Family Remittances and Vigilantism in Mexico

Contribution to JEMS Special Issue on "Migration and Drug-Related Violence in Mexico"

Abstract

We explore the role of workers' remittances in supporting vigilante organisations that emerged in reaction to rising criminal violence in Mexico. Research on remittances posits both a positive and a negative effect on collective action from the reception of remittances. On one hand, remittances sent by relatives abroad provide extra resources for political action at home. On the other hand, the reception of remittances makes recipients less prone to protesting, through a reduction in grievances. As a result, remittances can be associated with both an increase and a decrease of collective political activity. In this paper, we claim that both effects can co-exist and that the predominance of one mechanism or the other depends on the degree of penetration of remittances at the municipal level. Using data on the existence of vigilante organisations, we find that in most remittance-receiving municipalities, through a resource effect, remittance inflows increase the probability of observing self-defense organisations, but this probability declines at high rates of remittance penetration at the local level. Nonetheless, we observe an activation effect in a majority of remittance receiving municipalities. The paper contributes both to our understanding of international social networks as determinants of civilian action and to the research agenda on how workers' remittances shape political behaviour in home countries.

Introduction

While the research agenda on workers' remittances has been dominated by economists and their concerns about the developmental impact of remittances, political scientists are now exploring the consequences that this foreign income has on a variety of political outcomes in autocracies and new democracies (Kapur 2014). Some scholars have focused on exploring how the reception of remittances affects *incumbents'* choices of a variety of state policies (Ahmed 2012; Doyle 2015; Easton and Montinola 2017). A majority, however, put the emphasis on exploring how remittance recipients alter their electoral and non-electoral behaviour as a result of receiving remittances (Goodman and Hiskey 2008; Pfutze 2014; Pérez-Armendáriz and Crow 2010; Córdova and Hiskey 2015; Ahmed 2017).

Researchers think about the political consequences of remittances in a linear fashion: remittances are expected to *either* stimulate *or* deter various forms of political activity and collective action. Two mechanisms are usually explored. Remittances can incentivise different forms of collective organisation by providing recipients with extra financial resources to engage politically (Brady, Verba, and Scholzman 1995; Brancati 2014). However, since remittances raise household income and grant recipients greater autonomy from state policies and publicly provided goods (Adida and Girod 2011; Aparicio and Meseguer 2012; Duquette-Rury 2014; Doyle 2015), recipients tend to disengage from domestic politics, instead turning their attention to relatives abroad as providers of funds.

In this paper, we argue that these two mechanisms of political activation and disengagement following the reception of remittances are not exclusive. Rather, they are conditional on the level of penetration of remittances at the local level, after controlling for wealth. In other words, emigrants' remittances can both increase and diminish local political engagement

because these activation and disengagement effects are prevalent at different levels of remittance recipient households in a locality. We stipulate, test, and find that the political disengagement effect frequently attributed to an increase in remittance inflows is only evident at high densities of remittance recipient households: a high presence of remittances may discourage, rather than encourage, citizen mobilisation due to fewer grievances and greater self-sufficiency among remittance recipients. This is what we find in the case of self-defense organisations in reaction to the most recent surge of crime in Mexican municipalities.[1] Importantly, an activation effect is found in *a majority of* remittance-receiving localities. Therefore, in the case of vigilantism, remittances are overall associated with an increase in this type of collective mobilisation.[2] Our analysis shows that it takes a high degree of remittance penetration at the local level to demobilise recipients.

Together with Pérez-Armendáriz and Duquette-Rury in this Issue, who focus on collective remittances, this is one of the first papers that systematically gives evidence of emigrants' involvement with vigilantism via the resources they send back to their relatives. We prove that migrants' money has helped organise against crime domestically in a majority of remittance recipient municipalities. Thus, this paper contributes to the research agenda on the international determinants of civilian reactions to crime in violent democracies (as Pérez-Armendáriz describes in the Introduction to this Issue), besides contributing to the growing literature on the political

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[1] There is still very little research on how remittance flows are affected by the existence of crime, and only a handful exploring how crime affects remittances (e. g., Brito et al 2014; Meseguer, Ley and Ibarra-Olivo 2017).

[2] Our outcome variable is vigilantism. See López García and Maydom, this Issue, for an account of the impact of remittances on electoral turnout in the presence of crime.

consequences of remittances and emigration: to the best of our knowledge, this is the first paper that finds a *non-linear* relationship between family remittances and collective mobilisation.

Our paper proceeds as follows. First, we provide some background concerning crime and the emergence of vigilante organisations in Mexico. Second, we present the literature on remittances and collective action. From this discussion, we derive our main hypothesis. Next, we present our data and our empirical strategy, which consists in estimating the effect of remittances on the existence of self-defense organisations at the municipal level. We take care of the endogenous nature of remittances and use an instrumental variable approach to claim a *non-linear* relationship between degree of remittance penetration and the existence of vigilantism. We conclude with some reflections on the relevance of our findings, and suggestions for the research agenda ahead.

1. Vigilantism: Definitions, Explanations, and Self-Defense Organisations in Mexico

Vigilante organisations across the globe have caught the attention of anthropologists, sociologists, and political scientists alike. Given the various forms vigilantism can take – based on features identified by Johnston (1996) in his conceptualisation of vigilantism – Moncada (2017, 408) defines vigilante associations as groups that collectively use or threaten to use "extra-legal violence in response to an alleged criminal act." Most explanations about this phenomenon inevitably touch upon state capacity issues amid rising crime, arguing that vigilantism is a result of social injustice (Allen 1997) and a decrease of public confidence in the police (Abrahams 1987); a consequence of diminishing perceptions of state effectiveness (Rosenbaum and Sederberg 1974), as well as of state weakness or lawlessness (Ungar 2007; Asfura-Heim and Espach 2013; Sánchez-Talanquer 2016). Research at the micro-level confirms that citizens are more likely to express support for

vigilantism when they perceive law enforcement authorities as untrustworthy (Zizumbo 2017). Comparative evidence, however, suggests that explanations revolving around weak government are not entirely satisfactory, as vigilantism has been absent in relatively weak areas experiencing criminal violence (Phillips 2017).

In this regard, Phillips (2017) argues in favor of local economic inequality as a key explanatory variable of vigilantism. Inequality creates a demand for grassroots community vigilantism because lower income citizens feel insecure compared with wealthier neighbours, who are likely to have greater and better access to both private and public security. At the same time, economic inequality generates a distribution of labour that is useful for organising vigilante groups financed by wealthier citizens seeking private security, i.e. patron-funded vigilantism. In this way, Phillips (2017) provides a novel argument and contributes to a relatively less theorised topic in the extant literature on vigilantism: the funding of vigilante organisations. While grassroots community groups are self-funded or receive donations from neighbours or other sympathisers, patron-funded groups are financed by a specific entrepreneur or business leaders. Phillips' findings point to the specific nature of vigilantism from among the diverse forms of collective action. Unlike social movements that engage in street protests and are not as dependent on financial resources as on human resources and a wide net of supporters and sympathisers (McCarthy and Zald 2002), vigilante groups fighting organised crime require monetary resources for the maintenance and activities of these organisations and their members (Moncada 2017; Phillips 2017).

From a more historical perspective, Osorio, Schubiger, and Weintraub (2016) show that the cleavages and struggles that dominated Mexican politics in the early twentieth century shaped the formation of current vigilante organisations in Mexico. While focusing on the impact of

vigilantism on the control of crime, the authors emphasise the role of past armed mobilisation experiences in the formation, consolidation, and sustainability of cross-generational social networks that facilitate both access to information and the process of learning tactical and organisational skills – all of which are highly valuable for vigilante organisation. We propose to explore the role of remittances in financially supporting self-defense activities.

As documented by Santamaría (2016), armed vigilantes have been present in Mexico since the 1930s, but these groups have expanded since the beginning of the militarised war against drugs in 2006. Since then, Mexico has experienced a major increase in criminal violence,[3] which the Mexican judicial institutions have been both unable and unwilling to keep pace with and punish accordingly (Martínez 2017; Cárdenas 2016). In the face of such low judicial effectiveness and prevailing impunity, Mexican citizens lack incentives to report crime through institutional channels. Vigilantism has been one of the responses to such rising crime and impunity, particularly in the states facing the highest levels of criminal activity: Guerrero, Michoacán, Jalisco, and Veracruz (Osorio, Schubiger, and Weintraub, 2016). However, it was in 2013 that vigilante organisations quickly multiplied, and at least 68 municipalities – across 13 states – reported having such groups active within their territories (Reforma, 2013a). The surge in vigilantism was particularly concentrated in the state of Michoacán, where the federal government decided to unify them under a Rural Defense Force in 2014. These armed groups have patrolled their communities,

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[3] By the end of the Calderón administration, more than 70,000 people had been killed (Shirk and Wallman 2015) and over 22,000 had gone missing (Merino et al., 2015). The number of criminal organisations and their use of violence also multiplied (Guerrero 2012). In addition, the deployment of more than 50,000 soldiers to conduct counter-narcotics operations has implied increasing human rights violations (HRW 2011; Gracida 2016).

sometimes even substituting for municipal police forces; engaged in firefights with organised crime groups; and directly confronted federal and local armed forces.

Importantly, the surge in drug-related violence since 2006 has brought about a wave of international and national displacement.[4] Estimates on how many have migrated as a result of crime vary, but the evidence consistently indicates that criminal violence has increased displacement within and outside Mexico. Ríos (2014, 200) estimates that 264,692 Mexicans have changed residency as a result of the increase in drug-related violence.

In view of this security-motivated out-migration, lack of research on whether the existence of transnational connections can help understand patterns of collective action in response to crime in Mexico is surprising. Anecdotal evidence suggests that Mexican migrants living in California and elsewhere have helped fund self-defense groups in Michoacán (Fuentes and Rueda, 2014) and Guerrero. Some others even returned to their homeland to join such organisations (Becerra 2014). The best documented case is the vigilante groups standing up against the Knights Templar criminal organisation in the *Tierra Caliente*. Other migrants have returned to join the self-defense militias. For example, Luis Alberto Rivera returned to Coalcomán in the *Tierra Caliente* after 25 years in the U.S., "anxious to return to be a part of a solution."[5] As Lourdes Cárdenas documents, emigrants whose families had been hit by the Knights Templar organised through social media, sending money home to buy weapons, food, and medicines. Fidelina and her husband, based in San José,

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[4] Since this paper and Issue deal with international migration, we focus on international emigration and remittances and defer the study of the impact of internal displacement for later study.

[5] To fight the cartel, Mexican emigrants return to their hometowns http://www.latimes.com/local/la-me-michoacan-la-20140126-story.html (accessed 21 June 2018; access may be restricted in European locations).

sent money home so that their relatives could defend themselves: "[E]ach one helped their relatives the way they could. We sent money so that they could buy a AK-47 and a 9mm."[6]

Therefore, we systematically explore the role of emigrant relatives in helping to fund the activities of self-defense organisations. We focus on a particular aspect of transnational migrant interactions, namely family remittances, and their effect on local level vigilantism.[7]

2. Family Remittances and Collective Action

As mentioned above, in the specific case of self-defense organisations in Mexico, we have to keep in mind that recent emigration patterns have been partly driven by the security situation (Ríos 2014; Atuesta and Paredes 2015; Hiskey, Montalvo, and Orcés 2014). But exit does not necessarily entail the loss of voice. Frequently, emigrants continue to exert "voice" in local politics in a variety of ways, from financing local development projects (Adida and Girod 2011; Aparicio and Meseguer 2012; Duquette-Rury 2014) to achieving political representation or becoming involved in national elections via expatriate voting or other political activities (Guarnizo, Portes, and Haller 2003; Østergaard-Nielsen 2003; Guarnizo, Portes, and Haller 2003). Indeed, the anecdotal

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[6] Lourdes Cárdenas "Michoacanos al grito de guerra", *Nexos.* Authors' translation. http://www.nexos.com.mx/?p=23081 (accessed 7 June 2018)

[7] We acknowledge, however, that the generation of grassroots community vigilantism – particularly in Michoacán – is a complex process that reflects multiple social, political, and economic relationships entrenched in a long history of criminal activity and a violent context (Maldonado 2013; 2014). In this paper, we are interested in examining the role of remittances in this process, controlling for the role of social, political, and economic dimensions.

evidence presented in the previous section suggests that emigrants send and raise money with the specific purpose of helping shield their families and communities against crime.[8]

Researchers approach the question of the impact of remittances on collective action with two competing priors in mind. On one hand, following the *resource model of political participation* (Brady, Verba, and Scholzman 1995), greater income increases the resources available to gather information, to coordinate, and to be more politically active. Using cross-national data, Miller and Ritter (2014) show that by helping those left behind to overcome collective action problems, the money that relatives abroad send home facilitates the formation of rebel groups.

Funding of vigilante organisations is in fact weakly developed in the extant literature on vigilantism. Rosenbaum and Sederberg (1974) suggest that vigilantes' sources of support may be internal or external, as well as direct – in the form of arms, training or funds – or indirect, through social support. As noted by Phillips (2017), funding is crucial for the effective emergence of vigilante organisations. In particular, income from remittances may well contribute to the development of grassroots community vigilantism organised by lower income citizens, who require external funds to compensate for unequal access to security and justice. Thus, under the resource model, migrants' remittances are expected to *increase* the likelihood of vigilante organisations, by helping fund their activities.

Moreover, in Mexico, remittances have an impact on *inequality*, which in turn is a determinant in the emergence of self-defense organisations (Phillips 2017). And interestingly, the

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[8] Of course, while there is evidence of emigrants earmarking the resources for the specific purpose of helping their families to protect themselves, it could well be the case that recipients unilaterally decide to devote some of those inflows partly for that purpose. Elucidating the issue of agency requires future fieldwork.

relationship between remittances, emigration, and inequality exhibits a curvilinear shape, too. Remittances appear to increase inequality in rural communities; but the effect diminishes with the diffusion of access to migration (Taylor et al. 2008). In the same vein, Mckenzie and Rapoport (2007) report an inverted U-shaped relationship between migration and inequality, with the latter decreasing as emigration experience accumulates. Thus, at low to moderate levels of remittance penetration, an increase in inequality could explain the emergence of vigilantism; yet, at high levels of remittance inflows, less unequal access to protection against crime would diminish the need for *autodefensas*. Through their effect on inequality, we would expect an inverted U-shaped relationship between remittances and vigilantism.

Finally, *economic* but also *security grievances* are regarded as a major cause of anti-incumbent mobilisation (Gurr 1970; Brancati 2014). Beyond the effect that remittances may have on vigilantism through their impact on inequality, remittances facilitate access to social and public goods, help reduce poverty, and provide insurance against economic risks (Adams and Page 2010; World Bank 2006; Yang and Choi 2007). The substitution effect of remittances transforms recipients into "private providers" of public goods (Adida and Girod 2011). According to extant research, this makes recipients disengage from the political process as they become less dependent on state policies (Goodman and Hiskey 2008; Pfutze 2014; Doyle 2015). For the case in hand, remittances could enable recipients to have greater and better access to public and private security, afford legal assistance, or even pay bribes within the judicial system. Ultimately, this could reduce the incentives to organise collectively with others in reaction to rising crime or violence and produce, instead, politically and socially disengaged citizens. In fact, in their contribution to this Issue, López García and Doyle show that by making recipients feel less exposed to crime in their neighbourhoods, remittances reduce grievances associated with security. Thus, through fewer

grievances and more economic autonomy acquired via remittances, we expect these flows to *decrease* the likelihood of collective mobilisation against crime. But because vigilantism is a resource-intensive form of collective mobilisation that feeds on poverty and inequality (Rosenbaum and Sederberg 1974; Moncada 2017; Phillips 2017), we argue that the disengagement effect of remittances will only be evident when remittance penetration in communities is high, after we control for their wealth.

In sum, through different avenues, remittances may induce recipients to engage more or less than non-remittance recipients in collective organisation against crime. More collective action in response to crime may be facilitated by the availability of extra resources from abroad that help overcome collective action problems; less collective action to control crime can be expected from fewer grievances as recipients' perceptions of their own and their communities' security situation improve. In other words, the effect of remittances can work either way. This should be taken into account when modeling the impact of remittances on collective mobilisation against crime. Surprisingly, all studies to date approach the question of the impact of workers' remittances on political outcomes stipulating *either* a positive *or* a negative impact. In other words, scholars have disregarded the possibility that the effect of remittances specifically on civilian mobilisation may depend on the degree of remittance penetration at the local level. Engagement and disengagement effects can be possible but predominant at different levels of remittance recipient households in a municipality.[9]

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[9] In his study on the existence of vigilante organisations, Phillips (2017) includes remittances in linear form as a covariate. Remittances are not statistically significant. However, following our discussion, we consider that a non-linear specification can better capture the opposite effects at play.

We argue and show below that *de facto* questioning of state capacity to provide protection to citizens in regions badly hit by crime has laid the ground for the mobilisation of those abroad to support those initiatives with their remittances. However, we also find that the effect slows down at high percentages of remittance-receiving households in municipalities. We argue that remittances have to be sufficiently present in communities to lower security grievances and grant families enough autonomy to gain access to alternative ways to keep themselves protected against crime without resorting to grassroot *autodefensas*.[10]

We test the hypothesis that there is a *non-linear* relationship between remittances and the existence of vigilante organisations at the municipal level. *We expect remittances to promote the existence of vigilante associations, but up to a point after which the income and substitution effects of remittances, by increasing households' autonomy and lowering grievances, reduces the probability of observing self-defense groups.*

3. Data and Empirical Strategy

3.1. Data

Our dataset comprises a cross-section of 2,453 municipalities. Some specifications include fewer observations due to incomplete data availability. Socioeconomic and political data were collected from various sources: the National Statistical Institute (INEGI), Pfutze (2012), and data on vigilante organisations from Phillips (2017). Political data comes from the Center for Research in

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[10] As Génesis Godínez, a migrant involved with a self-defense group in her community of origin (La Ruana) puts it: "Unfortunately, we activists are poor." This statement relates to the logic of grassroots vigilantism, associated with high levels of local poverty and inequality, that remittances help counter. Lourdes Cárdenas "Michoacanos al grito de guerra", Nexos. Authors' translation.
http://www.nexos.com.mx/?p=23081 (accessed 7 June 2018)

Development (*Centro de Investigación para el Desarrollo*, CIDAC). The summary statistics of all variables are reported in Table 1. The dependent variable corresponds to the year 2013, while all the explanatory variables are recorded in 2012, or previous years depending on the data source.

***Table 1 about here ***

Vigilante Groups

Our dependent variable measures the existence of vigilante organisations. It is defined as a dichotomous variable equal to 1 if there is any record of vigilante groups in municipality *i* in 2013, and 0 otherwise. Phillips used media sources such as *El Universal* and *Milenio*, and the website *Animal Político* (p. 1371) to detect the existence of vigilante organisations.[11] Although disproportionately present in Guerrero and Michoacán, these organisations were present in 13 of the 32 federal entities (states) (Phillips 2017, 1371). Figure 1 below shows the spatial distribution of these organisations across Mexico. Three percent of municipalities had a self-defense group.

Figure 1 about here

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[11] This is a dichotomous variable and therefore we do not know whether more than one vigilante organisation existed in a municipality, let alone other features such as the organisational capabilities of these groups. To the best of our knowledge this information does not exist to date.

Remittances

As explained in the theory section, we aim to explore whether the posited contradictory effects of family remittances on political activation depend on the volume of remittance-receiving households, with remittances having an activation effect at low to moderate levels of remittance inflows. Thus, in our estimations we include a quadratic term for remittances to investigate the possibility that remittances increase the probability of engaging in collective mobilisation against crime up to a point, after which disengagement happens. We use the percentage of households receiving remittances as the main independent variable. An average 6.5 percent of households per municipality received remittances, with the maximum being 48 percent. The distribution of remittances is shown in Figure 2 below. The bulk of the recipient municipalities are distributed unevenly in the west and southwest, with some sizeable recipient municipalities in the north.

*** Figure 2 about here ***

Controls

For the most part, the control variables were collected from census data. We used information from the 2000 and 2010 *Censos de Población y Vivienda* (INEGI). Since we are explaining collective mobilisation to combat crime at the local level, we account for the homicide rate in each municipality. The average number of homicides across municipalities is 20.08 per 100,000 inhabitants. While this is not at all the only manifestation of violence that can motivate the existence of self-defense organisations, we follow Phillips in controlling for homicide rates since these are "much more reliable than Mexican data on other crimes" (2017, 1372). Table S2 in the

Supplementary Material controls for other indicators of crime (extorsion rate, execution rate, and disappearances rate), none of which alters our main substantive finding.

As mentioned before, the wave of crime that the country has experienced in recent years has caused an increase in the number of Mexicans fleeing from violence. We posited that this out-migration is crucial for understanding the role that international connections may have played in supporting collective mobilisation against crime at home. For this reason, we control for the *emigration* rate as well as for remittances. Emigration rates come from an extended questionnaire in the population and household census measuring the percentage of households with emigrants in the five years previous to the survey. The average municipality had 3 percent of households with members based abroad.

The emergence of vigilante organisations could be affected by the party in power. On one hand, in municipalities governed by the national incumbent *Partido de Acción Nacional* (PAN), voters may be better able to assign responsibility for growing insecurity (Ley 2017) and therefore may be willing to show their discontent on the streets. On the other hand, given that during the Calderón administration criminal violence was higher in municipalities governed by opposition parties – particularly by the party on the left (PRD) (Trejo and Ley 2016) – it may also be the case that citizens in opposition-led municipalities are more likely to organise in response to higher levels of insecurity. There could be differentiated relationships between the federal and municipal governments if the incumbent political parties are different at the federal and municipal level; that is, if the party of the municipality is not PAN. In 2012, only 15 percent of the municipalities were locally governed by the PAN, or to put it another way, the vast majority of local governments were led by an *opposition party.*

Due to non-availability of data at the municipal level, we are not able to account for the

effect of local networks of civic associations on the probability of existence of vigilante groups. However, we include a measure proxying the organisation of the diaspora abroad by controlling for the number of *hometown migrant associations* (HTAs) originating from the municipality's state (*Instituto de los Mexicanos en el Exterior*, 2015). This is a state level variable. Although our prior is that the existence of a well-organised diaspora abroad increases the probability of self-defense organisations, anecdotal evidence shows a frequent, but inconsistent involvement of these groups. Estimates suggest that immigrant groups may have raised as much as $250,000 to help self-defense groups, wiring the money to vigilante leaders' accounts.[12] However, these activities are carried out at high levels of secrecy due to fears of retaliation.[13] Therefore, we remain agnostic as to the effect of this control. Twenty-nine states out of thirty-two had at least one HTA, and the average state had 66 HTAs.

Additionally, we control for two variables that may affect remittance flows. We include the logarithm of the total *population* to account for the size of the municipality. We also control for the *gross domestic product per capita* in constant 2008 pesos (logged), in order to distinguish the income effect of remittances from the income effect of initial wealth. As a measure of the stock of human capital in the state at a given time, we also include a control for *education* using average years of schooling. Finally, as posed by Phillips (2017), the emergence of these organisations could be largely associated with increasing socio-economic inequality that makes those with lower incomes more likely to mobilise, possibly with the financial support of those more well-off willing

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[12] California Workers Finance Vigilante Groups in Mexico
http://fusion.net/story/4783/california-workers-finance-vigilante-groups-in-mexico/ (accessed 7 June 2018)

[13] "Migrantes en EU financian a insurgentes." http://www.excelsior.com.mx/de-la-red/2014/01/16/938851 (accessed 7 June 2018).

to pay for their own protection helping these groups to organise. As explained above, remittance inflows have implications for inequality at the local level. Thus, we control for the municipal Gini coefficient to account separately for any effect that remittances may have impact on the likelihood of vigilantism besides their impact through inequality.

3.2. Empirical Strategy

Our main empirical specification takes the following form:

$$Vigilantes_i = \beta_0 + \beta_1 remitt_i + \beta_2 remitt_i^2 + \gamma_1 X_i + \varepsilon_i \qquad \text{Eq (1)}$$

for municipality i. As mentioned, the dependent variable, $Vigilantes_i$, measures whether a vigilante organisation existed in a given municipality in the year 2013. We estimate the effect of remittances on the expected probability of observing a self-defense organisation by fitting a logit model. To investigate the posited non-linear effect of remittances on collective mobilisation against crime, the main independent variable, $remitt_i$, records the percentage of households receiving remittances in the recipient municipality in both linear and quadratic form. X_i is a vector of socioeconomic, demographic, and political determinants of protests, and ε_i is the error term.

Endogeneity issues may arise from reverse causality between contentious mobilisation and remittances. Violent local mobilisation could affect remittance flows. For instance, municipalities in which vigilantes are present could potentially experience a reduction in income flows coming from abroad due to uncertainty about financial security caused by the occurrence of crime and violent mobilisation (Meseguer, Ley, and Ibarra 2017). To address this endogeneity, we exploit an

instrumental variable approach.[14] In line with Pfutze (2014), we use two strategies frequently followed to instrument family remittances at the municipal level in Mexico. On one hand, we use the variation between historical migration and contemporaneous remittances by using as an instrument the state's 1924 level of migration as a proportion of the state's year 2000 population (Pfutze 2014). Arguably, the historical level of migration is likely to predict the municipality level of today's remittances, while being uncorrelated with the level of social mobilisation of vigilante groups in 2013.[15] Besides, we use the exogenous variation of the Euclidean distance to the nearest crossing point on the Mexico–USA border from municipality i's main city or town, calculated using railroad timetables dating from 1905, and the railroad network in 1942 (see Pfutze 2012, 166, 168 for details). In the particular case of Mexico, distance to the border is positively associated with remitting flows.[16] The variable *remittances* enters the equation in both linear and quadratic form. This particular specification is called the *non-linear in endogenous regressors system of equations* (Wooldridge 2010), and requires special treatment.

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[14] Another potential source of endogeneity could derive from the relationship between remittances and crime. If the presence of remittances at the local level attracts crime, an increase in the probability of vigilantism would follow due to the effect of remittances on victimisation. First, we control for homicide rates, which are the most reliable measure of crime activity (Phillips 2017); second, looking at different levels of analysis and different crime types, Brito et al. (2014) find that remittances *reduce* the likelihood of crime in Mexican states and municipalities.

[15] Importantly, the rates of emigration we are using as instrument are from 1924, which preceded the Cristero war (1926-1929) and the international displacements that it might have caused. Also, using another instrument besides rates of emigration (historic rail distance) allows testing for the validity of historical migration as an instrument (Pfutze 2012, 168).

[16] The border and northern states are not the ones with the highest levels of emigration. Instead of sending migrants north of the border, these states have traditionally been known for attracting internal migrants to their labour markets (Pfutze 2012).

4. Results

Our first step in exploring this relationship consists in estimating the effect of remittances on the odds of observing vigilante organisations, holding other predictors constant. Estimates of the marginal effects (at the mean) are given in Table 2. The first key result can be seen in columns 1 and 2. In the first model, the existence of vigilantism is a *linear* function of remittances, whereas in the second model a quadratic term is included. As we hypothesised, remittances have a positive effect on the odds of vigilante groups existing, but up to a certain local penetration of remittances, past which the effect is positive but declining. We conducted a likelihood ratio (LR) test in order to verify whether the full model including the quadratic remittances term is a better fit than the simple linear function. The LR statistic for models (1) and (2) is 17.98, which allows us to reject the null hypothesis that the additional term equals zero at the 1% confidence level. Hence, a non-linear relationship between vigilante groups and remittances provides a better fit than a linear specification.

Recall that the main explanatory variable is measured as the percentage of households receiving remittances in municipality i. According to the results, an increase in the percentage of remittance-recipient households is associated with increases in the odds of observing vigilante organisations, with a decreasing effect after an inflexion point, roughly at 13 percent of households in a municipality receiving remittances. Importantly, this is well above the mean percentage of remittance-receiving households (see the descriptive statistics), which means that in the majority of remittance recipient municipalities, remittances increase the probability of observing self-defense groups. To test the robustness of this finding, we calculated different specifications and introduced controls progressively in columns (3) – (6).

*** Table 2 about here ***

In the full specification in column (6), for each percentage point increase in the proportion of households receiving remittances at the municipal level, the odds of having a vigilante group increase by 0.59 percent at the mean.[17] Thus, after controlling for a number of potentially confounding factors, remittances sent from abroad are correlated with both an engagement and a disengagement political effect. To further illustrate the nature of this relationship, we simulated the average predicted probabilities of observing a vigilante group for a number of percentiles of the distribution of municipal recipient households, holding the other covariates constant. The probability of engagement is low (around 1.6 percent) for municipalities in the 25th percentile; but increases to 9.4 percent for municipalities in the 75th percentile (roughly 9 percent of remittance recipients households). Conversely, in settings where a large percentage of households receive remittances, we are less likely to find self-defense organisations. For instance, for municipalities in the 95th percentile, the probability of vigilante groups is 8.9 percent. Importantly, municipalities where high remittance penetration lowers the probability of vigilantism are those above the 75th percentile. The inflection point is around 15 percent of remittance recipient households, which lies between the 75th and the 95th percentiles of the distribution. Thus, *in a majority of remittance recipient municipalities,* remittances increase the probability of collective action in the form of vigilantism. This is consistent with the high level of resource commitment and personal involvement that this type of mobilisation requires (Moncada 2017, Phillips 2017).

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[17] The estimated marginal effect for a one percentage point increase in the percentage of households receiving remittances on the odds of having a vigilante group is calculated as follows: $\exp(0.0061 - .0002) = 1.0059$.

The results referring to the control variables are interesting and relevant. We find that emigration reduces the probability that self-defense organisations will exist, likely due to the exit of those more critical of the security situation. Yet, as demonstrated, remittances sent to those left behind have a positive effect on local mobilisation, as expected. This result holds after we control for wealth and numerous municipality characteristics. We further tested the significance of another measure of international connectivity. We controlled for the number of HTAs originating from the Mexican state in which a given municipality is located (IME 2015); however, unlike individual remittances, this measure of diaspora organisation abroad turned out to be statistically insignificant. Nonetheless, as Pérez-Armendáriz and Duquette-Rury show in this Issue, our finding is not incompatible with the significance of detailed municipal measures of organised migrant involvement in the 3×1 Programme, looking at how the frequency and resource commitment of interactions impact the likelihood of vigilantism.

The level of inequality as measured by the Gini coefficient and average years of education are significantly associated with the odds of observing vigilante groups (Phillips 2017). Importantly, our finding concerning remittances is robust to the inclusion of the measure of inequality, demonstrating that the influence of remittances is not exercised through their effect on inequality. This form of anti-incumbent collective mobilisation seems to be driven mostly by a relatively high population density, high levels of inequality, and low levels of educational attainment. Yet at the municipality level, homicide rates do not seem to have an effect in spurring vigilante groups, a finding that is in line with that of Phillips (2017).[18] Interestingly, having a municipality governed by a party in opposition to the federal state government's party, the PAN,

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[18] Phillips (2017) finds the same result and explores a quadratic term, finding a non-linear relationship between homicide rate and vigilantism. We find this same result (not shown).

appears to be associated with a higher probability of vigilante group occurrence, which in this case may be related to the considerably higher rate of crimes (not exclusively homicides) in opposition-governed municipalities.

4.1. Robustness

By fitting a Tobit model, we show that our results are robust to taking into account the existence of a high number of municipalities without a self-defense organisation: the non-linear relationship between degree of remittance penetration at the local level and the probability of finding vigilante organisations in a given municipality holds (Table S1 in the Supplementary Appendix).

To offer evidence that the direction of the relationship goes from remittances to vigilante mobilisation and to circumvent the problem that the remittances variable (potentially endogenous) enters the equation in both linear and quadratic terms, we follow the approach suggested by Wooldridge (Wooldridge 2010). This approach is similar to a three-stage least squares estimation. We restrict our instrumental variable estimation to a linear probability model to avoid incurring additional assumptions. The estimates for the three–stepwise instrumental variable approach are reported in Table 3.[19]

In the first stage, column (1), we regress the instruments and the other covariates on remittances. The F-statistic indicates that we can reject the null hypothesis that the coefficients of the joint instruments in the reduced form equal zero. Moreover, the instruments are significantly

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[19] We show the results of an alternative approach to the IV estimation in the Supplementary Appendix Table S3, where higher values of one of the instruments and other covariates are used to instrument for remittances. Our main result does not change.

and positively associated with remittances: in line with theoretical expectations, historical migration is positively correlated with contemporary remittances, and as expected in the Mexican case, remittances increase with distance to the border.

It could be tempting to use the reduced-form linear prediction of remittances and the square of remittances to estimate the second stage; but as Wooldridge puts it (2010: 267), "our mistake [would be] thinking that the linear projection of the square is the square of the linear projection." Instead, we use the linear prediction and its squared term as the excluded instruments in a two-stage least squares estimation with two endogenous variables. We then have two additional first-stage regressions, one for each of the endogenous variable, and two instruments.[20] Columns (2) and (3) in Table 3 have been labeled as second-stage. Note that they include the first-stage regressions of the two endogenous variables, namely remittances and remittances squared. The linear predictions obtained in column (1) are the excluded instruments (Pr[Remittances] and Pr[Remittances^2]).[21]

The third step of the procedure is shown in the last column (4) of Table 3, which gives the estimates of the second-stage regression (labeled as third stage). We confirm their relevance separately in the equations for each endogenous regressor and jointly for the last stage. To account for the fact that the linear prediction is estimated in a separate equation, we use bootstrapped standard errors in the estimation of the outcome equation. Once again, the inverted U-shaped

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[20] Hence our parameters of interest are exactly identified.

[21] We test for under- and weak identification of the endogenous parameters separately. The Sanderson-Windmeijer chi-squared Wald statistics allow us, in both cases, to reject the null hypothesis that the endogenous parameter is unidentified. The Sanderson-Windmeijer F statistic is a test of excluded instruments, and it confirms that the parameters are not weakly identified.

association between remittances and the existence of vigilante groups is robust to instrumenting the endogenous terms of remittances and remittances squared. In the IV specification, each one percentage point increase in the proportion of households receiving remittances at the municipal level increases the probability of observing a vigilante group by 1.2 percent, holding the rest of the covariates constant.[22] However, this effect, while positive, is again moderated in municipalities with a high percentage of remittance recipient households.

The direction and significance of the resulting coefficients are consistent with the specifications in Table 2. In fact, when instrumenting for the potential endogeneity, the effect of remittances on vigilante groups is larger compared to the logistic estimation (see Column 6 in Table 2), suggesting a downward bias in the first models. As per the relevant tests, we are able to confirm that the equation is identified, the instruments are strong, and the non-linear relationship between remittances and vigilante mobilisation is robust to addressing endogeneity. The role of income inequality indeed looms large, without wiping out an independent effect for migrant remittances. And as before, the existence of vigilante organisations is more likely in highly populated, poorly educated municipalities, and municipalities ruled by parties other than the PAN, the party in federal power during the period of this study.

***Table 3 about here ***

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[22] The estimated effect for a one percentage point increase in the percent of households receiving remittances on the odds of having a vigilante group is calculated as follows: $\exp(0.0128 - 0.0003) = 1.012$. Since we assume heteroskedasticity-robust standard errors we are compelled to use more appropriate tests for under-identification and weak identification of the reduced form equations jointly. The Kleibergen-Paap LM statistic allows us to reject the null that the model is under-identified. Moreover, the Kleibergen-Paap rk Wald F tells us that the equation is not weakly identified.

5. Discussion

Our paper contributes to an expanding literature on the effects of workers' remittances on the political life of their communities of origin in so-called "violent democracies" (Pérez-Armendáriz, this Issue). While anecdotal evidence existed of migrants' involvement in supporting their communities in the fight against crime by financially supporting them, we previously lacked any systematic evidence in that regard. Our paper shows that the money that migrants send to their families has increased the probability of collective organisation in the form of vigilantism. Thus, our paper brings attention to the importance of workers' remittances in understanding international sources of local collective mobilisation against crime.

First, we claim that empirical tests of the impact of remittances on political mobilisation have not properly modelled the diversity of mechanisms connecting remittance inflows with political outcomes. We show that the political engagement and disengagement effects attributed to remittances are not exclusive, but rather – as we argued and showed – these two effects manifest at different levels of density of remittance recipient households in municipalities. By modeling the effect of remittances on political outcomes as linear, researchers have been masking the fact that remittances can have either effect depending on the degree of remittance penetration at the local level. We claim that remittance inflows can certainly have an activation effect at low and moderate levels. Indeed, in the specific case of vigilantism, a high proportion of the municipalities that receive remittances in our study do so at levels that predict an activation effect.

Second, research to date has shown that households that receive remittances often become non-state private providers of public goods such as water and sanitation (Adida and Girod 2011). We lack research showing how the reception of remittances alters households' preferences and behaviour with regard to their access to security, but we know that remittances improve recipients'

appraisal of their security situation (López García and Doyle, this Issue). Future research should explore whether, if wealth is controlled for, households that have access to high volumes of remittance money opt for emigrating, gain better access to justice, or use private security more than households that receive modest inflows or no transfers from emigrant relatives.

Third, while we discussed and showed that the effect of remittances is multifaceted, potentially causing political disengagement at high levels, their effect on collective mobilisation was positive in a majority of remittance recipient localities: disengagement occurred only at high levels of local remittance penetration. Without ignoring the controversial character of this type of organisation (Maldonado 2013; 2014), our paper shows that international networks and connections can be mobilised in the fight against crime, thereby providing relatively deprived localities the possibility of circumventing states incapable of protecting them or unwilling to do so.[23]

Finally, we acknowledge that the case of Mexico could be regarded as a "most likely case" for international remittances to have an impact on the probability of observing *autodefensas*. Mexico is a country with a long, well-institutionalised history of emigration (Délano 2011). Although self-defense organisations have appeared in other Mexican states than those with heavy emigration, they are more numerous in regions of long-standing emigration to the United States, where "the vigilante narrative squares well with the idea of border militias and the right to carry guns."[24] While we are aware of this potential limitation, other instances in which family

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[23] See for instance "Autodefensas: ¿Héroes o Villanos?" https://www.letraslibres.com/mexico-espana/autodefensas-heroes-o-villanos (accessed 24 August 2018). As Grillo (2014) explains, there are concerns about the illegal character of these organisations as well as the degree of infiltration by drug cartels.

[24] Letras Libres, Grillo (2014), author's translation https://www.letraslibres.com/mexico-espana/autodefensas-heroes-o-villanos

remittances, domestic conflict, and civilian mobilisation against crime co-exist should be used as cases to test the non-linear impact of remittances on collective mobilisation that we have posited here.

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Table 1. Summary statistics

VARIABLES	(1) mean	(2) sd	(3) min	(4) max
Vigilante groups	0.0305	0.172	0	1
Remittances (% households)	6.501	7.247	0	48.70
Emigration	3.815	4.115	0	44.13
Log (population)	9.418	1.554	4.533	14.41
Log (GDP pc)	-1.643	1.557	-5.655	5.015
Gini	0.412	0.0390	0.286	0.591
Average schooling	6.657	1.527	2	13.50
Homicide rate	20.08	36.23	0	482.4
Opposition party	.848	.358	0	1
Migrant associations	66.29	69.07	0	480
IV Distance to border	703.5	260.6	0	1,358
IV Historic migration	9.093	15.52	0	68.11

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Remittances	0.0007**	0.0060***	0.0071***	0.0042***	0.0042***	0.0061***
	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Remittances^2		-0.0002***	-0.0002***	-0.0001***	-0.0001***	-0.0002***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Emigration			-0.0020**	-0.0014**	-0.0014**	-0.0016*
			(0.001)	(0.001)	(0.001)	(0.001)
Log (population)				0.0089***	0.0089***	0.0121***
				(0.002)	(0.002)	(0.002)
Log (GDP pc)				-0.0024	-0.0024	-0.0027
				(0.002)	(0.002)	(0.003)
Gini				0.1872***	0.1871***	0.2482***
				(0.043)	(0.043)	(0.061)
Average schooling				-0.0051***	-0.0051***	-0.0070***
				(0.001)	(0.001)	(0.002)
Homicide rate					0.00002	-0.00002
					(0.00002)	(0.00003)
Opposition party						0.0103*
						(0.005)
Migrant associations						-0.00007
						(0.0002)
Observations	2,456	2,456	2,456	2,453	2,453	2,013
Log pseudolikelihood	-333.94	-324.95	-323.20	-265.59	-265.58	-258.97

Table 2. Vigilantes and Remittances: Logit regressions

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
NOTE: Marginal effects all predictors at their mean value

Table 3. Vigilantes and remittances: Instrumental variable approach

VARIABLES	(1) First-stage	(2) First-stage *Remittances*	(3) First-stage *Remittances²*	(4) Second-stage
Remittances				0.0128***
				(0.004)
Remittances²				-0.0003**
				(0.000)
Emigration	1.4097***	0.0468	-5.2168	-0.0057
	(0.054)	(0.123)	(4.195)	(0.004)
Log(population)	-0.8071***	0.0398	-5.3172	0.0178***
	(0.094)	(0.108)	(3.632)	(0.004)
Log(GDP pc)	-0.0085	0.0020	-0.5295	-0.0029
	(0.073)	(0.071)	(1.961)	(0.003)
Gini	6.2744**	-0.6019	22.4177	0.6893***
	(2.710)	(2.699)	(84.145)	(0.152)
Average schooling	0.3082***	-0.0041	-3.6611*	-0.0143***
	(0.074)	(0.074)	(2.084)	(0.004)
Homicide rate	0.0156***	-0.0007	-0.1125	-0.0000
	(0.003)	(0.003)	(0.101)	(0.000)
Opposition party	-0.3822	0.0456	17.7937*	0.0290**
	(0.285)	(0.294)	(9.435)	(0.013)
Migrant associations	-0.0004	-0.0002	-0.0152	-0.0000
	(0.002)	(0.001)	(0.048)	(0.000)
Pr[Remittances]		1.1126***	13.8374***	
		(0.095)	(3.642)	
Pr[Remittances²]		-0.0066*	0.5644***	
		(0.004)	(0.167)	
IV Distance to border	0.0016***			
	(0.000)			
IV Historic migration	0.1264***			
	(0.009)			
Observations	2,000	2,000	2,000	2,000
R-squared	0.620	0.622	0.439	0.053
F	196.8	262.6	77.15	5.638
Sanderson-Windmeijer F		477.06	53.15	
Kleibergen-Paap rk LM				47.067
Kleibergen-Paap rk Wald F				36.299

Heteroskedasticity-robust standard errors in parentheses. Standard errors in column (4) are bootstrapped.
*** $p<0.01$, ** $p<0.05$, * $p<0$
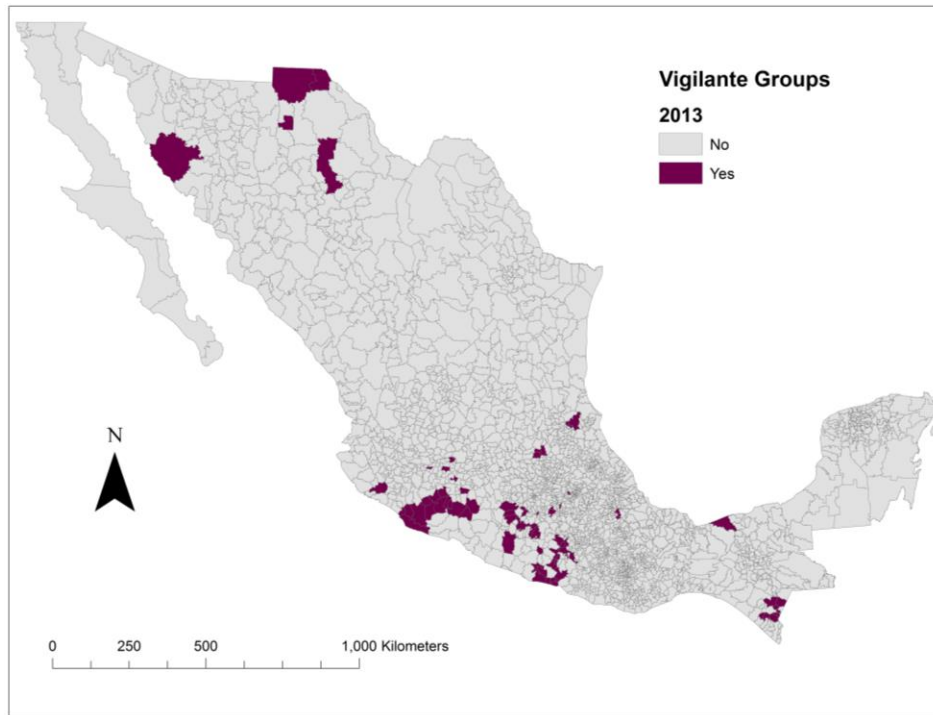
Figure 1. Vigilante Groups, 2013

Figure 2. Percent of households per municipality receiving remittances, 2012.