

Orrenius, Pia M.; Zavodny, Madeline

Working Paper

Do amnesty programs encourage illegal immigration? Evidence from the Immigration Reform and Control Act (IRCA)

Working Paper, No. 2001-19

Provided in Cooperation with:

Federal Reserve Bank of Atlanta

Suggested Citation: Orrenius, Pia M.; Zavodny, Madeline (2001) : Do amnesty programs encourage illegal immigration? Evidence from the Immigration Reform and Control Act (IRCA), Working Paper, No. 2001-19, Federal Reserve Bank of Atlanta, Atlanta, GA

This Version is available at:

<https://hdl.handle.net/10419/100788>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



FEDERAL
RESERVE
BANK
of ATLANTA

**Do Amnesty Programs Encourage Illegal Immigration? Evidence from
the Immigration Reform and Control Act (IRCA)**

Pia M. Orrenius and Madeline Zavodny

Working Paper 2001-19
November 2001

Working Paper Series

Federal Reserve Bank of Atlanta
Working Paper 2001-19
November 2001

Do Amnesty Programs Encourage Illegal Immigration? Evidence from the Immigration Reform and Control Act (IRCA)

Pia M. Orrenius, Federal Reserve Bank of Dallas
Madeline Zavodny, Federal Reserve Bank of Atlanta

Abstract: This paper examines whether allowing certain undocumented immigrants to legalize their status leads to additional illegal immigration. The authors focus on the effects of the 1986 Immigration Reform and Control Act, which granted amnesty to over three million undocumented immigrants. They find that apprehensions of persons attempting to illegally cross the U.S.-Mexico border declined immediately following passage of the law but returned to normal levels during the period when illegal immigrants could file for amnesty and in the years thereafter. The authors' findings suggest that the amnesty program did not change long-term patterns of illegal immigration from Mexico.

JEL classification: J61

Key words: undocumented immigrants, illegal aliens, amnesty

The authors thank Gordon Hanson for providing the data on Mexican economic conditions and border enforcement. They also thank Alan Viard and Jason Saving. The views expressed here are the authors' and not necessarily those of the Federal Reserve Bank of Atlanta or the Federal Reserve System. Any remaining errors are the authors' responsibility.

Please address questions regarding content to Pia M. Orrenius, Research Department, Federal Reserve Bank of Dallas, 200 N. Pearl Street, Dallas, Texas 75201, 214-922-5747, pia.orrenius@dal.frb.org, or Madeline Zavodny, Research Department, Federal Reserve Bank of Atlanta, 1000 Peachtree Street, N.E., Atlanta, Georgia 30309-4470, 404-498-8977, madeline.zavodny@atl.frb.org.

The full text of Federal Reserve Bank of Atlanta working papers, including revised versions, is available on the Atlanta Fed's Web site at http://www.frbatlanta.org/publica/work_papers/index.html. To receive notification about new papers, please use the on-line publications order form, or contact the Public Affairs Department, Federal Reserve Bank of Atlanta, 1000 Peachtree Street, N.E., Atlanta, Georgia 30309-4470, 404-498-8020.

Do Amnesty Programs Encourage Illegal Immigration? Evidence from IRCA

At the time of its passage in 1986, the Immigration Reform and Control Act (IRCA) marked the biggest change in U.S. immigration policy in decades. IRCA granted amnesty to undocumented immigrants who met specific provisions, required employers to verify workers' eligibility to work legally, and increased funding for the Border Patrol. Over 3 million individuals, including 2.3 million Mexicans, were granted legal permanent resident status under IRCA. Opponents of the law claimed that it would encourage future illegal immigration, notwithstanding tougher border enforcement, because it set a precedent for granting amnesty (e.g., Anderson, 1986).¹ Such concerns arose again recently as, fifteen years later, another amnesty is under consideration. President George W. Bush is considering granting legal residency to some of the estimated 3 to 4 million undocumented Mexican immigrants currently present in the United States, a proposal strongly endorsed by Mexican President Vicente Fox.

Previous research on the effect of IRCA on flows of undocumented immigrants has reached mixed conclusions. Based on data gathered from seven Mexican communities in 1987-89, Donato, Durand and Massey (1992b) find little evidence that IRCA lowered the number of undocumented Mexicans entering the United States. Based on estimates from decennial Census and Current Population Survey data after correcting for changes in the size of the undocumented immigrant population as a result of IRCA, Woodrow and Passell (1990) similarly conclude that the annual change in the number of undocumented immigrants during 1986-88 was not significantly different from changes prior to IRCA. Bean et al. (1990), in contrast, conclude from Immigration and Naturalization Service (INS) data on apprehensions during 1977-89 that

¹ For example, Congressman Lamar Smith (2000) said that, "Amnesty actually precipitates even more illegal immigration, as individuals come to join their amnestied relatives or are encouraged in the belief that if they can just elude the Border Patrol and stay underground for a few years, they will eventually get amnesty themselves."

apprehensions declined by about 27 percent after IRCA; the effect did not change significantly during the 35-month post-IRCA period they observe. White, Bean and Espenshade (1990) report a similar result using INS apprehensions data for 1977-88.

This study reexamines the effect of IRCA on undocumented immigration flows to the United States. Unlike previous studies, we distinguish between the period immediately following passage of the bill and the period when amnesty applications were accepted as well as assessing the overall effect of IRCA on illegal immigrant flows through 1996. Because the main IRCA legalization program required that applicants be present in the United States, the law may have encouraged illegal immigration immediately following its passage or during the application period but not after the amnesty program expired. Expected tougher border enforcement in the future also may have prompted undocumented immigration shortly after the law was enacted. In addition, IRCA may have encouraged immigration even after the amnesty period expired if the law fostered beliefs that other amnesty programs would occur in the future. Alternatively, the long run effects of IRCA may differ from the short term effects as potential migrants learned whether employment eligibility documentation requirements could easily be circumvented.

Establishing the effect of an amnesty program on unauthorized immigration is important for several reasons. First, the number of illegal immigrants present in the United States is substantial. An estimated 7 to 8.5 million immigrants—including 3.9 to 4.5 million Mexicans—were illegally present in the United States in 2000, and the annual net flow of undocumented immigrants is estimated at 275,000 (Porter, 2001; Immigration and Naturalization Service, 2000). It is generally believed that undocumented immigrants have lower skill levels, on average, than other immigrants (Fix and Passel, 1994; Tienda and Singer, 1995); this is partly because most undocumented immigrants are from Mexico and, more recently, other Latin

American countries, which have low average levels of education. The negative effects of immigration on natives' labor market outcomes are generally believed to be concentrated among high school dropouts, so an additional influx of low-skilled immigrants could have adverse effects on some natives (Borjas, Freeman and Katz, 1997).² Larger flows of low-skilled immigrants may also exacerbate income inequality and impose fiscal burdens on state and local governments (Smith and Edmonston, 1997).

The next section details the provisions of IRCA. We then discuss the data and methods used to examine whether the Act encouraged undocumented immigration. The results indicate that the flow of undocumented immigrants slowed for six months after passage of IRCA but then returned to previous levels. We do not find that IRCA stimulated illegal immigration in the hopes of receiving amnesty, but we also do not find that the law discouraged undocumented migration in the long run.

Legislative Background

IRCA included two separate legalization programs: the Legally Authorized Workers (LAW) program and the Special Agricultural Workers (SAW) program. Under the LAW program, illegal aliens who had lived in the United States since January 1, 1982, and met certain other criteria, could become temporary legal residents. Successful applicants could then become legal permanent residents (LPRs) after 18 months by meeting several criteria, such as demonstrating basic knowledge of the English language and American civics. Almost 1.8

² However, Bean, Lowell and Taylor (1988) suggest that undocumented immigrants are a complement to other workers. Hanson, Robertson and Spilimbergo (1999) find little relationship between enforcement along the U.S.-Mexico border and wages in U.S. border cities, suggesting that increased enforcement either does not affect undocumented migrant flows or that wages are not responsive to changes in the number of undocumented immigrants.

million applications were filed for the LAW program. The period for filing an amnesty application under the LAW program was from May 5, 1987 until May 4, 1988. The SAW program required that illegal immigrants have worked in U.S. agriculture for at least 90 days during each of the previous three years or for at least 90 days during the last year to receive temporary permanent resident status. SAWs could then receive LPR status in one or two years. The SAW application period was from May 5, 1987 until November 30, 1988, six months longer than the LAW program, and almost 1.3 million SAW applications were filed. SAW applicants were not required to be residents of the United States to qualify for the program, only to have met the agricultural work requirement. Over 2.7 million persons were granted amnesty under the two programs, about 70 percent of whom were from Mexico.

A substantial number of applications for the IRCA amnesty program are believed to have been fraudulent. For example, the entire qualifying foreign-born labor force, both legal and illegal, believed to meet the SAW provisions was estimated at about 300,000, far less than the more than 1 million SAW applications granted (Passel, 1999). Based on surveys conducted in Mexico, Donato and Carter (1999) estimate that, in their samples, 73 percent of LAW applications were fraudulent, and 40 percent of SAW applications. Cornelius (1989) reports that 28 percent of SAW applicants did not meet the program's conditions in his sample of Mexicans. Such widespread fraud suggests that people may have crossed the border after the bill's passage and then obtained fake documents indicating continuous residency in the United States since January 1982 or agricultural work during the eligibility period.

Other IRCA provisions required employers to ask job applicants for documents establishing legal status to work in the United States and imposed civil penalties (criminal on repeat offenders) on employers who knowingly hire illegal aliens. The law also called for a 50

percent increase in personnel for the Border Patrol and increased the agency's funding during that fiscal year and the next by about 75 percent. This increase in Border Patrol personnel, combined with legalization for millions of previously illegal aliens, would likely result in fewer illegal border crossings and a lower number of undocumented immigrants in the United States. The act also allowed persons who had resided illegally and continuously in the United States since January 1, 1972, to immediately qualify for LPR status.

The passage of IRCA was several years in the making. Immigration reform, including amnesty for undocumented immigrants, was proposed in Congress in 1981, and the Senate passed various bills in 1982, 1983 and 1985. The House of Representatives, however, was less willing to back immigration reform, primarily because of concerns about the amnesty proposal. On September 26, 1986, the House voted not to take up the immigration reform bill but then, in a "stunning reversal," passed the measure on October 9 (Congressional Quarterly, 1987: 65). The bill was signed into law on November 6, 1986. Undocumented aliens are thus unlikely to have anticipated passage of an amnesty program or to have illegally crossed the border before October 1986 in the hopes of an amnesty program being created. However, people may have responded to the amnesty program after it was passed and entered the United States soon after passage of the law intending to fraudulently file for amnesty.

There are several reasons the amnesty program may have encouraged illegal immigration. Immigration quotas for non-immediate family members are binding for Mexicans, so many family members of U.S. residents have to wait years for LPR ("green card") status. An amnesty program such as IRCA may provide a quicker route to becoming an LPR. For persons who are not eligible for LPR status under the available categories (family, employment-based, refugee, etc.), amnesty may offer the only means of obtaining a green card. Individuals may have entered

the United States without proper documents intending to file for LPR status under IRCA or in the hopes of another amnesty program. IRCA also may have prompted some family members of amnesty recipients to illegally migrate to the United States.

However, IRCA also contained several provisions that may have deterred undocumented immigration. The law included a substantial increase in Border Patrol funds and personnel, which would be expected to deter undocumented immigration by making potential immigrants perceive that the costs of successfully crossing the border were higher or the likelihood of success lower. The law also included sanctions for employers who knowingly hired undocumented immigrants and required workers to produce documents verifying their employment eligibility. The flow of undocumented immigrants would be expected to decline if the law reduced the demand for illegal immigrant workers (and hence their wages) or if immigrants believed it would be more difficult to obtain a job in the United States than was previously the case.³

Data

We use INS data on the number of apprehensions at the U.S.-Mexico border as a proxy for illegal immigration inflows.⁴ The number of apprehensions is, of course, not an ideal measure of the number of illegal migrants successfully entering the United States or even of the

³ Several studies conclude that IRCA had negative effects on employment outcomes of undocumented immigrants (Bansak and Raphael, 2001; Donato, Durand and Massey, 1992a; Donato and Massey, 1993). However, research has not been able to distinguish whether such negative effects are due to a decline in demand or an increase in supply of undocumented immigrants.

⁴ The INS data on apprehensions and enforcement are “linewatch,” or activities at the U.S. border instead of in the interior. As discussed by Hanson and Spilimbergo (1999), the data include U.S. ports as well as borders and include the Canadian border as well as the Mexican border. The vast majority (over 99 percent during 1977-96) of linewatch apprehensions have occurred at the U.S.-Mexico border. According to Hanson and Spilimbergo, linewatch activities at the U.S.-Mexico border are well correlated with total linewatch activities, but data on linewatch activities at the Mexican border are only available beginning in 1977. We therefore follow Hanson and Spilimbergo in using data on total linewatch activities.

number attempting to enter. In addition to counting the number of failed attempted crossings instead of the number of successful crossings, the data include repeat apprehensions for the same individual. The apprehensions data also do not reflect illegal aliens who enter legally and then overstay their visas, who are believed to account for about one-half of illegal immigrants present in the United States.

However, as noted by Bean et al. (1990), INS apprehensions data are believed to be correlated with illegal crossings and are useful for examining periodic changes in the number of such crossings. Espenshade (1995) concludes that the simple correlation between apprehensions and the volume of illegal immigration is about 0.90 and that the flow of undocumented immigrants is about 2.2 times the level of INS apprehensions. Espenshade cautions that the exact magnitude of the effect of changes in variables on illegal immigrant flows cannot be inferred from INS apprehensions data but that the direction of the effects can be identified; in other words, we can determine the direction of the effect of IRCA on illegal immigration flows from data on apprehensions but cannot identify the size of the change in the flow, only the size of the change in apprehensions. The INS data used here are monthly for the period January 1969 through December 1996.

We use INS border patrol hours to measure border enforcement. The expected relationship between enforcement and apprehensions is not certain because increased enforcement could result in more apprehensions or could change migration behavior such that apprehensions decline, either because fewer persons attempt to cross the border or because migrants shift to areas less policed by the Border Patrol.

Figure 1 displays apprehensions and enforcement for the period 1969-96. Because there are sizable seasonal swings in apprehensions, with apprehensions highest in the spring and

lowest in December, seasonally adjusted data for apprehensions are shown; the seasonal pattern of apprehensions corresponds with the timing of demand for agricultural labor and with migrants returning home for the winter holidays. Apprehensions generally increased from 1969-86 and then declined through 1989. Apprehensions then increased through 1993 and spiked upward in early 1995 and again in early 1996. Apprehensions appear to have declined during the period between the passage of IRCA in November 1986 and the beginning of the filing period in May 1987. Apprehensions do not show a clear trend during the main 12-month filing period for amnesty but appear higher than during the pre-filing period and higher than immediately after the filing period ended. The descriptive statistics in Table 1 indicate that there was an average of 58,000 apprehensions per month during the pre-filing period, compared with almost 60,000 per month during the 12-month filing period for amnesty.

Border Patrol man-hours spent enforcing the border also generally rose over time. Enforcement hours rose during the IRCA pre-filing period but declined during the filing period and immediately afterward until rising again in March 1988. Average monthly enforcement hours declined from 237,000 during the pre-filing period to about 203,000 during the filing period (Table 1).

Economic conditions in both the United States and Mexico are likely to affect the number of persons attempting to cross the border.⁵ For the United States, the empirical model below includes measures of the real average wage, the real federal minimum wage, and the average unemployment rate.⁶ We deflate wages by the consumer price index (CPI) for urban consumers.

⁵ We do not include measures of economic conditions in other countries of origins because Mexicans account for the vast majority of apprehensions, although the share of non-Mexicans apprehended at the border has increased over time. Mexicans accounted for 96.1 percent of apprehensions during 1988-94 (Hanson and Spilimbergo, 1999).

⁶ The U.S. wage is a weighted average of hourly earnings for production workers in eight industries (mining, construction, manufacturing, wholesale trade, retail trade, transportation and public utilities, finance/insurance/real estate, and services). The weights are based on the industry distribution of Mexican-born men aged 15-64 in the

For Mexico, we include the real average manufacturing wage and the minimum wage, which are deflated using the Mexican CPI; we do not include a measure of the Mexican unemployment rate because reliable data are not available during the early part of the sample period.⁷ Because of the importance of oil production to Mexico's economy, we include the U.S. producer price index for crude oil to capture changes in oil prices. We also include the real exchange rate between Mexico and the United States, deflated using the CPI for both countries.

The number of visas issued is another factor that may influence the inflow of illegal immigrants. The empirical model includes the number of persons from Mexico granted LPR status (not including those granted LPR status as a result of IRCA) and the number of non-immigrant visas issued to Mexicans. The number of new LPRs may influence illegal immigration if people cross the border illegally to join relatives with legal status; alternatively, people granted LPR status may have previously been entering the United States illegally, in which case an increase in LPRs would be expected to lower apprehensions. Non-immigrant visas may be a substitute for entering the United States without proper documents, so that lower issuance of non-immigrant visas raises the number of apprehensions. The visa variables are reported for fiscal years instead of monthly but are measured here as monthly averages within fiscal years.

1960, 1970, 1980 and 1990 decennial Censuses who immigrated in the last five years and do not report being a citizen (except for 1960, when citizenship was not asked).

⁷ In some years the Mexican manufacturing wage data include a December bonus of up to two or three times monthly earnings (*aguinaldo*). We removed this bonus from the data by subtracting the average difference in December wages between years with the bonus and years without the bonus from observations in years with the bonus.

Methods

We regress border apprehensions on border enforcement, the measures of economic conditions and immigration visas, and three IRCA policy variables. The IRCA variables are a dummy variable for the pre-filing period from November 1986 to April 1987, a dummy variable for the main IRCA filing period from May 1987 through April 1988, and a dummy variable for the post-IRCA period beginning in May 1988. We use these three variables to measure the effect of IRCA because the incentives for potential undocumented immigrants to enter the United States may have differed between the period immediately after the program was announced, the period when amnesty applications were accepted, and after the amnesty program ended. Other results discussed below examine the robustness of the results to including variables indicating when applications for only the SAW program were accepted and when immigration reform bills with amnesty provisions—precursors to IRCA—had passed at least one body of the U.S. Congress.

Because the apprehensions data display very high first-order serial correlation, we estimate the regressions in first differences, a method that is robust to the presence of a unit root in the disturbance term. All of the continuous variables are in log first differences (the fiscal year variables are in log 12-month differences), and the regressions also include a linear time trend and set of month dummy variables to control for the seasonal pattern of apprehensions.

We report both ordinary least squares (OLS) and instrumental variables (IV) results. The IV regressions instrument for border enforcement, which is endogenous if increased flows of illegal immigrants cause stepped-up border enforcement within the same month or if both border crossings and enforcement respond to another factor not controlled for in the model. We

instrument for border enforcement with U.S. government expenditures on defense and with three lags of border enforcement.

Results

Apprehensions clearly declined during the period immediately after IRCA was passed but before the amnesty application filing period began. As Table 2 indicates, apprehensions were about 11 percent lower during the pre-filing period than prior to IRCA's passage, controlling for other factors. Apprehensions during the filing period and thereafter were not significantly different than before IRCA, according to the results. In results not shown here, we included separate linear time trends for the pre- and post-IRCA periods. The estimated coefficients for the trend variables were not significantly different, also indicating that IRCA did not substantially affect illegal immigrant inflows.

Enforcement is positively associated with apprehensions in both the OLS and IV results, with a 10 percent increase in enforcement associated with a 4.4 percent increase in apprehensions in the OLS specification reported in column 1. As shown in Column 2, the estimated magnitude increases with enforcement is instrumented with defense spending and lagged enforcement; this result is surprising since endogeneity would be expected to bias the estimated coefficient on the enforcement variable upward. Hanson and Spilimbergo (1999) also find that the magnitude of the enforcement coefficient increases slightly when the variable is instrumented.

Apprehensions decline when the real average manufacturing wage in Mexico rises, with a 10 percent increase in the wage lowering apprehensions by about 3.3 percent. This indicates that improved economic conditions in Mexico reduce migration flows to the United States, a result

also reported by many other immigration studies. The real exchange rate is positively associated with apprehensions at the 10 percent significance level, suggesting that more Mexicans illegally migrate to the United States when the purchasing power of their dollar earnings rises in Mexico. We do not find significant relationships between apprehensions and measures of economic conditions in the United States, suggesting that “push” factors may play more of a role than “pull” factors in undocumented Mexican immigration. INS admissions of LPRs or non-immigrants do not appear to influence apprehensions.

The results in Table 2 are based on the period 1969-96. Previous studies examining the effect of IRCA on apprehensions used a shorter time period, beginning in 1977 and ending in either 1988 or 1989 (Bean et al., 1990; White, Bean and Espenshade, 1990). Table 3 shows the results if our sample is restricted to January 1977 through December 1989. The post-IRCA variable then is equal to one for the period May 1988 through December 1989 instead of, as in Table 2, through December 1996. The results again indicate that apprehensions declined immediately after IRCA’s passage but then returned to normal levels during the filing period and thereafter. Previous studies that did not distinguish between the different phases of the IRCA amnesty program but instead looked for differences at 12-month intervals found a negative effect for the entire period after IRCA’s passage, whereas our results indicate that the negative effect occurred only during the six months after the law was passed.

The above results do not indicate that apprehensions increased during the main IRCA filing period from November 1987 to May 1988, when LAW and SAW applications could be filed. The SAW amnesty program continued to accept applications for another six months after the LAW program filing period ended in May, and over one-half of SAW applications were filed during this period. It is generally believed that vast fraud occurred in the SAW program because

applications only had to submit documents indicating that they performed agricultural work in the United States during the relevant period rather than documents proving continuous U.S. residence since 1982, as required for the LAW program. The pattern of undocumented migration during the months when only SAW applications could be filed therefore may have differed from the pattern in the rest of the post-IRCA period.

To investigate this possibility, we included a dummy variable equal to one in May 1988 to November 1988 in the OLS and IV regressions (the post-IRCA dummy variable then equals one starting in December 1988). The results, which are not shown here, do not indicate that apprehensions were significantly different during the SAW-only filing period than during either the pre-IRCA period or the post-IRCA period. As in the above results, apprehensions were significantly lower during the pre-IRCA filing period than before IRCA was passed.

We also investigated whether illegal immigration flows appear to have responded to the possibility of an amnesty program before IRCA was passed. An immigration reform measure that included an amnesty program was passed by the Senate in 1982, 1983 and 1985 but did not pass the House of Representatives in the same year. In all three years, the House Judiciary Committee approved an immigration bill similar to that passed by the Senate earlier the same year, but the legislation died when the House adjourned for the year without voting on it. In 1984, the House did pass an immigration reform bill that included an amnesty program, but differences between the legislation and the bill passed by the Senate the previous year could not be resolved. Despite the ultimate failure to pass a bill until late October 1986, potential migrants may have believed that an amnesty program was in the works whenever at least one house of Congress had passed an immigration reform bill.

We therefore created a variable equal to one when an immigration reform bill had passed at least one body of the Congress and was not yet dead because the legislature had adjourned and equal to zero otherwise. If people crossed the border in anticipation that an amnesty program might be created in the future, this variable should be positively associated with apprehensions. In results not shown here, however, the dummy variable indicating passage of an amnesty program in at least one body of Congress is not significantly associated with increased apprehensions. The pre-IRCA filing variable continues to be negatively associated with apprehensions while the IRCA filing period and post-IRCA variables are not significantly associated with apprehensions.

Conclusion

This study examined the effect of IRCA on undocumented immigration flows using data on border apprehensions, a proxy for the number of people illegally entering the United States. Apprehensions declined immediately after passage of IRCA but then returned to normal levels during the amnesty filing period and thereafter. These results have several implications. Since we find that apprehensions did not rise during the filing period, as would be expected if people migrated to the United States to fraudulently apply for the program, it appears that amnesty programs do not encourage illegal immigration. If anything, IRCA reduced the number of illegal immigrants in the short run, perhaps because potential migrants thought that it would be more difficult to cross the border or to get a job in the United States after the law was passed. An amnesty program also does not appear to encourage illegal immigration in the long run in the hopes of another amnesty program; we do not find a significant difference between

apprehensions after the IRCA amnesty program expired and before the program was created. However, IRCA does not appear to have discouraged illegal immigration in the long run.

The INS apprehensions data used here do not allow us to distinguish between new and returning illegal immigrants or to estimate the stock of illegal immigrants in the United States. Our findings suggest that the net change in the stock of illegal immigrants was not affected by IRCA in the long run. However, the net change in the stock of illegal immigrants could have increased if illegal immigrants already present perceived that it was more difficult to cross the border after the law was passed. Circular migration between the United States and Mexico could have slowed, leading to a reduction in apprehensions of illegal immigrants who usually reside in the United States but temporarily returned to Mexico to visit relatives and had to illegally recross the border. A decline in apprehensions due to reduced circular migration could offset an increase in apprehensions among new illegal immigrants, suggesting that the illegal immigrant population could have risen. Future research should examine this possibility using individual-level data on border crossing patterns among both repeat and first-time illegal migrants.

References

- Anderson, Annelise, 1986. "Illegal Aliens and Employer Sanctions: Solving the Wrong Problem." *Hoover Essays in Public Policy*. Stanford, CA: Hoover Institution.
- Bansak, Cynthia, and Steven Raphael, 2001. "Immigration Reform and the Earnings of Latino Workers: Do Employers Sanctions Cause Discrimination?" *Industrial and Labor Relations Review* 54 (January): 275-295.
- Bean, Frank D., B. Lindsay Lowell, and Lowell J. Taylor, 1988. "Undocumented Mexican Immigrants and the Earnings of Other Workers in the United States." *Demography* 25 (February): 35-52.
- Bean, Frank D., et al., 1990. "Post-IRCA Changes in the Volume and Composition of Undocumented Migration to the United States." *Undocumented Migration to the United States*, ed. Frank D. Bean, Barry Edmonston, and Jeffrey S. Passel, Santa Monica, CA: RAND, pp. 111-158.
- Borjas, George J., Richard B. Freeman, and Lawrence F. Katz, 1997. "How Much Do Immigration and Trade Affect Labor Market Outcomes?" *Brookings Papers on Economic Activity*, 1997 (1): 1-90.
- Cornelius, Wayne A., 1989. "Impacts of the 1986 US Immigration Law on Emigration from Rural Mexican Sending Communities." *Population and Development Review* 15 (December): 689-705.
- Congressional Quarterly, 1987. *1986 CQ Almanac*. Washington, DC: Congressional Quarterly.
- Donato, Katharine M., and Rebecca S. Carter, 1999. "Mexico and U.S. Policy on Illegal Immigration: A Fifty-Year Retrospective." *Illegal Immigration in America*, ed. David W. Haines and Karen E. Rosenblum, Westport, CT: Greenwood Press, pp. 112-129.
- Donato, Katharine M., and Douglas S. Massey, 1993. "Effect of the Immigration Reform and Control Act on the Wages of Mexican Migrants." *Social Science Quarterly* 74 (September): 523-541.
- Donato, Katharine M., Jorge Durand, and Douglas S. Massey, 1992a. "Changing Conditions in the US Labor Market." *Population Research and Policy Review* 11: 93-115.
- Donato, Katharine M., Jorge Durand, and Douglas S. Massey, 1992b. "Stemming the Tide? Assessing the Deterrent Effects of the Immigration Reform and Control Act." *Demography* 29 (May): 139-157.
- Espenshade, Thomas J., 1995. "Using INS Border Apprehension Data to Measure the Flow of Undocumented Migrants Crossing the U.S.-Mexico Frontier." *International Migration Review* 29 (Summer): 545-565.

Fix, Michael, and Jeffrey S. Passel, 1994. *Immigration and Immigrants: Setting the Record Straight*. Washington, DC: Urban Institute.

Hanson, Gordon H., Raymond Robertson, and Antonio Spilimbergo, 1999. "Does Border Enforcement Protect U.S. Workers from Illegal Immigration?" NBER working paper no. 7054 (March).

Hanson, Gordon H., and Antonio Spilimbergo, 1999. "Illegal Immigration, Border Enforcement, and Relative Wages: Evidence from Apprehensions at the U.S.-Mexico Border." *American Economic Review* 89 (December): 1337-1357.

Immigration and Naturalization Service, 2000. *1998 Statistical Yearbook of the Immigration and Naturalization Service*. Washington, DC: Government Printing Office.

Passel, Jeffrey S., 1999. "Undocumented Immigration to the United States: Numbers, Trends, and Characteristics." *Illegal Immigration in America*, ed. David W. Haines and Karen E. Rosenblum, Westport, CT: Greenwood Press, pp. 27-111.

Porter, Eduardo, 2001. "Illegal Immigrants May Total 8.5 Million." *Wall Street Journal*, August 14, p. A4.

Smith, James P., and Barry Edmonston, eds., 1997. *The New Americans*, Washington, DC: National Academy Press.

Smith, Lamar, 2000. Lamar Smith Press Conference Statement on Amnesty, October 12. Available at <http://wwwa.house.gov/lamarsmith/im-101200.html>

Tienda, Marta, and Audrey Singer, 1995. "Wage Mobility of Undocumented Workers in the United States." *International Migration Review* 29 (Spring): 112-138.

White, Michael J., Frank D. Bean, and Thomas J. Espenshade, 1990. "The U.S. 1986 Immigration Reform and Control Act and Undocumented Immigration to the United States." *Population Research and Policy Review* 9 (May): 93-116.

Table 1
Sample Means, by Time Period

	Pre IRCA 1/69-10/86	IRCA Pre-Filing 11/86-4/87	IRCA Filing 5/87-4/88	Post IRCA 5/89-12/96
Apprehensions (in thousands)	33.31 (1.48)	57.93 (4.66)	59.84 (4.57)	65.07 (2.09)
Enforcement (hours, in thousands)	147.45 (2.68)	237.37 (4.46)	203.03 (4.78)	259.53 (5.58)
U.S. wage	9.71 (.03)	9.16 (.02)	9.04 (.01)	8.61 (.02)
U.S. minimum wage	3.74 (.02)	3.00 (.01)	2.91 (.01)	2.87 (.01)
U.S. unemployment rate	6.75 (.11)	6.60 (.08)	5.88 (.07)	6.10 (.08)
Mexican wage	110.33 (.96)	82.43 (1.43)	82.36 (1.01)	94.73 (1.14)
Mexican minimum wage	19.75 (.23)	13.04 (.28)	12.14 (.23)	8.64 (.12)
Oil price index	50.34 (2.23)	48.70 (2.17)	54.46 (1.29)	56.45 (1.15)
Real exchange rate (pesos per \$)	3.81 (.05)	6.06 (.03)	5.40 (.13)	3.99 (.06)
Legal permanent residents admitted from Mexico (thousands)	5.19 (.08)	6.03 (.00)	7.13 (.28)	7.75 (.27)
Non-immigrant visas issued to Mexicans (thousands)	119.67 (2.84)	74.14 (.00)	79.12 (1.27)	114.79 (1.48)
Number of observations	214	6	12	104

Note: Standard errors are in parentheses.

Table 2
First-Difference Regression Results for Apprehensions at the U.S.-Mexico Border, 1969-96

	(1)	(2)
	OLS	IV
IRCA pre-filing period	-.112*	-.112*
	(.048)	(.048)
IRCA filing period	.022	.024
	(.036)	(.037)
Post-IRCA period	.020	.020
	(.027)	(.027)
Enforcement	.441**	.565*
	(.086)	(.230)
U.S. wage	-.689	-.710
	(1.941)	(1.948)
U.S. minimum wage	-.499	-.492
	(.309)	(.310)
U.S. unemployment rate	-.165	-.208
	(.211)	(.224)
Mexican wage	-.332*	-.350*
	(.144)	(.148)
Mexican minimum wage	-.055	-.046
	(.131)	(.133)
Oil price index	.046	.047
	(.094)	(.095)
Real exchange rate	.205	.209
	(.123)	(.124)
Legal permanent residents admitted from Mexico	-.019	-.018
	(.020)	(.020)
Non-immigrant visas issued to Mexicans	-.004	-.003
	(.029)	(.030)
Trend	-.002	-.002
	(.002)	(.002)
Adjusted R ²	.772	.771
Number of observations	335	335

* p<.05; ** p<.01

Note: The time period is January 1969 to December 1996. All continuous variables except the time trend are in log first differences (fiscal year variables are 12-month differences). Month dummy variables are also included. In column (2), enforcement is instrumented with defense spending and three lags of enforcement. Standard errors are in parentheses.

Table 3
First-Difference Regression Results for Apprehensions at the U.S.-Mexico Border, 1977-89

	(1)	(2)
	OLS	IV
IRCA pre-filing period	-.125*	-.134*
	(.052)	(.056)
IRCA filing period	.006	-.014
	(.041)	(.047)
Post-IRCA period	-.006	-.003
	(.039)	(.042)
Enforcement	.387	-.475
	(.210)	(.726)
U.S. wage	-1.983	-1.390
	(3.221)	(3.456)
U.S. minimum wage	-.194	-.069
	(.675)	(.728)
U.S. unemployment rate	-.311	-.037
	(.328)	(.049)
Mexican wage	-.371	-.160
	(.217)	(.285)
Mexican minimum wage	-.174	-.390
	(.214)	(.286)
Oil price index	.173	.230
	(.192)	(.210)
Real exchange rate	.434*	.380
	(.186)	(.203)
Legal permanent residents admitted from Mexico	-.008	-.016
	(.026)	(.028)
Non-immigrant visas issued to Mexicans	-.015	-.017
	(.035)	(.037)
Trend	.002	.002
	(.004)	(.004)
Adjusted R ²	.768	.737
Number of observations	156	156

* p<.05; ** p<.01

Note: The time period is January 1977 to December 1989. All continuous variables except the time trend are in log first differences (fiscal year variables are 12-month differences). Month dummy variables are also included. In column (2), enforcement is instrumented with defense spending and three lags of enforcement. Standard errors are in parentheses.

Figure 1. Border Apprehensions and Enforcement, 1969-96

