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Remittances, criminal violence and voter turnout

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ABSTRACT

How do financial remittances influence electoral participation in violent democracies? Previous work has focused on the 'substitution effect'; if recipients depend on remittances for welfare rather than the state, they become disengaged from formal political processes and less likely to vote in elections. However, while remittances can be used to substitute for state provision of welfare goods, they cannot fully substitute for public security. In this paper, we posit that the ability of governments to contain crime and violence conditions the effect of remittances on electoral participation. Specifically, we argue that high levels of crime can negate the substitution effect and make remittance recipients more likely to vote. Using municipality-level data from Mexico and individual-level data from Latin America and sub-Saharan Africa, we find that both the receipt of remittances and crime exposure significantly reduce individuals' propensity to vote and that aggregate remittances and crime rates are correlated with lower turnout. Remittances can, however, negate the turnout-suppressing effects of crime, and crime can negate the turnout-suppressing effects of remittances. Our results suggest a need to account for government provision of both substitutable and non-substitutable goods when investigating the effects of remittances on political participation.

KEYWORDS

Political participation; turnout; remittances; crime; violence

1. Introduction

How do international remittances complement (or challenge) the capacity of the state to provide security to the citizenry? Recent research has provided significant insights into the relationship between remittance inflows, electoral participation and welfare goods provision (Goodman and Hiskey 2008; Germano 2013, 2018), but the relationship between remittances and security remains understudied. This is an important topic when we consider that many remittance-receiving countries in the developing world are electoral democracies with weak state institutions that are troubled by criminal violence (LaFree and Tseloni 2006). While experiences of crime can act as an impetus for non-electoral forms of political participation (Bateson 2012), most studies find that crime and violence decrease electoral turnout by encouraging citizens to abandon formal channels of

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participation and take refuge in their private spheres (Trelles and Carreras 2012; Vivanco et al. 2014; Ley 2018).

Some scholars have posited a connection between crime and international migration. Hiskey, Montalvo, and Orcés (2014) have shown that weak state institutions and insecurity in Latin America help to drive emigration and thus remittances, and several studies have presented evidence that crime tends to reduce the amount of remittances sent (Vargas-Silva 2009; Meseguer, Ley, and Ibarra-Olivo 2017). Little is known, however, about the joint effects of remittances and crime on political participation. Analysing how remittances and crime jointly influence political behaviour in migrant-sending countries can help to shed light on the mechanisms underlying decisions to vote in democracies, where 'violent pluralism' is pervasive (Pérez-Arméndariz 2019).

In this paper, we investigate how crime and violence interact with remittances to influence individuals' decisions about whether to turn out to vote. We employ two approaches. The first uses municipal-level data from Mexico to investigate how the impact of remittance inflows on electoral turnout varies with different levels of violence at the subnational level. The second uses survey data from Latin America and Africa and explores whether individual perceptions of insecurity and crime victimisation influence the incentives of remittance-recipients to participate in elections. At both levels of analysis, we find that remittances negate the turnout-suppressing effects of crime and that crime negates the turnout-suppressing effects of remittances.

The paper is organised as follows. First, we discuss how remittances and crime can affect electoral turnout and advance a series of hypotheses about the interactive effect of remittance receipt and experiences and fears of crime on voting. Second, we use municipal-level data from Mexico to analyse the relationship between aggregate remittances, crime levels and turnout rates. Third, we turn to survey data from Latin America and Africa to explore the individual-level relationship between receipt of remittances, experiences and fears of crime and the propensity to vote. We conclude by discussing the implications of our findings and suggesting potential avenues for further research.

2. How can remittances and crime affect electoral turnout?

Many existing studies of the electoral consequences of crime and remittances focus on the case of Mexico. Previous research on this country shows that remittance-receiving individuals (or households) are less likely to go to the polls. Goodman and Hiskey (2008) found that voter turnout rates for the 2000 presidential election in Mexico were negatively associated with the percentage of households receiving remittances at the municipal level. They corroborated this finding with survey data, showing that those living in Mexican towns with high levels of emigration were less likely to participate in elections regardless of their involvement in non-political community organisations. Using survey data collected in ten rural communities in Michoacán, Mexico, Germano (2013) similarly found that those who are dependent on remittances were less likely to lobby officials for economic assistance and consequently less likely to punish the incumbent party in elections for poor economic performance. López García (2017, 2018) also found that remittances negatively affect turnout in Mexico using Americas Barometer surveys from 2012–2016 and municipal-level measures of turnout and remittance receipts. Beyond Mexico, working

papers by Dionne, Inman, and Montinola (2014) and Ebeke and Yogo (2013) show that remittances also reduce the propensity to vote in sub-Saharan Africa.

Mexico has also been the site of much of the existing research on the relationship between crime and electoral turnout. Trelles and Carreras (2012) demonstrated that homicide rates were negatively related to turnout rates in federal elections across Mexican municipalities. Using individual-level data, they found that Mexican citizens who fear crime and those who live in violent states were less likely to go to the polls. Ley (2018) showed that turnout rates (and intentions) are lower in those municipalities where criminal violence targets high-profile political actors. Her results suggest that when organised crime has the ability to influence politics (by murdering candidates, party actors or public authorities, or even financing political campaigns), voters' choices become less meaningful and cynicism becomes widespread. Consequently, they have fewer incentives to show up to the polls. Furthermore, violent crime increases the costs of voting by making it more dangerous to turn out and decreases the benefits by making electoral choices less meaningful. Receiving remittances will increase individuals' resources and their propensity to vote, which, as we explain further below, may help to counteract the negative effect of crime on the decision to turn out to vote.

The electoral consequences of financial remittances are usually explained with reference to the 'substitution effect.' As emigrants (via the remittances they send) become the main providers of public goods and safety nets, their friends and families back home no longer need to rely on the state for their welfare (or other public goods) and become insulated from fluctuations in the national economy. As a result, remittance recipients have fewer economic grievances against the state and fewer incentives to hold governments accountable through elections (Goodman and Hiskey 2008; Germano 2013, 2018). This line of reasoning is consistent with studies showing that international remittances are a substitute for state-provided goods and services (Abdih et al. 2012; Ahmed 2012, 2013; Doyle 2015). In sum, through the financial remittances they receive, migrant households become self-providers of public goods and services, and therefore more autonomous from (or less dependent on) the state. This substitution in turn lowers the quality of governance in migrant-sending countries. Governments are then free to divert funds from welfare goods such as health and education towards regime security and corruption because remittance recipients can buy welfare goods on the private market and so have less incentive to demand them from the government (Abdih et al. 2012; Ahmed 2013; Ebeke 2012; Easton and Montinola 2017).

Remittances might also be expected to affect political participation through a more direct channel: they increase the resources available to recipients that can be used to participate politically. Through this resource channel, remittances have been shown to increase levels of protest and the likelihood of taking part in a variety of political activities such as strikes, demonstrations and petitions (Dionne, Inman, and Montinola 2014; Maydom 2017; Escriba-Folch, Meseguer, and Wright 2018; Easton and Montinola 2017). Voting generally requires fewer resources than other forms of political participation, however, so the consensus is that remittances decrease electoral participation through the substitution effect while increasing non-electoral participation through the resource channel (Dionne, Inman, and Montinola 2014; Maydom 2017).

The existing research discussed above focuses on the relationship between remittances and substitutable public goods such as health and education that can either be provided by

the state or bought on the private market. Not all public goods are as easy to substitute as health and education, however; public security is much more difficult to substitute with market-based alternatives. Recipients may spend remittances in providing security for themselves through private means (Ley, Ibarra-Olivo, and Meseguer 2019; Doyle and López García 2019). Or, as Pérez-Arméndariz and Duquette-Rury (2019) show remittance-receiving communities with active home-town associations in Mexico are more likely to see the formation of vigilante groups. While private security and vigilante groups can help to improve feelings of security, remittances cannot substitute these for the full range of issues that weak state monopoly over the use of force entails, including the lack of rule of law. Hired guards cannot solve crime, legally imprison suspects or dismantle criminal gangs. Where crime and violence are endemic, the well-being of all sectors in society is likely to be affected.

Even when remittance recipients may be less likely to be victimised or to fear crime (as Doyle and López García (2019) show), recent work demonstrates that the incidence of crime and violence in origin countries (or municipalities) can discourage outmigrants from sending remittances back home (Vargas-Silva 2009; Meseguer, Ley, and Ibarra-Olivo 2017). Criminal violence therefore increases the need of remittances for coping with growing security, but at the same time reduces recipients' access to remittances. The actual incidence and the perception of crime can thus affect the assets and income and the well-being of remittance-receiving individuals and households.

In sum, our main argument is that remittance recipients are not immune to the government's inability to deliver security and implement the rule of law even though they may rely less on the state for welfare, are isolated from volatility in the national economy, and can provide some measure of private security for themselves.

As noted above, existing research shows that violence has negative effects on political trust and participation in elections (Ley 2018; Trelles and Carreras 2012). Crime exposure may, however, increase the incentives of remittance recipients to engage in the political process in order to influence government policies on the provision of public security. Even if recipients had previously been disengaged because they had fewer incentives to try to influence the allocation of welfare goods (Germano 2013), or they have better perceptions of public security than non-recipients (Doyle and López García 2019), they are still affected by pervasive crime. Public security is essential for remittance-receiving households to continue receiving income from abroad and preserving their income and assets. Exposure to crime will emphasise the importance of public security to remittance recipients and increase their incentives to vote to influence the provision of public security. Through this mechanism, criminal violence can negate the substitution effect and make remittance recipients more likely to turn out to vote, even while it makes non-recipients less likely to turn out. We therefore hypothesise the following:

H1: Remittances have a greater negative effect on turnout in less violent regions and countries.

H2: Remittance recipients are more likely to turn out to vote if they fear or have experienced crime.

H3: Non-recipients are less likely to turnout out to vote if they fear or have experienced crime.

3. Remittance flows, crime rates and turnout: aggregate-level evidence from Mexico

3.1. Data and empirical strategy

To analyse the impact of crime on the relationship between electoral turnout and remittances, we begin by analysing aggregate data at the municipal level in Mexico. As discussed earlier, Mexico is the site of much research on the consequences of remittances and crime on turnout, likely due to its high levels of both emigration and criminal violence. It has the world's second-largest emigrant population and is the second-largest remittance-receiving country. While Mexico's homicide rate is low by Latin American standards, levels of violence have increased in recent years, especially since 2006 when President Felipe Calderon declared war against drug cartels.[1] As levels of violence have grown, the incidence of other forms of crime (such as robbery, extortion and theft) have increased (Durán-Martínez 2018). On a sub-national level, Mexican states and municipalities vary significantly in terms of (i) electoral participation rates, (ii) the proportion of households receiving remittances, (iii) and levels of criminal violence. The country is therefore a good case for analysing cross-sectionally whether the impact of remittances on turnout varies according to actual levels of criminal violence.

To test our first hypothesis that remittances have a greater negative effect on turnout in less violent regions, we use municipal-level data collected from a variety of publicly available sources. Information on electoral participation rates was collected from the National Electoral Institute of Mexico (INE). Data on international remittances comes from the Mexican National Population Council (CONAPO) and is based on the 2010 Mexican Census conducted by the National Institute of Statistics and Geography (INEGI). Information on intentional homicides, defined as 'unlawful deaths purposefully inflicted on a person by another person' (UNODC 2013), was also collected from INEGI, and other socioeconomic and demographic characteristics of municipalities were obtained from INEGI and the National Council for the Evaluation of Social Development Policy (CONEVAL).

We use homicide rates as a proxy of the incidence of crime, since data on other types of crimes (such as robbery, theft, assault or burglary) may vary according to citizens' varying propensity to report crimes to state authorities and differences in the classification and collection of crime statistics by state agencies. Since homicide rates are registered by health institutions, they are considered the most reliable cross-regional and -national measure of crime (Fearon 2011).

The dependent variable is municipal-level turnout in the 2012 presidential election, and the main independent variables are the proportion of households receiving remittances and the homicide rate in a given municipality.

Voter turnout in presidential elections measures the total number of votes cast in the 2012 presidential election divided by the total number of registered voters. It is a continuous variable that ranges from 0 to 100. Only votes cast by nationals who resided in the country at the time of the presidential election are considered. The average voter turnout for the 2012 presidential election was 64.7% (range: 0%–94.5%).

Remittance-receiving households measures the share of households in a municipality which reported having received remittances from abroad during the period 2005–2010.

Between 2005 and 2010 the average share of households (for all municipalities) receiving remittances was 6.52% (range: 0%–48.7%).

Rate of homicide measures the number of homicides per 100,000 habitants that occurred in the six months prior to the 2012 presidential election. The average homicide rate per 100,000 inhabitants in a given municipality was 10.31 (range: 0–291). It is important to note that the distribution of homicides rates varies greatly across municipalities and is highly skewed to the right. During the period under study, 50% of the municipalities exhibit violence levels under 2.35 murders per 100,000 inhabitants, whereas 25% of the municipalities included in the sample had homicides rates above 11.13.[2]

In the figures below, we plot municipality-level turnout in the 2012 presidential election against the proportion of households receiving remittances (Figure 1) and the rate of homicide (Figure 2). We can see that there is a negative relationship between the proportion of households receiving remittances and turnout rates. However, many of the data points do not fall along the trend line (Figure 1), indicating a high level of variance that is unaccounted for. Figure 2 shows that turnout rates are negatively associated with homicide rates although the regression slope is less steep and there is even greater variance.

The proportion of remittance-receiving households and homicide rates are our independent variables of interest, but we also control for a battery of political and socio-demographic variables that can affect voter turnout rates. We include a full description and summary statistics of the variables used in the municipal-level models in the Supplementary Material. All models also include state dummies to capture otherwise unobserved heterogeneity across Mexican federal states. To correct for heteroskedasticity, robust standard errors are used in all of the models.

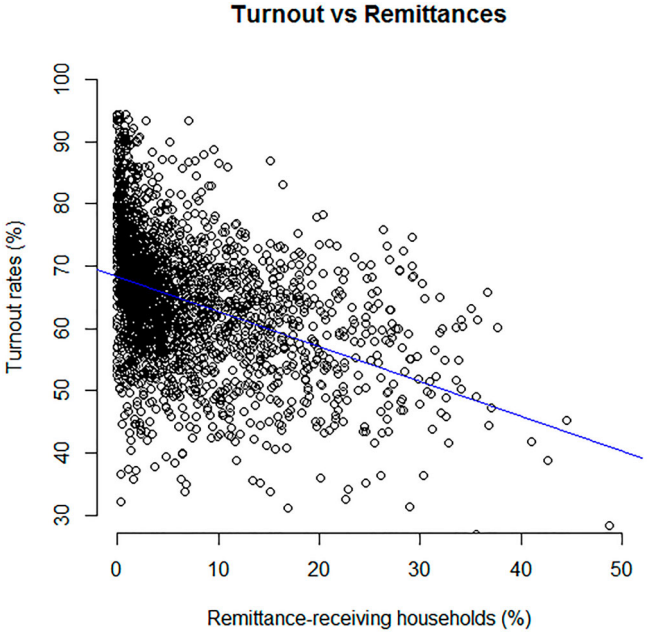

Figure 1. Remittances and turnout in Mexican Municipalities.

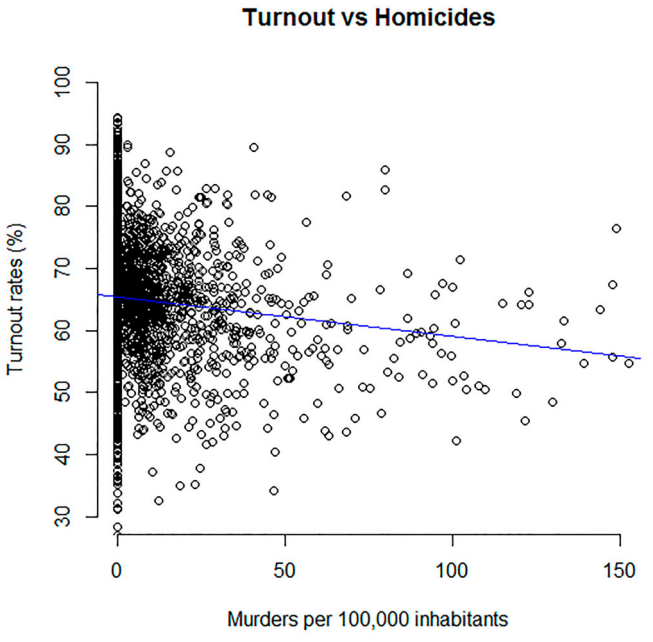

Figure 2. Crime and Turnout in Mexican Municipalities.

Our analysis uses an instrumental variable modelling approach. The reasons are twofold. Since the proportion of households receiving remittances in a given municipality is not randomly assigned, there is a risk that model estimates could be biased. It is also likely that a higher level of violence in a municipality could lead to higher emigration, which itself could lead to higher remittances. To correct for this, the proportion of households that received remittances in a given municipality in 2000 is used as an instrumental variable to enable the prediction of the random assignment of this variable.

3.2. Results

Table 1 reports the results obtained using a two-stage least squares (2SLS) estimation, in which the instrument for current remittance flows is the proportion of households that received international remittances in 2000.[3] The results show that the share of households receiving international remittances is negatively associated with turnout in the 2012 presidential election in a given municipality. The relationship is substantively important: increasing remittances by one standard deviation leads to a 3.7% decrease in turnout. This finding corroborates earlier findings that international remittances have a negative effect on electoral turnout in Mexico (Goodman and Hiskey 2008; Germano 2013; López Garcia 2018). We can also see from Table 1 that the homicide rate is negatively related to voter turnout rates in a municipality; again, this corroborates the findings of previous studies on the negative relationship between turnout and the level of violence in Mexico (Trelles and Carreras 2012; Vivanco et al. 2014; Ley 2018).

To examine whether the relationship between remittances and voter turnout varies with the level of criminal violence in a municipality, Models 2 and 4 interact the

Table 1. Linear regression models – Mexico.

	Dependent variable: Turnout rates in the 2012 presidential election					
	2SLS					
	(1)	(2)	(3)	(4)	(5)	(6)
Remittance-receiving households	−0.513***	−0.534***	−0.534***	−0.560***	−0.515***	−0.550***
	(0.038)	(0.039)	(0.043)	(0.044)	(0.038)	(0.044)
Homicide rate	−0.017*	−0.040**	−0.024**	−0.047***		
	(0.008)	(0.015)	(0.007)	(0.012)		
Remittances*homicides		0.003*		0.003*		
		(0.001)		(0.001)		
Homicide rate – 50th percentile					−0.126	−0.294
					(0.433)	(0.632)
Homicide rate – 60th percentile					0.231	−0.107
					(0.468)	(0.689)
Homicide rate – 70th percentile					−0.141	−0.460
					(0.508)	(0.812)
Homicide rate – 80th percentile					1.042*	0.349
					(0.519)	(0.843)
Homicide rate – 90th percentile					−1.691**	−3.628***
					(0.572)	(0.958)
Remittances* Homicides – 50th						0.012
						(0.098)
Remittances*Homicides – 60th						0.044
						(0.068)
Remittances*Homicides – 70th						0.039
						(0.080)
Remittances*Homicides – 80th						0.086
						(0.077)
Remittances*Homicides – 90th						0.245**
						(0.080)
Shared partisanship			0.531	0.543		
			(0.322)	(0.321)		
PAN mayor			0.188	0.146		
			(0.388)	(0.388)		
PRI mayor			−0.385	−0.380		
			(0.409)	(0.408)		
State effects	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES
Observations	2,430	2,430	2,013	2,013	2,430	2,430
R^2	0.607	0.607	0.686	0.687	0.609	0.610
Adjusted R^2	0.600	0.600	0.678	0.679	0.601	0.602
Residual Std. Error	6.685 (df = 2385)	6.682 (df = 2384)	5.455 (df = 1965)	5.443 (df = 1964)	6.673 (df = 2381)	6.669 (df = 2376)

Notes: Robust standard errors in parentheses. Coefficients significant at *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

proportion of remittance-recipient households with the homicide rate in a given municipality. The interaction term is positive and statistically significant, which indicates that the turnout-suppressing effect of remittances weakens as the homicide rate increases. It is important to note the substantive importance of this channel. Increasing a municipality's homicide rate by one standard deviation will reduce the negative impact of remittances on participation by 13%. These results hold after controlling for the party in government, the electoral strength of parties, and the shared partisanship of municipal mayors with state governors, as well as other socio-economic and demographic factors.

Given the significant dispersion of homicide rates across municipalities, we also conduct the above analysis separately for different groups of municipalities. To that end, we group municipalities into bins based on their homicide rates. As a baseline group, we use municipalities below the 50th percentile of homicides. The remaining

municipalities are then grouped into four bins. The results are reported in Models 5 and 6 in Table 1. One important finding of this exercise is that the effect of homicides on the link between remittances and turnout is fully driven by the municipalities in the highest homicide group. This is intuitive because we would expect the effect to be most prominent in the most violent municipalities. Furthermore, comparing the effect across different bins highlights that the documented impact of homicides is highly nonlinear, small in magnitude for most municipalities but highly important for the top of the homicide distribution. In particular, our results show that the effect of remittances on participation in the highest homicide bin is 45% smaller than in baseline municipalities. Thus, for these municipalities, the effect of violence on the link between remittances and electoral participation is more than three times larger than the effect we estimated in our pooled baseline specification.[4] Figure 3 shows the estimated effect of remittances on turnout rates in high, medium, low violent municipalities, based on their standard deviation from the mean.

Overall, results using data from the Mexican 2012 presidential election confirm that remittances have a negative influence on turnout rates in emigrants' home municipalities. However, this impact is reduced by the level of violence that a municipality experiences.

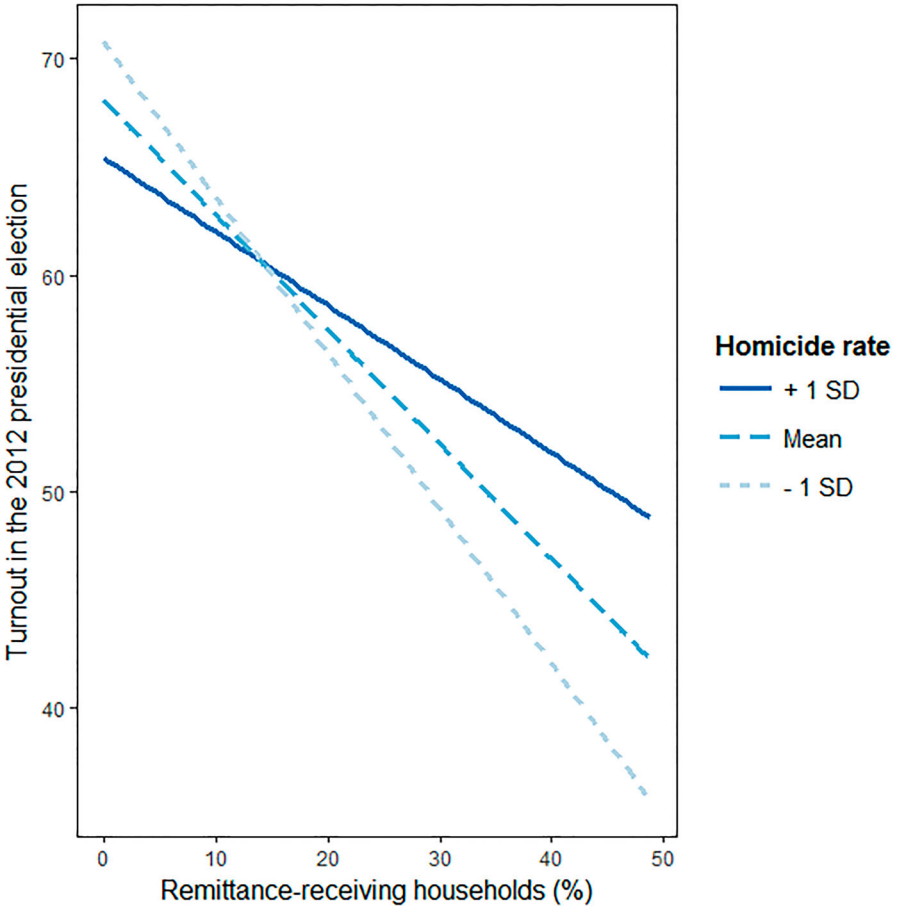

Figure 3. The effects of remittances on turnout conditioned by crime in Mexican municipalities.

This result is predominantly driven by those Mexican municipalities that experience the highest rates of violence.

4. Remittance receipt, crime victimisation and voting: individual-level evidence from Latin America and sub-Saharan Africa

4.1. Data and empirical strategy

To examine the micro-level drivers behind the aggregate-level relationship between remittances, crime and electoral turnout, we turn to survey data. One caveat when using survey data is that we do not know whether individuals began receiving remittances, or were exposed to criminal violence, before or after the elections. We thus restrict our analyses to surveys that were conducted within twelve months of an election. This means that we cannot use survey data from Mexico; no LAPOP-Americas Barometer survey has been ever conducted in Mexico in the twelve months prior to a national election and other surveys do not include all the requisite questions for our analysis.[5]

To test whether individual perceptions of insecurity and crime victimisation influence the incentives of remittance-recipients to participate in elections, we use data from Latin America and the Caribbean (LAC) and Africa. Latin America and sub-Saharan Africa contain important migrant-sending countries where violence is regularly used as a mean to electorally compete for power, including Mexico, Colombia, El Salvador, Guatemala, Honduras, Kenya, Jamaica, and South Africa (see Pérez Armendáriz 2019). Although they are the world regions with the highest levels of homicide (UNODC 2013), at the national level, there are important variations in terms of crime rates and the level of remittances received. These regions are therefore good cases for analysing whether the impact of remittances on turnout varies according to crime exposure.

LAC has an average annual homicide rate of more than 20 per 100,000 people, which is more than three times the world average. In the past 25 years, robberies in the region have tripled and more than 1 million people died as a result of criminal violence (The Economist, January 10, 2014). El Salvador and Honduras have high homicide rates that are similar to those during civil wars (over 70 in 2010). Violence is also widespread in Venezuela, Jamaica and Guatemala (with rates over 40 in 2014). Countries with below-average homicide rates include Chile (3.7 in 2010), Peru (5.4 in 2012) and Argentina (5.5 in 2012). Figure 4 shows homicide rates in Latin America by country.

While Africa has the second-highest homicide rate of world regions, most African countries have significantly lower levels of violence than countries in Latin America (UNODC 2013). The highest rates of homicide on the continent are found in South Africa (34.27 in 2015) and Lesotho (38.00 in 2010), but even these countries have much lower levels of criminal violence than those at the top of the distribution in Latin America. The countries with the lowest homicide rates on the continent, including Burkina Faso (0.71 in 2012) and Madagascar (0.62 in 2010), also have substantially lower levels of violence than low-crime states in Latin America.

Data from LAC was gathered from the 2010–2014 waves of LAPOP-Americas Barometer, and data from Africa was obtained from the 4th wave of the Afrobarometer conducted in 2008–2009. We employ these surveys because they include data on respondents' past participation in elections, status as remittance recipients and

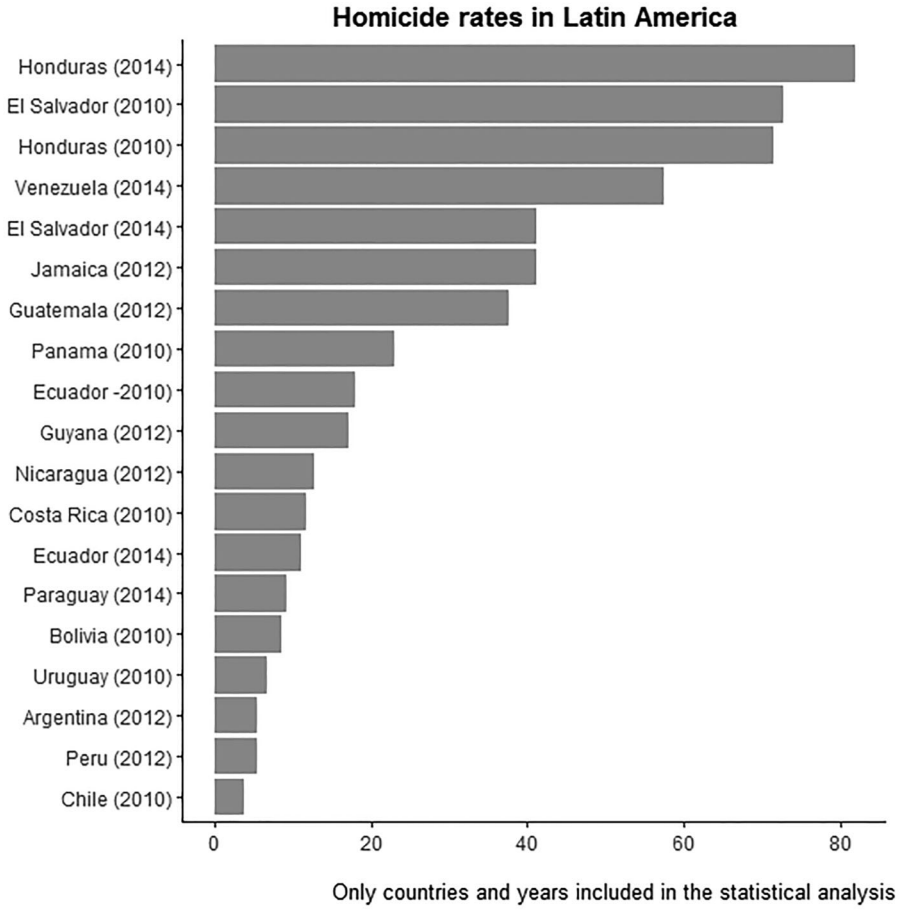

Figure 4. Homicide rates in Latin America and the Caribbean.

experiences and fears of crime and violence. As explained above, we limit the analysis to those countries in which elections were held in the twelve months prior to the survey, which excludes Mexico from the analysis. However, using data from countries other than Mexico can allow us to verify whether the joint effect of crime and remittances are specific to Mexico or apply more broadly. This is important considering that most studies on the political effects of international remittances are based on the case of Mexico.

Our main dependent variable is voting in national elections, coded 1 if respondents said they 'voted in the last national elections' and 0 if they did not vote. Figures 5 and 6 plot the proportion of respondents who claimed to have voted in the most recent national elections in the countries from which data was analysed. In Africa, reported turnouts range from 61% in Nigeria to 92% in Benin. Similarly, in Latin America, reported turnout ranges from 63% in Jamaica to 94% in Chile and Uruguay.[6]

The main independent variables for our study are individuals' status as remittance-recipients and their perceptions of and exposure to crime. Remittance-recipient status is registered as 1 if respondents answered affirmatively to the question 'Do you, or someone in your household, receive money from abroad?'; and 0, otherwise.

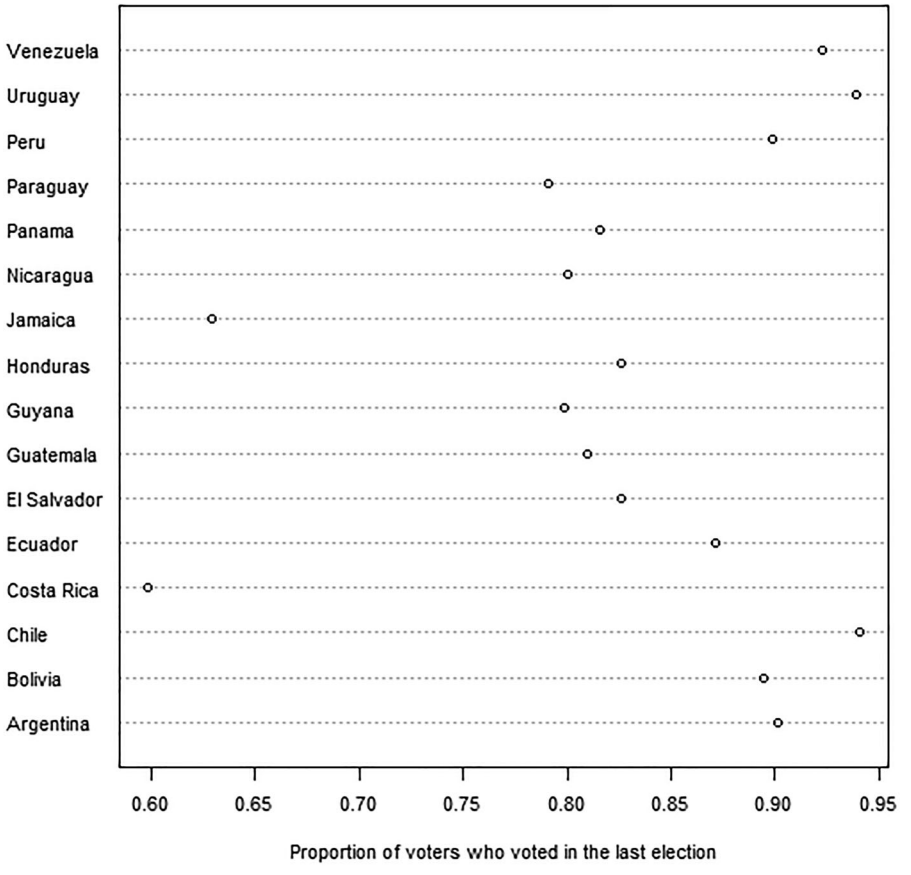

Figure 5. Reported turnout in Latin America and the Caribbean.

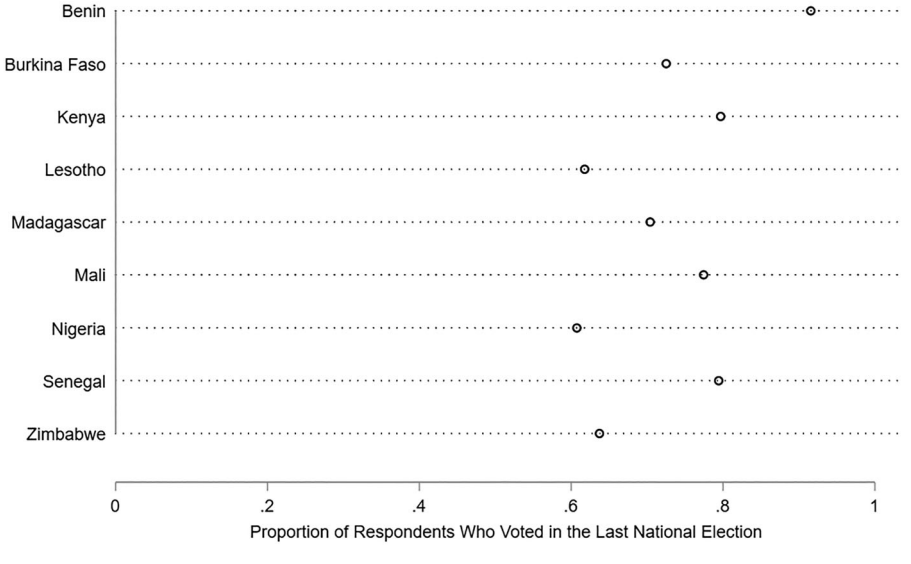

Figure 6. Reported turnout in sub-Saharan Africa.

Crime victimisation is coded from questions indicating whether the respondent herself or any of the members living in her household have been victims of any type of crime in the past 12 months. In LAPOP, the crime question includes 'robbery, burglary, assault, fraud, blackmail, extortion, violent threats or any other type of crime.' In Afrobarometer, the questions ask whether the respondent or their family had been 'physically attacked' or 'had something stolen' over the past year. Because the questions on crime victimisation in both LAPOP and Afrobarometer ask about events that occurred over the previous twelve months, we only include data from countries which held a national election in the year preceding the survey. Including earlier elections would mean that we would be modelling the effect of the experience of crime after an election on participation in that election. While the exclusion of data from countries in which the election was more than twelve months before the survey will help to limit this problem, we cannot be certain that crime experiences reported will necessarily have occurred before the election. Similarly, we do not know whether respondents first began to receive remittances before or after the election. Our results will therefore be biased towards finding no relationship between crime victimisation, remittances and electoral participation.

Perceived feelings of insecurity are coded from questions asking whether respondents believe that their neighbourhood is unsafe (LAPOP) or whether they have feared crime in their own home over the previous twelve months (Afrobarometer).

In addition to our key dependent variables of interest, our statistical models also control for a battery of socio-demographic characteristics as well as political opinions and behaviours that are likely to affect the propensity to vote. Socio-demographic controls include gender, age (and a square of age to capture non-linear effects), rural/urban residence, education, employment status, wealth and religiosity. Political controls include support for democracy, satisfaction with democracy, level of interest in politics, political efficacy, political awareness and attendance at community meetings. To control for citizens' evaluations of the national government's state capacity to ensure citizen security, we also include variables based on questions about respondents' confidence in the judicial system and the police. A full description of all the variables used in the models is available in the Supplementary Material.

The models estimated using data from LAPOP also account for a set of contextual variables which may affect aggregate turnout at the country level: homicide rates, compulsory voting with sanctions and gross domestic product per capita and remittance inflows as percentage of the country's GDP. Data for the country-level variables are taken from the International Institute for Democracy and Electoral Assistance (IDEA) and the World Bank's *World Development Indicators* and *Global Finance Indicators*. Unfortunately, there are too few countries in the Afrobarometer analysis to estimate multi-level models with country-level variables.

Figures 7 and 8 show the proportions of remittance recipients and crime victims in each country included in the analyses. In both the LAPOP and Afrobarometer samples, 34% of respondents reported that they or members of their household had been victims of a crime in the previous 12 months. 64% of LAPOP respondents thought their neighbourhood to be unsafe, while 35% of Afrobarometer respondents feared crime in their own homes. There were a significant number of remittance recipients in both surveys: 11% in the LAPOP sample and 21% in the Afrobarometer sample.

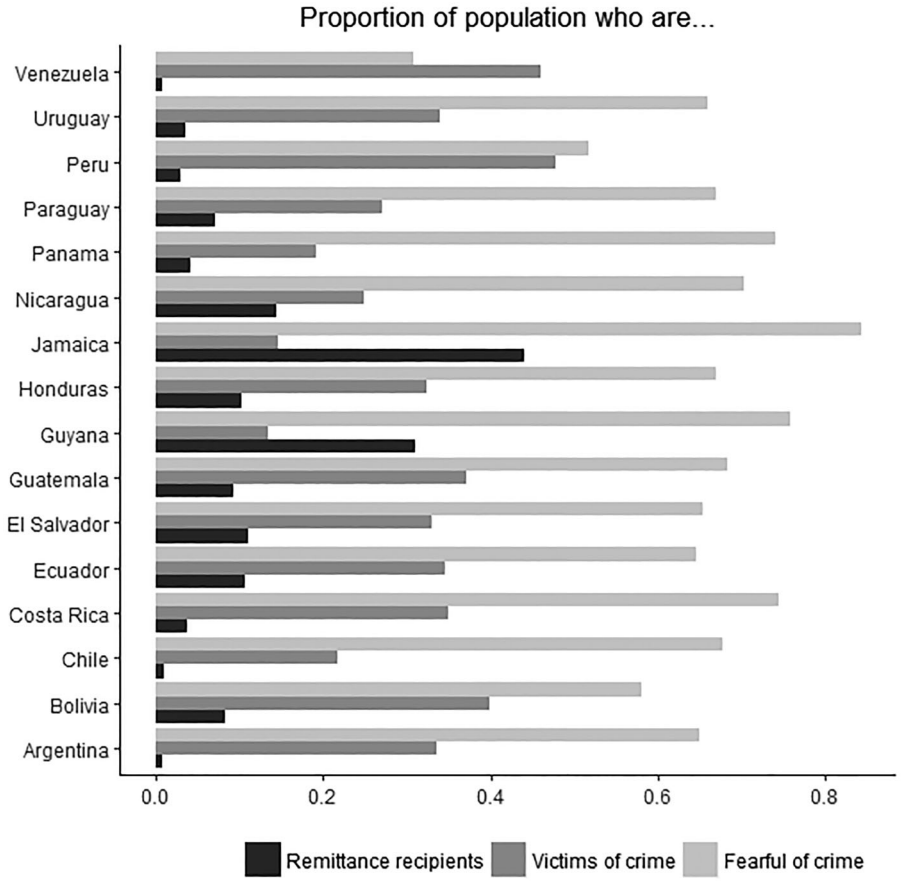

Figure 7. Remittance receipt and crime in Latin America and the Caribbean.

As our dependent variable of interest is a dichotomous variable – whether a respondent voted or not – we use a logit estimator. To mitigate the problem of 'selection on observables' which can bias estimates in analyses of survey data, we employ the Coarsened Exact Matching (CEM) method (Iacus, King, and Porro 2012). CEM is a nonparametric matching method that helps to reduce the imbalance between untreated and treated groups. In this study, the treatment group is made up of respondents who receive remittances.[7] Respondents were matched on the pre-treatment variables of age, gender, size of place of residence, and either years of education (in Latin America) or level of education (in Africa). By adjusting for the distribution of covariates between remittance recipients and non-recipients, matching can allow us to separate the effect of remittances from other factors shaping individuals' electoral turnout, and thus to create more valid comparisons. Using this method comes at a cost: observations that are not matched are discarded. The resulting sample is thus smaller, but the data is more balanced in the control variables between the treated and control observations. We also estimate all the statistical models using unmatched data to ensure that our results are not driven by the choice of matching method.

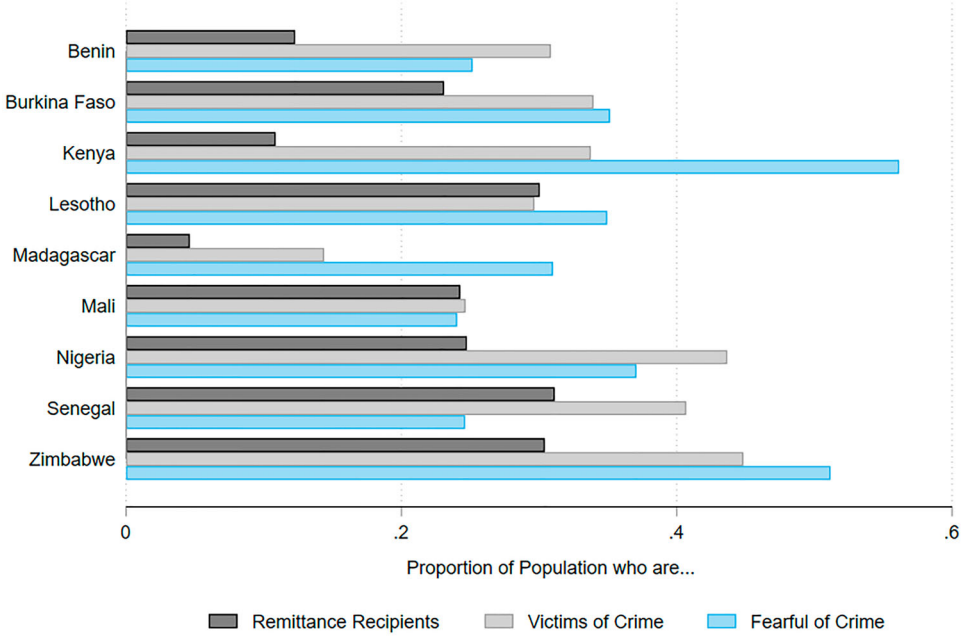

Figure 8. Remittance receipt and Crime in sub-Saharan Africa.

In the models using data from LAPOP, we use mixed-effects multilevel modelling with individual respondents nested in countries. Multilevel models allow us to control for important contextual factors that may bias the results and therefore allow for a more precise estimation of individual-level factors. We estimate random coefficient models, in which coefficients and intercepts vary across countries. By so doing, we condition the impact of remittances on electoral participation by country.

As there are only nine countries in our Africa sample, specifying full multi-level models with predictors at both individual and country levels would be impractical; the small number of countries would likely lead to biased results. It is nevertheless important to control for country-specific factors that might influence voting. We therefore employ two separate strategies to account for country-level variation: hierarchical random effects and country-fixed effects.

While we cannot be fully assured that these empirical strategies will prevent challenges to inference from selection effects and country-level variation, if similar results are found in multiple models in different regions then we can have greater confidence than if we only use one empirical strategy.

4.2. Results: Latin America

Table 2 presents a series of binary logistic regression models with country fixed effects estimating reported turnout at the individual level of analysis in Latin America. Models 1–4 show the coefficients obtained before matching, and Models 5-8 show the coefficients obtained after matching. In Latin America, the probability of voting does not vary between remittance recipients and non-recipients. Crime victimisation and perceptions

Table 2. Binary logistic regression models – Latin America.

	Dependent variable: Reported turnout							
	Unmatched				Matched			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance-recipient	0.981	0.967	0.981	1.137	0.979	0.960	0.979	1.159
	(0.065)	(0.080)	(0.065)	(0.112)	(0.065)	(0.080)	(0.065)	(0.112)
Victimisation	0.999	0.993			0.999	0.992		
	(0.047)	(0.050)			(0.047)	(0.050)		
Remittances*		1.041				1.055		
Victimisation		(0.129)				(0.130)		
Unsafe neighbourhood			1.027	1.055			1.055	1.089
			(0.045)	(0.048)			(0.046)	(0.049)
Remittances* Unsafe neighbourhood				0.804				0.777
				(0.133)				(0.134)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	20,476	20,476	20,476	20,476	18,808	18,808	18,808	18,808
Countries	16	16	16	16	16	16	16	16
Country effects	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Exponentiated coefficients. Standard errors in parentheses. Coefficients significant at *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

of insecurity in the respondent's neighbourhood are not significant predictors of the probability of voting either. To examine whether the probability that a remittance recipient votes changes with her exposure and perceptions of crime and violence, the models include a series of interaction terms. However, none of the interaction terms achieves statistical significance. That is, the effects of crime victimisation and fear of crime on the probability of voting do not vary across remittance recipients and non-recipients.

Since levels of crime victimisation or insecurity perceptions might not necessarily match actual levels of insecurity in the region (Dammert and Salazar Tobar 2017) we are also interested in examining whether variation in the homicide rate at the country level can explain variations in the propensity of remittance recipients to go to the polls. Table 3 presents the coefficients obtained using random coefficient models. As we can see, the probability of

Table 3. Random coefficient models – Latin America.

	Dependent variable: Reported Turnout				
	(1)	(2)	(3)	(4)	(5)
Remittance recipient	0.971	0.955	0.971	1.122	0.866
	(0.069)	(0.085)	(0.069)	(0.113)	(0.093)
Victimisation	0.998	0.992			
	(0.047)	(0.050)			
Remittance*victimisation		1.044			
		(0.130)			
Unsafe neighbourhood			1.027	1.055	
			(0.045)	(0.048)	
Remittance*unsafety perception				0.801	
				(0.133)	
Homicide rate (log)	2.343	2.335	2.353	2.303	2.566
	(0.502)	(0.501)	(0.502)	(0.503)	(0.489)
Remittance*homicide rate					1.760*
					(0.240)
Controls	YES	YES	YES	YES	YES
Observations	20,476	20,476	20,476	20,476	20,476
Number of countries	16	16	16	16	16

Notes: Exponentiated Coefficients. Standard errors in parentheses. Coefficients significant at *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

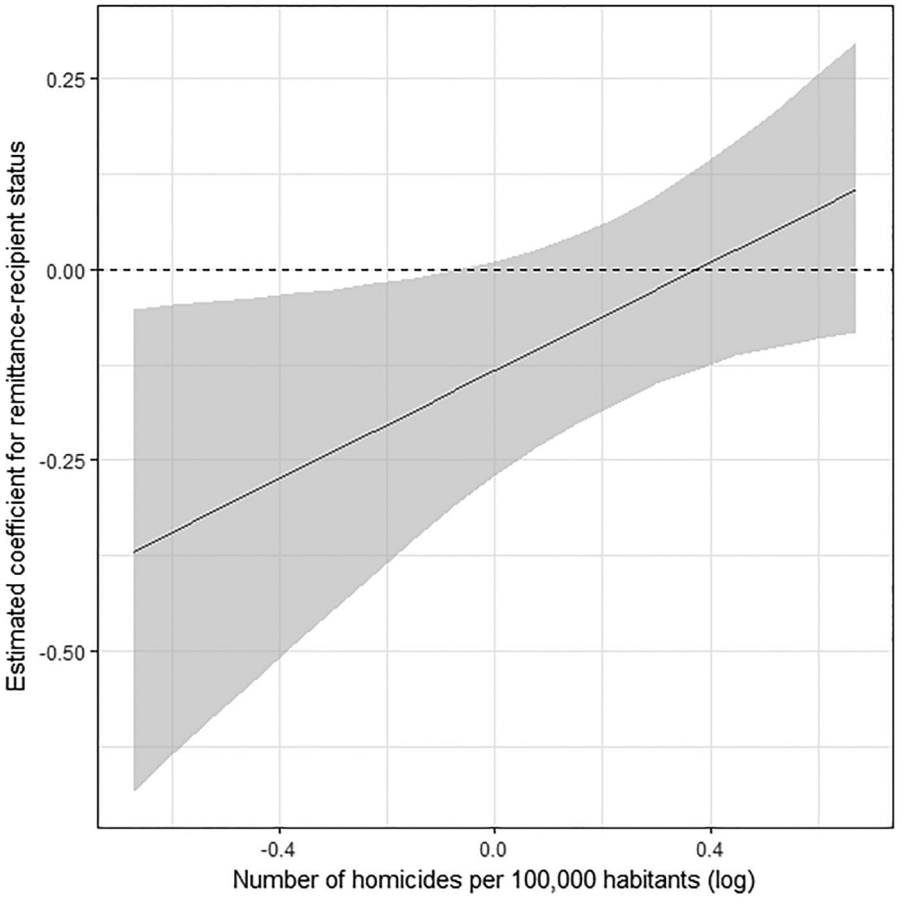

Figure 9. The effects of remittances on voting conditioned by national crime rates in Latin America.

voting does not vary with the homicide rate at the country level. However, the cross-level interaction term between remittance-recipient status and homicide rates at the country level is positive and significant. This indicates that remittance-receiving individuals who live in countries with higher than average levels of violence have a higher probability of turnout than remittance-receiving individuals living in countries with lower than average levels of violence. Figure 9 shows that with increasing homicide rates (along the x axis), the magnitude of the coefficient of remittance-recipient status on the probability of voting also increases (along the y axis). Overall, therefore, the evidence from Latin America is consistent with the above results at the subnational level on Mexico. The impact of remittances on turnout varies according to the actual levels of violence in migrants' home country (or municipality). This supports one of our key hypotheses and suggests that remittances have a positive effect on turnout in the violent democracies of Latin America.

4.3. Results: sub-Saharan Africa

In Table 4, we display the results of the models estimating voter turnout as a function of remittance receipts and experiences with crime as well as a full battery of control variables

Table 4. Effect of remittances and crime on voting in sub-Saharan Africa.

DV = Voted at Last National Election	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance	0.898	0.888	0.794	0.792	0.886	0.877	0.759	0.764
	(−0.062)	(0.060)*	(0.069)***	(0.068)***	(0.061)*	(0.059)*	(0.064)***	(0.064)***
Crime Victim	0.872	0.881	0.803	0.821				
	(0.053)**	(0.052)**	(0.057)***	(0.055)***				
Remittance * Crime Victim			1.369	1.336				
			(0.186)**	(0.180)**				
Feared Crime					0.907	0.936	0.814	0.855
					(−0.055)	(−0.056)	(0.057)***	(0.058)**
Remittance * Feared Crime							1.534	1.463
							(0.212)***	(0.201)***
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Matched?	No	Yes	No	Yes	No	Yes	No	Yes
Respondents/countries	7,743/9	7,691/9	7,743/9	7,691/9	7,746/9	7.694/9	7,746/9	7,694/9

Notes: Logit models with random effects (unmatched data) or fixed effects (matched data). Odds ratios reported with standard errors in brackets. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Description of controls and full regression tables available in the supplementary material.

using the Afrobarometer data.[8] Our key hypotheses are tested in columns 3, 4, 7 and 8, in which we model how the interaction between receiving remittances and crime experiences affects the likelihood of voting. While voting and being a victim or fearful of crime are separately associated with lower voting rates, the interaction term in both models is positive. This result implies that experiencing or fearing crime mitigates the negative effect of remittances on the propensity to vote. We can therefore reject the null hypothesis of no relationship between crime, remittances and voting.

While the Table 4 shows us the statistical significance, what is more important is the substantive impact of individual experiences with crime on the relationship between remittances and voting. Figures 10 and 11 plot the predicted probabilities of voting for hypothetical individuals based on the models presented in columns 4 and 8. Each bar

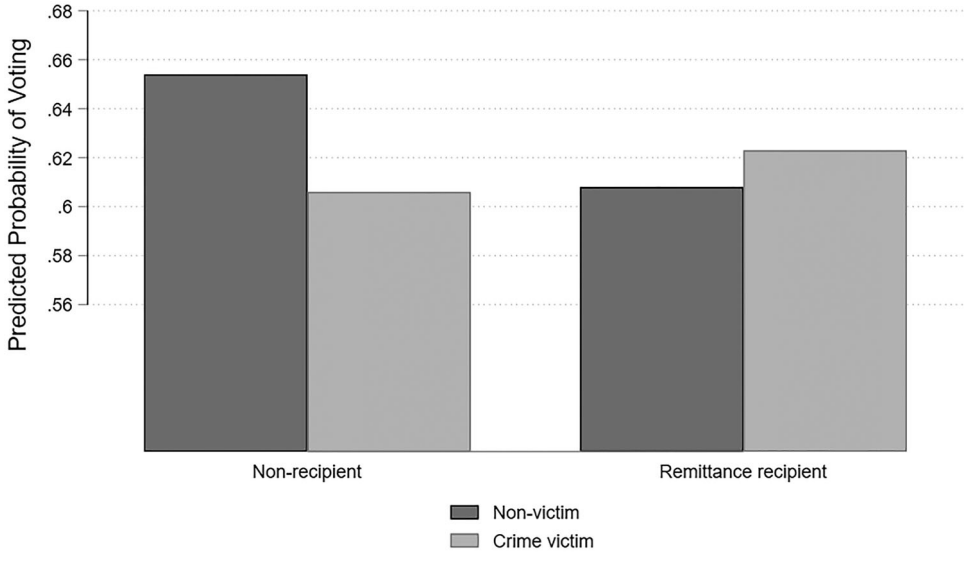

Figure 10. The effects of remittances and experiences of crime on turnout in sub-Saharan Africa.

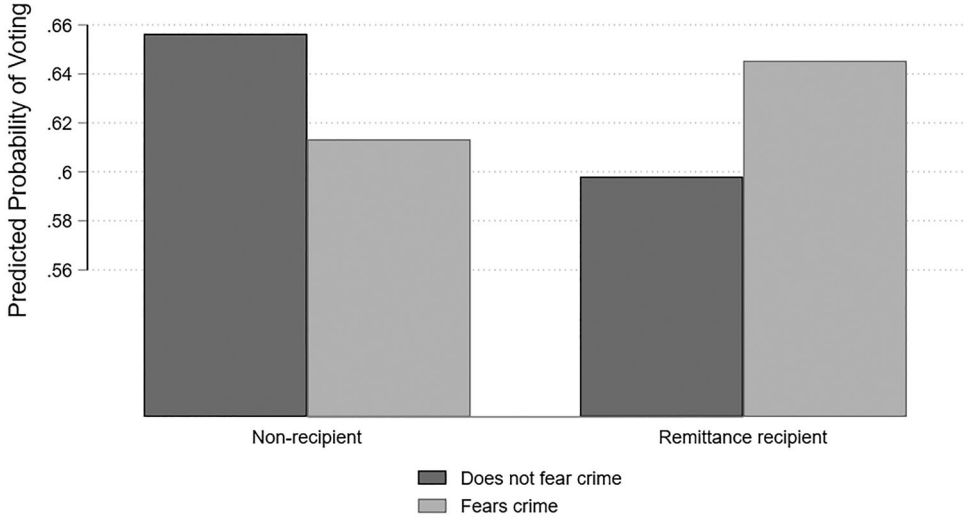

Figure 11. The effects of remittances and fears of crime on turnout in sub-Saharan Africa.

represents a 30-year-old woman with a secondary education, who lives in a rural area without internal plumbing, owns a radio but not a television or a car, is not formally employed, does not feel close to a particular political party, and has the mean average opinions on other questions included in the analysis. While each of the women are the same with respect to these qualities, they vary in their receipt of remittances, their experiences with crime, and the likelihood that they will have turned out to vote in the last national election.

Starting with the first two bars on the left of Figure 10, which represent the predicted probability of voting for those who *do not* receive remittances, we can see that being a victim of crime makes individuals significantly less likely to vote. The first bar shows that our non-remittance receiving woman with no crime experiences is the most likely of the four hypothetical women to have voted, with a predicted probability of 0.65. In contrast, the non-remittance receiving woman who suffered an assault or burglary (represented by the second bar) was less likely to have voted, with a predicted probability of voting of 0.61.

Turning to the two women who do receive remittances, we can see that the effect of experiencing crime on voting is altogether different. For remittance recipients, experiences of crime increased, rather than decreased, the propensity to vote. Our hypothetical remittance recipient who was not a victim of crime had a predicted probability of voting of 0.61, but her twin who was victimised had a slightly higher probability of 0.63. This is a small difference, but what is interesting is that experiencing crime had the opposite effect on the two remittance recipients compared with the two non-recipients.

By comparing these hypothetical women, we can also see that receiving remittances has a similar impact on the propensity to vote as being a victim of crime: both *reduced* the likelihood of voting by four percentage points. In addition, Figure 10 suggests that experiencing crime does not completely nullify the turnout-suppressing effects of remittances; the victimised remittance recipient was two percentage points less likely to vote that the individual who did not receive remittances and was not victimised.

Fear of crime has an even stronger effect on remittance recipients than non-recipients. While fear of crime has less of a negative effect on the propensity to vote on its own, the predicted probabilities plotted in Figure 11 indicate that remittance recipients who fear crime are substantially more likely to vote than those who do not. An individual with the same baseline characteristics as the remittance-receiving women mentioned above would be 4 percentage points more likely to vote if she reported fearing crime in her own home. If she did not receive remittances, fearing crime would decrease her likelihood of voting by 6 percentage points.

In Mexico and Latin America, the relationship between remittances and turnout is modulated by the general context of violence, but in Africa individual perceptions and experience of violence mitigate the impact of remittances on turnout. While the limited number of countries with data available precludes a full multilevel analysis, Figure 12 (homicide rate – remittance recipient voting) suggests that the turnout rate of remittance recipients is not related to the level of violence in African countries. When splitting the Afrobarometer sample into high- and low-crime countries, however, the coefficient of the interaction between individual experiences of crime and remittance-recipient status is significant in the low-crime countries but not in the high-crime countries (see Table S10). In Latin America, however, the interaction variable remains insignificant even after splitting the sample into quartiles according to the distribution of the homicide rate (see Table S11). We should bear in mind that, as discussed above, crime rates in Africa are significantly lower than in Latin America. While in Africa the safest countries (Burkina Faso and Madagascar) have under 1 homicide per 100,000 people, in Latin America the least violent democracies (Chile, Peru and Argentina) have between 3–6 homicides per 100,000 people. These observations suggest that individual experiences and fears of crime are more important in negating the remittance substitution effect in low-crime countries (regions), while the wider context of crime is more important in

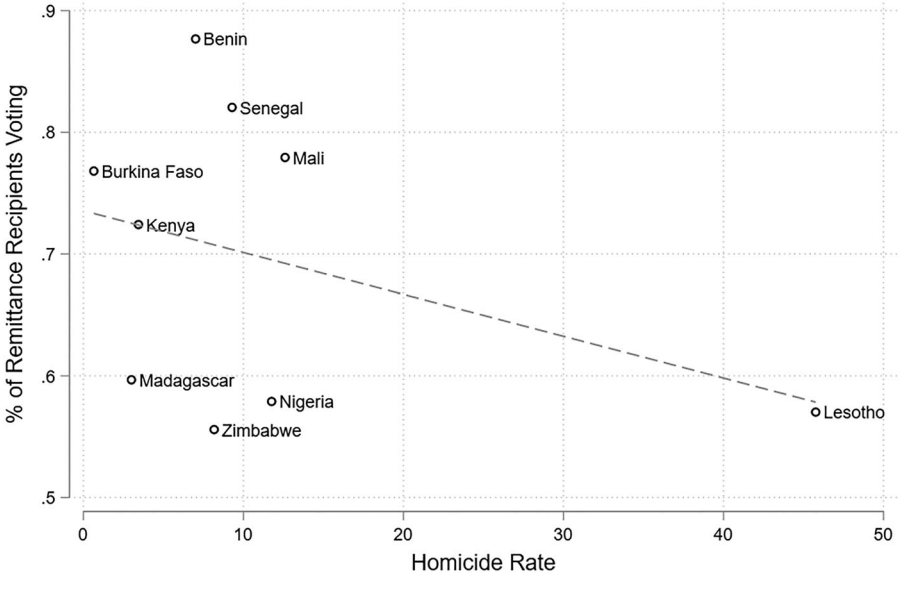

Figure 12. Homicide rates and remittance recipient voting in sub-Saharan Africa.

medium- and high-crime countries (regions). Future research could fruitfully explore these differences between Africa and Latin America in more detail and investigate the relationship between remittances, crime and voting in other regions of the world.

Overall, the results from the models using Afrobarometer data are consistent with those found at the aggregate level in Mexico and the individual level in Latin America described above: crime exposure makes remittance recipients more likely to vote but non-recipients less likely to vote. The results from Africa also confirm and extend the findings of existing studies of the relationships between remittances and voting and crime and voting test, which mostly test theories using data from Latin America. Indeed, our study is the first to investigate whether crime lowers electoral turnout outside Latin America; on this evidence we can tentatively accept that these findings can be generalised to sub-Saharan Africa.

5. Conclusion

There is consistent evidence that crime and violence may make citizens dissatisfied and less trusting of political institutions (Carreras 2013; Ceobanu, Wood, & Ribeiro 2010; Cruz 2003), and therefore less likely to vote (Trelles and Carreras 2012; Vivanco et al. 2014; Ley 2018). Similarly, previous studies have suggested that remittances can cause recipients to disengage from electoral politics by insulating them from economic conditions in their home country (Germano 2013, 2018; Ebeke and Yogo 2013; Dionne, Inman, and Montinola 2014). In this paper, however, we have shown that the turnout-suppressing effects of violence and remittances do not reinforce one another. To the contrary, our evidence suggests that crime and violence can bring remittance recipients out from their electoral isolation by reducing their sense of insulation from domestic politics.

These findings help to refine our understanding of the electoral consequences of international migration. Financial remittances are often conceptualised as a substitute for welfare and state-provided assistance, and this 'substitution effect' can foster disengagement in formal political processes amongst recipients. But while remittance recipients can afford to buy some level of private security for themselves, they cannot fully substitute for a lack of public security provided by a government. The failure of the state to contain crime and violence can discourage outmigrants from sending remittances back home (Vargas-Silva 2009; Meseguer, Ley, and Ibarra-Olivo 2017). Public security is essential for remittance-receiving households to preserving their income and assets. Although remittance recipients might have more resources to protect themselves against insecurity and feel safer than non-recipients, exposure to crime can shatter that illusion of security (or isolation from national events) and make them more likely to vote to demand security and protection from the state. However, it would be a mistake to think that remittances will necessarily strengthen electoral accountability in violent democracies. As shown by Doyle and López García (2019), members of remittance-receiving households in Mexico are less likely to punish incumbents for the occurrence of violence. Where violence is a feature of democratic politics, as it is in many parts of Latin America and sub-Saharan Africa, the ways in which migrant remittances interact with the meaning and incentives to participate in elections deserves further investigation (Pérez-Arméndariz 2019).

This paper is the first to examine the joint effects of remittances and crime on turnout and the first to study the effect of crime on voting beyond the case of Mexico. Our analysis is based on multiple sources of data from different countries and regions and used

evidence at the aggregate and individual levels of analysis. We analysed within-country variations in turnout, violence and remittances for more than 2000 Mexican municipalities and survey data on remittances, crime victimisation and voting from Africa and Latin America. The aggregate data from Mexico showed us that, as the rate of homicides in a given municipality increases, the impact of remittances on voter turnout rates in emigrants' home municipalities weakens. This finding is mainly driven by municipalities that experience very high rates of criminal violence. Survey data from other Latin American countries showed that the probability of voting among remittance recipients increases as the level of criminal violence in the country level rises. Data from Mexico and Latin America thus show that the context of violence negates the influence of remittances on turnout.

Results from Latin America suggest that the likelihood of remittance recipients to vote is not affected by individual experiences and perceptions of crime. However, survey data from Sub-Saharan Africa showed that remittance recipients who have been or fear becoming victims of a crime are more likely to vote. Our results were not completely clear-cut: in Latin America, the probability of voting for remittance recipients was not found to be affected by individuals' exposure to, or perceptions of, crime to a statistically significant degree. Nevertheless, we presented initial evidence that country-level crime rates were more important in affecting remittance recipients' political participation in medium- and high-crime contexts, while individual-level experiences and fear of crime are more important in low-crime contexts. Future work should explore these regional variations in greater depth.

Overall, the results of this study contribute to our understanding of how violent pluralism conditions the relationship between transnational migration and political development by illustrating how migrant remittances interact with violence in shaping citizens' incentives to participate in elections (Pérez Armendáriz 2019). They also shed new light on the substitution effect of remittances for state-provided goods. While it is true that many state-provided goods can be purchased on the private market using increased resources from remittances and thus may cause recipients to disengage from formal political institutions, certain public goods can only be fully provided by the state. Experiences and fears of crime in Africa and living in high-crime regions in Mexico and Latin America make remittance recipients more likely to engage with formal political processes because they are affected by the lack of state-provided public security. While crime usually decreases formal political participation by inducing fear in individuals and making the political process appear less meaningful, the opposite effect is found amongst remittance recipients. To fully comprehend the political causes and consequences of international remittances, we must attend to the ways in which crime affects political preferences and actions in migrants' origin countries (Bateson 2012; Ley 2018; Trelles and Carreras 2012; Phillips 2017).

Our paper has a number of limitations, and its results should be corroborated using data from other countries and regions and alternative research designs. Given data limitations, our analysis only considered participation in national elections. In various countries, however, local governments take on a significant level of responsibility for fighting crime. Hence, subnational data from other countries can help us to better understand the relationships of interest, especially in contexts where 'violent pluralism' persists at the local level. Further research could also use panel data to supplement the cross-

sectional analyses presented here, as well as survey data from Mexico to evaluate the question at the individual level in addition to the aggregate level. As new data becomes available, researchers could investigate the impact of the frequency and amount of remittances sent on voter turnout and how this relationship is affected by the context of violence as well as individual experiences and perceptions of crime.

Our paper contributes to the emergent literature examining how violent pluralism conditions the effects of remittances and crime on other aspects of political behaviour, including incumbent support, vigilante activities and non-electoral forms of political participation (see Pérez-Arméndariz and Duquette-Rury 2019; Doyle and López García 2019; Ley, Ibarra-Olivo, and Meseguer 2019). Furthermore, the influence of remittances on government spending on military and public security would be a worthwhile topic for investigation. Existing studies have found that remittances reduce redistributive social spending, increase health and education spending in democratic and well-governed states and increase military spending in autocracies (Ebeke 2012; Doyle 2015; Easton and Montinola 2017). The results of these undertakings will provide a clearer understanding of the impact of international remittances on political behaviour and public policies in origin democracies where violence and crime underpin political competition and outcomes (Pérez-Arméndariz 2019).

Notes

1. As of 2017, Mexico had an estimated homicide rate of 22.5 per 100,000 people. Although murder rates are at record highs in Mexico, they are still low in comparison to other countries of the region, such as Venezuela (89 per 100,000), El Salvador (60), and Jamaica (55.7) and Honduras (42.4).
2. These rates include all intentional homicides, not just drug-related homicides.
3. Results from an Ordinary Least Squares estimation are also reported in Table S9 in the Supplementary Material. Comparing this with Table 1, we can see that the remittances coefficient increases in absolute value after instrumenting. This is consistent with attenuation bias induced by the endogeneity of remittances and highlights the need to use an instrumental variable strategy. We therefore only report estimates obtained using 2SLS.
4. In all the specifications based on data aggregated at the municipal level, the instrumental variables pass the 'weak instruments' and 'Wu-Hausman' tests, which assess the strength of the instruments and the consistency of the 2SLS estimation as compared to OLS. The weak instruments test proves that the instrument has a strong correlation with the endogenous explanatory variable, whereas the Wu-Hausman test identifies whether the instrumental variable estimation is as consistent as the OLS method.
5. The latest two presidential elections in Mexico were held on 1 July 2012 and 2 July 2006. However, fieldwork for the 2012 and 2006 waves of the Americas Barometer took place between 25 January - 19 February 2012, and 6 -29 June 2006, respectively. An alternative survey is the Mexican Post-Election Study; however, this survey does not provide information on whether participants receive remittances. 'Las Américas y el Mundo' is another excellent survey project that gathers information on individual attitudes, interests, and practices on issues related to foreign policy and international relations, including international migration. It includes data on individual remittance-recipient status, socioeconomic characteristics as well as political practices, including turnout. Although the 2012 wave of this survey was held two months after Mexico's presidential election of 2012, it does not include questions on individual exposure to and perceptions of crime. Questions on

individual crime victimisation were added in subsequent waves of the 'Las Américas y el Mundo' survey.

6. Data on intentions to vote are also available in both survey projects, but vote intentions are prone to significant over-reporting. In the African survey sample, for instance, 87.6% of respondents claimed they would vote in the next election, while 71.8% of respondents claimed to have voted in the last election.
7. CEM has been used in a number of recent studies using survey data to analyse the political effects of remittances (Ahmed 2017; Aparicio, Meseguer, and Jaupart 2017).
8. We only show the coefficients of our independent variables of interest. The full regression table is available in the Supplementary Material.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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