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 (Hoefer *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).[1] 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).[2] *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.[3] 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.[4] 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 De-partment 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 mis-demeanors 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 communi-ties initially opposed to the implementation of the program on the basis that the pro-gram 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 re-mitting 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 altru-ism, investment and self-insurance. In the second period, some of the counties/states where migrants reside enact immigration enforcement measures that may adversely im-pact their earnings.

Overall, migrants maximize the utility derived from their own consumption in pe-riods 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):

$$U(c_1, c_2, a) = [\omega \ln c_1 + (1-\omega) \ln a] + \delta[\omega \ln c_2 + (1-\omega)(1-\Pi) \ln a],$$
$$\text{where}: 0 \leq \omega \leq 1, 0 < \delta < 1, 0 \leq \Pi \leq 1. \tag{1}$$

The weighing parameter: ω 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: δ denotes a discount factor showing the relative tastes for current (c_1) versus future consumption (c_2). Finally, Π denotes the probability that the counties/states where migrants reside implement tougher immigration enforcement.

We assume that, in the first period, migrants earn income Y_H with certainty. How-ever, their income in period 2 is uncertain due to the possibility of stepped up immi-gration 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 Π, the counties or states where migrants reside adopt stricter immigration enforcement, in which case mi-grants will earn a lower income (denoted by Y_L) due to their undocumented status or discrimination.[9]

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: $g'(x) > 0$, $g''(x) < 0$ and $g(x) < (Y_H - a - Y_L)$. 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 Π. 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: $\frac{\partial x}{\partial \Pi} > 0$, $\frac{\partial z}{\partial \Pi} > 0$, but the sign of $\frac{\partial a}{\partial \Pi}$ 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: $\frac{\partial(a+z+x)}{\partial\Pi} \geq or \leq 0$. 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,[11] 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.[12] 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,[13] (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.[14] 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

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

percent of them spoke English well and the vast majority (96 percent) worked, earning an average of $949/month.[15] 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 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. As such,

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

	Geographic areas that			Geographic areas that			DD
	Implemented these programs			Never implemented these programs			
Panel A: Police-based initiatives (287(g) and secure communities)							
	Pre-2002	Post-2002	DT	Pre-2002	Post-2002	DC	(DT-DC)
Remitting likelihood	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	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)							
	Pre-2006	Post-2006	DT	Pre-2006	Post-2006	DC	(DT-DC)
Remitting likelihood	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	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:

Likelihood of Remitting:

$$D^*_{irt} = \alpha_1 + X_{irt}\beta_1 + Y_{irt}\gamma_1 + (u_i * Y_{irt})\phi_1 + \delta_r + \theta_t + \delta_r * t + \varepsilon_{irt} = 1[D^*_{irt} > 0],$$
$$where : \varepsilon_{irt} \sim N(\mu, \sigma^2 I)$$

(4)

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 ith 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 AZ prior to that date or 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. $u_i * Y_{rt}$, where: u_i (included in X) equals 1 if they were undocumented and 0 otherwise.

We also include a vector (δ_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 θ_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 ($\delta_r * t$) 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:

Remittance level:

$$\left[R_{irt}|D_{irt}^*\right] = \alpha_2 + X_{irt}\beta_2 + Y_{irt}\gamma_2 + (u_i * Y_{irt})\phi_2 + \delta_r + \theta_t + \delta_r * t + v_{irt}, where : v_{irt} \sim N(\mu, \sigma^2 I) \tag{5}$$

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.[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.[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	(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	−0.260***	−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		0.009***	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 counter-parts, 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 sav-ings with the purpose of going back to their home country in the future to join their rela-tives. Regardless of their motives, tougher immigration enforcement increases the average dollar amount sent home per Mexican remitter by 50 percent,[22] 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. Over-all, however, the average dollar amount remitted per Mexican migrant rises by roughly $20 following the adoption of tougher immigration enforcement policies.[23]

Summarizing, increased immigration enforcement impacts migrants' remitting pat-terns 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 insur-ance mechanism in light of the increasingly hostile environment in the United States. Alternatively, remitters might increase the dollar amount sent home for altruistic rea-sons, such as to help deported family members and other relatives back home. Regard-less 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 lar-ger 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, al-though 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 in-stance, 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 orga-nizations –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 finan-cing 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

[1]The 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).

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

[3]Another 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.

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

[5]Visit: http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9ac89243c6a75 43f6d1a/?vgnextoid=e94888e60a405110VgnVCM1000004718190aRCRD&vgnextchannel= e94888e60a405110VgnVCM1000004718190aRCRD.

[6]The 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.

[7]*United 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.

[8]ICE 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.

[9]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.

[10]Please refer to the appendix for the derivation of these conditions.

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

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

[13]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.

[14]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.

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

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

[17]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.

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

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

[20]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*share of undocumented) = 0.022-0.181*0.64 = -0.094.

[21]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*share of undocumented) = -0.26 + 0.251*0.64 = -0.099.

[22]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*0.64)*100] or an increase of $166.

[23]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)*

	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	2009/2012	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

Table 6 287(g) agreements *(Continued)*

State	Department	Year	Enforcement Type
	Lexington County Sheriff's Office	2010	Jail Enforcement
	York County Sheriff's Office	2007	Jail Enforcement
Tennessee	Davidson County Sheriff's Office	2007	Jail Enforcement
	Tennessee Highway Patrol/Department of Safety	2008	Task Force
Texas	Carrollton Police Department	2008	Jail Enforcement
	Farmers Branch Police Department	2008	Task Force
	Harris County Sheriff's Office	2008	Jail Enforcement
Utah	Washington County Sheriff's Office	2008	Jail Enforcement
	Weber County Sheriff's Office	2008	Jail Enforcement
Virginia	Prince William-Manassas Regional Jail	2007	Jail Enforcement
	Shenandoah County Sheriff's Office	2007	Jail Enforcement
	Herndon Police Department	2007	Task Force
	Rockingham County Sheriff's Office	2007	Jail Enforcement
	Prince William County Police Department	2008	Task Force
	Prince William County Sheriff's Office	2008	Task Force
	Manassas Police Department	2008	Task Force
	Manassas Park Police Department	2008	Task Force
	Loudoun County Sheriff's Office	2008	Task Force

Appendix B

The first conditions that result from this optimization are given by:

$$
FOC_a : \frac{\partial U}{\partial a} = -\frac{\omega}{c_1} - \frac{\delta\omega(1-\Pi)}{c_2} + \frac{(1-\omega)}{a} + \frac{\delta(1-\omega)(1-\Pi)}{a} = 0
$$
$$
\text{or } \frac{(1-\omega)(1+\delta(1-\Pi))}{a} = \left[\frac{\omega}{c_1} + \frac{\delta\omega(1-\Pi)}{c_2}\right] \tag{B1}
$$

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:

$$
FOC_x : \frac{\partial U}{\partial x} = -\frac{\omega}{c_1} + \frac{\delta\omega\Pi g'(x)}{c_2} = 0 \tag{B2}
$$

and

$$
FOC_z : \frac{\partial U}{\partial z} = -\frac{\omega}{c_1} + \frac{\delta\omega(1+r)}{c_2} = 0 \tag{B3}
$$

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 Π. Specifically, using the implicit function theorem, we derive the following comparative static results, which suggest that increases in the probability

of the poor state of income, Π, lead to an increase in the larger family-provided insurance premium, x, as well as the self-insurance, z.

$$\frac{\partial x}{\partial \Pi} = -\frac{\partial FOC_x/\partial \Pi}{\partial FOC_x/\partial x} = -\frac{\left[\delta \omega g'(x)(Y_H + z(1+r)-a)c_2^{-2}\right]}{\left[\frac{\delta \omega \Pi}{c_2^2}\left(g''(x)c_2 - \Pi[g(x)]^2\right) - \frac{\omega}{c_1^2}\right]} > 0 \qquad (B4)$$

$$\frac{\partial z}{\partial \Pi} = -\frac{\partial FOC_z/\partial \Pi}{\partial FOC_z/\partial z} = -\frac{\left[-\delta \omega(1+r)(Y_L + g(x) + a - Y_H)c_2^{-2}\right]}{\left[-\frac{\omega}{c_1^2} - \frac{\delta \omega(1+r)^2}{c_2^2}\right]} > 0 \qquad (B5)$$

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: $c_2^3 > \frac{2a(1-\Pi)(Y_L + g(x) + z(1+r))}{(1-\omega)}$, the term in equation (B6) is likely to bear a negative sign.

$$\frac{\partial a}{\partial \Pi} = -\frac{\partial FOC_a/\partial \Pi}{\partial FOC_a/\partial a} = -\frac{\left[-\frac{\delta(1-\omega)}{a} + \frac{2\delta \omega(1-\Pi)(Y_L + g(x)) + z(1+r)}{c_2^3}\right]}{\left[-\frac{\omega}{c_1^2} - \frac{(1-\omega)(1+\delta(1-\Pi))}{a^2} - \frac{\delta \omega(1-\Pi)^2}{c_2^2}\right]} \leq or \geq 0 \qquad (B6)$$

As such: $\frac{\partial(a+z+x)}{\partial \Pi} \geq or \leq 0.$

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

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:

$$U(c_1, c_2, a) = [\omega \ln c_1 + (1-\omega)\ln a] + \delta[\omega \ln c_2 + (1-\omega)\Pi(1-\theta)\ln a + (1-\omega)(1-\Pi)\ln a], \qquad (C1)$$
where : $0 \leq \omega \leq 1, 0 \leq \delta \leq 1, 0 \leq \Pi \leq 1, and\ 0 \leq \theta \leq 1$

The weighing parameter: ω 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: δ denotes a discount factor showing the relative tastes for current (c_1) versus future consumption (c_2), while Π denotes the probability that the counties/states where migrants reside adopt one of the immigration enforcement measures being examined. The parameter: θ 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:

$$c_1 \leq Y_H - x - z - a \tag{C2}$$

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: θ. 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:

$$c_2 \leq \Pi(\theta(Y_L + g(x) + z(1 + r)) + (1 - \theta)[Y_H + z(1 + r) - a - M]) + (1 - \Pi)(Y_H + z(1 + r) - a) \tag{C3}$$

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:

$$FOC_a : \frac{\partial U}{\partial a} = -\frac{\omega}{c_1} - \frac{\delta\omega(1 - \Pi\theta)}{c_2} + \frac{(1 - \omega)(1 + \delta - \Pi\theta)}{a} = 0 \tag{C4}$$

$$FOC_x : \frac{\partial U}{\partial x} = -\frac{\omega}{c_1} + \frac{\delta\omega\Pi\theta g'(x)}{c_2} = 0 \tag{C5}$$

$$FOC_z : \frac{\partial U}{\partial z} = -\frac{\omega}{c_1} + \frac{\delta\omega(1 + r)}{c_2} = 0 \tag{C6}$$

From conditions (C4)-(C6), we can derive predictions regarding the change in a, z and x 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: Π. Using the implicit function theorem, the derived comparative statics suggest that increases in Π lead to an increase in family-provided insurance premium, x, as well as in self-insurance, z:

$$\frac{\partial x}{\partial \Pi} = -\frac{\partial FOC_x / \partial \Pi}{\partial FOC_x / \partial x} = -\frac{\left[\delta\omega\theta g'(x)(c_2 - \Pi[\theta Y_L + \theta g(x) - \theta Y_H + \theta a + \theta M - M])c_2^{-2}\right]}{\left[\frac{\delta\omega\Pi\theta}{c_2^2}\left(g''(x)c_2 - \Pi[g(x)]^2\right) - \frac{\omega}{c_1^2}\right]} > 0 \tag{C7}$$

$$\frac{\partial z}{\partial \Pi} = -\frac{\partial FOC_z / \partial \Pi}{\partial FOC_z / \partial z} = -\frac{\left[-\delta\omega(1 + r)(\theta[Y_L + g(x) + a - Y_H] - [1 - \theta]M)c_2^{-2}\right]}{\left[-\frac{\omega}{c_1^2} - \frac{\delta\omega(1 + r)^2}{c_2^2}\right]} > 0 \tag{C8}$$

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:

$$\frac{\partial a}{\partial \Pi} = -\frac{\partial FOC_a/\partial \Pi}{\partial FOC_a/\partial a} = -\frac{\left[-\frac{(1-\omega)(1+\delta-\Pi\theta)}{a^2} + \frac{\delta\omega\theta}{c_2} + \frac{\delta\omega(1-\Pi\theta)[\theta(Y_L+g(x)+a-Y_H)-(1-\theta)M]}{c_2^2}\right]}{\left[-\frac{\omega}{c_1^2} - \frac{(1-\omega)(1+\delta-\Pi\theta)}{a^2} - \frac{\delta\omega(1-\Pi\theta)^2}{c_2^2}\right]} \le \text{or} \ge 0$$

(C9)

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

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