DO AMNESTY PROGRAMS REDUCE UNDOCUMENTED IMMIGRATION? EVIDENCE FROM IRCA*

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This article examines whether mass legalization programs reduce future undocumented immigration. We focus on the effects of the 1986 Immigration Reform and Control Act, which granted amnesty to nearly 2.7 million undocumented immigrants. We report that apprehensions of persons attempting to cross the U.S.–Mexico border illegally declined immediately following passage of the law but returned to normal levels during the period when undocumented immigrants could file for amnesty and the years thereafter. Our findings suggest that the amnesty program did not change long-term patterns of undocumented immigration from Mexico.

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. Nearly 2.7 million individuals, including over 2 million Mexicans, were granted amnesty under IRCA. Opponents of the law claimed that rather than reduce undocumented immigration as intended, the policy would encourage future undocumented immigration, notwithstanding tougher border enforcement, because it set a precedent for granting amnesty (e.g., Anderson 1986).[1] Such concerns arose again in 2001, when another amnesty came under consideration. Shortly after taking office, President George W. Bush considered granting legal residence to some of the estimated 3 million to 4 million undocumented Mexican immigrants who were then in the United States, a proposal strongly endorsed by Mexican President Vicente Fox. Since then, other U.S. lawmakers have taken up this cause.

Previous research on the effect of IRCA on flows of undocumented immigrants has reached mixed conclusions. On the basis of data gathered from seven Mexican communities in 1987–1989, Donato, Durand, and Massey (1992b) found little evidence that IRCA lowered the number of undocumented Mexicans entering the United States. Using estimates from the decennial census and the Current Population Survey after correcting for changes in the size of the undocumented immigrant population as a result of IRCA, Woodrow and Passel (1990) similarly concluded that the annual change in the number of undocumented immigrants from 1986 to 1988 was not significantly different from changes prior to IRCA. In contrast, Bean et al. (1990) concluded, from Immigration and Naturalization Service (INS) data on apprehensions from 1977 to 1989, that apprehensions declined by about 27% after IRCA. The effect did not change significantly during

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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."

the 35-month post-IRCA period that they studied. White, Bean, and Espenshade (1990) reported a similar result using INS apprehensions data for 1977–1988.

The study presented here reexamined the effect of IRCA on flows of undocumented immigrants to the United States. Unlike previous studies, in this study, we distinguished between the period immediately after the passage of the bill and the period when amnesty applications were accepted and assessed the overall effect of IRCA on flows of illegal immigrants through 1996. The law may have reduced undocumented immigration, particularly in the short run, by making it more difficult for undocumented immigrants to cross the border and find work in the United States. However, there are several reasons why the law might instead have spurred undocumented immigration. Because the main IRCA legalization program required applicants to 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. The expectation of 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 have differed from the short-term effects as potential migrants learned whether requirements for the documentation of eligibility for employment could easily be circumvented.

Establishing the effect of an amnesty program on unauthorized immigration is important for several reasons. First, the number of unauthorized aliens present in the United States is substantial. An estimated 7 million to 8.5 million immigrants—including 3.9 million to 4.5 million Mexicans—were illegally present in the United States in 2000, and the annual net flow of undocumented immigrants during the 1990s averaged almost 500,000 (Costanzo et al. 2002; Porter 2001).[2] It is generally believed that undocumented immigrants have lower levels of skills, on average, than do other immigrants (Fix and Passel 1994; Tienda and Singer 1995), 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).[3] 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 we used to examine whether the act led to increases or decreases in undocumented immigration. The results indicate that the flow of undocumented immigrants slowed for six months after the passage of IRCA but then returned to previous levels. We did not find that IRCA stimulated illegal immigration in the hopes of receiving amnesty, but we also did not find that the law discouraged it 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

2. INS estimates of the number of undocumented immigrants are lower than most other estimates; the INS estimated in 2003 that the undocumented population increased by about 350,000 per year from 1990 to 1999 (see U.S. Department of Homeland Security 2003).

3. However, Bean, Lowell, and Taylor (1988) suggested that undocumented immigrants are a complement to other workers. Hanson, Robertson, and Spilimbergo (2002) found 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 flows of undocumented immigrants or that wages are not responsive to changes in the number of undocumented immigrants.

program, unauthorized 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 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 illegal immigrants to 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 past 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; they only had to have met the agricultural work requirement. Nearly 2.7 million persons were granted amnesty under the two programs, about three-fourths 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, that was believed to meet the SAW provisions was about 300,000, far less than the more than 1 million SAW applications that were granted (Passel 1999). On the basis of surveys conducted in Mexico, Donato and Carter (1999) estimated that, in their samples, 73% of LAW applications and 40% of SAW applications were fraudulent. Cornelius (1989) reported that 28% of SAW applicants in his sample of Mexicans did not meet the program's conditions. Such widespread fraud suggests that people may have crossed the border after the bill's passage and then obtained fake documents indicating their continuous residence 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 that established their legal status to work in the United States and imposed civil penalties (criminal for repeat offenders) on employers who knowingly hired illegal aliens. The law also called for a 50% increase in personnel for the Border Patrol and increased the agency's funding during that fiscal year and the next by about 75%. This increase in Border Patrol personnel, combined with legalization for millions of previously illegal aliens, would likely result in fewer illegal border crossings and fewer 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 qualify immediately 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 crossed the border illegally 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 intending to file for amnesty fraudulently.

There are several reasons why the amnesty program may have deterred undocumented immigration as intended. The law included a substantial increase in funds and personnel for the Border Patrol, 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 was lower.[4] The law also included sanctions for employers who knowingly hired undocumented immigrants, and required workers to produce documents to verify their eligibility for employment.[5] 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.[6]

However, the amnesty may instead have led to more illegal immigration. Immigration quotas for nonimmediate 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, and so forth), amnesty may offer the only means of obtaining a green card. Individuals may therefore 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 migrate illegally to the United States.

DATA

We used INS data on the number of apprehensions at the U.S.–Mexico border as a proxy for inflows of undocumented immigrants.[7] The number of apprehensions is, of course, not an ideal measure of the number of undocumented migrants who successfully entered the United States or even of the number who attempted 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 data on apprehensions also do not reflect unauthorized aliens who entered legally and then overstayed their visas. Visa overstays are believed to account for about half the unauthorized aliens present in the United States, although among Mexicans and Central Americans, the share is estimated to be much lower, between 16% and 26%.

However, as Bean et al. (1990) noted, INS data on apprehensions are likely to be correlated with illegal crossings and are useful for examining periodic changes in the number of such crossings. Espenshade (1995) concluded that the simple correlation between apprehensions and the volume of illegal immigration is about .90 and that the flow of undocumented immigrants is about 2.2 times the level of INS apprehensions. Espenshade cautioned that the exact magnitude of the effect of changes in variables on flows of illegal immigrants cannot be inferred from INS data on apprehensions, but that the direction of the effects can be identified; in other words, we could determine the direction of the effect of IRCA on flows of illegal immigrants from data on apprehensions, but we could not identify the size of the change in the flow, only the size of the change in

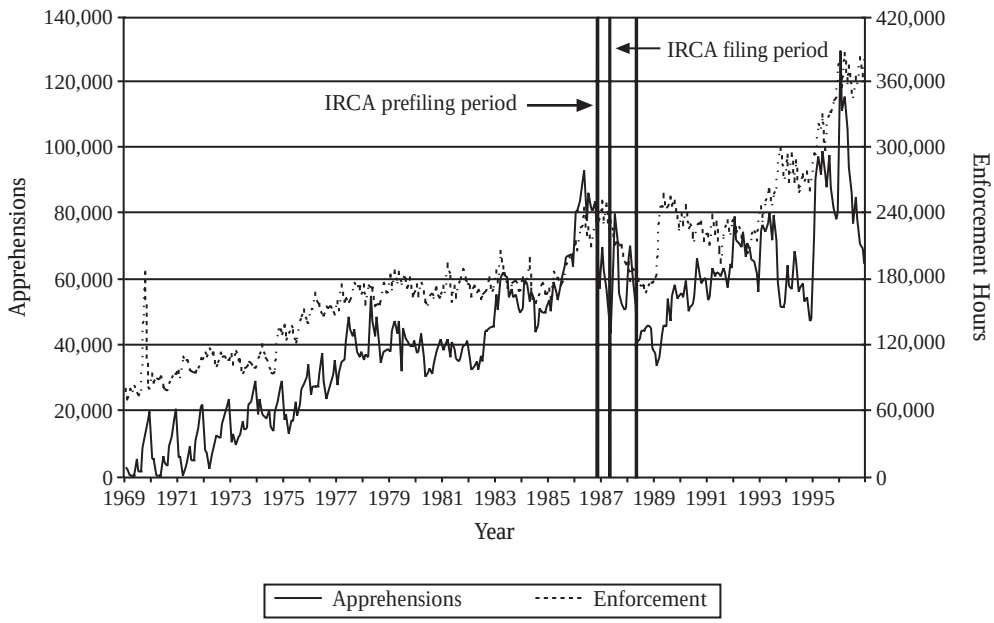
4. However, the increase in Border Patrol activities was not immediate; rather it was phased in over several years after the bill was passed. The long-run deterrent effect may therefore have been larger than any short-run negative impact.

5. The sanctions against employers were not enforced in the agricultural sector until 1989, so this deterrent effect may have increased over time.

6. Several studies have concluded that IRCA had negative effects on the 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 the demand for or an increase in the supply of undocumented immigrants.

7. The INS data on apprehensions and enforcement are "linewatch," or activities at the U.S. border instead of in the interior. As Hanson and Spilimbergo (1999) discussed, the data include U.S. ports, as well as borders, and include both the Canadian border and the Mexican border. The vast majority (over 99% during 1977–1996) of linewatch apprehensions 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 available only beginning in 1977. We therefore followed Hanson and Spilimbergo in using data on total linewatch activities.

Figure 1. Border Apprehensions and Enforcement, 1969–1996



apprehensions.[8] The INS data used here are monthly for the period January 1969 through December 1996.

We used INS Border Patrol hours to measure border enforcement. The expected relationship between enforcement and apprehensions is not certain because greater 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 that are less policed by the Border Patrol.

Figure 1 displays apprehensions and enforcement for the period 1969–1996. Because there are sizable seasonal swings in apprehensions, with apprehensions the highest in the spring and the lowest in December, seasonally adjusted data for apprehensions are shown; the seasonal pattern of apprehensions corresponds with the timing of the demand for agricultural labor and with migrants returning home for the winter holidays. Apprehensions generally increased from 1969 to 1986 and then declined through 1989. They 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. There was no clear trend in apprehensions during the main 12-month filing period for amnesty, but apprehensions appear to have been higher than during the prefiling period and higher than immediately

8. Using data on apprehensions as a proxy for inflows of undocumented immigrants can be viewed as measuring the outcome of interest—undocumented immigration—with error. In linear regressions, measurement error in the dependent variable does not bias the estimated coefficients but inflates the standard errors. In the regressions presented here, the estimated coefficients for the IRCA variables are either significant below the 5% level or do not approach conventional levels of significance.

Table 1. Sample Means, by Period

Variable	Pre-IRCA January 1969–October 1986	IRCA Prefiling November 1986–April 1987	IRCA Filing May 1987–April 1988	Post-IRCA May 1988–December 1996
Apprehensions (in thousands)	33.31	57.93	59.84	65.07
	(1.48)	(4.66)	(4.57)	(2.09)
Enforcement (hours, in thousands)	147.45	237.37	203.03	259.53
	(2.68)	(4.46)	(4.78)	(5.58)
Apprehension Rate (× 100)	34.04	29.57	27.30	24.51
	(0.14)	(0.74)	(0.47)	(0.41)
U.S. Wage	9.71	9.16	9.04	8.61
	(0.03)	(0.02)	(0.01)	(0.02)
U.S. Minimum Wage	3.74	3.00	2.91	2.87
	(0.02)	(0.01)	(0.01)	(0.01)
U.S. Unemployment Rate	6.75	6.60	5.88	6.10
	(0.11)	(0.08)	(0.07)	(0.08)
Mexican Wage	110.33	82.43	82.36	94.73
	(0.96)	(1.43)	(1.01)	(1.14)
Mexican Minimum Wage	19.75	13.04	12.14	8.64
	(0.23)	(0.28)	(0.23)	(0.12)
Oil Price Index	50.34	48.70	54.46	56.45
	(2.23)	(2.17)	(1.29)	(1.15)
Real Exchange Rate (pesos per $)	3.81	6.06	5.40	3.99
	(0.05)	(0.03)	(0.13)	(0.06)
Legal Permanent Residents Admitted From Mexico (in thousands)	5.19	6.03	7.13	7.75
	(0.08)	(0.00)	(0.28)	(0.27)
Nonimmigrant Visas Issued to Mexicans (in thousands)	119.67	74.14	79.12	114.79
	(2.84)	(0.00)	(1.27)	(1.48)
Number of Observations	214	6	12	104

Note: Standard errors are in parentheses.

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 prefiling period, compared with almost 60,000 per month during the 12-month filing period for amnesty.

The number of hours the Border Patrol spent enforcing the border also generally rose over time. They rose during the IRCA prefiling period but declined during the filing period and immediately afterward until they again rose in March 1988. The average monthly enforcement hours declined from 237,000 during the prefiling period to about 203,000 during the filing period (see Table 1).

In addition to controlling for Border Patrol hours in the regressions, we controlled for the estimated probability of apprehension. We included the approximate apprehension rate because we were interested in the number of successful crossings, yet we had data only on apprehensions. The estimated apprehension rates, which are annual, are from the Mexican Migration Project (MMP) at the University of Pennsylvania and are based on surveys of Mexicans who attempted to cross the border illegally. The probability of apprehension declined from an average about one-third during the pre-IRCA period to between 25% and 27% during the post-IRCA period.

Economic conditions in both the United States and Mexico are likely to have affected the number of persons who attempted to cross the border.[9] For the United States, the empirical model presented later includes measures of the real average wage, the real federal minimum wage, and the average unemployment rate.[10] We deflated wages by the consumer price index (CPI) for urban consumers. For Mexico, we included the real average manufacturing wage and the minimum wage, which were deflated using the Mexican CPI; we did not include a measure of the Mexican unemployment rate because reliable data are not available for the early part of the period under study.[11] Because of the importance of oil production to Mexico's economy, we included the U.S. producer price index for crude oil to capture changes in oil prices. We also included 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 have influenced the inflow of undocumented immigrants during this period. The empirical model includes the number of persons from Mexico who were granted LPR status (not including those granted LPR status as a result of IRCA) and the number of nonimmigrant visas issued to Mexicans. The number of new LPRs may have influenced undocumented immigration if people crossed the border illegally to join relatives with legal status; alternatively, people who were granted LPR status may have previously entered the United States illegally, in which case an increase in LPRs would be expected to lower apprehensions. Nonimmigrant visas may be a substitute for entering the United States without proper documents, so that a lower issuance of nonimmigrant visas may have raised the number of apprehensions. We report the visa variables for fiscal years instead of monthly, but we measured them as monthly averages within fiscal years.

METHODS

We regressed border apprehensions on border enforcement, the probability of apprehension, the measures of economic conditions and immigration visas, and three IRCA policy variables. The IRCA variables included a dummy variable for the prefiling 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 used 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 the period after the amnesty program ended. The estimated coefficients are relative to the period in our data before IRCA was passed, January 1969 to October 1986. We also examined the robustness of the results to the inclusion of variables indicating when applications for only the SAW program were accepted and when other immigration reform bills with amnesty provisions—precursors to IRCA—had passed at least one body of the U.S. Congress.

9. We did not include measures of economic conditions in other countries of origin because Mexicans accounted for the vast majority of apprehensions, although the share of non-Mexicans apprehended at the border increased over time. Mexicans accounted for 96.1% of apprehensions from 1988 to 1994 (Hanson and Spilimbergo 1999).

10. 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 1960, 1970, 1980, and 1990 decennial censuses who immigrated in the previous five years and did not report being citizens (except for 1960, when citizenship was not asked).

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

Because the data on apprehensions displayed high first-order autocorrelation, we estimated the regressions in first differences, a method that is robust to the presence of a unit root in the disturbance term.[12] Moreover, given the monthly frequency of the data, it is straightforward to assume that changes (not levels) are the more relevant unit of observation. All the continuous variables were in log first differences (the annual and fiscal-year variables were in log 12-month differences). The regressions also included a linear time trend and a set of month dummy variables to control for the seasonal pattern of apprehensions.

We report the results of both OLS and instrumental variables (IV) analyses. 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. Following Hanson and Spilimbergo (1999), we instrumented 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 period for filing amnesty applications began. As Table 2 indicates, apprehensions were about 11% lower during the prefiling period than before the passage of IRCA, after we controlled for other factors. In contrast, apprehensions during the filing period and thereafter were not significantly different from apprehensions before IRCA. We tested the robustness of these findings in several ways. 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, which also indicates that IRCA did not substantially affect inflows of illegal immigrants. In addition, the results are robust to including the square of the linear time trend in the regressions.

Controlling for economic conditions and other factors that were likely to affect apprehensions also had little effect on the IRCA variables, as a comparison of columns 1 and 2 of Table 2 indicates. Because the amnesty program was accompanied by a substantial increase in border enforcement, controlling for enforcement might have influenced the relationship between apprehensions and IRCA, but this does not appear to be the case.

Enforcement is positively associated with apprehensions in both the OLS and IV results, with a 10% increase in enforcement associated with a 4.4% increase in apprehensions in the OLS specification reported in column 2. As is shown in column 3, the estimated magnitude increases when enforcement is instrumented with defense spending and lagged enforcement; this result is surprising because endogeneity would be expected to bias the estimated coefficient on the enforcement variable upward. Hanson and Spilimbergo (1999) also found that the magnitude of the enforcement coefficient increases slightly when the variable is instrumented. In results not shown here, we interacted the enforcement variable with the linear trend to allow the effect of enforcement to change over time; the interaction term was not significant, and the main effect was unaffected by including the interaction.

The total number of apprehensions is positively related to the probability of apprehension, but the estimates are not significant. The apprehension rate we used might not have had a significant effect on total apprehensions because the apprehensions totals are monthly and the apprehensions probability data are annual. In addition, the apprehensions rate is based on the experiences of individuals who were surveyed by the MMP in a given year.

12. Durbin-Watson tests performed on the regression residuals of nondifferenced data either reject the null hypothesis of no autocorrelation or are inconclusive. We present the results of Ordinary Least Squares (OLS) analyses on first differences of the linear variables instead of those of an AR(1) regression because the estimates of rho are close to 1, suggesting the possibility of a unit root.

Table 2. First-Difference Regression Results for Apprehensions at the U.S.–Mexico Border, 1969–1996

Variable	OLS (1)	OLS (2)	IV (3)
IRCA Prefiling Period	–0.117*	–0.109*	–0.109*
	(0.048)	(0.049)	(0.049)
IRCA Filing Period	0.004	0.027	0.029
	(0.036)	(0.038)	(0.038)
Post-IRCA Period	0.011	0.020	0.020
	(0.025)	(0.027)	(0.027)
Enforcement	—	0.440**	0.578*
		(0.086)	(0.228)
Apprehension Rate	—	0.030	0.028
		(0.065)	(0.065)
U.S. Wage	—	–0.806	–0.820
		(1.960)	(1.968)
U.S. Minimum Wage	—	–0.501	–0.493
		(0.309)	(0.311)
U.S. Unemployment Rate	—	–0.180	–0.227
		(0.214)	(0.226)
Mexican Wage	—	–0.330*	–0.350*
		(0.144)	(0.148)
Mexican Minimum Wage	—	–0.053	–0.044
		(0.131)	(0.133)
Oil Price Index	—	0.043	0.045
		(0.095)	(0.095)
Real Exchange Rate	—	0.204	0.209
		(0.123)	(0.124)
Legal Permanent Residents Admitted From Mexico	—	–0.021	–0.021
		(0.021)	(0.021)
Nonimmigrant Visas Issued to Mexicans	—	–0.003	–0.002
		(0.029)	(0.030)
Trend	–0.001	–0.002	–0.002
	(0.001)	(0.002)	(0.002)
Adjusted R^2	0.752	0.771	0.770
Number of Observations	335	335	335

Notes: The period is January 1969 to December 1996. All continuous variables except the time trend are in log first differences (annual and fiscal-year variables are 12-month differences). Dummy variables for month are also included. In column 3, enforcement is instrumented with defense spending and three lags of enforcement. Standard errors are in parentheses.

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

The average experience of these individuals may not be consistently representative of the borderwide average apprehension rate, so the estimated relationship with apprehensions appears weak. We also tried converting the apprehensions data into an estimate of successful crossings using the formula in Espenshade (1995). The results using the estimated number of crossings were similar to those reported here, with crossings declining during the period after IRCA was passed but before it went into effect and no significant impact in later periods.

Apprehensions declined when the real average manufacturing wage in Mexico rose, with a 10% increase in the wage lowering apprehensions by about 3.3%. This finding indicates that improved economic conditions in Mexico reduced 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% significance level, suggesting that more Mexicans illegally migrated to the United States when the purchasing power of their dollar earnings rose in Mexico. We did not find significant relationships between apprehensions and measures of economic conditions in the United States, suggesting that "push" factors may have played more of a role than "pull" factors in undocumented Mexican immigration. INS admissions of LPRs or nonimmigrants did not appear to influence apprehensions.

The results in Table 2 are based on the period 1969–1996. Previous studies of the effect of IRCA on apprehensions used a shorter period, beginning in 1977 and ending in either 1988 or 1989 (Bean et al. 1990; White et al. 1990). Table 3 shows the results if our sample was restricted to January 1977 through December 1989. The post-IRCA variable is then equal to 1 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 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. However, the SAW amnesty program continued to accept applications for another six months after the LAW filing period ended in May, and over half the SAW applications were filed during this period. It is generally believed that vast fraud occurred in the SAW program because applicants had to submit only documents indicating that they had performed agricultural work in the United States during the relevant period, rather than documents proving their 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 1 in May 1988 to November 1988 in the OLS and IV regressions (dummy variable for the post-IRCA period then equals 1 starting in December 1988). The results, which are not shown here, did 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 foregoing 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. Critics of legalization initiatives often cite such an anticipatory effect of amnesty programs as a reason to expect amnesty to increase illegal immigration. In the pre-IRCA period, 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

Table 3. First-Difference Regression Results for Apprehensions at the U.S.–Mexico Border, 1977–1989

Variable	OLS (1)	OLS (2)	IV (3)
IRCA Prefiling Period	–0.129*	–0.124**	–0.130*
	(0.051)	(0.057)	(0.061)
IRCA Filing Period	–0.013	0.007	–0.010
	(0.040)	(0.050)	(0.055)
Post-IRCA Period	–0.008	–0.005	0.004
	(0.038)	(0.054)	(0.058)
Enforcement	—	0.387	–0.491
		(0.211)	(0.738)
Apprehensions Rate	—	0.011	0.051
		(0.273)	(0.294)
U.S. Wage	—	–1.979	–1.359
		(3.235)	(3.482)
U.S. Minimum Wage	—	–0.192	–0.056
		(0.680)	(0.736)
U.S. Unemployment Rate	—	–0.313	–0.039
		(0.333)	(0.049)
Mexican Wage	—	–0.371	–0.157
		(0.218)	(0.288)
Mexican Minimum Wage	—	–0.174	–0.393
		(0.215)	(0.289)
Oil Price Index	—	0.173	0.230
		(0.193)	(0.211)
Real Exchange Rate	—	0.434*	0.382
		(0.187)	(0.204)
Legal Permanent Residents Admitted From Mexico	—	–0.008	–0.016
		(0.026)	(0.029)
Nonimmigrant Visas Issued to Mexicans	—	–0.016	–0.020
		(0.039)	(0.042)
Trend	0.002	0.002	0.002
	(0.0004)	(0.004)	(0.004)
Adjusted R^2	0.754	0.766	0.734
Number of Observations	156	156	156

Notes: The period is January 1977 to December 1989. All continuous variables except the time trend are in log first differences (annual and fiscal-year variables are 12-month differences). Dummy variables for month are also included. In column 3, enforcement is instrumented with defense spending and three lags of enforcement. Standard errors are in parentheses.

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

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 1 when an immigration reform bill had passed at least one body of the Congress (and was not yet dead as a result of the legislature adjourning) and equal to 0 otherwise. If people crossed the border in anticipation that an amnesty program might be created in the future, this variable should have been 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 was not significantly associated with increased apprehensions. The pre-IRCA filing variable continued to be negatively associated with apprehensions, whereas the IRCA filing period and post-IRCA variables were not significantly associated with apprehensions. This finding that illegal immigration did not occur in anticipation of the law's passage may not be surprising, given that IRCA was the first (and, to date, only) major amnesty program. Of course, after the amnesty, it is possible that post-IRCA illegal immigration was partly motivated by the anticipation of a future amnesty. Our results do not indicate that this is the case.

CONCLUSION

In this study, we examined the effect of IRCA on flows of undocumented immigrants using data on border apprehensions, a proxy for the number of people who illegally entered the United States. Apprehensions declined immediately after the passage of IRCA but then returned to normal levels during the amnesty filing period and thereafter. These results have several implications. Because we found that apprehensions did not rise during the filing period, as would be expected if people migrated to the United States to apply for the program fraudulently, it appears that amnesty programs do not encourage undocumented immigration, as some critics of amnesty programs have charged. If anything, IRCA reduced the number of undocumented immigrants in the short run, perhaps because potential migrants thought that it would be more difficult to cross the border or to get jobs in the United States after the law was passed. An amnesty program also does not appear to have encouraged undocumented immigration in the long run in the hopes of another amnesty program; we did not find a significant difference between apprehensions before IRCA was created and after the program expired. However, it also appears that IRCA failed to discourage undocumented immigration in the long run. IRCA's sanctions against employers and requirements for immigrants to document their legal status do not appear to have slowed the flow of unauthorized aliens, as measured by the data on apprehensions.

Some caveats regarding our results are warranted. First, the INS apprehensions data used here did not allow us to distinguish between new and returning undocumented immigrants or to estimate the stock of unauthorized aliens in the United States. Our findings suggest that the inflow of undocumented immigrants was not affected by IRCA in the long run. However, the stock of undocumented immigrants could have increased if undocumented immigrants who were 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 undocumented immigrants who usually resided in the United States but temporarily returned to Mexico to visit relatives and had to recross the border illegally. A decline in apprehensions that were due to reduced circular migration could have offset an increase in apprehensions among new illegal immigrants, suggesting that the unauthorized alien 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.

Another caveat about our results from the INS data is that the observed decline in apprehensions immediately after IRCA's passage could have been due to a decline in apprehensions among people who legalized their status. If many apprehensions were of unauthorized aliens who regularly lived in the United States but occasionally returned to Mexico, then apprehensions naturally would have declined when these individuals legalized their status. However, these individuals could not have legalized their status during the prefiling period, which is when we observed the decline in apprehensions. One possibility that is consistent with our findings is that many of these individuals remained in the United States until they could legalize their status, contributing to the decline in

apprehensions during the prefiling period. Once these individuals legalized their status, however, they should no longer have appeared in the statistics on apprehensions. Because apprehensions were similar during the post-IRCA period and before passage of the amnesty—even though some 2 million Mexicans received LPR status—our results are consistent with the possibility that flows of illegal immigrants rose after the amnesty. Again, individual-level data may shed further light on this possibility.

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