

Supplementary Materials for: Remittances, Terrorism, and Democracy (Not for publication)

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A Countries in the data

Table A.1 lists how many times each country is observed in our sample.

Table A.1: Countries included in the data

Country	Number of years
Algeria	43
Angola	6
Argentina	35
Armenia	18
Australia	43
Austria	43
Azerbaijan	18
Bangladesh	34
Belgium	38
Bolivia	37
Brazil	38
Burundi	9
Cambodia	19
Canada	18
Central African Republic	16
Chad	8
Chile	18
China	31
Colombia	43
Congo	35
Costa Rica	34
Cyprus	37
Democratic Republic of the Congo	8
Dominican Republic	43
Ecuador	28
Egypt	36
El Salvador	37
Estonia	17
Ethiopia	31
France	38
Gabon	34
Georgia	16
Germany	23
Ghana	34
Greece	37
Guatemala	36
Guinea	26
Haiti	29

Table A.1: Countries included in the data

Country	Number of years
Honduras	39
India	38
Indonesia	30
Iran	22
Iraq	3
Ireland	23
Israel	43
Italy	43
Ivory Coast	21
Jamaica	37
Japan	30
Jordan	37
Kazakhstan	18
Kenya	43
Kosovo	5
Laos	28
Latvia	17
Lebanon	8
Lesotho	38
Macedonia	17
Madagascar	32
Malaysia	31
Mali	38
Mexico	34
Morocco	38
Mozambique	32
Myanmar	26
Nepal	20
Netherlands	43
New Zealand	41
Nicaragua	24
Niger	39
Nigeria	36
Pakistan	37
Panama	34
Papua New Guinea	34
Paraguay	38
Peru	23
Philippines	36
Portugal	38
Russia	19
Rwanda	37

Table A.1: Countries included in the data

Country	Number of years
Saudi Arabia	8
Senegal	39
Sierra Leone	33
Solomon Islands	13
South Africa	43
South Korea	37
Spain	38
Sri Lanka	38
Sudan	36
Suriname	36
Swaziland	26
Sweden	43
Switzerland	36
Tajikistan	11
Tanzania	18
Thailand	38
Togo	39
Tunisia	37
Turkey	39
Uganda	14
United Kingdom	26
United States of America	36
Uzbekistan	7
Venezuela	28
Yemen	22
Zimbabwe	22

B Robustness checks

We now consider several robustness checks. Unless noted, all models use the same controls as Model 3. Across every model we find that remittances have a pacifying effect on domestic terrorism within democracies; this effect is statistically significant in all but one specification. In most models, we also find support for our finding that remittances lead to an increase in domestic terrorism with autocracies, although this result is statistically significant in fewer models. In only one model do we find that the direction of the autocratic relationship is negative.

B.1 Alternative measures of remittances

Table B.1: Negative binomials regressions with different measures and transformations of remittances

	<i>Dependent variable:</i>				
	Domestic terrorist attacks				
	(15)	(16)	(17)	(18)	(19)
Log(Remittances per capita)	-0.01 (0.09)				
Log(Remittances per capita) \times Dem.	-0.19* (0.11)				
Log(Remittances per capita) \times Ano.	-0.004 (0.09)				
Sqrt(Remittances per capita)		0.42 (0.40)			
Sqrt(Remittances per capita) \times Dem.		-1.14** (0.42)			
Sqrt(Remittances per capita) \times Ano.		-0.57* (0.34)			
Remittances per capita, detrended			0.25 (0.44)		
Remittances per capita, detrended \times Dem.			-0.58 (0.46)		
Remittances per capita, detrended \times Ano.			-0.04 (0.53)		
Remittances/GDP				0.07 (0.10)	
Remittances/GDP \times Dem.				-0.25** (0.12)	
Remittances/GDP \times Ano.				-0.10 (0.10)	
IMF personal transfers					0.30** (0.14)
IMF personal transfers \times Dem.					-0.81** (0.22)
IMF personal transfers \times Ano.					-0.26** (0.13)
Democracy	-0.51 (0.41)	0.44 (0.40)	-0.20 (0.34)	-0.25 (0.34)	0.12 (0.32)
Anocracy	1.09** (0.38)	1.35** (0.38)	1.18** (0.30)	1.09** (0.31)	1.22** (0.27)
Military personnel	2.07** (0.64)	2.04** (0.66)	1.80** (0.63)	2.12** (0.64)	1.90** (0.44)
Population	4.00** (0.98)	4.09** (0.98)	4.03** (0.97)	4.26** (0.97)	5.06** (1.02)
GDP Growth	-0.03** (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.05** (0.01)
GDP per capita	0.97** (0.49)	0.98** (0.49)	0.99** (0.49)	1.04** (0.51)	1.53** (0.58)
Free Press	0.05 (0.22)	0.08 (0.21)	0.21 (0.21)	0.07 (0.22)	0.59** (0.19)
$\hat{\beta}_{\text{Remittances}} + \hat{\beta}_{\text{Remittances} \times \text{Dem.}}$	-0.21** (0.10)	-0.72** (0.34)	-0.33* (0.13)	-0.18* (0.10)	-0.51** (0.21)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	3,127	3,127	3,127	3,109	2,196
Log Likelihood	-5,910.69	-5,904.45	-5,910.49	-5,863.65	-4,562.53
θ	0.47	0.47	0.47	0.47	0.55

* $p < 0.1$, ** $p < 0.05$. Coefficients from negative binomial models. Standard errors in parentheses clustered on country.

The first set of robustness checks considers alternative ways to measure or transform remittances. In the main text, we used remittances per capita measured in constant USD/person. In Table B.1, we consider a log transformation, a square root transformation, a time detrended measure, a measure of remittances as a percentage of GDP, and a measure of remittances per capita from the IMF. The detrending model uses a regression of remittances per capita on a quadratic B-spline of the current year interacted with the country fixed effects to remove any time trend within remittances country-by-country. The quadratic specification was chosen based on the AICs of various polynomials.

In every model the combined coefficients $\hat{\beta}_{\text{remittances}} + \hat{\beta}_{\text{remittances} \times \text{Dem.}}$ are negative and statistically significant at a conventional level. Likewise, while we do not find a significant relationship between remittances within autocracies in the first four models, the coefficients in Models 16-18 are positive and mostly inline with the main results. Only in Model 15 do we find a negative relationship within autocracies, but this coefficients is very close to 0 and the AIC suggests that the main model with two-way fixed effects (Table 2, Model 3) is preferred.

B.2 Alternative measures of democracy

In this section, we consider alternatives to the democracy/anocracy/autocracy dummies presented in the main text. Specifically, we consider a specification that uses each observation’s polity score and polity score squared and one based on V-Dem where we define democracy using the top two categories from their levels measure: “Electoral democracy” and “liberal democracy.” The remaining regime types in this measure are “electoral autocracy” and “closed autocracy.” We use closed autocracies as the omitted category. The V-Dem and polity-based dummies correlate highly (Spearman’s ρ of about 0.83). These results are presented in Table B.2.

For the quadratic polity score we see that a positive and significant effect in the strongest autocracies (polity scores -9 and -10). For most anocracies and democracies we find a

Table B.2: Negative binomials with different measures of democracy

	<i>Dependent variable:</i>	
	Domestic terrorist attacks	
	(20)	(21)
Remittances per capita	-0.40** (0.17)	0.13 (0.12)
Remittances per capita \times polity	-0.02** (0.01)	
Remittances per capita \times polity sq.	0.005** (0.002)	
Remittances per capita \times Elect. Auto. (V-Dem).		-0.45** (0.17)
Remittances per capita \times Demo. (V-Dem).		-0.43** (0.16)
Polity	0.02 (0.02)	
Polity sq.	-0.02** (0.005)	
Electoral autocracy (V-Dem)		-0.28 (0.30)
Democracy (V-Dem)		-0.60* (0.34)
Military personnel	2.07** (0.68)	2.15** (0.66)
Population	4.13** (1.03)	4.67** (1.01)
GDP Growth	-0.03** (0.01)	-0.03** (0.01)
GDP per capita	1.10** (0.51)	0.88* (0.49)
Free Press	0.07 (0.21)	0.09 (0.22)
Country Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	3,127	3,185
Log Likelihood	-5,927.89	-6,034.56
θ	0.46	0.45

* $p < 0.1$, ** $p < 0.05$. Coefficients from negative binomial models. Standard errors in parentheses clustered on country.

negative and significant relationship.

In the V-DEM model, the main results hold, although we note that the coefficient for remittances to non-electoral autocracies is positive, but not significant. However, we do see a strong, negative effect of remittances on terrorism within democracies. Beyond this, we also note that there is an equally strong and negative relationship between remittances and domestic terrorism within electoral autocracies. This interesting finding suggests that

the institutional variation within autocracies has an effect on how remittances are used. Specifically, the presence of elections, even within autocracies, may be enough for groups to move away from terrorism and toward legitimate politics. This trend matches some results by [Wilson and Piazza \(2013\)](#), who find that electoral autocracies are associated with less terrorism and they attribute that to the electoral system being a more attractive tool for politics than ineffective terrorism.

B.3 Alternative samples and dependent variables

In this section, we consider robustness checks based on changes to the sample and to how the dependent variable is measured. The results are reported in Table [B.3](#). Regarding the former, we first check whether the results hold when we restrict our sample to non-OECD countries. The reason for this check is that OECD countries receive roughly twice as many remittance per capita per year as non-OECD countries. While country-fixed effects control for some of the differences between OECD and non-OECD countries, we want to be sure that these rich states are not driving the main results.

Regarding the latter, we use the domestic terrorist attack data from [Enders, Sandler and Gaibullov \(2011\)](#), ESG hereafter) to code the dependent variable. Recall that we code attacks as domestic when the perpetrator nationality matches the attack location using the INT_LOG indicator within the GTD. Our approach correlates highly with the ESG approach, while allowing for the inclusion of more recent data. However, it is important to make sure that the use of one or the other aggregation method does not drive the main results.

Turning to the estimates in Table [B.3](#), we see that the main results continue to hold. Interestingly, the democratic effect appears to be much larger in the non-OECD sample than in the main results. Likewise, while the autocratic coefficient is not significant in Model 22, it is still positive and no much different than the in the main models. The results from using the ESG look very similar to the result in Table 2, although the combined coefficient on democracy is slightly smaller.

Table B.3: Alternative dependent variables and samples

	<i>Dependent variable:</i>	
	Domestic Attacks (main)	Domestic Attacks (ESG)
	<i>Non-OECD sample</i> (22)	<i>Full sample</i> (23)
Remittances per capita	0.12 (0.09)	0.21** (0.04)
Remittances per capita \times dem.	-0.92** (0.23)	-0.35** (0.08)
Remittances per capita \times ano.	-0.36** (0.10)	-0.28** (0.07)
Democracy	0.38 (0.33)	0.57** (0.23)
Anocracy	1.26** (0.33)	0.77** (0.17)
Military personnel	2.88** (0.72)	0.31 (0.47)
Population	3.67** (1.68)	3.62** (0.85)
GDP Growth	-0.04** (0.01)	-0.03** (0.01)
GDP per capita	0.95* (0.57)	1.73** (0.37)
Free Press	-0.07 (0.23)	-0.02 (0.19)
$\hat{\beta}_{\text{Remittances}} + \hat{\beta}_{\text{Remittances} \times \text{Dem.}}$	-0.80** (0.24)	-0.14* (0.09)
Country Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	2,451	1,293
Log Likelihood	-4,420.86	-4,274.81
θ	0.41	1.57

* $p < 0.1$, ** $p < 0.05$. Coefficients from negative binomial models. Standard errors in parentheses clustered on country.

B.4 Alternative modeling choices

In this section, we consider several alternative modeling choices. The results are reported in Table B.4. The first one we consider is a zero-inflated negative binomial. To specify the binomial component we follow advice from [Drakos and Gofas \(2006\)](#) and focus on the regime and media aspects by using democracy, anocracy, free press, and the lagged number of attacks along with a Mundlak-specification (i.e., group-level means in the binomial stage). The count specification uses the variables from Model 3 including country and year fixed effects. Here we see that the within-autocracy effect is positive and significant. A linear hypothesis test

Table B.4: Alternative specifications

	<i>Dependent variable:</i>			
	Domestic Attacks			
	<i>Zero-inflated neg. bin.</i>	<i>Pooled neg. bin.</i>	<i>Random effects neg. bin.</i>	<i>Mundlak Poisson</i>
	(24)	(25)	(26)	(27)
Remittances per capita	0.20* (0.10)	0.05 (0.16)	0.23** (0.08)	0.23 (0.22)
Remittances per capita \times dem.	-0.30** (0.14)	-0.44* (0.23)	-0.51** (0.10)	-0.60* (0.32)
Remittances per capita \times ano.	-0.17 (0.14)	-0.15 (0.16)	-0.15 (0.10)	-0.20 (0.29)
Democracy	0.09 (0.31)	1.25 (0.88)	-0.09 (0.21)	0.69 (0.46)
Anocracy	0.80** (0.30)	1.67** (0.76)	1.01** (0.17)	1.58** (0.46)
Military personnel	0.83 (0.57)	2.66** (0.49)	2.78** (0.36)	0.01 (0.90)
Population	4.33** (1.13)	1.01** (0.12)	1.33** (0.14)	5.60** (0.81)
GDP Growth	-0.02** (0.01)	-0.10** (0.02)	-0.04** (0.01)	-0.04** (0.01)
GDP per capita	1.01 (0.69)	-0.18 (0.16)	-0.26** (0.12)	1.36** (0.52)
Free Press	0.26 (0.22)	-0.39 (0.34)	0.50** (0.15)	-0.50 (0.38)
Constant		-15.06** (1.79)	-21.92** (2.31)	
$\hat{\beta}_{\text{Remittances}} + \hat{\beta}_{\text{Remittances} \times \text{Dem.}}$	-0.11 (0.12)	-0.38** (0.17)	-0.28** (0.07)	-0.37* (0.21)
Country fixed effect	Yes	No	No	Mundlak
Year fixed effect	Yes	No	No	Yes
Observations	3,127	4,032	4,032	4,032
Log Likelihood	-5,642.00	-7,223.76	-6,329.50	-50,701.85
θ	0.90	0.12	0.37	

* $p < 0.1$, ** $p < 0.05$. Regression coefficients. Ordinary (Model 27) or clustered standard errors in parentheses.

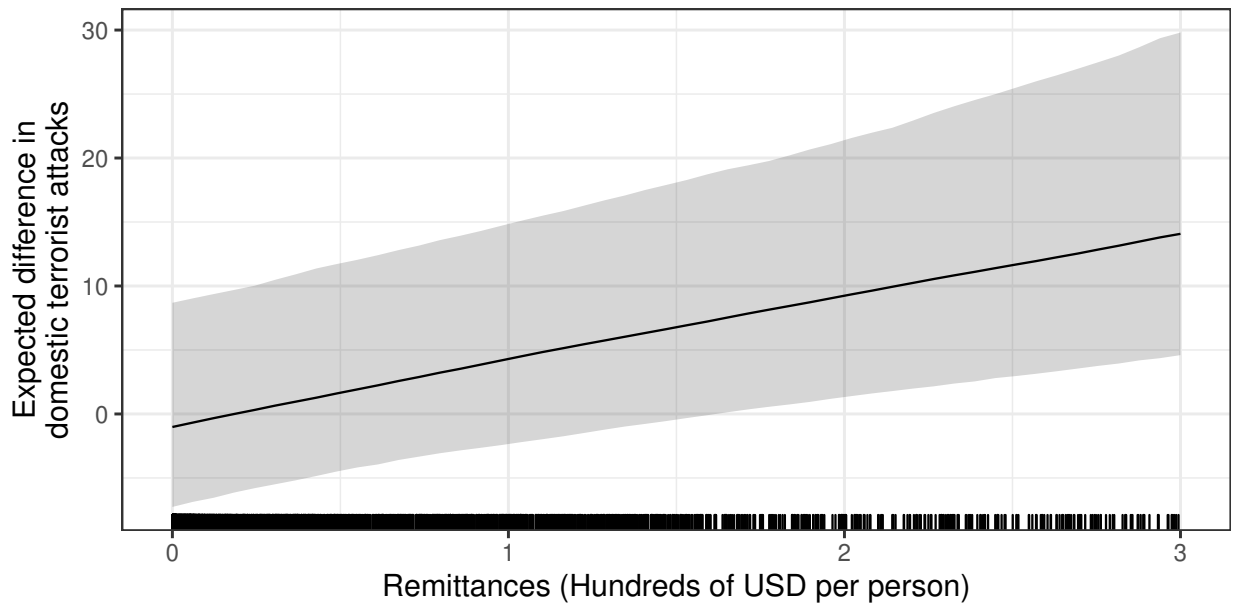
reveals that the within-democracy effect is negative but estimated imprecisely, and as such not significant at conventional levels. Likewise, the marginal effect estimates are similar to those presented in the main text but with more variance.

In the remaining models, we try alternatives to main modeling choice of a negative binomial regression with country dummies. To this end, we consider a pooled and country-random-effects model. The main results hold, although the within-autocracy effect is not significant in the pooled model. We also use a Mundlak-style Poisson model to make sure that the results are robust to both the distributional assumption and the inclusion of the all-zero countries (Crisman-Cox 2021; Wooldridge 2010, 648). The Poisson distribution will produce

consistent estimates even when the constant variance assumption is wrong, although the standard errors may be incorrect. As such we are primarily interested in the sign and relative magnitude of the estimates; they are roughly inline with the negative binomial estimates. The main results persist; the within-autocracy result is positive (although not significant at conventional levels), while the within-democracy effect is negative and significant at $p < 0.10$. Likewise, the estimates are very similar in magnitude to those reported in Tabel 2.

C Differences in terrorism by regime type

Figure C.1: Expected differences in domestic terrorist attacks by remittances and regime (Model 2)



Caption: Shaded areas represent 95% confidence intervals from a parametric bootstrap.

In this section, we further consider the results from Figure 1, by presenting the difference in expected terrorism between democracies or autocracies, rather than separating the estimated levels by regime type. While the difference does not directly speak to our hypotheses or research question it is separately interesting from the perspective of how vulnerable regimes are to terrorism at different values of remittances. At low levels of remittances there are

not strong differences in the amount of domestic terrorism in democracies and autocracies, but democracies, on average, may experience slightly more domestic terrorism. However, at values of about 150 USD/person and greater we see a significant difference where democracies experience less domestic terrorism. As remittances increase, the democratic advantage increases.

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