The role of drug-related violence and extortion in promoting Mexican migration: Unexpected consequences of a drug war

Viridiana Ríos[a]

[a]Harvard University

ABSTRACT

Mexican immigration figures have reached their lowest point since 2000. Yet, even if as a whole the United States is receiving fewer Mexican migrants, the opposite is true for cities at the border. In this article, I present evidence to show that this sui generis migration pattern cannot be understood using traditional explanations of migration dynamics. Instead, Mexicans are migrating because of security issues, in fear of drug-related violence and extortion that has spiked since 2008. I provide the first estimate of this migration pattern, showing that 264,692 Mexicans have migrated in fear of organized crime activities. In doing so, I combine the literature on migration dynamics with that on violence and crime, pointing toward ways in which non state actors shape actions of state members.

Cite as: Rios, V. (2014). The role of drug-related violence and extortion in promoting Mexican migration: Unexpected consequences of a drug war. *Latin American Research Review*, 49(3), 199-217.

1. Introduction

Mexican immigration to the United States has diminished steadily since 2000 (MMP, 2009). With figures dropping from an estimated 525 thousand Mexicans yearly leaving their country for the United States to fewer than 100 thousand, current migration figures are the lowest on record (Sheridan, 2011). Among the main reasons behind this trend are changes in Mexico's demographic profile (Terrazas, Papademetriou, & Rosenblum, 2011), an increase in the number of Mexicans earning college degrees (Ibarraran & Lubotsky, 2007; Orrenius & Zavodny, 2005), a constant increase in the costs associated with crossing the border (Cornelius & Lewis, 2007; Massey, Durand, & Malone, 2003; MMP, 2009; Orrenius, 2004), and the recession that the US economy has been facing since late 2007 (Papademetriou, Sumption, & Terrazas, 2011).

Even if the United States as a whole has experienced a decrease in the number of Mexican immigrants, the opposite seems to be true for US cities located at the border. Preliminary figures estimate that about 115,000 Mexicans have arrived in US border cities since 2006 (Rice, 2011). El Paso, for example, grew by 50,000 inhabitants from 2009 to 2011, and at least 30,000 of those new inhabitants were Mexicans moving from Ciudad Juárez (Alvarado, 2011).

To understand this phenomenon, I bring together the literature of migration dynamics (Massey & Taylor, 2004) with studies of crime, security, and violence (Di Tella,

Edwards, and Schargrodsky 2010). I claim that to fully understand the dynamics of migration from Mexico to the United States and within Mexico, we need to broaden our analysis of the factors that we normally analyze as part of traditional immigration literature, such as economic hardship, network analysis, or labor dynamics (Massey & Arango, 1998; Massey & Espinosa, 1997; Massey & Taylor, 2004).

As cumulative causation theory improved our understanding of migration patterns by pointing toward the importance of social ties in shaping individual decisions to relocate (Massey, 1990) -a variable that had been overlooked by scholars from the new economics, neoclassical economics, and labor market theories (Piore, 1979; Todaro & Maruszko, 1987)-this article argues that to complement the various competing theories that explain migration, academics should bring attention to how security environments affect relocation. In particular, I argue that drug-related violence and organized crime activities are affecting migration dynamics in Mexico. An important number of Mexicans are relocating to the United States, and to other cities within their country, to escape drug-related homicides and criminal activity that has spiked since 2008. In advancing this argument, I also speak to broader political science theories that have tried to assess the impact that nonstate actors have on shaping the decisions of state members in fundamental areas such as the allocation of human capital and resources within a polity.

I first present an overview of Mexico's security situation. A second section explores migration outflows at the border and within Mexico and shows why Mexicans living in border towns seem to be particularly inclined toward migrating. The third and fourth sections show my statistical results. I estimate that a total of 264,692 Mexicans have changed residency in direct response to drug-related homicides. A fifth section provides qualitative evidence of migration outflows.

2. Mexico's drug related violence

Fear has become part of our lives... There's panic. We don't know when the shooting is going to break out.

-Tijuana citizen, quoted in Marc Lacey, "Hospitals Now a Theater in Mexico's Drug War"

Mexico's homicide rates have increased every year since 2006 as a result of increases in territorial fights between drug cartels and changes in Mexico's security policies (Castillo, Mejía, & Restrepo, 2014; Dell, 2011; Rios, 2013). From December 2006 to 2010, 34,550 killings were officially linked to organized crime, a dramatic increase from previous years (2000-2006), when only 8,901 killings were linked to organized crime (Rios & Shirk, 2011). Most drug-related homicides concentrate at border cities, because the most profitable part of the drug-trafficking business chain occurs at US-Mexico crossing points (see figure 1). During the 2006-2010 period, the six Mexican states located at the US-Mexico border accounted for 47.81 percent of all drug-related murders despite containing just 17.62 percent of Mexico's population. Approximately 30.04 percent of all drug-related homicides occurred in 39 border municipalities, which represent less than 1 percent of the roughly 2,450 municipalities in Mexico and just 6.06 percent of the country's population.

[Figure 1 about here.]

Drug-related homicides within Mexico have not only increased but changed in na-

ture. Different than in years prior to 2004, government authorities are increasingly targeted by traffickers (Freeman, 2006). In border cities like Tijuana, at least 100 policemen died on duty every year from 2007 to 2009 (Guerrero 2009)[1]. To put this in perspective, in the entire United States 133 police officers were killed in the line of duty in 2008. The same period saw the chief of police in Nuevo Laredo, south of Texas, lasting eight hours in the position before being assassinated by traffickers. Traffickers have also created new ways to spread fear among the population. Bodies are left in the streets with messages targeted at other citizens, politicians, or fellow criminals.

Furthermore, criminal organizations have diversified their activities, getting into alternative illegal businesses, and expanded their areas of operation (Coscia & Rios, 2012; Diaz-Cayeros, Magaloni, Matanock, & Romero, 2011; Rios, 2013). Extortion is perhaps the most widespread of these new criminal ventures. Criminals initially used extortion to target illegal businesses such as prostitution rings and casinos, industries in which the probability of being denounced to the police by the owner was exceedingly low. However, the extortion of businesses soon extended into the legal sphere and became traffickers' most accessible means of quickly acquiring cash. It has deeply affected business dynamics. High protection fees and intimidation have forced businesses into bankruptcy and have pushed some businessman to take radical action such as creating violent organizations for self-defense.

3. Unexpected migration outflows in Mexico

From 2006 to 2010, some Mexican cities started depopulating unexpectedly. As a result, the usual general predictors of population trends, which have previously been quite successful in predicting the yearly population in Mexican counties (Partida Bush, 2008), are producing higher than normal prediction errors[2].

Unexpected migration outflows have been particularly prominent in areas located on the US-Mexico border, probably because acquiring US residency is relatively easy there (table 1). While Mexican border cities tended to lose inhabitants unexpectedly (an average of 35,255), counties not on the border tended to gain inhabitants (an average of 1,297.86). The tendency is less strong when considering all border counties (independently of whether or not they are urban or rural), yet even here an average about 8,103.63 people left unexpectedly.

When considering all Mexican cities, among those experiencing the largest unexpected population outflows are important border cities. Juárez lost 150.36 thou-sand inhabitants, about 11 percent of its population, between 2006 and 2010. Other cities with high violence levels have lost population during the same period, like Tijuana (6 percent), Reynosa (9 percent), and Matamoros (4 percent) (INEGI, 2010; Partida Bush, 2008)[3]. Cities like Práxedis G. Guerrero, Mier, and Guadalupe have faced unexpected outflows of more than 25 percent of their whole population (INEGI, 2010; Partida Bush, 2008).

It is impossible to know where these people relocated, but preliminary figures agree

[1]Tijuana is a border town located south of San Diego, California. During 2008, it saw 614 drug-related homicides, a rate of about 43.72 per 100,000 inhabitants, more than non-drug-related homicides, which caused only 20.46 casualties per 100,000.

[2]Mexican authorities have developed quite sophisticated methodologies to predict migration trends due to the important role that population flows, particularly migration to the United States, play in determining demand for public services.

[3]Reynosa is a Mexican border city located south of Texas with drug-related homicide rates of about 26.18 per 100,000 inhabitants in 2010.

that at least half of them moved to the United States (Rice, 2011). Particularly, for middle- and upper- class Mexicans living on the border, migration to the United States feels like the natural choice when a change of residency is being planned. For many of them it is just like moving from one neighborhood to another within the same city, or, as one citizen described it, "moving to the American side of the city". Inhabitants commonly refer to border cities using their Mexican or American names almost interchangeably. As the mayor of Laredo said, "We are inhabitants of Laredos", referring to Laredo, Texas, and Nuevo Laredo, Tamaulipas; "The border does not divide our policies or families"[4].

Other Mexicans have surely relocated within Mexico. Indeed, some cities, particularly Acapulco, Chimalhuacán, and Tlajomulco have experienced unexpected migration inflows. Tlajomulco, for example, grew about 30 percent more than population predictions had accounted for; Juárez (Nuevo León) and Bahía de Banderas also grew by more than 18 percent from 2006 to 2010.

In the following section I present empirical evidence linking Mexican migration outflows to drug-related violence and organized crime activities.

4. Empirical specifications

As my main specification I used a linear regression model whose dependent variable is the number of Mexicans within a county that unexpectedly left that county from 2006 to 2010, or what I call unexpected migration outflows. The unit of analysis is the county. There are a total of approximately 2.5 thousand observations, one observation per county. All figures were scaled to represent rates per 100,000 inhabitants. To measure unexpected migration outflows I subtract population predictions for 2010 (calculated using variables measured in 2005 to predict the number of people that would be living in a particular county in 2010; Partida Bush (2008)) minus real population figures (according to the 2010 census; INEGI (2010))[5].

This research project was made possible because of mistakes made by Mexico's National Population Council (Consejo Nacional de Poblacin, CONAPO). Every year, CONAPO predicts county-level population figures considering demographic and economic variables. Given how important migration outflows to the United States are as predictors of population figures, CONAPO uses very sophisticated methods to predict the total number of Mexicans that will change their residency to the United States[6]. The predictions take into account economic conditions in both Mexico and the United States, surveys, polls, previous census figures, and panel studies. Every five years, when a census is conducted in Mexico, CONAPO predictions can then be checked for accuracy. The predictions are normally quite good. However, as figure 1 shows, official predictions in 2010 were particularly inaccurate. The graph shows each county according to the size of the population that was incorrectly predicted for two peri-

[4]Ramón Garza Barrios, major of Nuevo Laredo, Tamaulipas, interviewed in June 2009 at Nuevo Laredo, Tamaulipas, Mexico.

[5]Only positive cases were considered (i.e., migration outflows) because the goal of this article is to identify variables that are correlated with people leaving their counties, not with people arriving to new counties. Decisions over exiting a county (outflow) and picking a new one (entry) may not necessarily follow the same logic. The former is the only concern of this article. Models considering positive and negative values (also called "migration flows") were calculated as alternative specifications and provided similar (although weaker) results than those presented here.

[6]Predictions are based on the algorithms developed by Bean, Corona, Tuiran, Woodrow-Lafield, and Van Hook (2001) using Mexican and US Census figures (1950-2005), the Current Population Survey (19902005), and the American Community Survey (2002-2005). For more details on the specification see Partida Bush (2008).

ods, from 2000 to 2005 and from 2005 to 2010. Positive (or negative) numbers refer to municipalities where predictions calculated more (or less) population than actual. While in 2005 most of the observations are close to zero, meaning predictions were accurate; the dispersion of the 2010 figures is much larger. In 2005, official statistics failed to predict the migration of 866 thousand Mexicans, in 2010 they failed by 2,394 thousand, an error 176 percent higher.

In my main specification, I compare CONAPO predictions for 2010 to census figures in 2010 to capture population outflows that could not be predicted even while accounting for changes in economic or demographic conditions in Mexico and the United States. The level of analysis is the municipality. I called my dependent variable unexpected outflows and defined it as the number of individuals (per 100,000 inhabitants) that CONAPO predicted would live in a municipality and yet the census showed were not there. Unexpected outflows are larger when CONAPO predicted more people will be living in a county than the census captured.

In every specification, I added a control to account for other unmeasurable factors driving possible errors in CONAPO's prediction. I created a proxy variable for expected CONAPO errors by measuring the error that CONAPO made in its previous predictions. I used the estimation errors that CONAPO made in the second-to-last census year (INEGI, 2005) because I expect 2010 municipalities to be more similar to what they were in 2005 than to any more distant census year. The logic behind this proxy is to control for counties that have proven to be difficult to estimate for CONAPO. Some counties may have inherent characteristics that make their population figures more variable and thus highly susceptible to incorrect estimation.

As my independent variables, I used measures of three of the most common types of organized crime violence in Mexico: homicides linked to drug trafficking, extortion, and kidnapping. These variables quantified as the total incidence of these crimes per county, per 100,000 inhabitants, for years between censuses (i.e., 2006 to 2009). Drug-related homicide figures come from Mexico's National Security Council (2011), an institution that counts the number of homicides related to activities of criminal organizations and provides monthly figures per county from December 2006 until December 2010[7]. Kidnapping and extortion figures were obtained from state-level Mexican offices of the general attorney (INEGI, 2011).

To control for social and economic factors that may have generated unexpected economic conditions within Mexico (which could have changed migration pat-terns more than CONAPO could have predicted) I added two sets of controls: employment and education figures. Academic research indicates that these two variables are among the most important drivers of migration (Massey & Arango, 1998). Particularly, research shows that a higher number of college graduates is an important deterrent of migration to the United States and an enhancer of migration within Mexico from rural to urban areas (MMP, 2009). Higher levels of employment normally translate to less migration (Tuirán, Partida, & Ávila, 2000a, 2000b).

A common dummy for each of the thirty-nine Mexican counties located right at the border was added. The intention is to capture, in a very indirect way, the ease of migration decisions. The assumption is that any factor increasing migration willingness among Mexicans will have an increased effect on border counties, where migration costs are lower with respect to the rest of the country. An alternative specification also added a common dummy for each of the five border states.

[7]Mexican authorities follow strict procedures to identify whether a homicide is related to organized crime according to the characteristics of the event as well as intelligence reports. For more information, refer to (Rios & Shirk, 2011).

Finally, as part of robustness tests, extra controls and specifications were tested. An alternative specification adds figures of general homicides not related to organized crime as assessed by (INEGI, 2011) to account for the effects that other forms of violence may have had in driving migration. State-fixed effects (thirty-two, one per Mexican state) were also added[8].

General descriptive statistics of the dependent and independent variables are presented in table 1 .

[Table 1 about here.]

5. Principal results

The results, given in table 2, strongly support my hypothesis. Migration out-flows are higher in places with higher drug-related violence and crime, even ac-counting for factors such as employment and human capital. Several models were specified.

[Table 2 about here.]

Model 1 presents results without controlling for non-drug-related homicides, while models 2 and 3 control for them. Controlling for non-drug-related homicides does not change the results but improves the fit of the models. Drug-related violence is strongly linked to migration outflows, independent of the general homicide rate in a county. Furthermore, in every specification the coefficients of drug-related homicides are larger than those of general homicides, which con-firms my hypothesis that Mexicans are making the decision to migrate based on organized crime activities rather than on general security concerns. The reason why drug-related homicides are better predictors of migration outflows than general homicides may be that drug-related homicides are a newer phenomenon, not an important cause of homicides before 2004 (Rios & Shirk, 2011), and leave a longer-lasting impression in the communities because of their particularly violent features. Unlike general homicides, the victims of drug-related homicides are tortured and beheaded and their bodies are dumped in the streets, hanged from pedestrian bridges, or displayed publicly next to messages directed to rival trafficking organizations.

Model 3 adds fixed effects per states to capture changes happening at the state level that may have influenced migration dynamics. For example, we should expect citizens living in states with publicly well-regarded justice systems to be less affected by drug-related violence even if the number of homicides is the same as in states where citizens are less confident of their governments. My goal is to show that outflows are correlated with organized crime activities, which is why model 3 is considered the preferred specification.

Indeed, in all specifications, drug-related homicides are an important factor in Mexican migration outflows. In my preferred specification (model 3), drug-related homicides increased the number of Mexicans unexpectedly migrating out of their counties of residence by 220,291[9]. Each one-point increase in the rate of drug-related homicides per 100,000 inhabitants is correlated with 6.34 Mexicans fleeing their county of residence.

[8] I tested for weighted coefficients based on the inverse of their squared residuals. The use of weights did not change coefficients or standard errors meaningfully.

[9] To transform the coefficients of my preferred specifications into actual number of immigrants, I calculated the value of the dependent variable (unexpected migration outflows) for each observation, setting each independent variable to its mean and assuming that the maximum of drug-related homicides and extortions had happened. I

As an example, consider the case of Tijuana. In the period from 2007 to 2008, its drug-related homicide rate changed by 31.04 points (from 176 to 614 drug-related homicides in just one year). If the results of the model hold, an average of 5,367 Mexicans left Tijuana just during 2008 fleeing from drug-related homicides.

Other organized crime activities, particularly extortion, also have had important effects on migration outflows. In the preferred specification, every additional case of extortion per 100,000 inhabitants increases unexpected migration outflows by 13.03 per 100,000 inhabitants. That accounts for a total of 44,401 Mexicans relocating to escape extortion. Tijuana has lost about 926 citizens because of extortion; other border cities Nuevo Laredo, Reynosa, and Juárez lost 286, 334, and 221 individuals, respectively. Kidnappings were not significantly correlated with migration outflows. This result is quite robust among all models and is consistent with what we would expect given the particularities of the victims of this crime. Kidnappers pick their victims according to their wealth, not location. Because kidnapping victims are hunted, migration does not change their attractiveness as targets.

Considering the forms of criminal violence that were found significant for migration, a total of 264,692 Mexicans fled their counties fearing either drug-related homicides (approximately 220 thousand) or extortion (approximately 44 thousand).

Traditional economic explanations of migration outflows take the expected signs and are significant in all outflows specifications. An increase of one point in employment rates or in the number of college degrees per 100,000 inhabitants reduces migration outflows by 0.01 and 0.11 per 100,000 inhabitants, respectively.

Finally, all variables introduced to correct for CONAPO's error were strongly significant. Indeed, it seems as though CONAPO faces greater inherent problems in measuring population outflows in some places than in others. In general, places where CONAPO's 2005 predictions were upward biased (i.e., CONAPO predicted more people than the 2005 census) had the same upward bias in 2010. The relationship is 1 to 0.77 in the preferred specification, meaning an error of 1 in 2005 figures is correlated with an error of 0.77 in 2010 figures[10].

6. The new driver of Mexico's immigration outflows: Security issues

I know that we came here illegally, but at least we can sleep in peace now.

–Citizen of Juárez relocated in El Paso, quoted in Mariel Torres, "Running from Violence, Young Student Finds Cultural Barriers in Her New Country"

The effect of violence in determining migration outflows is a well-studied phenomenon within political science research on Africa and in other civil war contexts

did the same, assuming that zero drug-related homicides and extortions had happened, and found the difference of these two figures. The results were relative figures measuring the population per 100,000 inhabitants that, ceteris paribus, the model would have predicted to migrate out of a county due to drug-related homicides and extortion. Considering population, the numbers were then transformed into absolute figures.

[10]The fact that drug-related violence is a predictor of unexpected migration outflows is an even more robust finding if we consider that CONAPO's 2010 population predictions assumed that migration outflows from Mexico to the United States will remain at least as high as those measured in 2000, which we now know was the highest point of Mexico-US migration to date (MMP, 2009). Given unexpectedly harsh economic conditions in the United States, particularly in 2007 and 2008, CONAPO's predictions should be upward biased. In other words, CONAPO assumed US labor markets will remain as appealing for Mexicans as they were in 2000, which clearly was not the case with the 2007 crisis. The fact that, even with CONAPO's upward estimation bias, migration figures were underestimated in border towns strongly reinforces my hypothesis that other, non economic variables are being factored when taking migration decisions.

(Morrison, 1993; Zolberg, Suhrke, & Aguayo, 1989). Most of these studies emphasize the role of violence in generating unexpected migration outflows and refugees.

However, until now Mexican migration outflows had never been understood in these terms, probably because prior to the current explosion of drug-related violence in Mexico, economic rather than political or social concerns drove most migration decisions (Massey et al., 2003; Massey & Espinosa, 1997; Papademetriou et al., 2011).

This article has provided evidence supporting the idea that gaining a more complete understanding of migration outflows within Mexico and between Mexico and the United States requires one to account for the literature on organized crime violence. Recent spikes in drug-related violence within Mexico have changed migration dynamics, adding a whole new dimension that considers well-being and security issues as a fundamental part of migration decisions[11].

Before the current article, the total number of Mexicans migrating as a result of drug-related criminal activities had not yet been scientifically counted. Some tentative figures had been given of about 230,000 Mexicans moving out of violent cities, 115,000 of them to relocate in the United States (IDMC, 2010). Yet many claim that this number may be underestimated as it does not account for Mexicans who leave on a temporary basis, checking in at US hotels for short periods of time "to rest from the constant violence" (Corchado, 2009). Other accounts claim 120,000 is the figure only for Juárez (Alvarado, 2011). Overall, the accuracy of these figures remains doubtful as none of these sources explain their methodology.

Based in my own estimates, I claim drug-related homicides from 2006 to 2010 yielded a total displacement figure of 220,291 and extortion yielded 44,401 dis-placements, for a total of 264,692 Mexican drug-violence refugees. This figure accounts for all relocations both within Mexico (from violent to nonviolent cities) and from Mexico to the United States. Some cities though, particularly the most violent ones, seem to carry most of the burden. According to my estimates, Juárez alone has lost 40,993 drug-violence refugees; about 15.48 percent of all displacements in Mexico happened in this city that has just 1.26 percent of Mexico's total population.

Table 3 presents my estimates of the number of drug-related refugees for the top ten municipalities with the largest number of refugees in real and per capita terms. The cities with the largest burden during 2006-2010 are Juárez, Culiacán, and Tijuana with 40.99, 12.4, and 11.37 thousand inhabitants respectively leaving unexpectedly (representing 0.31, 0.16 and 0.8 per million of the total population of these cities, respectively). In relative terms, the cities with the largest drug-related migration outflows are Guadalupe, Mier, and General Treviño with 0.9 inhabitants per million leaving unexpectedly because of security concerns. Figure 2 maps the distribution of drug-violence refugees in Mexico.

[Table 3 about here.]

[Figure 2 about here.]

My estimate of 264,692 Mexican refugees of violence matches what ethnographic, journalistic, and public opinion accounts have been describing as a massive Mexican exodus both within Mexico and from Mexico to the United States. Henry Cisneros, former mayor of San Antonio, Texas, classified Mexican migration outflows as the "largest since the 1920s" and acknowledged that "whole areas of San Antonio...are being trans-

[11] See Alvarado and Massey (2010) for a similar attempt using Latin American countries as the level of analysis, and Lindley (2010) for a good literature review on the topic.

formed" (Sheridan, 2011). Within Mexico, recent opinion polls have shown that out of all people interviewed, 17 percent had changed residency because of drug-related violence or to escape from criminal activities. This represents about 2 percent of the total migration outflows happening in the country, slightly above my own estimates[12].

Perhaps the most telling case study of drug-violence migration outflows is that of Juárez, Chihuahua, and its US counterpart El Paso, Texas. The impacts of Mexican outflows have been felt strongly in El Paso, where housing, schooling, business associations, and many other spheres have changed significantly over the last two years to adapt to new migration patterns.

My results provide empirical evidence of the benefits that introducing variables related to crime and to the behavior of nonstate actors bring to our under-standing of migration studies. Decisions to relocate cannot be grasped entirely by a focus on a monetary cost-benefit analysis or social capital. As I have shown, even the best estimates predicting migration outflows are subject to important errors unless we introduce as part of our independent variables information about the dynamics of crime and violence within territories. If CONAPO's estimates were flawed in 2010, it was because Mexican demographers understated the effect that these variables have on migration dynamics.

I have also contributed to our understanding of puzzles long researched by conflict scholars. In particular, the Mexican case provides tangible evidence of the precise ways in which nonstate actors (i.e., organized crime) affect the decisions taken by citizens and other actors within the state. I have presented robust quantitative evidence to show that violence generated by criminal organizations affects the location of human capital within a polity. My numbers show that academics researching the civilian burden of conflict (Cullen & Levitt, 1999; Oliver & Shapiro, 2006; Wilson, 1997) were right to assert that violence has many and quite nuanced effects that still need to be studied, and that may benefit or hurt the state as a whole.

The influx of US immigrants generated by drug-related violence has had a positive effect on real estate markets in Texas. Housing prices, particularly in El Paso, have remained steady even in the face of the recession, largely because of the influx of Mexicans buying properties (Rice, 2011). Completely new housing developments have started to pop up in McAllen and Brownsville, many of them specifically targeting Mexican markets, tastes, and needs. As a real estate developer in McAllen acknowledged, "The tendency is towards developing gated communities, close to border bridges, with larger kitchens, and more rooms because our customers have larger families and need to cross every day to Mexico to work"[13].

Mexicans have moved not alone but with their businesses, especially when their businesses were already targeted toward American consumers. Mexican restaurants, bars, and hair salons have closed their doors in Mexico and reopened in the United States. Relocating allows American clients who are increasingly fearful of crossing into Mexico because of violence to maintain their regular spending habits and, most important, allows Mexican businessmen to avoid paying extortion fees to traffickers. For example, it is estimated that as many as 700 businesses closed in Nuevo Laredo, Tamaulipas, in 2006 for this reason.14 Estimates for Juárez point to about 10,000 businesses closed between 2007 and 2010 (Torres, 2011).

The exodus of businesses can be tracked to some extent by the number of US "investor's visas" (E1-E2) given to Mexican citizens during the last years. While from

[12]Parametra, "Mexico y sus desplazados", http://www.parametria.com.mx/carta_parametrica.php?cp=4288.
[13]In general, there is more inequality in US border cities and more gated, wealthy communities into which Mexican migrants like to settle with their accumulated wealth (Wong, Palloni, and Soldo 2007).

2001 to 2005 only 7,603 visas were granted, from 2006 to 2010 the number increased to 31,066. Mexican businessmen have even started to organize them-selves into self-support clubs. In El Paso, for example, a club named "La Red" (The Network) provides newcomers with advice on how to relocate their business successfully in the United States. As of 2011, La Red has almost 300 members, most of them enrolling just recently (Perez and Chávez 2011).

The school system may also be changing in important ways. There is no way to officially count the exact numbers of students transferring from Mexican schools to the El Paso School District, but some numbers provide evidence of Mexicans increasingly studying in the United States. The number of students enrolled in bilingual or limited-English-proficiency programs has increased by 1,330 students from 2007 to 2010, even as the total number of students enrolled in the school district has dropped from 45,049 in 2007 to 44,778 in 2010 (Martinez & Torres, 2011).

These new Mexican immigrants are not only changing US border cities but also Mexican ones. The number of unoccupied dwellings in Mexican border cities is quite high and correlates strongly with rates of drug-related homicides. According to census figures, 26 percent of all dwellings in Juárez are unoccupied, 20 percent in Tijuana, and 19 percent in Mexicali. Other nonborder cities facing drug violence also have significantly low levels of occupancy: Chihuahua is 15 percent empty, and Monterrey, the second most important city in Mexico, faces the same situation with 11 percent of its houses vacant (Martnez, Alvarado, and Chvez 2011)[14]. Some claim that forced migration has affected smaller rural towns to the point of creating de facto ghost towns. Teachers, doctors, policemen, and public servants have left their communities without prior notice, fearing violence in communities of Tamaulipas, Michoacán, and Chihuahua.

Ciudad Mier, a border county located south of Texas, is quite impressive in this regard. My estimates account for a total displacement of about 431 individuals, a considerable number given that the city only counts 6,662 inhabitants. Most of the Mier migration happened in mid-2010 when Tony Tormenta, a Mexican drug trafficker, was assassinated[15]. Mier inhabitants, fearing violence and retaliation from Tony Tormenta's allies, left the city immediately, creating a true state of emergency. The exodus of at least a hundred families was so abrupt that Mexican authorities had to install a refugee camp in a neigh-boring community (Guzmán, 2010). Refugee camps have also been created in Michoacán in response to traffickers' turf wars. In this southern Mexican state, forced unexpected migration has displaced at least 2.5 thousand Mexicans into refugee camps[16].

When picking a place to relocate to, Mexicans have favored cities with larger markets and employment opportunities. Mexico City, for example, has become a quite attractive place for relocation. In the past, few businessmen wanted to move to Mexico City because of bureaucracy, the high cost of real estate, and lack of bank financing. Nonetheless, in 2010, about 6,500 businesses relocated to Mexico City from other states (MEPI & ITESM, 2011).

[14] A poll conducted at Juárez showed that only 6.95 percent of all dwellings were empty, totaling about 32,858 thousand residencies (Velázquez Vargas et al. 2010).

[15] Alfredo Corchado, chief of Dallas Morning Bureau at Mexico City, interviewed in June 2010 at Mexico City, DF, Mexico.

[16] Indeed, migration is not restricted to border communities but has also affected other highly vio-lent counties within the country. Journalistic accounts have identified at least seventy counties where drug-related violence has had important consequences for migration outflows, particularly in the Mexi-can states of Chihuahua, Guerrero, Durango, Michoacán, Nuevo León, San Luis Potosí, Sinaloa, Sonora, and Tamaulipas (Zermeño 2011).

7. Conclusion

Mexican immigration is changing in fascinating ways. Immigration figures have reached their lowest point since 2000. Better socioeconomic conditions in Mexico and economic hardship in the United States are among the main causes behind this trend. Yet even if as a whole the United States is receiving fewer Mexican migrants, the opposite is true for cities located at the border.

In this article I have presented the first quantitative evidence available to show that the reason behind this migration pattern is not to be found in traditional explanations of migration dynamics. Mexicans are not crossing into the United States to get better-paid jobs or to run away from economic hardship; at least this is not the only reason. Instead, I argue that Mexicans are migrating out of fear of drug-related violence and extortion. This is particularly true in border counties, where Mexican drug-trafficking organizations have caused large increases in homicide rates and where migration to the United States entails relatively low costs.

Even when we control for variables fostering migration (i.e., employment, education, and economic conditions in both countries), drug-related violence and extortion correlate with migration figures. Each one-point increase in the rate of drug-related homicides per 100,000 inhabitants correlates with 6.34 Mexicans fleeing their county of residency, and every case of extortion per 100,000 correlates with 13.03. These two forms of criminal violence account for a total of 264,692 Mexicans changing their county of residence as an unexpected consequence of Mexico's drug war.

The only way to stop the growth of migration outflows at the border is to in-crease safety within Mexican cities. A recent study measuring Juárez citizens' opinion with respect to moving away for security reasons found that 55 percent of the population would leave the city if they had the opportunity to do so (Torres, 2011). It is time for policy makers to realize that migration won't stop unless drug-related violence does first.

References

Alvarado, R. (2011, June 31). Juárez demographer says 30,000 to 50,000 persons fled juárez to the u.s. as a result of drug-war violence since 2008. *Mexodus*.

Bean, F., Corona, R., Tuiran, R., Woodrow-Lafield, K., & Van Hook, J. (2001). Circular, invisible, and ambiguous migrants: Components of difference in estimates of the number of unauthorized mexican migrants in the united states. *Demography*, *38*(3), 411–422.

Castillo, J. C., Mejía, D., & Restrepo, P. (2014). *Scarcity without leviathan: The violent effects of cocaine supply shortages in the Mexican drug war.* (*Working paper*)

Corchado, A. (2009, January 12). Effects of Mexico's drug war hit el paso. *Dallas Morning News*.

Cornelius, W., & Lewis, J. (2007). *Impacts of border enforcement on mexican migration: The view from sending communities.* Center for Comparative Immigration Studies La Jolla.

Coscia, M., & Rios, V. (2012). Knowing where and how criminal organizations operate using web content. In *Proceedings of the 21st acm international conference on information and knowledge management* (pp. 1412–1421).

Cullen, J., & Levitt, S. (1999). Crime, urban flight, and the consequences for cities. *Review of economics and statistics*, *81*(2), 159–169.

Dell, M. (2011). Trafficking networks and the mexican drug war. In *The annual east asian nber conference.*

Diaz-Cayeros, A., Magaloni, B., Matanock, A., & Romero, V. (2011). Living in fear: So-

cial penetration of criminal organizations in mexico. *Unpublished paper. Retrieved from http://irps. ucsd. edu/assets/001/502967. pdf. Retrieved April*, *14*, 2014.
Freeman, L. (2006). *State of siege: drug-related violence and corruption in Mexico. unintended consequences of the war on drugs.* Washington Office on Latin America.
Guzmán, M. (2010, November 9). *Familias huyen tras muerte de tony tormenta.* Retrieved from http://www.eluniversal.com.mx/notas/722186.html
Ibarraran, P., & Lubotsky, D. (2007). Mexican immigration and self-selection: New evidence from the 2000 mexican census. In *Mexican immigration to the united states* (pp. 159–192).
IDMC. (2010, December). *Internal displacement monitoring center's briefing paper.*
INEGI. (2005). *Conteo nacional de población y vivienda.*
INEGI. (2010). *Censo nacional de población y vivienda.*
INEGI. (2011). *Estadísticas judiciales en materia penal (1997-2011).*
Martinez, A., & Torres, M. (2011, August 26). El paso school districts have no idea how many new students fled juárez. *Borderzine*. Retrieved from http://borderzine.com/2011/08/el-paso-school-districts-have-no-idea-how-many-new-students-fled-juarez/
Massey, D. (1990). Social structure, household strategies, and the cumulative causation of migration. *Population index*, 3–26.
Massey, D., & Arango, J. (1998). *Worlds in motion. understanding international migration at the end of the milenium.* Clarendon Press: Oxford.
Massey, D., Durand, J., & Malone, N. (2003). *Beyond smoke and mirrors: Mexican immigration in an era of economic integration.* Russell Sage Foundation Publications.
Massey, D., & Espinosa, K. (1997). What's driving Mexico-us migration? a theoretical, empirical, and policy analysis. *American journal of sociology*, 939–999.
Massey, D., & Taylor, J. (2004). Back to the future: Immigration research, immigration policy, and globalization in the twenty-first century. *International Migration. Prospects and Policies in a Global Market*, 373–388.
MEPI, & ITESM. (2011, June 31). *Relocate or die: Mexican entrepreneurs migrate to the interior fleeing violence, insecurity.* Retrieved from http://mexodus.borderzine.com/business/relocate-or-die-mexican-entrepreneurs-migrate-to-the-interior-fleeing-violence-insecurity/
MMP. (2009). *Selected results better lives for mexicans cut allure of going north.* Retrieved from http://mmp.opr.princeton.edu/results/results-en.aspx
Morrison, A. (1993). Violence or economics: what drives internal migration in guatemala? *Economic Development and Cultural Change*, *41*(4), 817–831.
Oliver, M., & Shapiro, T. (2006). *Black wealth, white wealth: A new perspective on racial inequality.* CRC Press.
Orrenius, P. (2004). Crossing the border: Research from the mexican migration project. In J. Durand & D. S. Massey (Eds.), (chap. The Effects of U.S. Border Enforcement on the Crossing Behavior of Mexican Migrants). Russell Sage Foundation.
Orrenius, P., & Zavodny, M. (2005). Self-selection among undocumented immigrants from Mexico. *Journal of Development Economics*, *78*(1), 215–240.
Papademetriou, D., Sumption, M., & Terrazas, A. (2011). Migration and the great recession: The transatlantic experience. *Woodrow Wilson International Center for Scholars and Migration Policy Institute*.
Partida Bush, V. (2008). *Proyecciones de la poblacion de Mexico, de las entidades federativas, de los municipios y de las localidades 2005-2050. documento metodológico.*
Piore, M. (1979). Birds of passage: Migrant workers and industrial society. *Nova Iorque: Cambridge University Press*.
Rice, A. (2011, July 28). *Life on the line.* Retrieved from http://www.nytimes.com/2011/07/31/magazine/life-on-the-line-between-el-paso-and-juarez.html?pagewanted=all
Rios, V. (2013). Who started Mexico's drug war? *The Harvard Kennedy Review*.
Rios, V., & Shirk, D. (2011). Drug violence in Mexico: Data and analysis through 2010. *Trans-Border Institute*.

Sheridan, M. (2011). Drug war sparks exodus of affluent mexicans. *The Washington Post*, *23*, 2012. Retrieved from http://www.washingtonpost.com/world/nationalsecurity/drug-war-sparks-exodus-of-affluentmexicans/2011/08/19/gIQA6OR1gJ_story.html

Terrazas, A., Papademetriou, D., & Rosenblum, M. (2011). *Evolving demographic and human-capital trends in Mexico and central america and their implications for regional migration.* Washington, DC: Migration Policy Institute. www. migrationpolicy. org/pubs/RMSG-human-capital. pdf.

Todaro, M., & Maruszko, L. (1987). Illegal migration and us immigration reform: A conceptual framework. *Population and development review*, 101–114.

Torres, M. (2011, June 31). *Business ee juarez as customers stop knocking.* Retrieved from http://mexodus.borderzine.com/business/businesses-flee-juarez-as-customers-stop-knocking/

Tuirán, R., Partida, V., & Ávila, J. (2000a). Migración méxico-estados unidos. presente y futuro. In R. Tuiran (Ed.), (p. 29-33).

Tuirán, R., Partida, V., & Ávila, J. (2000b). Migracion Mexico-estados unidos. presente y futuro. In R. Tuiran (Ed.), (p. 53-75).

Wilson, W. (1997, July 29). *When work disappears: The world of the new urban poor.*

Zolberg, A., Suhrke, A., & Aguayo, S. (1989). *Escape from violence: Conflict and the refugee crisis in the developing world.* Oxford University Press, USA.

List of Tables

Table 1. Descriptive statistics

Variables	Minimum	Standard Dev.	Mean	Max
Unexpected outflows	0	3543.05	1217	62149
Drug-related homicides	0	95.32	29.08	1552.25
Extortion	0	1.234	0.116	36.64
Kidnapping	0	1.645	0.175	34.18
Employment	1604	23415.41	67030	658998
College degrees	0	3725.82	3581.27	36643.32
General homicides	102	126578.1	42079.62	1820888
Previous estimation error	20,760.00	1526.76	-1560	4928

Note: All figures were standardized as rates per 100,000 inhabitants at the municipal level. The level of analysis is the municipality. Unexpected outflows are the number residents (per 100,000 inhabitants) of a municipality that Mexican population offices predicted would live in a community and yet census authorities failed to capture.

Table 2. Empirical results: Drug-related crime and immigration outflows.

Dependent variable	Model 1 Outflows	Model 2 Outflows	Model 3 Outflows
Drug-related homicides	5.424*	5.386*	6.349*
	(2.325)	(2.331)	(2.64)
Extortion	12.416*	12.215*	13.031*
	(5.771)	(6.445)	(6.091)
Kidnapping	1.636	1.533	2.188
	(1.75)	(1.677)	(3.519)
Employment	0.022**	0.021**	0.018*
	(0.008)	(0.008)	(0.008)
College degrees	0.086***	0.119***	0.116***
	(0.024)	(0.025)	(0.025)
Border county	2395.069*	1480.1	1188.7
	(1123.92)	(1057.79)	(1087.7)
Non-drug-related homicides		0.002***	0.002***
		(0.001)	(0.001)
Fixed effects?	NO	NO	YES
Error correction	0.709***	0.704***	0.771***
	(0.105)	(0.104)	(0.116)
Constant	3929.08***	3905.97***	2445.99**
	(614.76)	(613.901)	(788.03)

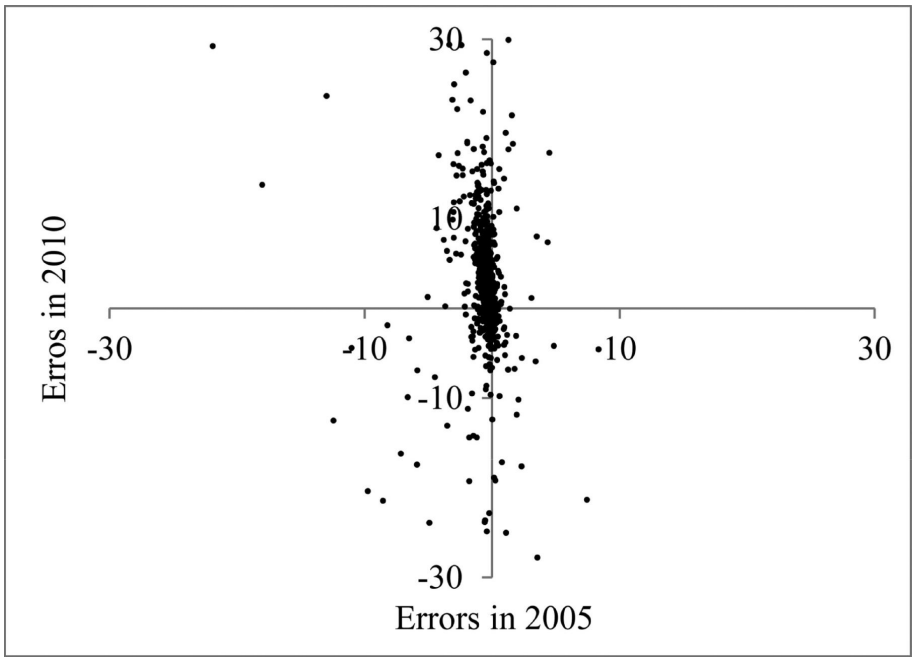
Note: Standard errors are reported in parentheses below coefficients. Model 3 is the preferred identification. The dependent variable is the number of Mexicans unexpectedly leaving their county (outflows) (INEGI, 2010; Partida Bush, 2008). *p.001; **p.050; ***p.100

Table 3. The top ten municipalities with the largest number of drug-related refugees, and the top ten municipalities with the largest number of drug-related refugees per million inhabitants.

Municipality	Refugees	Refugees per million inhabitants
Juárez	40994	0.31
Culiacán	12407	0.16
Tijuana	11372	0.08
Chihuahua	9024	0.12
Acapulco	4785	0.07
Torreón	3798	0.07
Guadalajara	3720	0.02
Gómez Palacio	3533	0.12
Mazatlán	3477	0.09
Nogales	3001	0.16
Guadalupe	924	0.99
Mier	622	0.93
General Treviño	137	0.9
Sáric	211	0.84
Guerrero	301	0.76
Matamoros	258	0.59
Doctor Coss	101	0.58
Arizpe	171	0.56
Guelatao de Juárez	29	0.55
Práxedis G. Guerrero	459	0.53

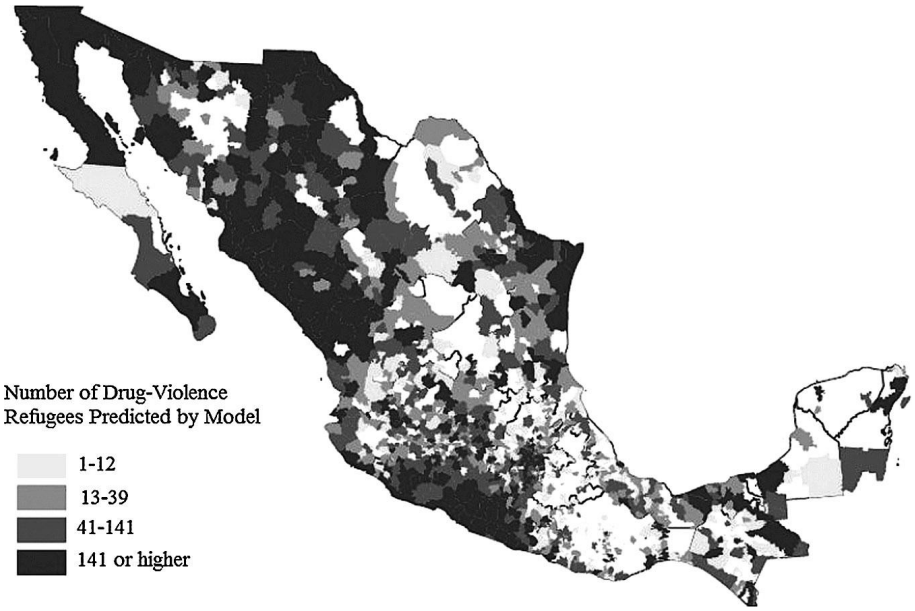
List of Figures

Figure 1. Errors in official population predictions from 2005 to 2010.



Each point represents one of the 2,450 Mexican municipalities. The y axis measures the population (per 100,000 county inhabitants) that was incorrectly predicted from 2005 to 2010; the x axis does the same for the period 2000-2050. Positive [negative] numbers refer to municipalities where predictions calculated more [less] population than actual.

Figure 2. Geographic distribution of drug-violence refugees.



This map shows the number of drug-violence refugees per municipality predicted by this paper. A darker area means more refugees. The four different shades were selected according to the distribution of refugees in four quartiles (1-12, 13-39, 40-141, and 141 and up).