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Belinda I. Reyes
Belinda.Reyes@chicagounbound.edu

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The Impact of U.S. Immigration Policy on Mexican Unauthorized Immigration

Belinda I. Reyes†

On March 22, 2007, U.S. Representatives Luis Gutierrez (D-Ill.) and Jeff Flake (R-Ariz.) unveiled new legislation intended to "fix our nation's badly broken immigration system." The unfinished political debate promised to be an important issue for the 110th Congress in the last two years of the Bush Administration. But Congress approved no comprehensive plan.

Although defined by some as "the quintessential American experience," immigration continues to be a politically contentious issue. For some, the debate is about national identity and the challenges "new" foreigners with different traditions, languages and cultures present to the "American fabric." For others, the debate is about economic progress and globalization. The conflict between the economic demands of a globally expanding, interconnected world economy and the protectionist desires of those concerned with vulnerable resources and cultural traditions frame the debate. Also at play are the persistent problems

† Assistant Professor, San Francisco State University. I would like to thank Pia Orrenius, Gordon Hanson, and the Mexican Migration Project for providing me with critical data to conduct this analysis. I also would like to thank the reviewers at the Journal of Policy Analysis and Management, as well as Deborah Reed, Hans Johnson, Douglas Massey, Bettina Nicely Johnson, and Peter Richardson for their helpful comments on early versions of this paper.


3 Consider Peter Brimelow, Alien Nation: Common Sense About America's Immigration Disaster (Random House 1995); Victor Davis Hanson, Mexifornia: A State of Becoming (Encounter 2003).

of race and discrimination, expanding inequalities, and the restructuring of the U.S. economy. But instead of addressing the root causes of these problems, politicians often use immigrants as scapegoats, ignoring the systemic problems, diffusing the politicians' responsibility and placing the blame on some distant foreigner. The current challenge is balancing economic realities, social concerns, and political conflicts to create a realistic future-oriented policy.

In order to inform the debate, this paper explores the links between U.S. immigration policy and unauthorized immigration. We briefly review the history of U.S. immigration policy and the academic evidence for a link between immigration and policy. Then we present new evidence of the impact of U.S. immigration policy—border controls, legalizations, and guest-worker programs—on unauthorized Mexican immigration. This article examines unauthorized immigration from 1970 until 1998 and explicitly models the impact of U.S. immigration policy on migration behavior. Moreover, we examine male and female migration to explore the differential impact of policies on male and female migrants.

I. U.S. IMMIGRATION POLICY

In this section we will briefly review the history of U.S. immigration policy to set the stage for the current debate on immigration policy. Two general points summarize our history:

1. U.S. immigration policy is not the result of a coherent plan or a systematic philosophy; it is the result of political battles, economic swings, and cultural fears.

2. Arguments about the potential impact of immigrants on U.S. society—their "inferiority" and believed lack of ability to adapt to U.S. society—date back to the 1700s and are still a part of the policy debate.

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6 See, for example, James Lardner and David A. Smith, Inequality Matters: The Growing Economic Divide in America and Its Poisonous Consequences (New Press 2007).
7 See, for example, Bennett Harrison and Barry Bluestone, The Great U-Turn: Corporate Restructuring and the Polarization of America (Basic Books 1988).
A. Labor Needs

Since the colonial period, immigration has played a critical part in the economic expansion of the United States. During the colonial period, private companies and colonial governments advertised the “New World” to British and European workers, offering land, transportation, equipment, supplies, the right to vote, and religious tolerance to those interested in immigrating. Starting in the 1850s, Asian immigrants were brought to the Southwest following the Gold Rush to facilitate railway and agricultural expansion. And during the Civil War, the first federal immigration law was primarily interested in increasing immigration to secure enough labor to meet production needs during the war.

Throughout the following decades, as restrictions were imposed on immigrants from Asia, and Southern and Eastern Europe, Mexicans became the labor of choice. They were for the most part excluded from most restrictions until 1965 because of the need to maintain a flow of cheap labor from Mexico. Moreover, for over 20 years, a bilateral agreement between Mexico and the United States brought millions of Mexican immigrants to work in the United States during the Bracero Program. This agreement developed a symbiotic relationship between Mexican labor and U.S. employers that still exists today.

But this need for labor has led to the transformation of the U.S. population. As early as the 1700s, the immigrant flow changed the demographics of the colonial population. By the time of the Declaration of Independence, more than one third of the country’s white inhabitants were of non-English origin. The diversification of the immigration population continued throughout the 1800s. As shown in Figure 1, the proportion of British-born residents in the U.S. population declined significantly and
by the late 1800s, the majority of the immigrants in the United States were from other parts of the world.

B. Backlash

But even in the early years of the republic there was resistance to immigration; as the immigrant population grew and diversified, arguments about the potential of immigrants to assimilate and their perceived "inferiority" gained strength throughout the country. In California, fears about a subhuman Asian invasion increased pressure on politicians, leading to the passage of the Chinese Exclusion Act in 1882 and restrictions on other Asian immigrant groups in subsequent years. At the turn of the twentieth century, a large and ethnically diverse immigrant population began to involve itself in the labor movement as political struggles were emerging in the states. Once the World War started in Europe, it ignited fears among the U.S. born population and brought increasing appeals for immigration controls. The 1911 Dillingham Report to the President proclaimed the potential ill effects of a growing immigrant population and the perceived inferiority of the new immigrant groups, leading to the passage of restrictive federal immigration policies in 1917, 1921, and 1924. In 1921, Congress passed the Quota Act, which not only set a limit on immigration, but restricted annual admissions from each foreign country to three percent of the foreign-born from that country in the U.S. as of the 1910 Census, effectively restricting immigration from most parts of the world and giving preference to Northern Europeans. After the passage of the Immigration Act of 1924, Northern and Western Europe received 82 percent of the total annual quota.

C. Political pressures

Political changes in the United States and internationally put pressure on the federal government to change its approach toward immigrants. War World II increased the number of refu-

15 Daniels, Asian America at 52–56 (cited in note 9).
17 Bernard, Immigration: History of U.S. Policy at 63 (cited in note 8).
18 Id.
19 Id.
The Cold War required the U.S. to change its policies against Asian immigrants as it tried to project an image of itself as the defender of democracy and the leader of the “free new world” against communism.\(^2\) In 1943, the Magnuson Act repealed the Chinese Exclusion Act and in 1952 the McCarran-Walter Act loosened restrictions on Asian immigration.\(^2\) Then the civil rights movement in the United States brought to the surface the ill effects of race-based policies and discrimination.\(^2\) John F. Kennedy attacked the national origin system in 1963, and after his death the Hart-Celler Act of 1965 abolished the national origin quota system, ending all restrictions on Asian immigrants and setting an annual immigration ceiling of 170,000 persons, without preference for immigrants from any one country.\(^2\) This was also the first time numerical limits were imposed on the western hemisphere, a year after the end of the Bracero Program in 1964.\(^2\)

Since the Hart-Celler Act, the number of immigrants has increased dramatically, going from 9.6 million in 1970 to 35.7 million in 2005.\(^2\) The immigrant population has become more Asian and Latino and less European in origin. And there has been a growing influx of unauthorized immigrants from the Western Hemisphere, who for the first time had numerical restrictions on their numbers. These three patterns—increasing numbers, di-

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versification, and illegal immigration—set the stage for increasing appeals to restrict the flow of immigrants and to do something about illegal immigration.

Concerns about the number of unauthorized immigrants in the United States led to the first legalization program and the largest border enforcement buildup effort in U.S. history. The Immigration Reform and Control Act of 1986 ("IRCA") increased border enforcement and imposed sanctions on those who employ unauthorized immigrants. Most importantly, it legalized some 2.3 million formerly undocumented Mexican immigrants. Eight years later, Attorney General Janet Reno and Immigration and Naturalization Service ("INS") Commissioner Doris Meissner launched the most ambitious border enforcement effort in U.S. history, the Southwest Border Strategy. This multiyear strategy was intended to disrupt unauthorized entry via traditional entry points along the southwest border. The border enforcement budget increased over five-fold between 1980 and 2002, reaching $1.8 billion.

Today, the number of unauthorized immigrants is at an all-time high and their labor has become essential in many labor markets in the United States. This has led many in the U.S. Congress to look for a different approach. Recently, $1.2 billion

30 Id.
31 Gordon H. Hanson, Why Does Immigration Divide America? Public Finance and Political Opposition to Open Borders at 16 (Inst for Intl Econ 2005).
33 Before the attacks of September 11th, the United States and Mexico were contemplating a comprehensive bilateral agreement on immigration. The effort would have included collaborations on border controls, visa approval, the legalization of unauthorized immigrants, and legal avenues for immigration. But since September 11th, the debate has shifted to border controls and visa checks. In January 2004, President Bush proposed, and since has continued to advocate for, a new guest worker program that would include the close to 10.5 million unauthorized immigrants currently living in the United States. During the summer of 2006, the Senate agreed on a comprehensive immigration package that included guest worker programs, legalizations, and border controls. The agreement stalled in the House of Representatives. In March 2007, U.S. Representatives Gutierrez and Flakes proposed a new comprehensive bill. Although there are intense negotiations taking place behind close doors, it is uncertain whether a bill would be signed before the 2008 election. See generally Nicole Gaouette, Immigration Plan Quietly in the Works: The
were approved for border controls and the President signed a bill to build a 700-mile fence along the U.S.-Mexico border.\textsuperscript{34} No budget has yet been allocated for its construction, but the Congressional Research Service estimated that the fence could cost as much as $49 billion.\textsuperscript{35}

Even though border control has been the main approach to controlling illegal immigration and large sums of money are being spent protecting the border, it remains unclear if it is achieving its intended goal: to deter and reduce illegal immigration. The consequences of other policy alternatives on illegal immigration, namely, guest worker programs and legalizations, remain unclear as well. These are the issues explored in this paper.

II. EVIDENCE OF AN IMPACT

In this section we review the social science literature for evidence of the impact of U.S. immigration policy on undocumented immigration. First we review studies on the impact of changes in the number of legal permanent residents (LPRs), such as with legalization, and increases in the number of non-immigrant visas, such as guest worker programs, on unauthorized immigration. This is followed by a review of the literature examining the relationship between border controls and undocumented immigration.

A. Legal Admission and Guest Worker Programs

There is no clear evidence of the impact of increases in the number of legal permanent residents, or legalizations, on unauthorized immigration. Looking at data in the U.S. before and after IRCA, Johnson and Warren find large increases in the number of unauthorized immigrants in the United States following the IRCA’s legalization.\textsuperscript{36} But other studies suggest there may


have been only a short-term decline in unauthorized immigration.\textsuperscript{37} Orrenius and Zavodny find a decline in apprehensions immediately after the passage of IRCA and the effect weakening over time.\textsuperscript{38} On the other hand, Hanson and Spilimbergo find no correlation between the lagged log of legal admissions of Mexican immigrants and apprehensions.\textsuperscript{39} Finally, using sending community samples, other studies have found a limited impact of the legalization on unauthorized immigration from Mexico.\textsuperscript{40} In the short run, it appears that unauthorized immigration may have declined, as immigrants were legalized, but as new immigrants entered the flow, unauthorized immigration returned to pre-legalization levels.

As for the probability of immigrants returning to their home countries, only two studies have examined the impact of the IRCA legalization on return probabilities or duration of stay in the United States.\textsuperscript{41} Massey and Espinosa argue that the legalization increased duration of stay in the United States.\textsuperscript{42} But


\textsuperscript{42} Massey and Espinosa, 102 Am J of Sociology at 979–80 (cited in note 41). Massey and Espinosa did not use the actual number of legal visas granted to Mexicans. Instead they used an estimate of the available visas by creating a ratio of annual legal Mexican immigrants to the sum of legal immigrants plus an estimate of gross unauthorized en-
Reyes finds that the legalization may have initially increased the probability of a return to Mexico. What may have decreased return probabilities is a legalization immediately followed by an increase in border controls.

There is a limited literature on the links between guest worker programs and undocumented immigration in the United States. An important article by Massey and Liang finds that guest worker programs increase the number of people in the migration flow by increasing the number of trips made by guest workers and their family members. But the programs decrease the probability of long-term settlement in the United States. They argue that, "by encouraging and facilitating return migration [temporary worker programs] may effectively lower the rates of settlement among seasonal migrants."

B. Border Controls and Unauthorized Immigration

A number of studies have examined the impact of border controls on unauthorized immigration. Donato, et al, find no statistically significant changes in first migration, remigration, or on the probability of apprehension with increases in enforcement before and after IRCA. On the other hand, Massey and Espinosa find a positive correlation between border controls and the probability of a first-time unauthorized immigration, as prospective migrants fear further enforcement and attempt to cross while they still can. These results are corroborated by Reyes, Johnson, and Swearingen, who find an increase not only in first immigration, but also in repeat migration, with further increases in enforcement.

Looking at the effect of apprehensions on repeat migration and duration of stay in the United States, Kossoudji finds that migrants who have been apprehended make additional trips to...
the United States more quickly than those not apprehended and spend less time in Mexico. Once in the United States, if not apprehended again, unauthorized immigrants stay longer in the United States than those not apprehended a first time. Furthermore, Massey, Durand and Malone, and Reyes, Johnson, and Swearingen find a decline in the probability of return to Mexico for unauthorized immigrants in the U.S. in the mid- to late 1990s. Massey, Durand and Malone argue, "U.S. immigration and border policies after 1990 transformed what had been a circular flow of temporary migrants into a settled immigration of permanent residents."

Gathmann, as well as Hanson, Roberton and Spilimbergo, have examined the impact of border controls on the cost of migration and the wages received by immigrants. They find a limited impact of border control on the cost of hiring a smuggler, migration outflows, and wages in the United States, suggesting border controls had a limited impact on unauthorized immigration.

Other studies have observed the effect of some of the strategies that were part of the Southwest Border Strategy: Operation Hold the Line in Texas and Operation Gatekeeper in San Diego. For instance, an early evaluation of Operation Hold the Line found that the policy was effective at reducing the crossing of certain "local" unauthorized crossers—domestic service work-

49 Id at 169–70.
50 Douglas S. Massey, Jorge Durand, and Nolan J. Malone, Beyond Smoke and Mirrors: Mexican Immigration in an Era of Economic Integration at 131 (Russell Sage 2002).
51 Reyes, Johnson, and Van Swearingen, Holding the Line? at 26 (cited in note 29).
52 Massey, Durand, and Malone, Beyond Smoke and Mirrors at 131 (cited in note 50).
54 Gordon H. Hanson, Raymond Robertson, and Antonio Spilimbergo, Does Border Enforcement Protect U.S. Workers from Illegal Immigration?, 84 Rev Econ & Stat 73 (2002).
55 Since 1994 the then Immigration and Naturalization Services launched the most ambitious border enforcement effort in U.S. history, which came to be known as the Southwest Border Strategy. The multi-year strategy includes expanded use of technology, manpower, and resources along the major crossings places of immigrants at the U.S.-Mexico border. It started in El Paso, Texas and in subsequent years resources have been expanded through the 2000 mile border. Today over 10,000 agents guard the United States-Mexico border and resources are augmented every year. See Office of the President, Press Release, President Bush Discussion Comprehensive Immigration Reform in Yuma, Arizona (Apr 9, 2007), available at <http://www.whitehouse.gov/news/releases/2007/04/print/20070409-12.html> (last visited Apr 15, 2007).
ers and street vendors who live in Ciudad Juarez and cross daily to work in El Paso—but that it had no deterrent effect on long-distance crossers. \(^{56}\) Cornelius\(^ {57}\) has looked at Operation Gatekeeper and he suggests that although unauthorized crossers are being forced to cross in other areas, the program may not have had a real impact on overall flow. \(^{58}\) However, no formal test is presented in either paper.

The Government Accountability Office ("GAO") also conducted a number of evaluations of the Southwest Border Strategy and found that some of the intended goals of the policy have been achieved. \(^{59}\) The GAO has found that crossing locations have changed from traditional high-volume entry points like San Diego and El Paso to other locations along the border, more migrants appear to be using fraudulent documents, and the price charged by smugglers has gone up, indicating an increase in the difficulty in crossing. \(^{60}\) However, the reports do not evaluate the deterrent effect of the border build-up or its effect on duration of stay, and they make clear that an overall evaluation of the effectiveness of the policy is essential in order to determine if the billions of dollars invested in the strategy are producing the intended results. \(^{61}\)

This study goes beyond previous work in several ways. It incorporates data obtained after the implementation of the Southwest Border Strategy. It also looks at the effects of border enforcement and at increases in the number of immigrant or non-

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\(^{58}\) Cornelius, Appearances and Realities at 390 (cited in note 57).


\(^{60}\) GAO, Illegal Immigration: Status of Southwest Border Strategy Implementation at 20–23 (cited in note 59).

immigrant visas on migration behavior, employing a more reliable method for modeling the migration probabilities than prior work. This paper incorporates border controls, non-immigrant visas, legal admissions, and economic conditions in Mexico and the United States into the model to evaluate the effect of each factor on migration probabilities. However, because including aggregate variables in the model would lead to a downward bias in the error terms, which could erroneously lead to finding statistical significance for the aggregate variables, we use discrete-time hazard equations and cluster-sample methods to model the probability of first and return migration. Furthermore, we look at gender differences in migration behavior to determine if U.S. immigration policy has a differential effect by gender.

III. DATA SOURCES AND METHODOLOGY

This study uses data from the Mexican Migration Project ("MMP") in order to capture personal, household and community characteristics while modeling the effect of immigration policy on migration behavior. The MMP is a representative sample of 93 communities throughout Mexico and contains data gathered since 1982 from surveys administered every year in Mexico and the United States. Figure 2 shows a map of the states included in the MMP. For this study we used the sample collected as of 2000, which includes 71 communities in these states.

The MMP gathered demographic and socioeconomic information about all household members and their communities of origin. For those with migration experience, the interviewer recorded information about the first and most recent U.S. trips. Over 12,000 households were interviewed, resulting in a sample

62 For a description of the problem see Brent R. Moulton, Random Group Effects and the Precision of Regression Estimates, 32 J of Econometrics 385 (1986).
63 In addition, we weighed every observation by 1/sqr(n), where n is the number of observations available for each year to correct for heteroscedasticity. The later years are more imprecise because of a smaller sample size, so this weighting should correct for the variance in the standard errors.
66 Id.
of 15,645 people who had lived in the United States at some point in their lives.\textsuperscript{67}

We also used a set of nationally and internationally recognized data sources to generate the macro-level variables. The number of Mexican non-immigrants admitted and legal permanent residents were generated from the \textit{Yearbook of Immigration Statistics} for the years between 1968 and 2000.\textsuperscript{68} Enforcement data, obtained by Gordon Hanson and provided to us from unpublished INS records, show the total person-hours that the U.S. Border Patrol spends policing the U.S. border.\textsuperscript{69} The unemployment rate was obtained from the U.S. Bureau of Labor Statistics. Data on the exchange rate and Mexican GDP per capita were obtained from World Bank’s World Development Indicators Database.\textsuperscript{70} The GDP is corrected for inflation and it is measured in 1998 dollars.

We ran two models: one for the probability of making a first unauthorized migration to the United States, and the other for the probability of returning to Mexico once the person has entered the United States illegally. The sample is retrospective and we look at all persons in the sample older than fifteen.\textsuperscript{71} We then constructed a record for every year between sixteen and thirty-five years old.\textsuperscript{72} Both models capture the probability of a trip at a particular year.\textsuperscript{73} This generates a sample of 616,279 “person years” that we use for the analysis. For the return migration model, we construct a record for every year the person was in the United States during a particular trip and until she returned to Mexico or turned thirty-five years old. This generates a sample of 61,839 “person years” that we use to model return migration.

We relate migration probabilities to personal, household, community characteristics, household and community migration

\textsuperscript{67} Id.

\textsuperscript{68} Formerly the yearbook was published by the U.S. Immigrant and Naturalization Services, but since early 2000, the yearbooks have been published by the U.S. Department of Homeland Security’s Office of Immigration Statistics, Washington, D.C..\textsuperscript{75}

\textsuperscript{69} For further details on the enforcement data see Hanson and Spilimbergo, 89 Am Econ Rev at 1355–56 (cited in note 39).

\textsuperscript{70} World Bank, \textit{World Development Indicators} (World Bank 2000).

\textsuperscript{71} Some studies have restricted the analysis to household heads, since the MMP has more migration information on household heads. We chose all persons to take into account the differential migration patterns of all household members.

\textsuperscript{72} Although this means that every record is not going to be independent of the others, this is standard practice in the literature.

\textsuperscript{73} We have information on the first and last trip for every member of the household. The second model examines return probabilities at each trip, while controlling for number of trips.
networks, aggregate changes in the U.S. and the Mexican economies, and changes in border controls, the number of LPRs, or the number of non-immigrant visas. We model the probability that person \(i\) will make a first unauthorized trip to the United States at time period \(t\), or the probability than once person \(i\) entered the U.S. illegally, she would return to Mexico at time period \(t\).\textsuperscript{74} We use logit regressions to estimate the models.\textsuperscript{75}

The critical variables for our analysis are the number of Mexicans admitted to the U.S. at year \(t\) with legal permanent status, the number of Mexican non-immigrants admitted to the U.S. at that same year, and the number of of hours spent guarding the U.S.-Mexico border by border patrol agents at \(t\).\textsuperscript{76}

IV. FINDINGS OF THIS STUDY

On average, two percent of adult males and one percent of adult females in this sample made an unauthorized trip to the United States on an average year between 1970 and 1998, while seventeen percent of males and ten percent of females in the United States returned to Mexico within the first year after migration. However, migration and return probabilities change sig-

\textsuperscript{74} Migration in this context is not necessarily a permanent move, as some people may be engaging in cyclical migration. Also, short-term trips are not counted as moves by the MMP, so this only includes trips longer than a month.

\textsuperscript{75} We also corrected for heteroscedasticity as discussed above.

\textsuperscript{76} We also control for the economic conditions in Mexico and the United States. We look at the GDP per capita at year \(t\), the exchange rate between pesos and dollars, and the unemployment rate in the United States to capture changes in the U.S. and the Mexican economies. We use square terms for GDP per capita, LPRs, non-immigrant visas, and border controls because they better capture the interaction between these variables and migration probabilities. These variables appear to have a non-linear correlation with migration probabilities and only using continuous variables or simple growth measures would obscure this correlation. Furthermore, the literature suggests a non-linearity. For example, Wayne A. Cornelius, Labor Migration to the United States: Development Outcomes and Alternatives in Mexican Sending Communities, in Sergio Diaz-Briquets and Sidney Weintraub, eds, Regional and Sectoral Development in Mexico as Alternatives to Migration 89, 109 (Westview 1991); Cornelius, Appearances and Realities at 384 (cited in note 57); Philip L. Martin, Trade and Migration: NAFTA and Agriculture (Inst for Intl Econ 1993); and Philip L. Martin, Trade and Migration: the Mexico-US Case, in Slobodan Djaji, ed, International Migration: Trends, Policies, and Economic Impact 89, 105 (Routledge 2001), argue that as the GDP increases, inequality and displacement in agriculture increase and this could lead to a short-term increases in immigration, but as GDP continues to increase, immigration should decrease over time. We also tried lags for many of the variables in the analysis but they were not statistically significant. This could be explained by the extensive networks available to potential Mexican immigrants in the United States that make immigrants very responsive to macro changes in Mexico and the United States. For instance, Hanson and Spilimbergo, 89 Am Econ Rev at 1352 (cited in note 39), found no correlations between lagged log legal admissions of Mexicans on apprehensions, suggesting that adjustments are immediate.
significantly in the period under study. We examine the factors contributing to this change in a set of models. Table 1 presents the probability of making a first unauthorized immigration to the United States and Table 2 shows the probability of return to Mexico once someone entered the U.S. illegally. Although personal, household and community characteristics were incorporated in the analysis, we only show the impact of macro economic changes in Mexico and the U.S. and U.S. immigration policy on these tables. The results of the entire model could be made available upon request.

A. The Probability of a First Unauthorized Immigration

Increasing the number of legal permanent residents (LPRs) has a small and—for the most part insignificant—effect on unauthorized immigration.\(^7\) Although the number of LPRs has no direct effect on the probability of migration, it may have an indirect effect, with legal residents broadening the social networks for potential migrants to the United States. Meanwhile, increasing the number of non-immigrant visas has a negative and significant effect on unauthorized immigration by females. Temporary non-immigrant visas may be a substitute for unauthorized immigration for women.\(^8\) Also, guest workers programs may provide a stable source of income for families without requiring them to resettle permanently in the United States.\(^9\)

On the other hand, border controls have a positive and significant effect on the probability of migration. However, as those controls continue to increase, they may lead to decreases in unauthorized immigration in the long run. For the period under analysis, the number of line-watch hours had not reached a level at which male unauthorized immigration would decline. And it is unclear what level of enforcement could lead to declines in male undocumented immigration and what the costs of achieving such a decline would be. But for females, enforcement may have already led to a decline in the probability of migration.

\(^7\) Hanson and Spilimbergo, 89 Am Econ Rev at 1352 (cited in note 39), also found no correlation using the lag of legal permanent residents.

\(^8\) Massey and Espinosa also argue that immigrants move legally if visas are available and illegally if visas are not available. See Massey and Espinosa, 102 Am J Soc at 963 (cited in note 41).

\(^9\) Massey and Liang found a decrease in the probability of a long-term settlement for guest workers. See Massey and Liang, 8 Pop Rsrch & Pol Rev at 220 (cited in note 43).
Theory would suggest that increasing the cost of migration should lead to a decline in the probability of migration, but initially we see increases in migration as a result of increases in enforcement, especially for males. Hanson and Spilimbergo\textsuperscript{80} found a positive correlation between enforcement and apprehensions, and they argue that this suggests that there are increasing returns to scale on border controls. Massey and Espinosa also found a positive correlation, and they argue that the increase is due to fears on the part of potential migrants that an increase would lead to further increases in enforcement, encouraging them to cross while they still can. Finally, Gathmann argues that the limited impact of border controls may be a result of enforcement concentrated in particular areas of the border.\textsuperscript{81} As a result, migrants may have shifted from higher-enforcement places to lower-enforcement places.\textsuperscript{82} However, the United States has undertaken a massive increase in personnel and resources at the Southwest border and the impact was negligible at the time of this analysis. More data are needed to determine if this pattern persists over time or if border controls do eventually lead to a decline in the probability of migration.

As suggested by our findings, economic factors also play a critical part in the decision to migrate. People are very responsive to economic conditions in Mexico and the United States.\textsuperscript{83} They are less likely to move to the United States when the U.S. unemployment rate is increasing. An increasing GDP in Mexico originally leads to increases in migration, but as the GDP continues to increase, fewer Mexicans move to the United States. This finding may be explained by increases in inequality and displacement that took place in Mexico as the economy developed. Some scholars suggest that even though the Mexican economy grew in this period, there was nonetheless tremendous inequality and displacement in agriculture, which could have led many to immigrate to the United States.\textsuperscript{84} Another indication of the effect of worsening economic opportunities in Mexico on mi-

\textsuperscript{80} Hanson and Spilimbergo, 89 Am Econ Rev at 1350–51 (cited in note 39).
\textsuperscript{81} Gathmann, The Effects of Enforcement on Illegal Markets at 4–5 (cited in note 53).
\textsuperscript{82} See also Reyes, Johnson, and Van Swearingen, Holding the Line? at 57 (cited in note 29).
\textsuperscript{83} See Hanson and Spilimbergo, 89 Am Econ Rev at 1352 (cited in note 39).
\textsuperscript{84} Cornelius, Labor Migration at 99–100 (cited in note 76); Cornelius, Appearances and Realities at 414–15 (cited in note 57); Martin, Trade and Migration: NAFTA at 97–99 (cited in note 76); Martin, Trade and Migration: the Mexico-US Case at 101 (cited in note 76).
migration probabilities is the effect of the exchange rate; a deterioration of the peso relative to the dollar leads to increases in unauthorized immigration.

B. The Probability of Return for Unauthorized Mexican Immigrants

An increase in the number of legal immigrants in the United States, particularly increases in the number of non-immigrants, decreases the likelihood that unauthorized immigrants will return. But for males, the probability of returning to Mexico once they have illegally entered the United States increases as the number of non-immigrants increases. This could be a result of declining wages in the face of more non-immigrants in the United States competing with unauthorized immigrants in the same labor market. This competition would limit opportunities for unauthorized immigrants and force them to return to Mexico. However, further increases in non-immigrant visas could also be reinforcing cyclical migration by facilitating return migration and reducing the need to resettle, as suggested by Massey and Liang.

Increases in the number of agents guarding the U.S.-Mexico border decrease the probability that males return. The increase in difficulty and rising cost of migration at the U.S.-Mexico border may have altered migration patterns for Mexican males. Perhaps because of fear of not being able to reenter or a need to recover high migration costs, unauthorized Mexican males are staying longer in the United States partly due to increased enforcement at the U.S.-Mexico border.

Finally, in our models the exchange rate is the only economic variable that consistently affects the probability of return of males and females. This underscores the temporary nature of Mexican unauthorized immigration. Unauthorized Mexican immigrants may be more likely to leave Mexico when the peso loses value relative to the dollar, but they are encouraged to return by the higher value of the dollar. If immigrants are able to buy more with their U.S. earnings in Mexico, they return more quickly to their home communities.

C. The Impact on the Numbers

What has been the effect of all these changes on the number of illegal immigrants in the United States and unauthorized immigrant flows, especially in the late 1990s? Some authors propose that there was a dramatic increase in unauthorized immigration in the mid-1990s. Using the parameter estimates from the models, the means of the independent variables, we generate a simulation of the potential effect of changes in the macro conditions on the number of immigrants and returnees. The only variables we vary are the macro conditions, and we use their values in 1985 and 1997 to generate the results in Figure 3.

The economic conditions in Mexico and the United States and the changes in U.S. immigration policy in 1985 and 1997 would have doubled the number of immigrants entering the United States in the late 1990s. Assuming there are 16 million potential migrants in the western part of Mexico (half of them males), the models predict that about 239,000 Mexicans would have entered the United States without papers in 1985. But given macro conditions and policy in the late 1990s, 556,000 would have entered the country in 1997. Of those who moved, 212,000 would have stayed in the United States for longer than a year in 1985. But in 1997, over 486,000 would have stayed in the United States for longer than a year. What this indicates is that, in spite of the tremendous build-up at the U.S.-Mexico border, the stock of unauthorized immigrants in the United States increased dramatically in the late 1990s, as the number of immigrant entering the country increased and many more stayed longer in the United States. Nevertheless, there was a significant decline in female unauthorized immigration, from close to 64,000 in 1985 to about 14,000 in 1997. These findings are consistent with prior studies that find a decline in female migration but increases in the stock of unauthorized immigrants in the United States in the late 1990s.

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CONCLUSION AND POLICY IMPLICATIONS

This paper explores the effect of economic conditions, border controls, and changes in legal admissions on the probability of migration and the probability of return for Mexican male and female immigrants. Throughout the paper it is clear that macro-economic conditions and policy changes have a significant effect on Mexican immigration patterns. Moreover, there are important differences between males and females that are often ignored in the literature because most studies concentrate on the migration of male household heads.\(^8\) We find that females appear to be more responsive to changes in immigration policy than Mexican males, with stronger responses to changes in non-immigrant visas and increases in border controls.

The two most important macroeconomic factors in this analysis are the number of non-immigrant visas issued and the number of agents guarding the U.S.-Mexico border. These represent two very different approaches to unauthorized immigration. The first approach recognizes the need for immigrant labor in the U.S. labor markets and proposes increases in the number of non-immigrant visas as an alternative to unauthorized immigration. The latter approach—increasing the number of agents guarding the U.S.-Mexico border—is a response to protectionist arguments, concerns about the fiscal costs of unauthorized immigrants, and fears of displacement in the labor market. This paper shows that both of these policies have unanticipated consequences on immigration. While decreasing female unauthorized immigration, border controls may have a short-term positive effect on male unauthorized immigrations and may decrease the probability of return for males and females. Even if border controls eventually lead to some decline in male unauthorized immigration, those who would continue to enter would settle permanently in the United States. After a number of years the number of unauthorized immigrants could increase dramatically, thereby creating a permanent unauthorized population in the United States. We saw some indication of that in the late 1990s, as shown in Figure 3.\(^9\)

\(^8\) This is one of the few studies in the literature that actually includes female in the analysis. All other studies, with some minor exceptions, concentrate on male migration.

\(^9\) Passel and others have documented an increase in undocumented immigrants in the late 1990s and in the early 2000. See, for example, Jeffrey S. Passel, Estimates of the
Although an increase in the number of non-immigrant visas has no statistically significant effect on male migration, it has a negative and significant effect on female migration. Females are either discouraged from migrating without papers to the United States by temporary employment contracts or are relying on non-immigrant visas rather than unauthorized immigration. Furthermore, non-immigrant visas decrease the probability of return in the short-run, but over time non-immigrant visas may increase return migration, reinforcing cyclical patterns of migration and encouraging a temporary pattern of migration.

The overall effect of increasing the number of non-immigrant visas on the number of unauthorized immigrants in the United States depends on the extent of the decline in female migration, the increase in duration of stay in the United States, and whether or not return migration begins to increase for males as non-immigrant visas increase. If female immigration declines significantly and males engage in more temporary migration, increases in the number of non-immigrant visas could lead to a decline in the number of unauthorized immigrants in the United States.

This paper finds that neither policy can actually stem the flow of unauthorized immigrants. Given the magnitude of the networks available to Mexican migrants in the United States and the need for immigrant labor in the United States, it is hard to imagine a strategy that would be able to overcome the information and resources available to Mexican immigrants. If we then think about regulating the flow of undocumented immigrants and bringing a temporary pool of workers for particular industries, guest workers programs may be a more reliable approach than border controls. However, a guest worker program that allows for the readjustment of status is necessary to accommodate the small proportion of workers that become long-term productive residents. We found that legalizations have no direct impact on the probability of moving illegally to the United States, maybe because it is a one time readjustment to accommodate a long-term undocumented population. But legalizations followed by increases in enforcement and no expansion of LPRs or non-immigrant visas, as seen in the 1990s, may increase undocumented immigration and reversed a long-standing pattern of temporary migration into a long-term settlement of a large proportion of Mexican immigrants.

Finally, economic conditions in Mexico and the U.S. are critical. Therefore, addressing the economic realities of Mexican immigration may be the best approach to control unauthorized immigration. Improving opportunities for Mexicans at home and addressing increasing inequality and poverty in Mexico may be the only reliable and long-lasting solution to unauthorized immigration.
Table 1

Discrete-Time Hazard Model of the Probability of First Migration

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td></td>
<td>Std</td>
<td>Std</td>
</tr>
<tr>
<td>Mx GDP per capita</td>
<td>0.04**</td>
<td>0.04**</td>
</tr>
<tr>
<td>GDPsq</td>
<td>0.00**</td>
<td>0.00**</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>-0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>US Unemp</td>
<td>-0.1**</td>
<td>-0.1**</td>
</tr>
<tr>
<td>Mx Total admitted</td>
<td>0.27</td>
<td>0.23</td>
</tr>
<tr>
<td>Mx_Total_adm2</td>
<td>-0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Mx Non-imm</td>
<td>0.02</td>
<td>0.21</td>
</tr>
<tr>
<td>Mx_Non-imm2</td>
<td>0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Mx LPRs</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Mx LPRs2</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Line watch hrs</td>
<td>0.55**</td>
<td>0.16</td>
</tr>
<tr>
<td>Line watch2</td>
<td>-0.1**</td>
<td>0.02</td>
</tr>
<tr>
<td>Log Likelihood</td>
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<td>-26,304.7</td>
</tr>
<tr>
<td>Number of obs.</td>
<td>227,250</td>
<td>227,750</td>
</tr>
<tr>
<td>Pseudo R square</td>
<td>0.072</td>
<td>0.0721</td>
</tr>
</tbody>
</table>

Note: The macro variables were normalized. Line watch hours are normalized at 1 million hours, LPRs at 100,000 people, non-immigrant visas at 1 million people, and gross domestic product (GDP) per capita at 100 pesos per person.

* is significant at a 10% level, ** at a 5% level, and *** at a 1% level.

Table 2

Discrete-Time Hazard Model of the Probability of Return

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td></td>
<td>Std</td>
<td>Std</td>
</tr>
<tr>
<td>Mx GDP per capita</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>GDPsq</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>0.21**</td>
<td>0.04</td>
</tr>
<tr>
<td>US Unemp</td>
<td>-0.05</td>
<td>0.04</td>
</tr>
<tr>
<td>Mx Total admitted</td>
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<td>0.44</td>
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<tr>
<td>Mx_Total_adm2</td>
<td>0.39**</td>
<td>0.13</td>
</tr>
<tr>
<td>Mx Non-imm</td>
<td>0.03</td>
<td>0.26</td>
</tr>
<tr>
<td>Mx_Non-imm2</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Mx LPRs</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Mx LPRs2</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Line watch hrs</td>
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<td>0.45</td>
</tr>
<tr>
<td>Line watch2</td>
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<td>0.04</td>
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<tr>
<td>Log Likelihood</td>
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<td>-11,976.4</td>
</tr>
<tr>
<td>Number of obs.</td>
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<td>28,911</td>
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<tr>
<td>Pseudo R square</td>
<td>0.1634</td>
<td>0.1636</td>
</tr>
</tbody>
</table>

Note: The macro variables were normalized. Line watch hours are normalized at 1 million hours, LPRs at 100,000 people, non-immigrant visas at 1 million people, and gross domestic product (GDP) per capita at 100 pesos per person.

* is significant at a 10% level, ** at a 5% level, and *** at a 1% level.
Figure 1

Proportion of the Foreign Born Population Originating from Northern Europe and the British Isles (1850 to 1930).

Figure 2

Map of States included in the Mexican Migration Project

Figure 3

Simulation of the Change in Macro Conditions in Mexico and the U.S. on the Number of Migrants and Returnees: 1985 and 1997