	N	Y	Y	N	N	Y	Y

Note: This table presents OLS estimations of the number of Daesh recruits (log(N+1)) on country level characteristics. Columns 1-4 and 5-8 respectively replicate columns 1-4 of Table 8 in Benmelech and Klor (2018). In columns 1-4, we use our Daesh personnel records to construct the outcome variable, in columns 5-8 we use the expert estimates from Benmelech and Klor (2018). We drop South Africa as Figure A2 shows it is an outlier: ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 2.2.

Table A5: Percentage of Missing Values in the Unemployment Data

	Number of countries with Daesh recruits	% missing unemployment rate
Sub-Saharan Africa	5	100%
East Asia and Pacific	4	25%
Europe and Eurasia	28	11%
Near East and North Africa	14	7%
South Asia	3	33%
Western Hemisphere	2	0%
First quartile of distance to Syria	15	0%
Second quartile of distance to Syria	15	33%
Third quartile of distance to Syria	15	20%
Fourth quartile of distance to Syria	13	23%
First quintile of GDP per capita	3	100%
Second quintile of GDP per capita	13	38%
Third quintile of GDP per capita	15	13%
Fourth quintile of GDP per capita	8	13%
Fifth quintile of GDP per capita	19	0%

Note: This table compares missingness of the unemployment rate by region, distance to Syria, and GDP in countries with at least one Daesh recruit. This table is discussed in Section 2.3.

Table A6: Wages, Unemployment and Daesh Recruits Data Overlap

	Wages	Unemployment	Daesh recruits		Wages	Unemployment	Daesh recruits		Wages	Unemployment	Daesh recruits
AFG	□	□	■	GMB	■	■	□	NIC	□	■	□
AGO	□	□	□	GNB	□	□	□	NLD	□	■	■
ALB	■	■	■	GNQ	□	□	□	NOR	□	■	■
ARE	□	■	□	GRC	□	■	□	NPL	■	■	□
ARG	□	■	□	GTM	□	■	□	NZL	□	■	□
ARM	■	■	□	GUY	□	□	□	OMN	□	□	□
AUS	□	■	■	HKG	□	■	□	PAK	■	■	■
AUT	□	■	■	HND	□	■	□	PAN	□	■	□
AZE	□	■	□	HRV	□	■	□	PER	□	■	□
BDI	□	□	□	HTI	□	□	□	PHL	■	■	□
BEL	□	■	■	HUN	□	■	□	POL	□	■	■
BEN	■	□	□	IDN	■	■	■	PRI	□	□	□
BFA	■	□	□	IND	■	■	■	PRK	□	□	□
BGD	■	■	□	IRL	□	■	□	PRT	□	□	□
BGR	□	■	■	IRN	□	■	■	PRY	□	■	□
BHR	□	■	■	ISL	□	■	□	QAT	□	■	■
BIH	□	■	■	ISR	□	■	□	ROM	□	■	□
BLR	□	■	□	ITA	□	■	□	RUS	□	■	■
BLZ	□	■	□	JAM	□	□	□	RWA	■	■	□
BOL	□	■	□	JOR	■	■	■	SAU	□	■	■
BRA	□	■	□	JPN	□	■	□	SDN	□	□	■
BTN	□	■	□	KAZ	■	■	■	SEN	□	□	□
BWA	□	■	□	KEN	□	□	■	SGP	□	■	□
CAF	□	□	□	KGZ	■	■	■	SLE	■	□	□
CAN	□	■	■	KHM	■	■	□	SLV	□	■	□
CHE	□	■	■	KOR	□	■	□	SOM	□	□	■
CHL	■	■	□	KSV	■	■	■	SRB	■	■	□
CHN	■	□	■	KWT	□	■	■	SSD	□	□	□
CIV	■	□	□	LAO	□	■	□	SUR	□	□	□
CMR	■	□	■	LBN	■	■	■	SVK	□	■	□
COG	□	□	□	LBR	■	■	□	SVN	□	■	□
COL	□	■	□	LBY	□	□	■	SWE	□	■	■
COM	■	□	□	LKA	■	■	□	SWZ	□	□	□
CRI	□	■	□	LSO	□	□	□	TCD	■	□	□
CUB	□	■	□	LTU	□	■	□	TGO	■	■	□
CYP	□	■	□	LUX	□	■	□	THA	■	■	□
CZE	□	■	□	LVA	□	■	□	TJK	■	□	■
DEU	□	■	■	MAR	□	■	■	TKM	□	□	■
DJI	■	□	□	MDA	□	■	□	TTO	□	■	■
DNK	□	■	■	MDG	■	■	□	TUN	□	■	■
DOM	□	■	□	MEX	□	■	□	TUR	□	■	■
DZA	□	■	■	MKD	□	■	■	TZA	■	■	□
ECU	□	■	□	MLI	■	□	□	UGA	■	■	□
EGY	□	■	■	MLT	□	■	□	UKR	■	■	■
ERI	□	□	□	MMR	□	■	□	URY	■	■	□
ESP	□	■	■	MNE	■	■	□	USA	■	■	■
EST	□	■	□	MNG	□	■	□	UZB	□	□	■
ETH	■	■	□	MOZ	■	■	□	VEN	□	■	□
FIN	□	■	□	MRT	■	□	■	VNM	■	■	□
FRA	□	■	■	MUS	■	■	□	WBG	□	□	■
GAB	□	□	□	MWI	■	□	□	YEM	□	■	■
GBR	□	■	■	MYS	□	■	■	ZAF	■	■	□
GEO	■	■	■	NAM	□	■	□	ZAR	■	□	□
GHA	■	□	□	NER	■	□	□	ZMB	□	□	□
GIN	■	□	□	NGA	■	□	□	ZWE	□	□	□

Note: This table reports for each country whether the wage and unemployment data by education category are available, and whether the country has at least one Daesh recruit (solid markers). This table is discussed in Section 2.3.

Table A7: Foreign Recruitment into Daesh - Bootstrapped Std. Errors

	(1)
	$logN_{ce}$
VARIABLES	Total
Total Labor force (log)	-0.063
	(0.108)
Interaction between unemployment and	
Distance to Syria -First Quartile	0.113***
	(0.035)
Distance to Syria - Second Quartile	0.009
	(0.082)
Distance to Syria - Third Quartile	-0.008
	(0.033)
Distance to Syria - Fourth Quartile	-0.160***
	(0.051)
Observations	105
Number of countries	44
Country FE	Y
Education Dummies	Y
Adj. R-squared	.85

Note: This table is identical to Table 4, column 4, but displays point estimates and standard errors which are bootstrapped with 500 replications. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 4.1.

Table A8: Robustness of Distance Interaction - Ethnic and Linguistic Fractionalization

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$	(6) $logN_{ce}$	(7) $logN_{ce}$
Unemployment rate	0.668***	-0.021	-0.014	0.735***	0.742***	-0.019	0.734***
	(0.140)	(0.052)	(0.052)	(0.216)	(0.217)	(0.055)	(0.214)
Total Labor force(log)	-0.000	0.075	0.074	-0.002	-0.004	0.078	-0.001
	(0.082)	(0.117)	(0.118)	(0.080)	(0.081)	(0.119)	(0.081)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.102***	-0.102***		-0.102***
	(0.020)			(0.028)	(0.029)		(0.028)
Ethnic fractionalization		0.039		0.042		0.075	0.056
		(0.107)		(0.106)		(0.168)	(0.173)
Linguistic fractionalization			0.017		0.029	-0.044	-0.017
			(0.113)		(0.109)	(0.177)	(0.178)
Observations	105	101	101	101	101	101	101
Mean N_{ce}	25.5	26.3	26.3	26.3	26.3	26.3	26.3
Number of countries	44	42	42	42	42	42	42
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.81	.81	.83	.83	.8	.83

Note: This table is similar to the "horse-race" Table 5, except that we now add additional interactions between distance and ethnic and linguistic fractionalization. The variables are described in Table A1. This table is discussed in Section 4.2.

Table A9: Robustness of Distance Interaction - Religious & Government Fractionalization

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$	(6) $logN_{ce}$	(7) $logN_{ce}$
Unemployment rate	0.668***	0.051	0.007	0.727***	0.753***	0.081	0.732***
	(0.140)	(0.043)	(0.031)	(0.240)	(0.206)	(0.050)	(0.229)
Total Labor force(log)	-0.000	0.068	0.087	-0.000	0.009	0.084	0.015
	(0.082)	(0.108)	(0.121)	(0.079)	(0.082)	(0.114)	(0.083)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.093***	-0.101***		-0.090***
	(0.020)			(0.032)	(0.027)		(0.030)
Religious fractionalization		-0.167*		-0.127		-0.185*	-0.143
		(0.099)		(0.101)		(0.102)	(0.098)
Government fractionalization			-0.058		-0.050	-0.082	-0.069
			(0.076)		(0.069)	(0.076)	(0.066)
Observations	105	101	101	101	101	101	101
Mean N_{ce}	25.5	26.3	26.3	26.3	26.3	26.3	26.3
Number of countries	44	42	42	42	42	42	42
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.82	.81	.84	.83	.82	.84

Note: This table is similar to the "horse-race" Table 5 , except that we add additional interactions between distance and religious and political fractionalization. The variables are described in Table A1. This table is discussed in Section 4.2.

Table A10: Robustness of Distance Interaction - Political Rights and Corruption

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$	(6) $logN_{ce}$	(7) $logN_{ce}$
Unemployment rate	0.668***	-0.080	0.092	0.533**	0.729***	-0.093	0.579**
	(0.140)	(0.049)	(0.078)	(0.256)	(0.208)	(0.156)	(0.281)
Total Labor force(log)	-0.000	0.102	0.083	0.031	0.011	0.103	0.028
	(0.082)	(0.112)	(0.109)	(0.088)	(0.082)	(0.114)	(0.086)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.079**	-0.091***		-0.080**
	(0.020)			(0.031)	(0.031)		(0.030)
Political rights		0.025*		0.015		0.026	0.011
		(0.012)		(0.012)		(0.018)	(0.019)
Corruption index			-0.002		-0.001	0.000	-0.000
			(0.002)		(0.001)	(0.002)	(0.002)
Observations	105	102	102	102	102	102	102
Mean N_{ce}	25.5	26	26	26	26	26	26
Number of countries	44	43	43	43	43	43	43
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.83	.82	.84	.83	.82	.83

Note: This table is similar to the "horse-race" Table 5 , except that we add additional interactions between distance and political rights and corruption. The variables are described in Table A1. This table is discussed in Section 4.2.

Table A11: Robustness of Distance Interaction - Polity Index and Polity Fragmentation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$
Unemployment rate	0.668***	0.030	-0.011	0.708**	0.852***	0.028	0.758**
	(0.140)	(0.031)	(0.027)	(0.279)	(0.267)	(0.033)	(0.314)
Total Labor force(log)	-0.000	0.101	0.073	0.030	-0.005	0.104	0.020
	(0.082)	(0.120)	(0.116)	(0.091)	(0.076)	(0.123)	(0.088)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.095**	-0.115***		-0.101**
	(0.020)			(0.039)	(0.035)		(0.044)
Polity index		-0.007*		-0.002		-0.007	-0.002
		(0.004)		(0.005)		(0.004)	(0.005)
Polity fragmentation (dummy)			0.016		-0.046	0.020	-0.031
			(0.033)		(0.030)	(0.025)	(0.032)
Observations	105	99	102	99	102	99	99
Mean N_{ce}	25.5	26.8	26	26.8	26	26.8	26.8
Number of countries	44	42	43	42	43	42	42
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.81	.81	.83	.83	.81	.82

Note: This table is similar to the "horse-race" Table 5 , except that we add additional interactions between distance and the polity index and polity fragmentation. The variables are described in Table A1. This table is discussed in Section 4.2.

Table A12: Robustness of Distance Interaction - Social & Government Regulation of Religion

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$	(6) $logN_{ce}$	(7) $logN_{ce}$
Unemployment rate	0.668***	-0.073	-0.047	0.679***	0.666***	-0.067	0.716***
	(0.140)	(0.086)	(0.059)	(0.231)	(0.173)	(0.088)	(0.254)
Total Labor force(log)	-0.000	0.086	0.085	0.027	0.030	0.087	0.026
	(0.082)	(0.124)	(0.125)	(0.094)	(0.095)	(0.125)	(0.095)
Interaction between unemployment and							
Distance to Syria (log)	-0.091***			-0.096***	-0.094***		-0.099***
	(0.020)			(0.027)	(0.023)		(0.030)
Social regulation of religion		0.014		0.003		0.009	-0.007
		(0.013)		(0.011)		(0.022)	(0.019)
Government regulation of religion			0.012		0.005	0.005	0.010
			(0.010)		(0.009)	(0.018)	(0.015)
Observations	105	101	101	101	101	101	101
Mean N_{ce}	25.5	26.4	26.4	26.4	26.4	26.4	26.4
Number of countries	44	42	42	42	42	42	42
Country FE	Y	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.81	.81	.83	.83	.8	.83

Note: This table is similar to the "horse-race" Table 5 , except that we add additional interactions between distance and social and government regulation of religion. The variables are described in Table A1. This table is discussed in Section 4.2.

Table A13: Robustness of Distance Interaction - Region Indicators

VARIABLES	(1) $logN_{ce}$ Total	(2) $logN_{ce}$ Total	(3) $logN_{ce}$ Total	(4) $logN_{ce}$ Total	(5) $logN_{ce}$ Total	(6) $logN_{ce}$ Total
Unemployment rate		-0.029	0.032	-0.004	0.001	0.003
		(0.033)	(0.035)	(0.025)	(0.025)	(0.025)
Total Labor force (log)	0.111	0.078	0.127	0.128	0.083	0.060
	(0.147)	(0.110)	(0.141)	(0.148)	(0.123)	(0.125)
Interaction between unemployment and						
MENA	0.052	0.081				
	(0.048)	(0.065)				
Europe	-0.032		-0.057			
	(0.039)		(0.055)			
Former Soviet	0.061			0.094		
	(0.075)			(0.076)		
Asia	-0.018				-0.017	
	(0.109)				(0.104)	
Americas	-0.071					-0.069
	(0.045)					(0.043)
Observations	105	105	105	105	105	105
Mean N_{ce}	25.4	25.4	25.4	25.4	25.4	25.4
Country FE	Y	Y	Y	Y	Y	Y
Number of countries	44	44	44	44	44	44
Education Dummies	Y	Y	Y	Y	Y	Y
Adj. R-squared	.8	.8	.8	.8	.79	.79

Note: This table displays OLS estimates of equation 2 with different region interactions. The dependent variable is the log number of foreign recruits to Daesh by country and education category. Standard errors are in parentheses, clustered at the country level. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 4.2.

Table A14: Average Unemployment Rate by Education Category and Quartile of Distance

Quartiles of distance		Education		
		Primary	**Secondary**	**Tertiary**
1	Mean	0.0	-0.6	0.6
	Std dev.	4.6	1.9	4.1
2	Mean	2.9	0.8	-3.7
	Std dev.	5.6	2.2	5.6
3	Mean	5.2	-1.4	-3.8
	Std dev.	2.9	1.0	3.2
4	Mean	2.8	0.8	-3.6
	Std dev.	4.7	2.0	4.5

Note: This table reports the average unemployment rate (net of country means) by education category and distance quartile. This table is discussed in Section 4.3.

Table A15: Foreign Recruitment into Daesh - Robustness to Different Geodesic Distance Measures

VARIABLES	(1) logN	(2) logN	(3) logN	(4) logN	(5) logN	(6) logN	(7) logN	(8) logN	(9) logN	(10) logN	(11) logN	(12) logN	(13) logN
Unemployment rate	0.668***	0.658***	0.762***	0.739***	0.759***	0.788***	0.887***	0.858***	0.886***	0.688***	0.734***	0.740***	0.728***
	(0.140)	(0.219)	(0.232)	(0.226)	(0.234)	(0.232)	(0.225)	(0.229)	(0.227)	(0.226)	(0.224)	(0.214)	(0.222)
Total Labor force (log)	-0.000	0.005	0.016	0.043	0.021	-0.019	-0.005	0.026	0.000	-0.003	0.008	0.030	0.013
	(0.082)	(0.079)	(0.085)	(0.094)	(0.087)	(0.076)	(0.081)	(0.088)	(0.083)	(0.078)	(0.084)	(0.090)	(0.085)
Interaction between unemployment and													
Distance to Syria (log)	-0.091***	-0.086***	-0.099***	-0.095***	-0.098***	-0.102***	-0.114***	-0.109***	-0.114***	-0.089***	-0.094***	-0.094***	-0.093***
	(0.020)	(0.028)	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)	(0.029)	(0.029)	(0.029)	(0.028)	(0.027)	(0.028)
Observations	105	102	102	102	102	102	102	102	102	102	102	102	102
Mean N_{ce}	25.5	26	26	26	26	26	26	26	26	26	26	26	26
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Number of countries	44	43	43	43	43	43	43	43	43	43	43	43	43
Education Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Adj. R-squared	0.832	0.830	0.831	0.831	0.831	0.849	0.851	0.850	0.850	0.829	0.829	0.830	0.828

Note: This table displays OLS estimates of equation 2 for different geodesic distance measures. The dependent variable is the log number of foreign recruits to Daesh by country and education category. The first column replicates our main result from Table 4, column 1. Columns 2-5 measure distance from a country's most populous city, columns 6-9 measure it from the capital city, columns 10-13 measure it from the country's geographic center. Columns 2, 6, and 10 measure distance to Damascus; columns 3, 7, and 11 measure distance to Raqqa; columns 4, 8, and 12 measure distance to Mosul; columns 5, 9, and 13 measure distance to Tell Abyad (the primary entry point to Daesh territory during the period covered by our data). This table is discussed in section 5.1.

Table A16: Robustness to Dropping Countries With Large Deviation Between Muslim Male and General Male Unemployment Rate

	(1)	(2)	(3)	(4)	(5)	(6)
	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$	$logN_{ce}$
	All Countries		Dropping Countries With Deviation > 40%		Dropping Countries With Deviation > 20%	
Unemployment rate	0.668***		0.631***		0.587***	
	(0.140)		(0.128)		(0.126)	
Total Labor force(log)	-0.000	-0.063	-0.022	-0.042	-0.031	-0.048
	(0.082)	(0.075)	(0.078)	(0.075)	(0.077)	(0.073)
Interaction between unemployment and						
Distance to Syria (log)	-0.091***		-0.085***		-0.079***	
	(0.020)		(0.017)		(0.017)	
Distance to Syria - First Quartile		0.113***		0.116***		0.113***
		(0.030)		(0.030)		(0.030)
Distance to Syria - Second Quartile		0.009		0.011		-0.006
		(0.029)		(0.030)		(0.018)
Distance to Syria - Third Quartile		-0.008		-0.005		-0.003
		(0.026)		(0.025)		(0.024)
Distance to Syria - Fourth Quartile		-0.160***		-0.136***		-0.131***
		(0.037)		(0.039)		(0.041)
Observations	105	105	85	85	78	78
Mean N_ce	25.4	25.4	27.6	27.6	29.3	29.3
Number of countries	44	44	35	35	31	31
Country FE	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.85	.84	.85	.85	.86

Note: Columns 1 and 2 report our main results, as in Table 4, columns 1 and 4. Columns 3 and 4 (5 and 6) repeat the same estimations, after dropping countries for which the deviation between the Muslim male unemployment rate and the general male unemployment rate is more than 40 percent (more than 20 percent). The deviation is calculated as $[(MuslimMaleUnemploymentRate - GeneralMaleUnemploymentRate)]/(MuslimMaleUnemploymentRate)$. This table is discussed in Section 5.2.

Table A17: Robustness to Interacting Unemployment with Country Characteristics

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$
Main effects					
Unemployment rate	0.636***	0.576**	0.653***	0.663***	0.598***
	(0.227)	(0.233)	(0.209)	(0.229)	(0.208)
Total Labor force(log)	0.002	0.002	0.000	0.000	0.011
	(0.103)	(0.102)	(0.103)	(0.103)	(0.102)
Interaction between unemployment and					
Distance to Syria (log)	-0.088***	-0.081***	-0.088***	-0.091***	-0.079***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.029)
Muslim > 50%	0.013				
	(0.043)				
Muslim Majority		0.038			
		(0.050)			
Above-Median GPDpc			-0.011		
			(0.047)		
MENA region dummy				0.003	
				(0.063)	
Official OECD region dummy					-0.047
					(0.045)
Observations	105	105	105	105	105
Mean N_{ce}	25.4	25.4	25.4	25.4	25.4
Number of countries	44	44	44	44	44
Country FE	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y
Adj. R-squared	0.829	0.830	0.829	0.828	0.832

Note: This table repeats our main estimation from Table 4, column 1, adding interaction terms between the unemployment rate and various country characteristics (including indicators for Muslim majority countries as used in the sample splits in Table 7). This table is discussed in Section 5.2.

Table A18: Robustness to Interacting Unemployment with Distance & Country Characteristics

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$	(5) $logN_{ce}$
Main effects					
Unemployment rate	0.646***	0.602***	0.644***	0.671***	0.591***
	(0.212)	(0.216)	(0.213)	(0.213)	(0.211)
Total Labor force(log)	0.002	0.001	-0.000	-0.000	0.010
	(0.103)	(0.102)	(0.103)	(0.103)	(0.102)
Interaction between unemployment and					
Distance to Syria (log)	-0.089***	-0.085***	-0.087***	-0.092***	-0.078**
	(0.028)	(0.028)	(0.030)	(0.028)	(0.030)
Distance * Muslim >50%	0.002				
	(0.006)				
Distance * Muslim Majority		0.005			
		(0.007)			
Distance * Above-Median GDPpc			-0.002		
			(0.006)		
Distance * MENA				-0.000	
				(0.009)	
Distance * OECD					-0.006
					(0.006)
Observations	105	105	105	105	105
Mean N_{ce}	25.4	25.4	25.4	25.4	25.4
Number of countries	44	44	44	44	44
Country FE	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y
Adj. R-squared	0.829	0.830	0.829	0.828	0.832

Note: This table repeats our main estimation from Table 4, column 1, adding interaction terms between unemployment*distance and various country characteristics (including indicators for Muslim majority countries as used in the sample splits in Table 7). This table is discussed in Section 5.2.

Table A19: DDD Estimation of Substitution Between Daesh and Domestic Terrorism

	(1)	(2)	(3)	(4)	(5)	(6)
	Outcome: Log(N terrorist events+1)			Outcome: 1(Any terrorist event)		
Post Daesh Definition	Post 2011	Post 2012	Post 2013	Post 2011	Post 2012	Post 2013
Unemployment Rate (Fraction)	-0.901	-1.109	-1.133	0.025	-0.120	-0.157
	(2.092)	(2.172)	(2.177)	(0.668)	(0.682)	(0.674)
Distance * Post Daesh	0.717***	0.860***	1.062***	0.108	0.197	0.278**
	(0.261)	(0.318)	(0.359)	(0.098)	(0.140)	(0.125)
Distance* Unemployment Rate	13.863***	15.025***	16.294***	2.857*	3.177**	3.319**
	(4.476)	(4.449)	(4.405)	(1.532)	(1.569)	(1.577)
Unemployment Rate * Post Daesh	0.429	0.972	1.306	-0.214	0.108	0.264
	(1.218)	(1.294)	(1.356)	(0.318)	(0.357)	(0.376)
Distance* Unemployment Rate * Post Daesh	-2.784	-3.784	-4.874	-0.708	-1.521	-1.918
	(2.625)	(3.783)	(3.707)	(1.266)	(1.913)	(1.644)
Observations	1,639	1,639	1,639	1,639	1,639	1,639
Number of countries	149	149	149	149	149	149
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y

Note: This table display estimates of equation 3. The outcome is the log(N terrorist events +1) in columns 1-3, and a dummy for any terrorist event in columns 4-6, based on the Global Terrorism Database. The *Distance* dummy indicates countries in the fourth distance quartile. Countries in the first distance quartile are dropped from the analysis, as they may be affected by direct spillovers from Daesh. The *Post* dummy indicates years after 2011, 2012 or 2013, as per the column headings. Standard errors, clustered at the country level, are in parentheses. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 5.3.

Table A20: Controlling for Domestic Terrorism in Main Estimation

VARIABLES	(1) $Log(N_{ce})$	(2) $Log(N_{ce})$	(3) $Log(N_{ce})$	(4) $Log(N_{ce})$	(5) $Log(N_{ce})$	(6) $Log(N_{ce})$
Unemployment rate	0.668***	0.678***	1.328**	0.479**	0.548***	1.445**
	(0.140)	(0.147)	(0.646)	(0.181)	(0.180)	(0.694)
Total Labor force (log)	-0.000	0.009	0.018			
	(0.082)	(0.086)	(0.091)			
Interaction between unemployment and						
Distance to Syria (log)	-0.091***	-0.090***	-0.175*	-0.068***	-0.071***	-0.190*
	(0.020)	(0.021)	(0.088)	(0.025)	(0.026)	(0.095)
Domestic Terrorism		-0.032	-0.759		-0.061	-1.039
		(0.052)	(0.668)		(0.049)	(0.712)
Domestic Terrorism * Log Distance			0.096			0.130
			(0.090)			(0.097)
Observations	105	105	105	114	114	114
Mean N_{ce}	25.4	25.4	25.4	23.9	23.9	23.9
Number of countries	44	44	44	47	47	47
Country FE	Y	Y	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y	Y	Y
Adj. R-squared	.83	.83	.83	.81	.82	.82

Note: This table display estimates of our main specification, equation 2, with additional interaction terms between unemployment, distance and domestic terrorism. Domestic terrorism is a dummy variable that indicates if any terrorist event took place in the country in 2013. The data is from the Global Terrorism Database. The outcome is the log(N Daesh recruits). Standard errors, clustered at the country level, are in parentheses. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 5.3.

Table A21: Foreign Recruitment into Daesh - Robustness to Wage Controls

VARIABLES	(1) $logN_{ce}$	(2) $logN_{ce}$	(3) $logN_{ce}$	(4) $logN_{ce}$
Unemployment rate	0.668***	0.371	0.443	0.436
	(0.140)	(0.401)	(0.415)	(0.390)
Total Labor force(log)	-0.000	-0.065	-0.042	-0.051
	(0.082)	(0.131)	(0.135)	(0.129)
Median wage (log)			-0.435	
			(0.517)	
Median wage among 18-36 old (log)				-0.260
				(0.283)
Interaction between unemployment and				
Distance to Syria (log)	-0.091***	-0.048	-0.056	-0.055
	(0.020)	(0.051)	(0.053)	(0.050)
Observations	105	28	28	29
Mean N_{ce}	25.4	6.5	6.5	6.4
Number of countries	44	12	12	12
Country FE	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y
Adj. R-squared	.83	.63	.62	.63

Note: This table displays OLS estimates of equation 2 with additional wage controls. The dependent variable is the log number of foreign recruits to Daesh by country and education category. Standard errors are in parentheses, clustered at the country level and corrected for small number of clusters whenever the number of clusters $\leq$ 40 using the Moulton correction factor. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 5.4.

Table A22: Foreign Recruitment into Daesh - Poisson Estimation

VARIABLES	(1) N_{ce}	(2) N_{ce}	(3) N_{ce}	(4) N_{ce}
Unemployment rate	1.105***			
	(0.361)			
Total Labor force (log)	0.207	0.140	0.082	0.004
	(0.201)	(0.143)	(0.192)	(0.188)
Interaction between unemployment and				
Distance to Syria (log)	-0.151***			
	(0.049)			
Distance to Syria - First Half		0.072		
		(0.049)		
Distance to Syria - Second Half		-0.122***		
		(0.039)		
Distance to Syria - First Tercile			0.133***	
			(0.022)	
Distance to Syria - Second Tercile			-0.019	
			(0.021)	
Distance to Syria - Third Tercile			-0.159***	
			(0.055)	
Distance to Syria - First Quartile				0.146***
				(0.023)
Distance to Syria - Second Quartile				-0.006
				(0.022)
Distance to Syria - Third Quartile				-0.050
				(0.041)
Distance to Syria - Fourth Quartile				-0.189***
				(0.053)
Observations	132	132	132	132
Mean N_{ce}	20.2	20.2	20.2	20.2
Number of countries	44	44	44	44
Country FE	Y	Y	Y	Y
Education Dummies	Y	Y	Y	Y
Adj. R-squared	.83	.82	.84	.85

Note: This table is similar to Table 4 but uses the Poisson Pseudo Maximum Likelihood Estimator. The dependent variable is the number of foreign recruits to Daesh by country and education category. The depedent variable takes value zero for country-education cells with no recruits. Standard errors are in parentheses, clustered at the country level. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively. This table is discussed in Section 5.5.

Table A23: Robustness of Distance Interaction to Considering Different Daesh Aspirations

VARIABLES	(1) $logNF_{ce}$	(2) $logNS_{ce}$	(3) $logNA_{ce}$
Unemployment rate	0.537	0.818*	1.243
	(0.325)	(0.391)	(0.783)
Total Labor force(log)	0.340	0.395	0.172
	(0.217)	(0.304)	(0.624)
Interaction between unemployment and			
Distance to Syria (log)	-0.065	-0.116*	-0.158
	(0.045)	(0.057)	(0.106)
Observations	62	45	22
Mean NF_{ce}	7.9	x	x
Mean NS_{ce}	x	7.5	x
Mean NA_{ce}	x	x	2.8
Country FE	Y	Y	Y
Number of Countries	32	24	13
Education Dummies	Y	Y	Y
Adj. R-squared	.77	.54	.43

Note: This table is similar to Table 4, column 1, except that the outcome variable considers only the number of recruits desiring to become fighters (column 1), suicide fighters (column 2) and administrators (column 3) respectively. This table is discussed in Section 5.5. Standard errors are in parentheses, clustered at the country level and corrected for small number of clusters using the Moulton correction factor.

A: Number of Recruits per Country
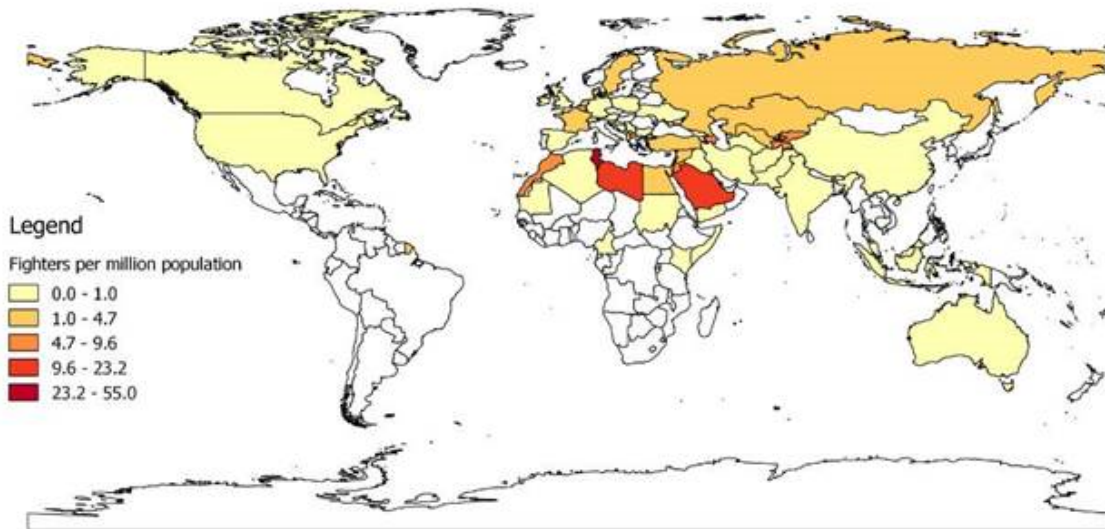
B: Number of Education Cohorts per Country
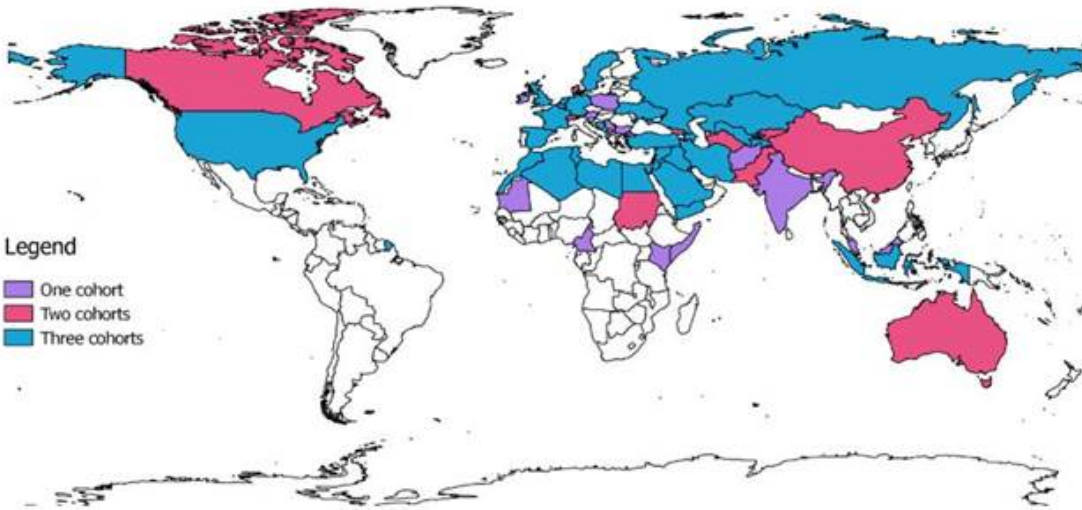
Figure A1: Countries with Recruits in the Daesh Personnel Records

Note: Panel A displays the number of recruits by population for each country of residence, for countries represented in the Daesh personnel records. Panel B displays the number of different education cohorts into which recruits from each country fall, considering the following three cohorts: primary and below, secondary and tertiary education. This figure is discussed in Section 2.2.

A: Full Sample

Slope: .78 (.12), R2=.54

B: Dropping South Africa

Slope: .99 (.14), R2=.61
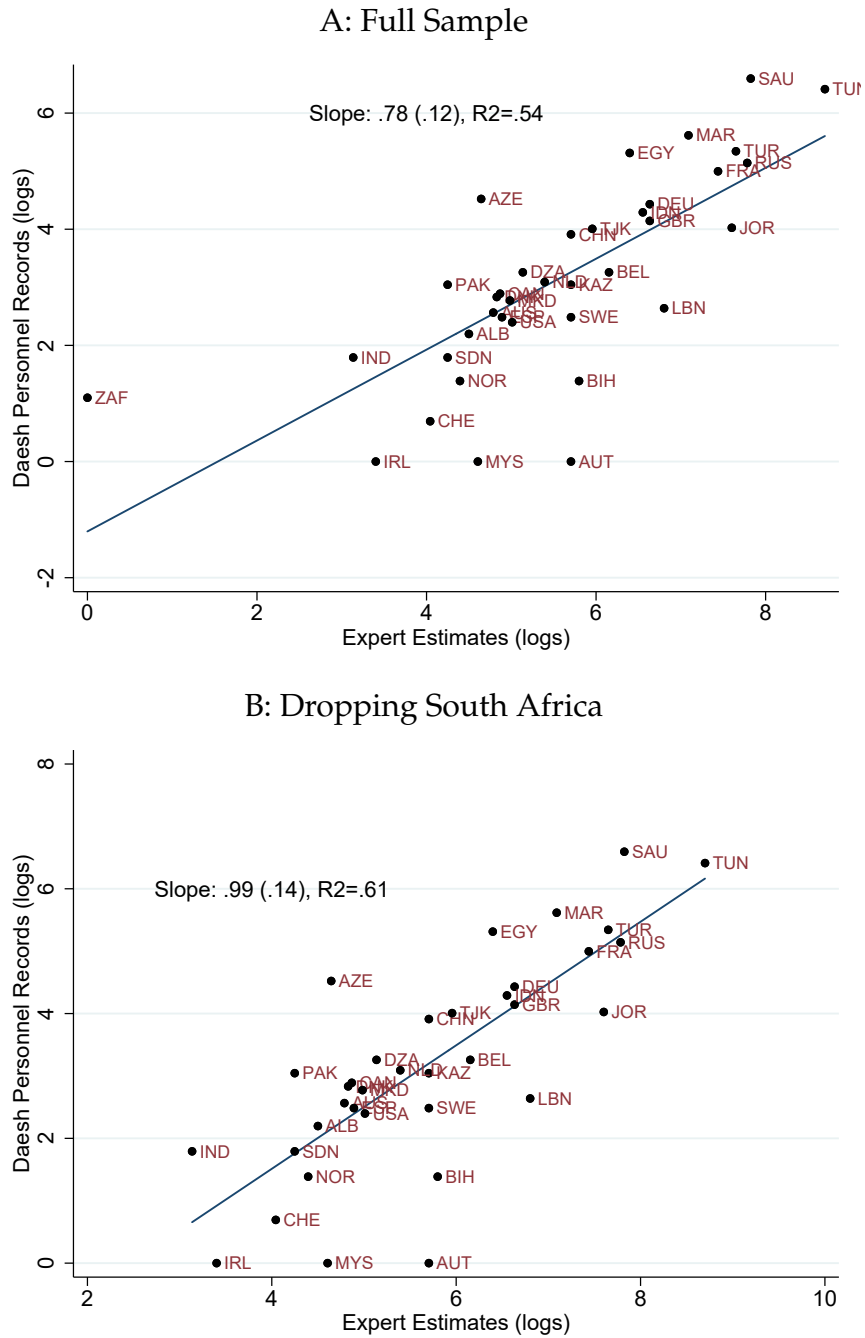
Figure A2: Comparison Between Daesh Personnel Records and Expert Estimates

Note: This figure plots the log number of Daesh recruits from our personnel records against the numbers from expert estimates (used in Benmelech and Klor (2018)). We consider all countries with recruits in panel A and all countries minus South Africa (ZAF, an outlier) in panel B. This figure is discussed in Section 2.2.

A: Distance and Travel Cost
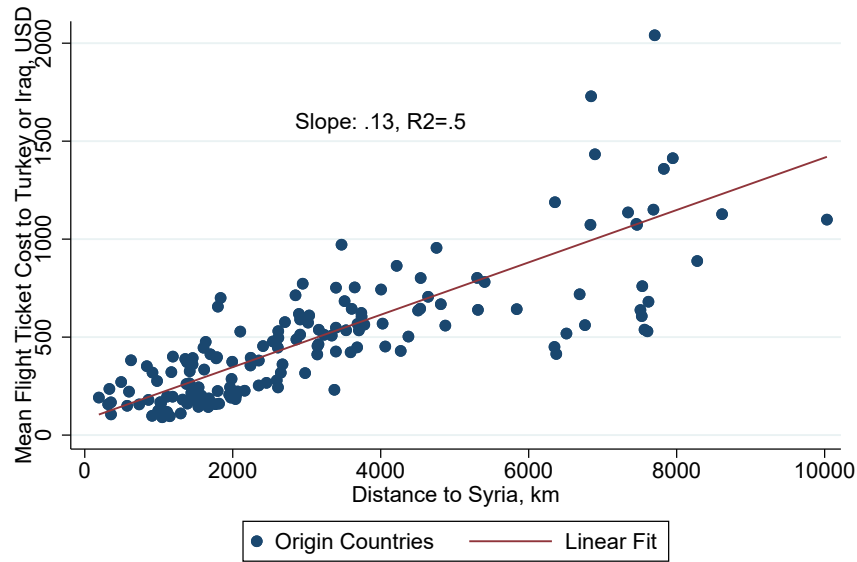
Note: We use the minimum of the travel cost to Turkey and to Iraq. This means we use the travel cost to Iraq only for Ethiopia, Ghana, Mozambique, Myanmar, Oman, Qatar and Trinidad and Tobago

B: Distance and Visa-Free Travel, All Countries
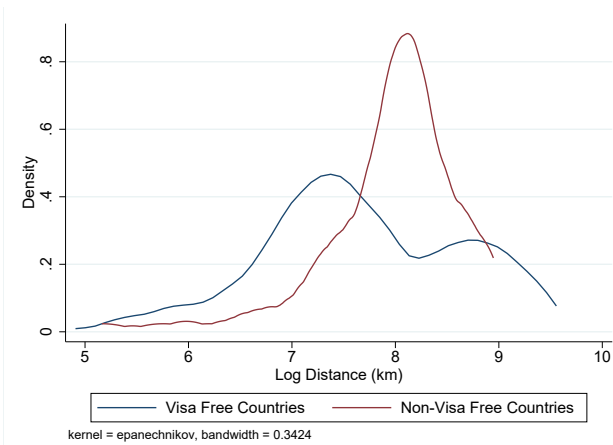
C: Distance and Visa-Free Travel, Countries with Daesh Recruits
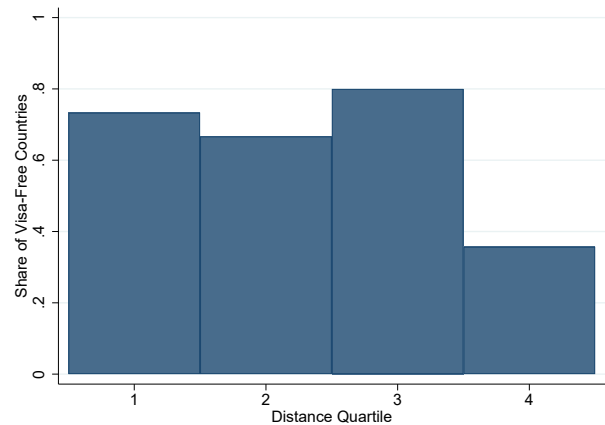
Figure A3: Correlations Between Geographic Distance, Travel Cost and Visa-Free Travel

Note: Panel A shows a scatter plot of travel cost to Turkey or Iraq vs distance to Syria. The travel cost is the mean economy flight ticket price from the origin country to Turkey or Iraq (whichever is cheaper) in 2013, based on OAG Analytics data. The construction of the travel cost variable is discussed in more detail in Section 5.1. Panel B shows the distribution of the geographic distance from a country to Syria, by whether or not residents from the country benefit from visa-free entry into Turkey. The data on visa-free entry was obtained from Ministry of Foreign Affairs, Turkey. Panel C shows the share of countries benefiting from visa-free entry into Turkey, by distance quartile (quartile 1 being the closest to Syria), for the sample of countries with Daesh recruits. This figure is discussed in Section 5.1.
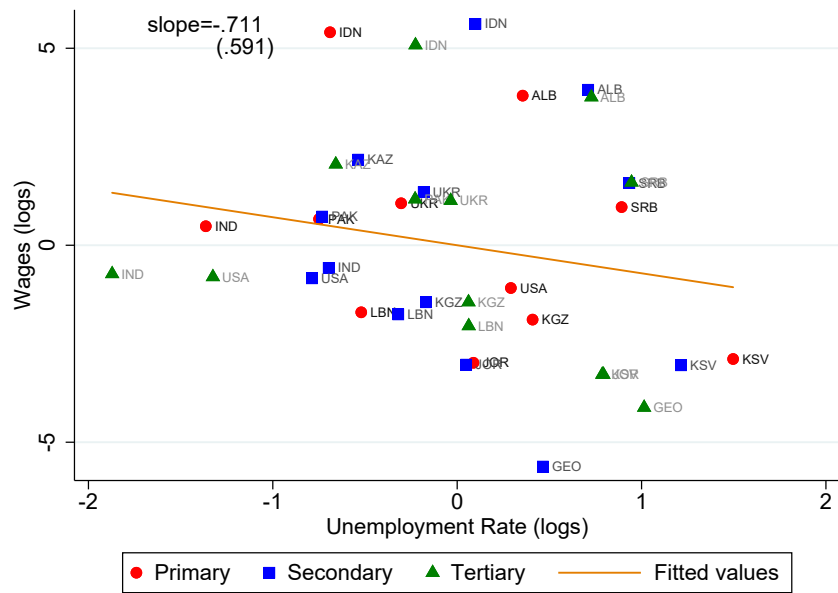
Figure A4: Wage and Unemployment Correlation

Note: This figure displays the scatter plot of log wages and log unemployment rates, after country and education-level fixed effects are partialled out. The sample includes countries that have at least one Daesh recruit and available wage and unemployment information. This figure is discussed in Section 5.4.

A: General Unemployment versus Muslim Unemployment

slope=1.107
(.265)
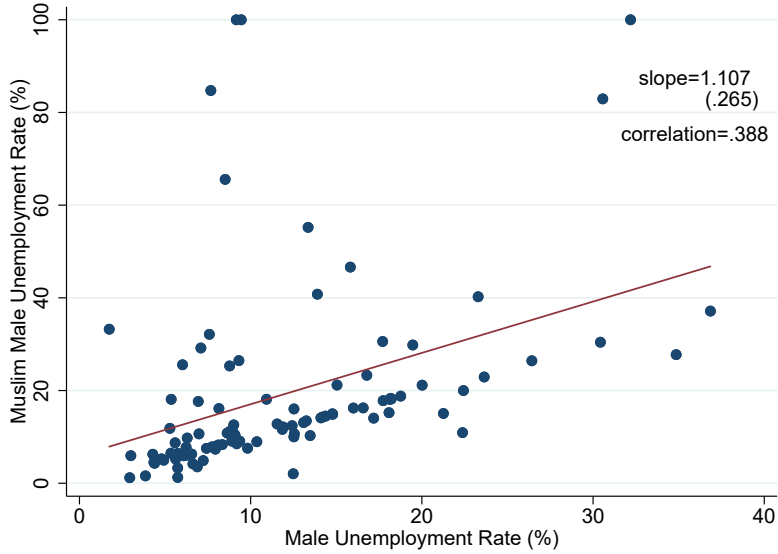
correlation=.388

B: Deviation Between General and Muslim Unemployment by Distance

slope=.042
(.028)

correlation=.09

● Deviation Btw Muslim Male and All Male Unemployment Rate
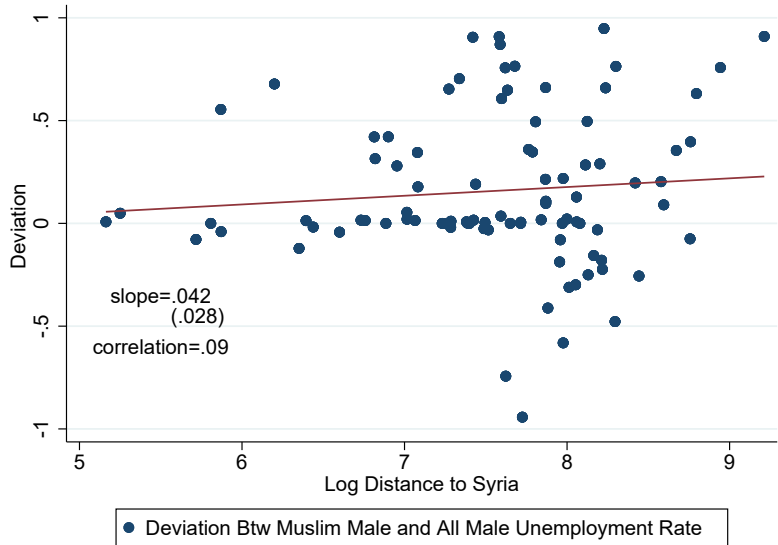
Figure A5: Comparing Different Unemployment Measures

Note: Panel A displays the correlation between Muslim male unemployment and the general male unemployment rate, in the Gallup survey data, for countries with a non-zero unemployment rate. Panel B shows that the deviation between these two unemployment measures is largely uncorrelated with distance to Syria. The deviation is calculated as (Muslim Male Unemployment Rate - General Male Unemployment Rate)/(Muslim Male Unemployment Rate). This figure is discussed in Section 5.2.

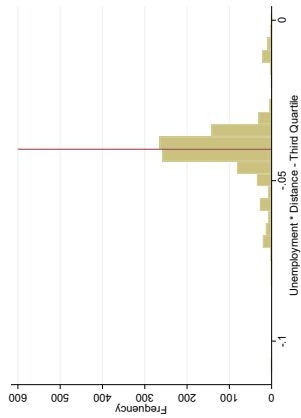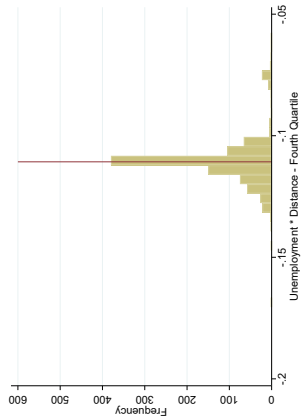I. Distribution of Point Estimates

Quartile 1   Quartile 2   Quartile 3   Quartile 4
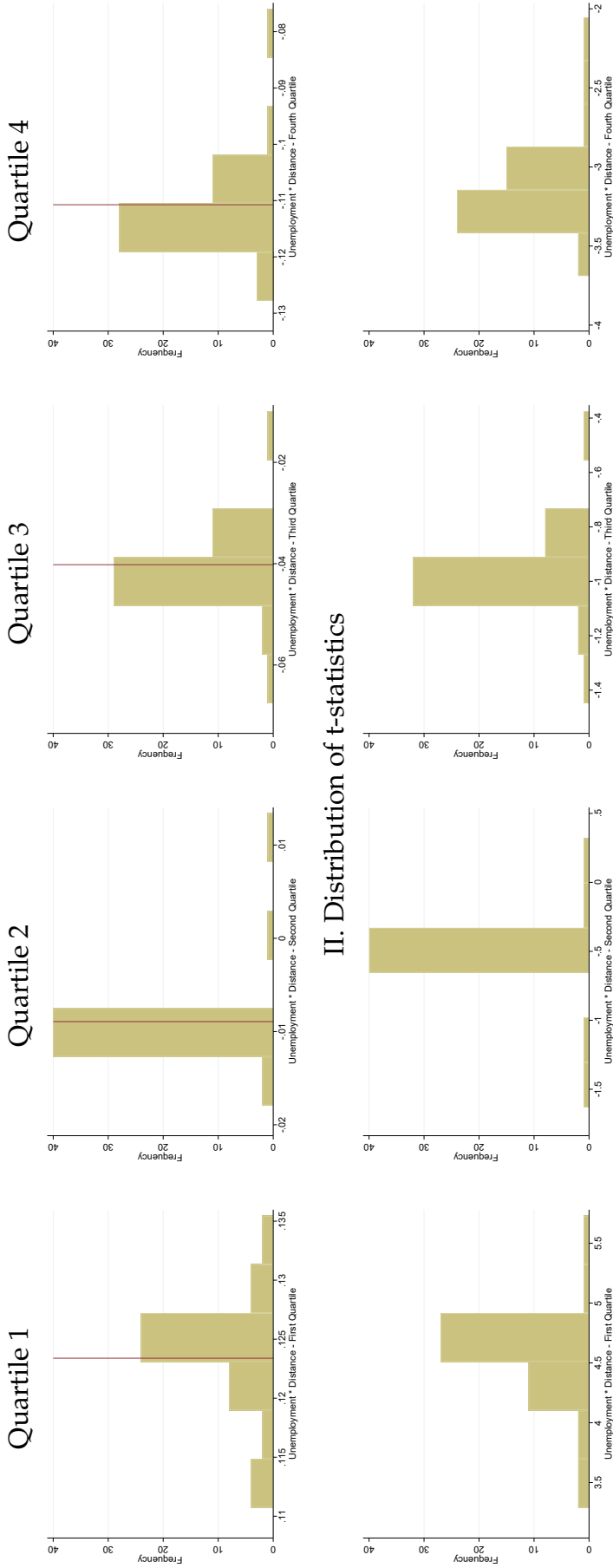

II. Distribution of t-statistics
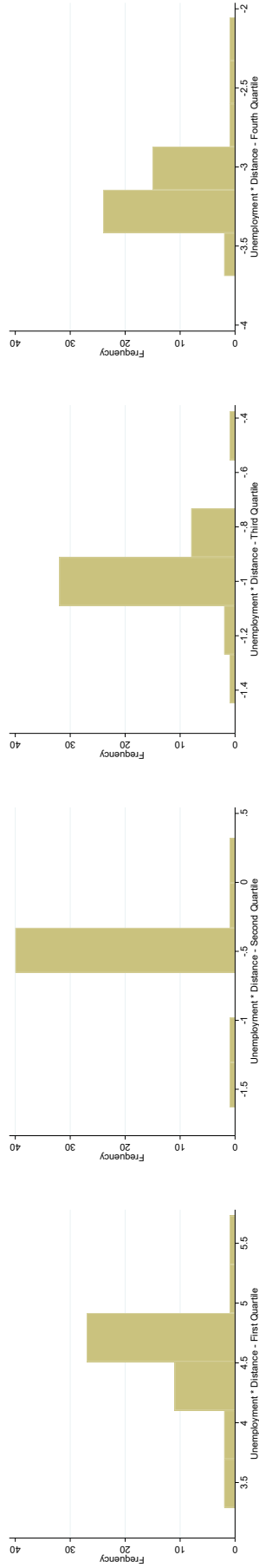
Figure A6: Distribution of Main Effect Estimates (1/2)

Note: These figures plot the distribution of point estimates β_i, and their associated t-statistics, on the unemployment*distance-quartile interaction term, from the regression $\ln N_{ce} = \alpha + \mu_c + \gamma_e + \sum_i \beta_i \ln U_{ce} \cdot quartile_i + \ln LF_{ce} + \epsilon_{ce}$, where we re-estimate the model 44 times, leaving one country out at a time. This figure is discussed in Section 5.5.

75

I. Distribution of Point Estimates
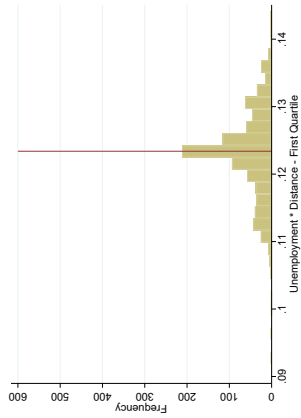
Quartile 1   Quartile 2   Quartile 3   Quartile 4
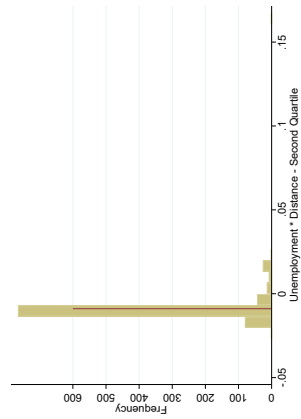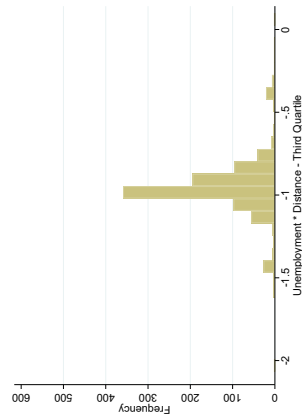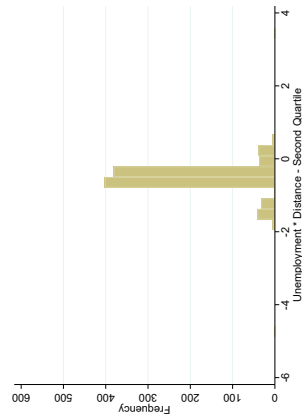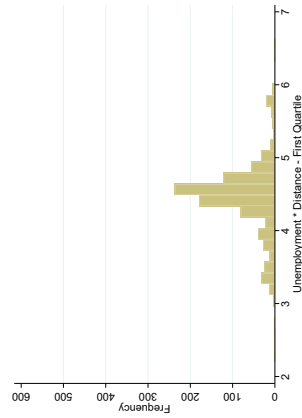
II. Distribution of t-statistics
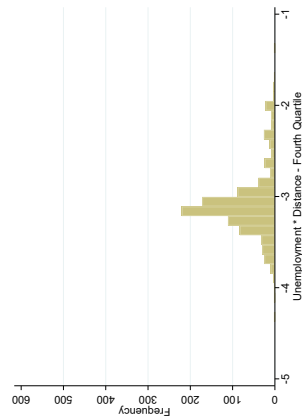
Figure A7: Distribution of Main Effect Estimates (2/2)

Note: This figure is identical to Figure A6, except that we leave out two countries in each iteration. This figure is discussed in Section 5.5.

76