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Remittances and immigration enforcement

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Abstract
Recent increases in U.S. immigration enforcement at the local and state level may be impacting remittance flows to developing countries by curtailing undocumented immigration, restricting the cyclicality of migration flows and limiting employment opportunities for the undocumented. We examine how the remitting patterns of Mexican migrants in the United States are being impacted by two types of immigration enforcement policies: police-based initiatives, such as 287(g) agreements and Secure Communities, and employment-based programs, as is the case with employment verification mandates. We find that increased enforcement reduces the share of migrants sending money home. However, legal migrants remitting money home increase their money outflows enough to offset any reductions in remittance payments from their undocumented counterparts. As a result, the average dollar amount remitted per Mexican migrant rises in the midst of increased uncertainty, safeguarding remittances as one of the least volatile sources of income in the developing world.

1. Introduction
The results from the past U.S. elections re-opened the path for a bipartisan comprehensive immigration reform. Yet, it quickly became apparent that any legislative success will have to inevitably come at the expense of increased immigration enforcement. In 2012, investments in immigration enforcement reached $18 billion—a figure that far exceeded government spending on all the other major federal law enforcement agencies combined (Meissner et al. 2013). However, to this date, there remain important questions regarding the effectiveness and consequences of such investments at the federal, state and county levels.

In this paper, we focus on one particular lateral consequence of stepped up immigration enforcement—namely, how it may impact remittance flows. Remittances play an important role in developing economies, including those in Latin America and the Caribbean (Maldonado et al. 2010). Nowhere in that region are remittances larger than in Mexico, where they represent the second source of income after oil and reached $22.5 billion in 2012 (Fundación BBVA Bancomer 2013). Increased immigration enforcement could curtail these vital money flows in various ways. First, the growing number of initiatives at the state and local level targeting the removal of undocumented immigrants might reduce immigrant inflows. According to the Pew Hispanic Center analysis of Mexican government data, the number of new immigrant arrivals from Mexico fell from one million in 2006 to 404,000 in 2010, with recent net migration being close to zero (Passel and Cohn 2012). In line with those figures, the U.S. Office of Immigration Statistics showed that border patrol apprehensions in 2010 were
at their lowest level since 1972 as fewer people were trying to cross the south border. Second, increased immigration enforcement might further disrupt the historically cyclical pattern of Mexican migration. Undocumented Mexican immigrants, who accounted for approximately 60 percent of all illegal immigration in 2011 (Hoef er et al. 2012), are now more likely to stay in the U.S. for longer periods of time (Massey et al. 2002). This practice may weaken their ties with the home community, reinforce the development of new ties and responsibilities in the United States, and ultimately their lower remittance outflows (Hagan et al. 2008, Amuedo-Dorantes and Mazzolari 2010). Third, the expanding use of employment verification (E-Verify) systems might reduce Mexican migrants’ earnings – especially among the undocumented. They might be forced to look for work in the informal sector, where pay discrimination and other abuses are more dominant. Their lower earnings can, in turn, constrain their ability to remit money home.

Despite the various channels through which increased immigration enforcement might lower remittance flows, there is evidence of the exact opposite (World Bank 2006, Mahuteau et al. 2010, Varsanyi 2010, Vaira-Lucero et al. 2012, Piracha 2012, Piracha and Zhu 2012, Gatina 2013). Specifically, fearing that their time in the country may be cut short, migrants may save and remit more as an insurance mechanism (Amuedo-Dorantes and Pozo 2006). Alternatively, legal migrants in a position to send money home might increase their money outflows altruistically to help deported family members or to make up for lower remittance payments from undocumented relatives.

In this study, we assess how increased immigration enforcement at the county and state levels impacts Mexican migrants’ remitting patterns. At the state level, we focus on the role played by E-Verify mandates and a few 287(g) agreements signed by states with the U.S. Immigration and Customs Enforcement (ICE). At the county level, we consider 287(g) agreements – typically signed at the county level, as well as the Secure Communities program. Due to the similarity in spirit of 287(g) agreements and the Secure Communities program – designed as a continuation and replacement of the 287(g) agreements, we combine those two measures into what we refer to as police-based initiatives, and explore their impact along with that of employment-based initiatives, such as E-Verify mandates. We combine: (a) data on migrants’ remitting patterns from the Mexican Migrant Project, and (b) data on the adoption date and geographic scope of the aforementioned immigration enforcement measures. We then exploit the geographic and temporal variation in the adoption of tougher immigration enforcement measures to gauge their impact on Mexican migrants’ remitting patterns.

Since, by definition, immigration enforcement targets undocumented immigrants, it is natural to explore how this group’s remitting patterns are impacted by the aforementioned initiatives relative to those of their documented counterparts. Yet, it is worth noting that more than 16 million undocumented immigrants in the United States reside in mixed-status families (Passel and Taylor 2010, Debry 2012). Therefore, legal immigrants may also react to the various measures in place. For instance, they might face growing financial responsibilities now that other household members are unable to work and, consequently, become less likely to remit. Still, legal migrants in a position to remit might increase their remittances for multiple reasons. Perhaps, they wish to make up for their undocumented family members’ restricted ability to remit or, if some of their family members were deported, they might need to increase their remittances
to support those relatives as well. Alternatively, legal immigrants may want to build up some savings with the purpose of returning to Mexico in the future, perhaps to join other family members, or they might want to ensure themselves against what appears to be an increasingly hostile environment in the United States.

Furthering our understanding of how increased immigration enforcement at the county and state level is impacting remittance flows is now more important than ever for, at least, three reasons. First, remittance flows to Mexico are not only the second source of revenue for the country after oil and the largest in Latin America and the Caribbean, but have also been shown to have significant multiplier effect on economic development and growth in that region (Taylor, Mora and Adams 2005, Adams and Page 2005). Second, increased immigration enforcement may not only negatively impact Mexico via reduced revenues, but also the United States by curtailing Mexican migration. After all, low-skilled immigration over the past decades allowed for a substantial reduction in the price of locally-traded goods and services that are immigrant-intensive in the United States (Cortés 2008). Third, any successful comprehensive immigration reform proposal will most likely have to increase immigration enforcement and expand E-Verify nationwide. Therefore, gaining a better understanding of how immigration enforcement and, more broadly, U.S. immigration policy impacts remittance flows is critically important when drafting viable economic development policies.

2. Background on the various immigration enforcement programs

Immigration enforcement in the United States has built up to an extraordinary level since the early 1990s, when the first border enforcement operations were implemented. Since then, immigration enforcement has moved to a “consequence delivery system” (CDS) intended to increase the costs of illegal immigration. A wide range of programs and tactics have been adopted to that end by the federal, state and local governments. Examining the impact of all those policies in a single manuscript is not feasible owing to the distinct data challenges that the evaluation of each of those initiatives poses. We thus focus on three policies. One of them is a state-level employment-based initiative – namely, employment verification (E-Verify) mandates. The other two policies involve, for the most part, local policing. Therefore, we refer to them as police-based initiatives in what follows. They are the 287(g) agreements and Secure Communities. A brief review of these programs is necessary in order to better understand and hypothesize about their potential impacts.

2.1. Employment verification systems

E-Verify is an internet-based, free program run by the United States government that compares information from an employee’s employment eligibility verify form (I-9) to data from U.S. government records. If the information matches, that employee is considered eligible to work in the United States. If there is a mismatch, E-Verify alerts the employer and the employee is allowed to work while s/he resolves the problem. Nineteen states have enacted laws mandating the use of E-verify by firms with ties to state public programs or by all firms as of 2012 with the objective to reduce employment of unauthorized workers. Enrollment in E-Verify has jumped since 2005 in line with many of these state mandates. According to the U.S. Citizenship and Immigration
Services, more than 450,000 employers use E-Verify to check the employment eligibility of their employees, with about 1,400 new businesses signing up each week. \(^5\) It is estimated that E-Verify now screens more than 1 in 5 new hires with a disproportionate share verified through larger firms (Rosenblum 2011).

Yet, as noted by Meissner et al. (2013), while many of the initial problems of E-Verify – as is the case with the false negatives – have been greatly minimized, E-Verify still faces important challenges, such as false positives due to the program's limited ability to detect identity fraud. Still, E-Verify mandates appear to be having an impact, with immigrants often leaving the states where they are enacted (Bohn, Lofstrom and Raphael 2010; Amuedo-Dorantes and Bansak 2012).

2.2. 287(g) agreements

The 287(g) agreements date back to the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), which added Section 287(g) on the performance of immigration officer functions by state officers to the Immigration and Nationality Act. Section 287(g) allows a state and local law enforcement entity to enter into a partnership with the U.S. Immigration and Customs Enforcement (ICE) in order to receive delegated authority for immigration enforcement within their jurisdiction. Specifically, it authorizes state and local police to screen people for immigration status, issue detainers to hold them until ICE takes custody, and begin the process of their removal. There are different types of 287(g) agreements and distinct implementation methods. \(^6\)

Although they were introduced in 1996, the first 287(g) agreements between ICE and state/local officers were not signed until 2002. At the end of 2012, ICE had signed 287(g) agreements with 64 law enforcement agencies in 24 states (ICE 2012). The agreements have been credited with identifying more than 304,678 potentially removable migrants from January 2006 through the end of the 2011 (ICE 2012). However, despite the emphasis placed by the Obama Administration in the identification and removal of serious criminals, about half of the detainees had only committed misdemeanors or traffic offenses (Rosenblum and Kandel 2011). Aside from ongoing debate about the extent to which 287(g) agreements have lowered the count of undocumented immigrants at the county level (e.g. Parrado 2012, Watson 2013), a number of factors have contributed to the reduced funding for 287(g) agreements since 2012. The latter include increased discontent about racial profiling, \(^7\) its high implementation cost, minimal oversight and support from ICE, and accusations that the agreements are used as political tools that interfere with protecting and serving communities (Immigration Policy Center, April 2, 2010). As a result, 287(g) agreements have been progressively phased out and replaced by Secure Communities.

2.3. Secure communities

Secure Communities is a data-based program currently in place in practically all of the nation’s jails and prisons. It establishes a fingerprinting check process that starts with a local or state law enforcement agent taking the fingerprints of an arrested individual. The process ends with ICE’s Law Enforcement Support Center generating a report that may include a criminal-level classification. \(^8\) Overall, the purpose of the program is to identify noncitizens who have committed serious crimes by using biometric
information that is checked against the immigration and criminal records in the Department of Homeland Security (DHS) and Federal Bureau of Investigation (FBI) databases.

The program quickly expanded since its first implementation in 2008, and it is intended to eventually replace 287(g) agreements (ICE, Activated Jurisdictions). As noted by Meissner et al. (2013), the total number of fingerprints submitted through the Secure Communities program neared 7 million in 2011. The program has also issued a growing number of detainers. Although individuals convicted of an aggravated felony or multiple felonies are the main target of the program, arrestees with one or two misdemeanors have made up more than half of those ordered to be removed since 2010 (ICE, IDENT/IAFIS Interoperability Statistics 2, Kohli et al., 2011). Several communities initially opposed to the implementation of the program on the basis that the program would undermine cooperation between the immigrant community and law enforcement agents. However, the program is already functional in all states.

3. Theoretical framework and testable predictions

In this section, we use a simple model to derive some testable predictions regarding the impact of tougher immigration enforcement on the remittance behavior of migrants. With that purpose in mind, we follow Amuedo-Dorantes and Pozo’s (2006) proposed template for examining migrants’ remitting motives and model the inter-temporal remitting decision of migrants using a two-period model with uncertainty in period 2. In the first period, migrants arrive to the United States and decide whether to remit money home for the traditional purposes identified in the literature – including altruism, investment and self-insurance. In the second period, some of the counties/states where migrants reside enact immigration enforcement measures that may adversely impact their earnings.

Overall, migrants maximize the utility derived from their own consumption in periods 1 and 2, i.e. \((c_1, c_2)\), as well as from the altruistic payments enjoyed by family members \((a)\) as specified in Equation (1):

\[
U(c_1, c_2, a) = \omega \ln c_1 + (1 - \omega) \ln a + \delta \omega \ln c_2 + (1 - \omega)(1 - \Pi) \ln a,
\]

where \(0 \leq \omega \leq 1\), \(0 < \delta < 1\), \(0 \leq \Pi \leq 1\).

The weighing parameter: \(\omega\) denotes the relative contributions to utility from the own consumption of goods and services, versus the altruistic payments made to their family members. The parameter: \(\delta\) denotes a discount factor showing the relative tastes for current \((c_1)\) versus future consumption \((c_2)\). Finally, \(\Pi\) denotes the probability that the counties/states where migrants reside enact immigration enforcement measures that may adversely impact their earnings.

We assume that, in the first period, migrants earn income \(Y_H\) with certainty. However, their income in period 2 is uncertain due to the possibility of stepped up immigration enforcement. To simplify matters, we assume that with probability: \((1 - \Pi)\) immigration enforcement is left unchanged, in which case migrants’ income remains the same as in period 1 –namely: \(Y_H\). However, with probability \(\Pi\), the counties or states where migrants reside adopt stricter immigration enforcement, in which case migrants will earn a lower income (denoted by \(Y_L\)) due to their undocumented status or discrimination.
We also make some standard assumptions regarding migrants’ remitting patterns. First, we assume that the altruistic payments, \( a \), only take place when migrants earn \( Y_H \). In addition to altruistic remittances, migrants may choose to set aside a sum \( z \) in period 1 for self-insurance purposes or to earn a return to their investment equal to \( z(1 + r) \) in period 2. Lastly, migrants may choose to remit to their family in the amount of \( x \) in period 1 with the expectation that they will receive family-provided insurance; that is, a payoff of \( g(x) \) in period 2 should their income drop to \( Y_L \). We assume that:
\[
g'(x) > 0, \quad g''(x) < 0 \quad \text{and} \quad g(x) < (Y_H - a - Y_L).
\]
In other words, the larger the family-provided insurance premium paid today, \( x \), the greater future coverage will be (i.e. \( g'(x) > 0 \)), although the increase will take place at a decreasing rate (i.e. \( g''(x) < 0 \)). Furthermore, family-provided insurance is not complete. One cannot insure against the total losses, that is: \( g(x) < (Y_H - a - Y_L) \). We do not restrict who the insurer is as both insurance payments, \( x \), and altruistic payments, \( a \), can be made to the same families in the home country. However, we assume that migrants are not expecting anything in return from \( a \); that is, these are purely altruistic payments.

Consumption in period 1 is constrained by migrants’ income, the amount sent for family-provided insurance (\( x \)), their investments/self-insurance (\( z \)), and the level of altruistic payments they make to their families back home (\( a \)) as follows:
\[
c_1 \leq Y_H - x - z - a \tag{2}
\]

In period 2, some of the counties/states where migrants reside adopt tougher immigration enforcement measures with probability \( \Pi \). For those migrants, consumption becomes constrained by their lower income, \( Y_L \); the payoff that family members make, \( g(x) \); and the principal and return from their self-insurance, \( z(1 + r) \). Alternatively, consumption might remain the same as in period 1 if immigration enforcement is not increased. In that case, with probability \((1 - \Pi)\), consumption is constrained by their income \((Y_H)\) plus the principal and return to their savings: \( z(1 + r) \), minus their altruistic remittances \((a)\) as follows:
\[
c_2 \leq \Pi(Y_L + g(x) + z(1 + r)) + (1 - \Pi)(Y_H + z(1 + r) - a) \tag{3}
\]

Migrants choose the amount of family-provided insurance, \( x \), the level of self-insurance/investment or saving, \( z \), and the level of altruistic payments, \( a \), so as to maximize the utility function described in (1) subject to the budget constraints in Equations (2)-(3). We can derive the first-order conditions and, using the implicit function theorem, compute some comparative statics to assess how remittances change with stricter immigration enforcement.\(^{10}\) As shown in the appendix: \( \frac{\partial a}{\partial \Pi} > 0, \frac{\partial z}{\partial \Pi} > 0 \), but the sign of \( \frac{\partial x}{\partial \Pi} \) is unclear. In other words, as the likelihood of exposure to tougher immigration enforcement rises, migrants save more and either invest or remit more for self-and family-provided insurance, possibly with the purpose of consumption smoothing. However, it is unclear how remittances sent altruistically respond to increased enforcement. They may increase if legal migrants raise their money outflows to make up for the curtailed remitting ability of undocumented family members in the United States, or to support deported family members back home. Alternatively, remittances sent for altruistic purposes may drop as the earnings of undocumented migrants are harshly impacted and legal migrants become responsible for a greater share of their household needs in the United States. As such, from a theoretical point of view, overall remittance
flows could increase or decrease as: $\frac{\partial(a+z+x)}{\partial t} \geq 0$. Therefore, the empirical analysis can shed some more light on the overall impact of tougher immigration enforcement on remittance outflows.

4. Data and descriptive statistics

We use data from the Mexican Migration Project (MMP). The MMP was initiated in 1982 to study the migration of Mexicans to the United States. Each year, the MMP randomly samples households in communities located throughout Mexico. It collects detailed social, demographic, and economic information on those households and their members. Of interest to us is the data collected on household head migrants. Although the MMP is a cross-sectional survey, it gathers retrospective information on household heads’ U.S. migration history and, in particular, on their last U.S. migration spell. Specifically, it contains information on when those migrants last came to the United States and where they resided. We also have information on their employment, earnings and average monthly remittances during their last U.S. trip. After gathering data from returning Mexican migrants in Mexico, interviewers travel to the U.S. destinations of migrants from the sampled Mexican communities to administer the same survey to those Mexican migrants who have permanently settled in the United States. The surveys conducted in Mexico and those conducted in the United States are then combined to generate a binational sample. Altogether, the MMP provides reasonably representative data on legal and undocumented Mexican immigrants on both sides of the U.S.-Mexico border.

The release of the MMP we work with contains data on Mexican migrants interviewed between 1982 and 2011 in one of 134 Mexican communities or in the most common U.S. destinations of Mexican migrants from those communities. To maximize our sample size, we use data on all Mexican migrants regardless of when they last came to the United States and how long they stayed. In those instances in which migrants arrived after the earliest adoption of any of the initiatives at hand, i.e. 2002, we instrument for their U.S. residential choice using: (a) the U.S. location where they resided during a migration spell prior to 2002, or (b) in the case of first-time migrants, the most common U.S. destination of migrants from their home community in Mexico prior to 2002. As such, our sample contains information on four groups of migrants: (1) Mexican migrants who migrated to treated U.S. localities prior to their adoption of tougher immigration enforcement, (2) Mexican migrants who migrated to control U.S. localities prior to the adoption of stricter immigration measures by other U.S. localities, (3) Mexican migrants who migrated to treated U.S. localities after their adoption of harsher immigration enforcement methods, and (4) Mexican migrants who migrated to control U.S. localities after the adoption of the policies being examined by other U.S. localities.

For all migrants, the interviewer documents each migration experience and obtains extensive information about the last (or ongoing) migration spell, including their legal status and remitting practices. Table 1 provides summary statistics of key characteristics of migrants in our sample. The vast majority of migrants in the MMP are men. At the time of their last U.S. trip, they were, on average, 33 years old and 27 percent of them were married. Typically, they had completed 5.6 years of schooling. About 29
percent of them spoke English well and the vast majority (96 percent) worked, earning an average of $949/month. About 69 percent of migrants lived with relatives or countrymen (paisanos), and 14 percent participated in sports and social organizations. Table 1 also displays information on the size of their Mexican communities and municipalities. Additionally, we have information on the timing and duration of their last trip, as well as on their legal status at the time. On average, Mexican migrants in our sample last entered the United States in 1986. Yet, the standard deviation is 11 years, thus indicating the presence of significantly earlier as well as later entries. The mean duration of their last migration spell was 3 years and 64 percent of them were undocumented during their last trip. Essential to our study is the information regarding their remitting patterns during their last U.S. migration spell. On average, sixty-six percent of migrants in our sample indicate remitting money home during their last trip to the United States. Those remitting money home sent an average of $332/month.

In order to examine how increased immigration enforcement may impact the remitting patterns of Mexican migrants, we gather information regarding the timing and geographic scope of the various policies. For instance, data on the enactment of E-Verify mandates by various states are collected from the National Conference of State Legislatures (NCLS) website. Data on the implementation of 287(g) agreements and Secure Communities at the state and county levels are gathered from the ICE’s 287(g) Fact Sheet website,16 from Kostandini et al. (2012), and from the ICE’s Activated Jurisdictions document, respectively. We use the information on the timing and geographic scope of the abovementioned policies to merge it to the MMP data according to the time and place where the migrant indicates heading to at the time of her/his last trip to the United States. We then create policy dummies that take the value of 1 when the migrant resided in a so-called treated U.S. locality (that is, a locality that implements one of the measures being examined) during the time period when the policies were in place; otherwise, they take the value of 0.17

### Table 1 Descriptive statistics

| Variables                                                                 | Obs. | Mean  | S.D.  |
|---------------------------------------------------------------------------|------|-------|-------|
| Male                                                                      | 6,713| 0.952 | 0.215 |
| Age                                                                       | 6,713| 33.495| 11.922|
| Married                                                                   | 6,713| 0.268 | 0.443 |
| Years of education completed                                             | 6,713| 5.609 | 3.981 |
| Spoke English well                                                        | 6,713| 0.287 | 0.452 |
| Worked during the last U.S. migration spell                              | 6,713| 0.955 | 0.207 |
| Monthly wage earned during the last U.S. migration spell                 | 6,713| 949.3 | 1442  |
| Lived with relatives or community members during the last U.S. migration spell | 6,713| 0.693 | 0.461 |
| Participated in sports or social organization during the last U.S. migration spell | 6,713| 0.138 | 0.345 |
| Municipal population                                                      | 6,713| 995,508| 213,643|
| Communal population                                                       | 6,713| 66,144| 198,154|
| Year of last U.S. trip                                                   | 6,713| 1986  | 11,094|
| Duration of last U.S. migration spell (in years)                         | 6,713| 3.189 | 5.652 |
| Undocumented                                                              | 6,713| 0.640 | 0.480 |
| Remitted money home during last U.S. migration spell                     | 6,713| 0.662 | 0.473 |
| Average monthly real remittances during last U.S. migration spell         | 4,444| 332   | 804   |
Table 2 provides some preliminary descriptive evidence on the incidence and impact of increased immigration enforcement. As noted in the Introduction, we group 287(g) agreements and Secure Communities under a category that we label police-based initiatives given the similarities between the two programs and the fact that Secure Communities was designed to replace the 287(g) agreements. Hence, we distinguish between police-based programs (i.e. 287(g) and Secure Communities) and employment-based initiatives, namely E-Verify mandates. To assess their impact on migrant remitting patterns at a descriptive level, we compare the remitting likelihood and average dollar amount sent home by remitters in treated and control U.S. localities during the pre- and the post-treatment periods for the two sets of policies. Because the policies all expanded geographically over time, we take the earliest adoption year as the reference for distinguishing a pre- versus post-treatment period. Those years are 2002 for 287(g) agreements and Secure Communities and 2006 for E-Verify mandates. Additionally, given the overlap of some immigration enforcement measures (for instance, police-based initiatives and E-Verify mandates were both in effect in the post-2002 period), we restrict our samples to better identify the effect of each policy. For instance, when examining the impact of police-based initiatives, we exclude from our sample migrants residing in states mandating the use of E-Verify at some point in time. Similarly, when evaluating the impact of employment-based initiatives, we exclude from our sample migrants residing in U.S. localities adopting police-based enforcement measures.

Table 2 Differences-in-differences in the probability to remit and the dollar amount remitted home

| Panel A: Police-based initiatives (287(g) and secure communities) | Geographic areas that Implemented these programs | Geographic areas that Never implemented these programs | DD |
|---|---|---|---|
| Remitting likelihood | Pre-2002 | Post-2002 | DT | Pre-2002 | Post-2002 | DC | (DT-DC) |
| | 0.624 | 0.751 | 0.127*** | 0.645 | 0.833 | 0.188*** | −0.061* |
| | (0.485) | (0.433) | (0.021) | (0.479) | (0.374) | (0.034) | (0.040) |
| N | 4119 | 486 | 4605 | 994 | 156 | 1150 | 5755 |
| $ amount remitted | Pre-2002 | Post-2002 | DT | Pre-2002 | Post-2002 | DC | (DT-DC) |
| | 324.877 | 291.895 | −32.983** | 286.678 | 361.4 | 74.723* | −107.705** |
| | (505.37) | (314.294) | (19.223) | (255.798) | (637.767) | (56.701) | (59.831) |
| N | 2569 | 365 | 2934 | 641 | 130 | 771 | 3705 |

Panel B: Employment-based initiatives (E-Verify)

| Remitting likelihood | Pre-2006 | Post-2006 | DT | Pre-2006 | Post-2006 | DC | (DT-DC) |
|---|---|---|---|---|---|---|---|
| | 0.808 | 0.742 | −0.066 | 0.665 | 0.778 | 0.113** | −0.178** |
| | (0.395) | (0.445) | (0.083) | (0.472) | (0.420) | (0.058) | (0.101) |
| N | 265 | 31 | 296 | 1096 | 54 | 1150 | 1446 |
| $ amount remitted | Pre-2006 | Post-2006 | DT | Pre-2006 | Post-2006 | DC | (DT-DC) |
| | 347.620 | 178.184 | −169.44*** | 303.187 | 231.406 | −71.781** | −97.654** |
| | (361.366) | (130.653) | (36.448) | (356.273) | (238.938) | (38.791) | (53.191) |
| N | 214 | 23 | 237 | 729 | 42 | 771 | 1008 |

Samples: To avoid the overlap of the two types of policies being examined, the sample in Panel A excludes migrants from the geographic areas that eventually adopt E-Verify, whereas the sample in Panel B excludes migrants from geographic areas that ultimately adopt 287(g) or Secure Communities.

Note: Standard deviations and standard errors (for the difference and difference-in-difference estimates) in parentheses. *** denote 1%, 5%, and 10% significance levels at the corresponding one-tail and two-tail tests. DT stands for the difference in remitting patterns among migrants in treated localities –localities adopting the examined measures, whereas DC represents differences in remitting patterns among migrants in control localities –localities that do not adopt any of the policies.
our samples are smaller than the sample we are ultimately able to work with in the regression-based analysis that follows, especially when examining the impact of E-Verify mandates given the widespread implementation of Secure Communities. Nevertheless, they are helpful in revealing some preliminary and potentially interesting changes in migrants’ remitting practices.

Indeed, simple difference-in-difference regression estimates reveal that the two sets of policies appear to significantly impact the remitting likelihood of Mexican migrants, as well as their average monthly remittances. Specifically, according to the figures in Panel A, police-based initiatives (such as 287(g) agreements and Secure Communities) lower the remitting likelihood of Mexican immigrants by 6 percentage points and their average monthly remittances by roughly $108 or 33 percent. Similarly, the figures in Panel B reveal that employment-based measures (such as E-Verify) reduce the remitting likelihood of Mexican migrants by 18 percentage points and the average dollar amount remitted by $98/month or 30 percent. These impacts could be explained by migrants’ constrained ability to remit money home due to employment restrictions or discriminatory treatment that negatively impact their earnings’ potential. Alternatively, other factors we are not yet accounting for, such as ongoing economic trends in the home and host communities or migrants’ personal characteristics, could be responsible for the estimated coefficients. In what follows, we address that limitation with a more thorough analysis.

5. Methodology

Our main objective is to measure how increased immigration enforcement, as captured by the implementation of 287(g) agreements, the Secure Communities program and E-Verify mandates, impacts the remitting behavior of Mexican migrants in the United States. The latter can be characterized as a two-step process. Migrants first decide whether to remit money home, as described by the following equation:

\[
\text{Likelihood of Remitting:}
\]

\[
D_{irt}^* = \alpha_1 + X_{irt}\beta_1 + Y_{irt}\gamma_1 + (u_i \ast Y_{irt})\phi_1 + \delta_r + \theta_t + \delta_r \ast t + \epsilon_{irt} = 1[D_{irt} > 0],
\]

where \(D_{irt}^*\) is the unobserved or latent dependent variable determining the discrete outcome \(D_{irt}\) – namely the decision to remit. Therefore, \(D_{irt}\) is a dummy variable indicative of whether the \(i\)th migrant residing in region \(r\) (county/state) at time \(t\) chooses to remit money home. The function \(1[\cdot]\) is called the indicator function. It takes the value of one when the event in brackets is true and zero otherwise. The vector \(X\) includes a variety of demographic and migration-related characteristics shown in Table 1 and known to influence migrants’ remitting patterns – including their immigration status. In addition, the vector \(X\) includes a series of fixed-effects for the communities where migrants are from in Mexico, along with community of origin-specific time trends and some time-varying information on the population of those communities at the time of migrants’ last U.S. trip. The community fixed-effects address unobserved time-invariant community characteristics crucial in shaping remittance flows, such as a historically higher predominance of migration in that community. Additionally, controlling for
community of origin-specific time trends and for the communities’ population at the time of their last migration addresses time-varying characteristics that change with the community size and that clearly impact remittance transfers, such as the availability of financial and money transfer services, educational and employment opportunities.

\( Y_{rt} \) is a vector of two policy dummies (the employment-based E-Verify mandates, and the police-based initiatives of 287(g) and Secure Communities) indicative of whether region \( r \) (county or state, depending on the scope of the policy) adopted any of the measures in question at time \( t \), that is, during the migrant’s last U.S. visit. For instance, \( Y_{rt} \) will equal 1 for E-Verify if the migrant resided in AZ after 2007; it will equal 0 if s/he resided in CA—a state without an E-Verify mandate.

As noted earlier, due to the predominance of mixed-immigration status households in the United States (Passel and Taylor 2010, Debry 2012), the two sets of policies under examination may not solely impact the remitting patterns of undocumented immigrants. Rather, they are likely to also affect the remitting patterns of relatives who are legal immigrants. For instance, an undocumented husband adversely impacted by the enactment of an E-Verify mandate might no longer be in a position to remit money home. Lower earnings may result in a greater economic burden for other household members who, even if they are legal, might feel more financially constrained and become less likely to remit. As such, we cannot think of legal migrants as a good control group. Nevertheless, it is still of interest to examine how stricter immigration enforcement is impacting the remitting patterns of both legal and undocumented immigrants; therefore, we include a set of interaction terms of the policy dummies with migrants’ immigration status, i.e. \( u_t \times Y_{rt} \), where: \( u_t \) (included in \( X \)) equals 1 if they were undocumented and 0 otherwise.

We also include a vector \( (\delta_r) \) of regional fixed-effects indicative of the U.S. county in which migrants report residing at during their last migration spell. It helps us address a variety of aspects likely impacting migrants’ remitting patterns, such as geographic differences in immigrant networks, the availability of various remitting options in the area (e.g. money transfer firms, banks, etcetera) or a long-standing history of anti-immigrant policy. Likewise, we include the vector \( \theta_t \), which contains time fixed-effects capturing aggregate level shocks potentially impacting immigrant remitting patterns, as might have been the case with the 2008-2009 recession.

A key identification assumption in the analysis described above is the absence of differential pre-treatment trends in the remitting patterns of migrants residing in what we have been labeling as treated versus control U.S. localities (see footnote no. 14). This assumption is violated if the remitting patterns of migrants in the two types of U.S. localities already differed prior to the enactment of the policies being examined. To address that possibility, we include U.S. locality-specific time trends \( (\delta_r \times t) \) in our most complete model specification. In addition to capturing any pre-existing diverging trends in migrants’ remitting patterns across U.S. localities, these controls address political, economic or social developments at the locality level possibly related to migrants’ remitting patterns and the enactment of the policies at hand. Examples of such developments include changes in the economic infrastructure of the region (e.g. a localized decline of specific industry sectors, such as construction), changes in the political preferences of constituents or the proliferation of new immigrant settlements.
Once the migrant decides to remit money home, s/he has to choose how much money to send, as described by the following equation:

\[
R_{irt} \left| D_{irt} \right. = a_2 + X_{urt} \beta_2 + Y_{urt} \gamma_2 + (u_i + Y_{urt}) \phi_2 + \delta_r + \theta_t + \delta_t + t + \nu_{irt}, \text{where} \ \nu_{irt} \sim N(\mu, \sigma^2) \tag{5}
\]

where \(R_{irt}\) represents the dollar amount sent home by those remitting. Therefore, the vector \(R_{irt}\) is a continuous non-negative random variable bounded at zero.

The conventional approach to estimating the two-equation model described above is a censored type model, such as the Tobit and its closely related variants – namely Tobit I or Tobit II. These models estimate a log-likelihood function consisting of two parts: (1) one that describes the decision to remit and utilizes all observations, and (2) a second one that models the amount remitted conditional on the observations not being censored. However, this approach has several drawbacks. First, the model relies on very strict assumptions, which include: the linearity, homoscedasticity and normality of the error term, for its validity. Otherwise, the usage of a Tobit model is highly inappropriate as it yields inconsistent estimators. We tested the appropriateness of the Tobit model in our case using the LM-statistic.\(^\text{18}\) A rejection of the null suggests that the Tobit specification is unsuitable. Second, the model is restrictive in that it assumes that the same mechanism explains the decision to remit and the dollar amount ultimately remitted. This is an important modeling constraint that does not fit the reality. As an example, tougher immigration enforcement policies might restrict migrants’ ability to earn and save money and, as a result, fewer migrants might remit money home. However, those in a position to remit might increase the dollar amount sent home for insurance purposes or to make up for lower remittance payments from undocumented family members in the United States. Third, the model is only applicable when zero values capture true censoring, which might not be the case here. The observed zeroes may very well represent the amount the migrant chooses to remit.

An alternative approach is to estimate a two-part model, such as a Heckman or double hurdle model. However, identification is likely to be a problem in those models. After all, it is hard to think of a variable that would credibly impact the decision to remit, but not the amount sent home. Hence, in order to avoid the imposition of non-credible assumptions about the data or functional forms, we estimate the two equations separately via simple ordinary least squares.\(^\text{19}\) Standard errors are clustered at the U.S. county level – the finest geographic level at which immigration enforcement policies are implemented (Bertrand et al. 2004).

### 6. Results

Does increased border enforcement impact the remitting behavior of immigrants? And, if so, does the impact differ with the migrant’s legal status? Also, what can we conclude about the effect of police-based and employment-based immigration enforcement initiatives? Do both types of policies have similar impacts on migrant remittances? The figures in Tables 3 and 4 address these questions by displaying the estimated impacts that police-based measures, such as 287(g) agreements and Secure Communities, and
## Table 3 Likelihood of remitting money home

| Variables | Baseline model | Added controls, plus regional and time fixed-effects | Specification (2) plus U.S. location-specific time trend |
|-----------|----------------|-----------------------------------------------------|--------------------------------------------------------|
| 287(g) agreements & secure communities | $-0.260^{***}$ | $-0.298^{***}$ | $-0.260^{***}$ |
| | (0.098) | (0.085) | (0.088) |
| E-Verify mandates | $0.355^{***}$ | 0.021 | 0.022 |
| | (0.028) | (0.034) | (0.037) |
| Undocumented | $0.112^{***}$ | 0.051** | 0.052*** |
| | (0.016) | (0.020) | (0.020) |
| Undocumented*287(g) & secure comm. | $0.371^{***}$ | $0.284^{***}$ | $0.251^{***}$ |
| | (0.105) | (0.090) | (0.098) |
| Undocumented*E-Verify | $-0.420^{***}$ | $-0.202^{**}$ | $-0.181^{**}$ |
| | (0.088) | (0.100) | (0.090) |
| Male | $0.161^{***}$ | $0.154^{***}$ | |
| | (0.037) | (0.036) | |
| Age at last U.S. trip | $0.000^{***}$ | $0.009^{***}$ | |
| | (0.003) | (0.003) | |
| Age at last U.S. trip squared | $-9.71e-05^{***}$ | $-9.67e-05^{***}$ | |
| | (3.24e-05) | (3.18e-05) | |
| Married during last U.S. trip | 0.008 | 0.012 | |
| | (0.038) | (0.037) | |
| Years of schooling | $-0.006^{***}$ | $-0.006^{***}$ | |
| | (0.002) | (0.002) | |
| Speaks english well | 0.028 | 0.028 | |
| | (0.027) | (0.027) | |
| Monthly earnings in the U.S. | $-2.91e-06$ | $-2.33e-06$ | |
| | (4.68e-06) | (4.75e-06) | |
| Length of Last U.S. Trip | $-0.002^{***}$ | $-0.002^{***}$ | |
| | (3.18e-04) | (3.25e-04) | |
| Length of last U.S. trip squared | $4.12e-06^{***}$ | $3.99e-06^{***}$ | |
| | (1.11e-06) | (1.17e-06) | |
| Lived with relatives or community members | 0.045* | 0.041* | |
| | (0.032) | (0.031) | |
| Participated in sports or social organizations | $-0.078^{***}$ | $-0.073^{***}$ | |
| | (0.029) | (0.028) | |
| Communal population | $-3.76e-08$ | $-3.97e-08$ | |
| | (7.22e-08) | (7.26e-08) | |
| Municipal population | $1.13e-07^{*}$ | 6.71e-08 | |
| | (7.43e-08) | (7.75e-08) | |
| Observations | 6,703 | 6,703 | 6,703 |
| R-squared | 0.020 | 0.183 | 0.194 |

Notes: All models include a constant term. In addition to the shown regressors, specification (2) contains fixed-effects for the last year in the U.S. and community of origin in Mexico, as well as community of origin time trends. Finally, specification (3) adds U.S. location-specific time trends to the regressors included in specification (2). Standard errors (in parentheses) are clustered at the U.S. county level. ***, **, * denote 1%, 5%, and 10% significance levels at the corresponding one-tail and two-tail tests.
Table 4 Log of dollar amount remitted

| Variables                                           | (1)         | (2)         | (3)         |
|-----------------------------------------------------|-------------|-------------|-------------|
|                                                     | Baseline model | Added controls, plus regional and time fixed-effects | Specification (2) plus U.S. location-specific time trend |
| 287(g) agreements & secure communities              | 0.381       | 0.607**     | 0.724***    |
|                                                     | (0.302)     | (0.262)     | (0.256)     |
| E-Verify mandates                                    | −0.260*     | 0.214       | 0.140       |
|                                                     | (0.200)     | (0.177)     | (0.238)     |
| Undocumented                                        | −0.102      | −0.026      | −0.006      |
|                                                     | (0.122)     | (0.052)     | (0.050)     |
| Undocumented*287(g) & secure comm.                  | −0.231      | −0.326*     | −0.347*     |
|                                                     | (0.317)     | (0.218)     | (0.224)     |
| Undocumented*E-Verify                                | 0.434*      | −0.249      | −0.237      |
|                                                     | (0.268)     | (0.285)     | (0.299)     |
| Male                                                | 0.329***    | 0.327***    |             |
|                                                     | (0.117)     | (0.121)     |             |
| Age at last U.S. trip                               | 0.006       | 0.007       |             |
|                                                     | (0.014)     | (0.014)     |             |
| Age at last U.S. trip squared                       | −1.22e-04   | −1.39e-04   |             |
|                                                     | (1.71e-04)  | (1.69e-04)  |             |
| Married during last U.S. trip                       | 0.149*      | 0.139*      |             |
|                                                     | (0.107)     | (0.108)     |             |
| Years of schooling                                  | 0.013***    | 0.013***    |             |
|                                                     | (0.004)     | (0.004)     |             |
| Speaks english well                                 | −0.104**    | −0.103**    |             |
|                                                     | (0.048)     | (0.048)     |             |
| Monthly earnings in the U.S.                        | 2.68e-05    | 3.19e-05*   |             |
|                                                     | (2.22e-05)  | (2.1e-05)   |             |
| Length of last U.S. trip                            | 0.001       | 0.001       |             |
|                                                     | (0.001)     | (0.001)     |             |
| Length of last U.S. trip squared                    | 3.17e-06    | 4.24e-06*   |             |
|                                                     | (3.26e-06)  | (2.85e-06)  |             |
| Lived with relatives or community members           | −0.003      | −0.008      |             |
|                                                     | (0.074)     | (0.073)     |             |
| Participated in sports or social organizations      | −0.146**    | −0.138*     |             |
|                                                     | (0.081)     | (0.080)     |             |
| Communal population                                 | −2.49e-07   | −2.06e-07   |             |
|                                                     | (2.24e-07)  | (2.43e-07)  |             |
| Municipal population                                | 1.25e-07    | 2.39e-07    |             |
|                                                     | (3.71e-07)  | (3.72e-07)  |             |
| Observations                                        | 4,438       | 4,438       | 4,438       |
| R-squared                                           | 0.004       | 0.242       | 0.268       |

Notes: The dependent variable is the logarithm of the dollar amount remitted in real terms. All models include a constant term. In addition to the shown regressors, specification (2) contains fixed-effects for the last year in the U.S. and community of origin in Mexico, as well as community of origin time trends. Finally, specification (3) adds U.S. location-specific time trends to the regressors included in specification (2). Standard errors (in parentheses) are clustered at the U.S. county level. ***, **, * denote 1%, 5%, and 10% significance levels at the corresponding one-tail and two-tail tests.
E-Verify mandates have had on both the likelihood of sending money home of Mexican migrants in the United States and on the amount remitted by those choosing to do so. Column (1) shows the results from estimating a baseline specification that only includes a constant term along with the policy and undocumented immigration status dummies, plus their interaction terms. Column (2) expands our baseline specification by adding the demographic and migration-related characteristics included in Table 1, as well as fixed effects for the community of origin, U.S. county of residence and last year in the United States. Additionally, the specification in column (2) contains community of origin-specific time trends. Finally, column (3) adds U.S. county-specific time trends to account for the possibility that distinct trends in migrant remitting patterns between treated and control U.S. localities already in place prior to the adoption of the policies might be driving our findings.

For brevity, we focus our discussion on the estimated coefficients in the last column – our most complete specification. Some of the findings from Table 3 are expected, as is the greater propensity to remit exhibited by undocumented immigrants previously noted in the literature. Undocumented immigrants are 5.2 percentage points more likely to send money home than their legal counterparts. A closer look at the impact of the two types of immigration enforcement policies on migrants’ remitting patterns reveals a couple of findings worth discussing. First, employment-based immigration enforcement measures (i.e. E-Verify mandates) significantly lower undocumented migrants’ propensity to remit by 18 percentage points. Perhaps, employment restrictions curtail undocumented immigrants’ earning and remitting capabilities. Since undocumented immigrants account for approximately 64 percent of our sample, E-Verify mandates effectively reduce the remitting likelihood of Mexican migrants by 9.4 percentage points.20

Second, unlike E-Verify mandates, police-based immigration enforcement measures (i.e. 287(g) agreements and Secure Communities) raise undocumented migrants’ propensity to remit by 25 percentages points. This is likely to occur if, in the midst of increased uncertainty surrounding their migration experience, undocumented migrants decide in larger numbers to start remitting money home as an insurance mechanism. Furthermore, in contrast to E-Verify mandates, police-based initiatives appear to significantly alter the remitting likelihood of legal migrants, who become 26 percentage points less likely to send money home. Perhaps, the deportation of undocumented family members that results from the adoption of 287(g) agreements and Secure Communities – an unlikely outcome of E-Verify, raises the financial burden of legal family members in the United States and hinders their ability to remit. Taken altogether, 287(g) agreements and Secure Communities lower Mexican migrants’ remitting likelihood by 9.9 percentage points.21

Overall, then, the two sets of initiatives – police-based and employment-based immigration enforcement measures – reduce the remitting likelihood of Mexican migrants by approximately 19 percentage points (thus lowering the share of remitters from 66 percent to 47 percent). However, how are the two sets of policies impacting the dollar amount sent home by remitters? While fewer migrants might find themselves in a position to send money home, those able to do so might choose to remit larger amounts to make up for lower remittance flows from undocumented household members in the United States or to assist deported relatives back home.

To assess whether that is the case, we turn to the figures in Table 4. E-Verify mandates do not appear to have a statistically significant impact on the dollar amount sent
home by remitters, regardless of their legal status. However, police-based initiatives do. Specifically, undocumented migrants reduce their remittance outflows by 34.7 percent following the implementation of tougher enforcement. Perhaps, increased police-enforcement induces undocumented migrants to go ‘into the shadows’ in an effort to avoid apprehension – a move that could imply restricted driving, employment and, in turn, earning and remitting capabilities. In contrast to their undocumented counterparts, legal migrants respond to the adoption of police-based initiatives by increasing their remittance outflows by as much as 72.4 percent. Maybe, as hypothesized earlier, legal migrants in a position to send money home remit larger amounts to support deported family members back in Mexico, to ensure themselves against what appears to be an increasingly more hostile environment in the United States, or to build up some savings with the purpose of going back to their home country in the future to join their relatives. Regardless of their motives, tougher immigration enforcement increases the average dollar amount sent home per Mexican remitter by 50 percent, raising their average monthly remittance payments from $332/month to $498/month. While this might seem a large amount, it is worth keeping in mind that this is the increase among remitters. Overall, however, the average dollar amount remitted per Mexican migrant rises by roughly $20 following the adoption of tougher immigration enforcement policies.

Summarizing, increased immigration enforcement impacts migrants’ remitting patterns by curtailing their propensity to send money home. However, those continuing to remit money home, increase the dollar amount sent. Perhaps, they do so as an insurance mechanism in light of the increasingly hostile environment in the United States. Alternatively, remitters might increase the dollar amount sent home for altruistic reasons, such as to help deported family members and other relatives back home. Regardless of their motives, these policies overall raise the average dollar amount remitted by migrants – reassuring us about the resilience of these money flows.

Finally, it is comforting to find that the figures in Tables 3 and 4 confirm well-known findings in the literature, such as the fact that men are more likely to remit and remit larger sums than women. This is often the result when men are the main breadwinners in their Mexican households. The remitting likelihood also rises with the migrant’s age, although at a decreasing rate. Additionally, we find evidence that more educated migrants are less likely to remit money home than their less educated counterparts. However, they are able to remit somewhat larger amounts when they do so, possibly due to their better employment and earnings outcomes in the United States. Indeed, higher monthly earnings are positively linked to larger remittance flows. To conclude, there is some evidence of how immigrants remit less as they become increasingly assimilated to the United States, perhaps form new families and assume new responsibilities in the host country. For instance, migrants’ propensity to remit declines with the length of their migration spell at an increasing rate. Similarly, English proficient migrants and those engaged in social organizations – often byproduct of longer migration experiences and greater assimilation, are less likely to remit and remit less if they send money to their families in Mexico.

7. Summary and conclusions
Remittances are, undoubtedly, a major source of income for many migrant sending economies around the world. They are used for a multitude of purposes, from financing food, housing, education and health related expenses of family members back
home, to saving for a rainy day or to invest with the purpose of earning an economic return, just to cite a few. While known for their resilience, these flows are likely to be affected by host countries’ immigration policies that impact migrants’ employment and earnings opportunities, as well as their likelihood of being apprehended and deported.

In this paper, we use data on Mexican migrants from the Mexican Migration Project to examine how immigration enforcement policies implemented by the Department of Homeland Security and by states after 9/11 are impacting migrants’ remitting patterns. Specifically, we pay attention to two different sets of policies—one primarily targeting the employment of unauthorized immigrants, as is the case with E-Verify mandates, and the other one more broadly focused on police enforcement, as is the case with 287 (g) agreements and its successor: Secure Communities. In addition to their focus, these policies differ with regards to their implementation levels. While E-Verify mandates are state-level initiatives, the vast majority of 287(g) agreements are signed at the county level—the same level at which the adherence to Secure Communities took place—with the federal government, i.e. Immigration Customs and Enforcement (ICE).

We find that increased immigration enforcement impacts migrants’ remitting patterns by severely restricting the share of undocumented immigrants sending money home. However, not all policies are created equal. What we refer to as police-based initiatives, i.e. 287(g) agreements and Secure Communities, induce undocumented immigrants to start remitting money home, possibly as an insurance mechanism. However, they significantly curtail legal migrants’ remitting likelihood, conceivably through the greater financial responsibilities they now face following the deportation of family members in mixed-status households. In contrast, E-Verify mandates, possibly through their restrictions on undocumented migrants’ employment options, lower their propensity to remit money home, but have no statistically significant impact on the remitting likelihood of legal migrants. Overall, the two sets of policies curtail the propensity to remit of Mexican migrants by approximately 19 percentage points.

We also find that remitters generally increase their money outflows following the adoption of increased immigration enforcement. Specifically, although police-based initiatives significantly lower the remittance outflows from undocumented migrants, they induce legal migrants to increase their remittance payments. Why? Perhaps legal migrants try to make up for their undocumented family members’ restricted ability to send money home. Alternatively, they might be supporting deported family members back in Mexico, ensuring themselves against what appears to be an increasingly more hostile environment in the United States, or building up some savings with the purpose of going back to their home country in the future. Regardless of their motives, the dollar amount sent by remitters rises and, albeit the lower share of migrants remitting home, tougher immigration enforcement raises the average dollar amount remitted per Mexican migrant increases by roughly $20/month.

The fact that remittances increase with the implementation of stricter immigration policies means that, in the midst of increased uncertainty about their migration experience or that of their undocumented family members, legal migrants boost their money outflows so as to offset any reductions in remittance flows stemming from undocumented immigrants’ restricted ability to work and save. This response safeguards remittances as one of the least volatile sources of income in the developing world.

We believe these findings are of great importance given the currently debated comprehensive immigration reform proposal, which includes significant increases in
immigration enforcement and the expansion of E-Verify nationwide. Nevertheless, the existing proposal also attempts the implementation of a generalized amnesty—a policy that could lower remittances as the motive for self- or family-provided insurance disappears (Amuedo-Dorantes and Mazzolari 2010). Therefore, further research on what the combined impact of the various policy components of the proposed comprehensive immigration reform might be on these vital money flows is crucial in order to forecast their impact and assist in the drafting of viable development policies for migrant-sending countries.

Endnotes

1The likelihood of migrating illegally from Mexico to the United States rises when there are other family members already residing in the country, many of whom might be legal (Massey et al. 2002).

2For instance, Cortés (2008) shows that the low-skilled immigration wave of the 1980-2000 resulted in an important reduction in the price of an agglomeration of non-traded goods and services by a city average of 9-11 percent.

3Another state-level initiative we tried examining was omnibus immigration bills. Starting with Arizona’s SB1070 in 2010, six states have enacted omnibus immigration legislation, including Alabama (HB56), Georgia (HB87), Indiana (SB590), South Carolina (S20) and Utah (Utah’s package – H116, H466, H469 and H497) in 2011. Their laws address a variety of topics, from immigration enforcement by local and state police to verification for employment and public benefits. In some instances, they have gone even further, such as requiring schools to verify students’ immigration status. Unfortunately, due to the recent nature of these laws, we are unable to properly examine their impact with our data.

4See Table 5 in the Appendix for a listing of the states with E-Verify mandates, as well as the mandates’ enactment dates and scope.

5Visit: http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9ac89243c6a7543f6d1a/?vgnextoid=e948888e60a405110VgnVCM1000004718190aRCRD&vgnextchannel=e948888e60a405110VgnVCM1000004718190aRCRD.

6The three types refer to:

- Task force model that permits local and state officers to question and arrest suspected noncitizens during routine law enforcement operations.
- Jail enforcement model, which enables local officers to question detained individuals about their immigration status.
- Hybrid models, which allow jurisdictions to participate in both types of programs. The various types of programs can be implemented using a “targeted” or a “universal” model. When implementing the program as a targeted model, local and state officers focus on identifying serious criminal offenders, whereas the universal model implementation focuses on processing as many undocumented immigrants as possible.

7United States v. Maricopa County, case number 2:12-cv-00981-LOA, filed May 10, 2012, available at: www.justice.gov/iso/opa/resources/46420125101544060757.pdf; DHS, FY 2013 Budget in Brief, 16.

8ICE distinguishes between criminals in Priority 1, 2 and 3 based on the charge for which they were arrested and their criminal history. Priority 1 being individuals
convicted of an aggravated felony or multiple felonies, Priority 2 those with one felony or three misdemeanors, and Priority 3 those with at least one misdemeanor.

We are implicitly assuming that the vast majority of migrants impacted by these policies do not relocate to other counties or states. They either stay in their original location or, if apprehended, they are deported to Mexico. In both instances, their incomes fall to $Y_L$. There is emerging empirical evidence suggesting that, indeed, that is most commonly the case (Amuedo-Dorantes and Lozano 2013, Watson 2013) in light of the large number of deportations in the past years—averaging approximately 400,000/year. Nevertheless, we also experiment with a theoretical extension that allows for the possibility that migrants relocate to another U.S. locality not adopting tougher immigration measures and, as such, are not adversely impacted by the policy. Comparative statics are displayed in Appendix C. Our main predictions remain unchanged.

Please refer to the appendix for the derivation of these conditions.

Each household (and its members) is only interviewed once. Respondents are not followed over time.

For more detailed information on the survey design, please visit: http://mmp.opr.princeton.edu/databases/dataoverview-en.aspx.

For the purpose of the analysis, we label as treated those U.S. localities adopting one of the policy measures being examined at some point in time, whereas control localities are those that do not.

Because of the limited number of women in the MMP, dropping them from our sample does not significantly alter our main findings. These results are available from the authors.

Earnings and remittance data are deflated using the consumer price index from the Bureau of Labor Statistics website (http://www.bls.gov/cpi/).

http://www.ice.gov/news/library/factsheets/287g.htm.

We also experiment with dropping those observations corresponding to migrants whose last year in the United States coincides with the enactment year of the policy. Results (available from the authors) prove robust to that alternative definition of the policy variables.

Our LM statistics is 1768.4, which is above 1 percent critical value of 29.92 by a large margin.

The least squares estimators are unbiased and consistent even when the assumptions of linearity, homoscedasticity and normality of the error term are violated.

While legal migrants’ propensity to remit does not appear to significantly change with the enactment of E-Verify mandates, the coefficients gauging the impact of E-Verify mandates on legal and undocumented immigrants are jointly significant. As such, the overall impact of E-Verify mandates on the likelihood of sending money home by Mexican migrants is given by: $(0.022 - 0.181 \times \text{share of undocumented}) = 0.022 - 0.181 \times 0.64 = -0.094$.

The overall impact of 287(g) agreements and Secure Communities on the likelihood of sending money home by migrants is given by: $(-0.26 + 0.251 \times \text{share of undocumented}) = -0.26 + 0.251 \times 0.64 = -0.099$.

The police-based initiatives, such as 287(g) agreements and Secure Communities, increase the dollar amount remitted by Mexican migrants by 50 percent $[(0.724 - 0.347 \times 0.64) \times 100]$ or an increase of $166$.

Before the adoption of these policies, 64.5 percent of migrants remitted an average of $331/month. Hence, on average, the dollar amount remitted per migrant was:
(0.645*$331) = $214/month. Following the adoption of the aforementioned policies, the share of remitters drops to 47 percent, whereas the average dollar amount remitted home by those sending money to their families increases by $166/month to approximately $498/month. Hence, on average, the dollar amount remitted per migrant increases to $234/month = (0.47*$498).

Appendix A

Table 5 E-verify mandates

| STATE     | MEASURE   | YEAR | APPLIES TO                                      |
|-----------|-----------|------|------------------------------------------------|
| Colorado  | HB 1343   | 2006 | State contractors                               |
| Arizona   | HB 2779   | 2007 | employers, public and private                  |
| Oklahoma  | HB 1804   | 2007 | Public employers, state contractors and subcontractors |
| Mississippi | SB 2988 | 2008 | employers, public and private                  |
| Missouri  | HB 1549   | 2008 | Public employers, state contractors and subcontractors |
| Idaho     | Executive order | 2009 | State agencies                                 |
| Nebraska  | LB 403    | 2009 | Public employers, public contractors           |
| Alabama   | HB 56     | 2011 | Employers, public and private                  |
| Florida   | Executive order | 2011 | State agencies, state contractors and subcontractors |
| Indiana   | SB 590    | 2011 | State agencies, state contractors              |
| Louisiana | HB 342, HB 646 | 2011 | All employers (employers may look at photo IDs instead) |
| Minnesota | Law 11-3590 | 2011 | State contractors and subcontractors with contracts over $50,000 |
| Tennessee | HB 1378   | 2011 | Public employers and private employers with 6+ workers (driver’s licenses OK) |
| Pennsylvania | SB 637   | 2012 | Contractors and subcontractors on public works projects (construction) |
| Georgia   | SB 529/HB 87 | 2006/2011 | Public employers and private employers with more than ten workers |
| North Carolina | SB 1523/HB 36 | 2006/2011 | State agencies, private employers with more than 24 workers |
| Utah      | SB 81/HB 116 | 2008/2010 | Public employers, state contractors and subcontractors, private employers with more than 14 workers |
| South Carolina | HB 4400/SB 20 | 2008/2011 | Employers, public and private |
| Virginia  | HB 737/HB 1859 | 2010/2011 | State agencies, public contractors and subcontractors with 50+ employees and contracts over $50,000 |

Source: http://www.immigrationworksusa.org/index.php?p=110

Table 6 287(g) agreements

| State     | Department                  | Year     | Enforcement Type |
|-----------|-----------------------------|----------|------------------|
| Alabama   | Dept of Public Safety       | 2003/2012| Task Force        |
|           | Etowah County Sheriff Office| 2008     | Jail Enforcement |
| Arizona   | Dept of Corrections         | 2005     | Jail Enforcement |
|           | Maricopa County             | 2008     | Hybrid            |
|           | City of Mesa Police Department| 2009   | Jail Enforcement |
|           | City of Phoenix Police Department | 2008/2012 | Jail/Task Force |
|           | Florence Police Department  | 2009     | Jail/Task Force   |
Table 6 287(g) agreements (Continued)

| State/County/Office                      | Year  | Type            |
|------------------------------------------|-------|-----------------|
| Pinal County Sheriff's Office            | 2008  | Jail Enforcement|
| Pima County Sheriff's Office             | 2008  | Jail/Task Force  |
| Yavapai County Sheriff's Office          | 2008  | Jail Enforcement|
| Dept of Public Safety                    | 2007  | Jail/Task Force  |
| Arkansas                                 |       |                 |
| Benton County Sheriff's Office           | 2007  | Jail Enforcement|
| City of Springdale Police Department     | 2007  | Task Force       |
| Rogers Police Department                 | 2007  | Task Force       |
| Washington County Sheriff's Office       | 2007  | Jail Enforcement|
| Colorado                                 |       |                 |
| Dept of Public Safety                    | 2007  | Task Force       |
| El Paso County Sheriff's Office          | 2007  | Jail Enforcement|
| California                               |       |                 |
| Los Angeles County Sheriff's Office      | 2005  | Jail Enforcement|
| Orange County Sheriff's Office           | 2006  | Jail Enforcement|
| Riverside County Sheriff's Office        | 2006  | Jail Enforcement|
| San Bernardino County Sheriff's Office   | 2005  | Jail Enforcement|
| Connecticut                              |       |                 |
| City of Danbury Police Department        | 2009  | Task Force       |
| Delaware                                 |       |                 |
| Dept of Corrections                      | 2009/12| Jail Enforcement|
| Florida                                  |       |                 |
| Dept of Law Enforcement                  | 2002  | Task Force       |
| Collier County Sheriff's Office          | 2007  | Jail Enforcement|
| Bay County Sheriff's Office              | 2008  | Task Force       |
| Jacksonville Sheriff's Office            | 2008  | Jail Enforcement|
| Georgia                                  |       |                 |
| Dept of Public Safety                    | 2007  | Task Force       |
| Cobb County Sheriff's Office             | 2007  | Jail Enforcement|
| Gwinnett County Sheriff's Office         | 2009  | Jail Enforcement|
| Hail County Sheriff's Office             | 2008  | Jail Enforcement|
| Whitfield County Sheriff's Office        | 2008  | Jail Enforcement|
| Maryland                                 |       |                 |
| Frederick County Sheriff's Office        | 2008  | Jail Enforcement|
| Massachusetts                            |       |                 |
| Massachusetts Department of Correction   | 2007  | Jail Enforcement|
| Minnesota                                |       |                 |
| Dept of Public Safety                    | 2008/2012| Task Force   |
| Missouri                                 |       |                 |
| Missouri State Highway Patrol            | 2008/2012| Task Force   |
| Nevada                                   |       |                 |
| Las Vegas Metropolitan Police Department | 2008  | Jail Enforcement|
| New Jersey                               |       |                 |
| Hudson County Department of Corrections  | 2008  | Jail Enforcement|
| Monmouth County Sheriff's Office         | 2009  | Jail Enforcement|
| New Mexico                               |       |                 |
| Dept of Corrections                      | 2007  | Jail Enforcement|
| North Carolina                           |       |                 |
| Alamance County Sheriff's Office         | 2007  | Jail Enforcement|
| Cabarrus County Sheriff's Office         | 2007  | Jail Enforcement|
| Gaston County Sheriff's Office           | 2007  | Jail Enforcement|
| Mecklenburg County Sheriff's Office      | 2006  | Jail Enforcement|
| Henderson County Sheriff's Office        | 2006  | Jail Enforcement|
| City of Durham Police Department         | 2008  | Task Force       |
| Wake County Sheriff's Office             | 2008  | Jail Enforcement|
| Ohio                                     |       |                 |
| Butler County Sheriff's Office           | 2008  | Jail Enforcement|
| Oklahoma                                 |       |                 |
| Tulsa County Sheriff's Office            | 2007  | Jail/Task Force  |
| South Carolina                           |       |                 |
| Charleston County Sheriff's Office       | 2009  | Jail Enforcement|
| Beaufort County Sheriff's Office         | 2008  | Task Force       |
Appendix B
The first conditions that result from this optimization are given by:

\[
\begin{align*}
\text{FOCa} : \quad \frac{\partial U}{\partial a} &= -\omega \frac{c_1}{c_2} + \frac{\delta \omega (1 - \Pi)}{a} + \frac{(1 - \omega) + \delta (1 - \omega) (1 - \Pi)}{a} = 0 \\
\text{or} \quad \frac{1}{a} &= \left[ \frac{\omega c_1}{c_2} + \frac{\delta \omega (1 - \Pi)}{c_2} \right]
\end{align*}
\]  

(B1)

where Equation (4) suggests that migrants’ consumption and their altruistic payments over their lifetime are in keeping with the weights they assigned to their utility and the probability that the good state prevails in period 2.

Two additional first-order conditions are:

\[
\begin{align*}
\text{FOCx} : \quad \frac{\partial U}{\partial x} &= -\omega \frac{c_1}{c_2} + \frac{\delta \omega \Pi \gamma'(x)}{c_2} = 0 \\
\text{FOCz} : \quad \frac{\partial U}{\partial z} &= -\omega \frac{c_1}{c_2} + \frac{\delta \omega (1 + r)}{c_2} = 0
\end{align*}
\]  

(B2, B3)

From these conditions, we can derive some predictions regarding the change in \(a\), \(z\) and \(x\) should the county or state where migrants reside adopt any of the immigration enforcement measures being examined—that is, should the “poor” state of the world prevail with probability \(\Pi\). Specifically, using the implicit function theorem, we derive the following comparative static results, which suggest that increases in the probability

| State     | Department                                      | Year | Enforcement Type |
|-----------|-------------------------------------------------|------|-------------------|
| Tennessee | Davidson County Sheriff’s Office                | 2007 | Jail Enforcement  |
| Tennessee | Tennessee Highway Patrol/Department of Safety   | 2008 | Task Force         |
| Texas     | Carrollton Police Department                    | 2008 | Jail Enforcement  |
| Texas     | Farmers Branch Police Department                | 2008 | Task Force         |
| Texas     | Harris County Sheriff’s Office                  | 2008 | Jail Enforcement  |
| Utah      | Washington County Sheriff’s Office              | 2008 | Jail Enforcement  |
| Utah      | Weber County Sheriff’s Office                   | 2008 | Jail Enforcement  |
| Virginia  | Prince William-Manassas Regional Jail           | 2007 | Jail Enforcement  |
| Virginia  | Shenandoah County Sheriff’s Office              | 2007 | Jail Enforcement  |
| Virginia  | Herndon Police Department                       | 2007 | Task Force         |
| Virginia  | Rockingham County Sheriff’s Office              | 2007 | Jail Enforcement  |
| Virginia  | Prince William County Police Department         | 2008 | Task Force         |
| Virginia  | Prince William County Sheriff’s Office          | 2008 | Task Force         |
| Virginia  | Manassas Police Department                      | 2008 | Task Force         |
| Virginia  | Manassas Park Police Department                 | 2008 | Task Force         |
| Virginia  | Loudoun County Sheriff’s Office                 | 2008 | Task Force         |
of the poor state of income, $\Pi$, lead to an increase in the larger family-provided insurance premium, $x$, as well as the self-insurance, $z$.

\[
\frac{\partial x}{\partial \Pi} = -\frac{\partial FOC_x}{\partial \Pi} = -\frac{\delta g'(x)(Y_H + z(1+r) - a)c_2^2}{\delta x} > 0 \quad (B4)
\]

\[
\frac{\partial z}{\partial \Pi} = -\frac{\partial FOC_z}{\partial \Pi} = -\frac{\delta g'(x)(Y_H + g(x) + a - Y_H)c_2^2}{\partial z} > 0 \quad (B5)
\]

In other words, as the likelihood of being exposed to immigration enforcement measures rises, migrants will save more and either invest or remit more for self- and family-provided insurance purposes with the purpose of smoothing out their consumption in the future. However, it is unclear how migrants’ remittances for altruistic purposes will behave in response to a likelihood of being exposed to immigration enforcement measures; even though under relatively conservative assumption: $c_2^3 > \frac{\delta g(1-\Pi)(Y_L + g(x) + z(1+r))}{(1-\omega)}$, the term in equation (B6) is likely to bear a negative sign.

\[
\frac{\partial a}{\partial \Pi} = -\frac{\partial FOC_a}{\partial \Pi} = \frac{\delta(1-\omega)}{a} \ln g(x) + \frac{\delta \omega(1-\Pi)(Y_L + g(x) + z(1+r))}{c_2^2} \leq 0 \quad (B6)
\]

As such: $\frac{\partial a}{\partial \Pi} \geq 0$ or $\leq 0$.

**Appendix C**

**Extension to the theoretical framework**

In this section, we consider the possibility that migrants move between counties or states in response to the adoption of stricter immigration enforcement measures in their area of residence. Migrants will move only if their income at the new destination, net of moving costs, is believed to be higher than if they stay. That is:

Migrants stay if: \[ Y_L + g(x) + z(1+r) \geq Y_H + z(1+r) - a - M \]
Migrants move if: \[ Y_L + g(x) + z(1+r) < Y_H + z(1+r) - a - M \]

where $M$ denotes moving costs. We further assume that migrants are able to improve their net incomes by moving with probability $(1 - \theta)$. Therefore, migrants now maximize the below utility function:

\[
U(c_1, c_2, a) = [\omega \ln c_1 + (1-\omega) \ln a] + \delta [\omega \ln c_2 + (1-\omega) \Pi (1-\theta) \ln a + (1-\omega)(1-\Pi) \ln a], \quad (C1)
\]

where $0 \leq \omega, a, \delta, \theta \leq 1$, and $0 \leq \Pi \leq 1$.

The weighing parameter: $\omega$ denotes the relative contributions to utility from the own consumption of goods and services, versus the altruistic payments made to their family members. The parameter: $\delta$ denotes a discount factor showing the relative tastes for current ($c_1$) versus future consumption ($c_2$), while $\Pi$ denotes the probability that the counties/states where migrants reside adopt one of the immigration enforcement measures being examined. The parameter: $\theta$ denotes the probability that migrants stay in
the counties or states that adopt one or more of the immigration enforcement measures being examined.

Consumption in period 1 is still constrained by migrants’ income, the amount sent for family-provided insurance \(x\), their investments/self-insurance \(z\), and the level of altruistic payments they make to their families back home \(a\) as follow:

\[
c_1 \leq Y_H - x - z - a
\]  

(C2)

In period 2, some of the migrants residing in localities subject to increased immigration enforcement might not be able to increase their net incomes by relocating—an event that might occur with probability: \(\theta\). In those instances, their net income will be given by: \(Y_L + g(x) + z(1 + r)\). However, other migrants might be able to improve their incomes by relocating—an event we assume might occur with probability \((1 - \theta)\). Those migrants might then still afford to remit \(a\) for altruistic purposes, and since they will not need any family-provided insurance: \(g(x)\), their net income will be given by: \(Y_H + z(1 + r) - a - M\). Therefore, consumption in period 2 will be given by:

\[
c_2 \leq \Pi(Y_L + g(x) + z(1 + r)) + (1 - \theta)\{Y_H + z(1 + r) - a - M\} + (1 - \Pi)(Y_H + z(1 + r) - a)
\]  

(C3)

Migrants will choose the level of altruistic payments, \(a\), the amount of family-provided insurance, \(x\), and the level of self-insurance/investment or saving, \(z\), so as to maximize the utility function described in (C1) subject to the budget constraints in equations (C2)-(C3). The first conditions that result from this optimization are given by:

\[
\frac{\partial U}{\partial a} = \frac{\omega}{c_1} \frac{\delta \omega(1 - \Pi \theta)}{c_2} + \frac{(1 - \omega)(1 + \delta - \Pi \theta)}{a} = 0
\]  

(C4)

\[
\frac{\partial U}{\partial x} = \frac{\omega}{c_1} \frac{\delta \omega \Pi g'(x)}{c_2} = 0
\]  

(C5)

\[
\frac{\partial U}{\partial z} = \frac{\omega}{c_1} \frac{\delta \omega (1 + r)}{c_2} = 0
\]  

(C6)

From conditions (C4)-(C6), we can derive predictions regarding the change in \(a\), \(x\) and \(z\) should the county or state where migrants reside adopt any of the immigration enforcement measures at hand—that is, should the “poor” state of the world prevail with probability: \(\Pi\). Using the implicit function theorem, the derived comparative statistics suggest that increases in \(\Pi\) lead to an increase in family-provided insurance premium, \(x\), as well as in self-insurance, \(z\):

\[
\frac{\partial x}{\partial \Pi} = \frac{\partial \Pi}{\partial x} \frac{\partial U}{\partial a} = \frac{\delta \omega \theta g'(x) c_2 - \Pi \theta Y_L + \theta g(x) - \theta Y_H + \theta a + \theta M - M}{\delta \omega \Pi (g'(x) c_2 - \Pi g(x)) - \frac{\delta \omega \Pi}{c_2}} > 0
\]  

(C7)

\[
\frac{\partial z}{\partial \Pi} = \frac{\partial \Pi}{\partial z} \frac{\partial U}{\partial a} = \frac{-\delta \omega (1 + r) \theta Y_L + \theta g(x) + a - Y_H - [1 - \theta \Pi][c_2^2]}{-\frac{\delta \omega (1 + r)}{c_2}} > 0
\]  

(C8)

In other words, as the likelihood of being exposed to immigration enforcement measures rises, migrants will save more and either invest or remit more for self- and family-provided insurance purposes with the purpose of smoothing out their
consumption in the future. However, it is unclear how migrants’ remittances for altruistic purposes will behave in response to an increase in the likelihood of being exposed to immigration enforcement measures:

\[
\frac{\partial a}{\partial \Pi} = \frac{\partial FOC_a}{\partial \Pi} = \left[ -\frac{\delta \omega}{\partial c} \left( a^\Pi \right) \frac{\delta \omega}{\partial c} \left( a^\Pi \right) \frac{\delta \omega}{\partial c} \left( a^\Pi \right) \frac{\delta \omega}{\partial c} \left( a^\Pi \right) \right] \leq 0 \quad \text{or} \quad 0 \leq \frac{\partial a}{\partial \Pi} \leq 0.
\]

(C9)

Therefore, from a theoretical point of view, remittances could increase, decrease or stay the same following an increase in immigration enforcement, that is: \( \frac{\partial a}{\partial \Pi} \geq 0 \) or \( \frac{\partial a}{\partial \Pi} \leq 0 \).

Competing interests

The IZA Journal of Migration is committed to the IZA Guiding Principles of Research Integrity. The authors declare that they have observed these principles.

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