The Impact of Illegal Immigration and Border Enforcement on Crime Rates Along the U.S.—Mexico Border*

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Abstract: In the 1990s, the border led the nation in the decline of property-related crimes, while violent crime rates fell twice as fast in the U.S. as a whole than in the median border county. This paper asks how changes in immigration and border enforcement might have played a role in generating these divergent trends. We find that there is a significant positive correlation between illegal immigration and the incidence of violent crime. This is most likely due to extensive smuggling activity along the border. We also find that while border enforcement has had a significant negative effect on property crime rates, it has had no overall deterrent effect on violent crime.

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The 1990s saw a remarkable decline in crime rates not only in the U.S. as a whole, but also along the U.S.-Mexico border. Between 1985 and 2000, the median border county crime rate fell by 30 percent while the U.S. crime rate fell by 21 percent. The decline intensified during the 1990s. Between 1991 and 2000, the median border county crime rate fell 34 percent while the U.S. crime rate fell 30 percent. It is tempting to attribute the steeper decline in border crime to stepped up border enforcement since over the same period, although the number of illegal immigrant apprehensions rose 121 percent, border patrol linewatch hours rose 331 percent. The story is more complex, however, and requires a closer look at the types of crimes being committed. While the border led the decline in property-related crimes, violent crime rates fell twice as fast in the U.S. as a whole than in the median border county. Has immigration and border enforcement played a role in generating these divergent trends?

This paper attempts to sort out the confounding effects of changes in illegal immigration and enforcement on county-level crime, while controlling for other determinants of border crime such as Mexico and U.S. economic conditions and other forms of immigration. While prior research on immigration and crime is limited, we found even less work done on examining the link between *illegal* immigration and crime. With regard to the former, Butcher and Piehl (1998a), by using Census data on institutionalized individuals show that immigrant men, despite their lower education levels, have lower institutionalization rates than native-born men. Butcher and Piehl also find that early immigrant cohorts are more likely to be institutionalized than recent immigrants, so although all immigrants assimilate to higher native crime rates over time, recent immigrants appear to do so more slowly. This finding is supported by anecdotal evidence from the border that career criminals are not typically recent illegal immigrants, but rather green card

holders or U.S. citizens who reside in Mexico and cross the border legally in order to commit crimes on the U.S. side (U.S. Commission on Immigration Reform, 1994).

In another study using CPS data and FBI Uniform Crime Reports, Butcher and Piehl (1998b) find that immigration is unrelated to levels and changes in city crime rates. Other studies on the criminality of immigrants generally support Butcher and Piehl's findings that immigrants have a lower propensity (or at worst an equal propensity) to commit crime as compared with natives. In analyzing prison survey data, Hagan and Palloni (1998) conclude that incarceration rates among Mexican immigrants are not notably different from native rates when age and gender are taken into account.[1]

To date, the bulk of the crime literature has focused on the impact on crime of law enforcement and labor market conditions. The intensity of law enforcement, generally measured by so-called *deterrence* variables, is believed to reduce the incentive to commit crime by lowering the expected benefit of engaging in criminal activity (Becker, 1968). Longer prison sentences, more police, higher arrest and conviction rates, and concealed weapons laws are all facets of the criminal justice system that have been found to deter crime (Cornwell and Trumbull, 1994; Levitt, 1995, 1997; Mocan and Rees, 1999; Witte, 1980; Grogger, 1991; Lott and Mustard, 1997).

Labor market conditions have also been found to be determinants of crime. Economic conditions affect the opportunity cost of committing crime by, in good times, increasing both the probability of (non-criminal) employment and the expected wage level. Gould, Weinberg and Mustard (2002) show that the improvement in wages for young unskilled men in the 1990s

[1] Hagan and Palloni go on to make the point that prison data may overstate immigrant incarceration rates since non-citizen immigrants are more likely to be convicted and less likely to qualify for early release than comparable natives. See also Horowitz (2001) for a review of pertinent research on immigration and crime.

significantly reduced the crime rate among this group. Meanwhile, Grogger (1998) uses falling real wages to help explain rising youth arrest rates in the 1970s and 1980s. Mocan and Rees (1999) show that local unemployment rates and poverty also increase the probability of committing a crime.

Sorting out the determinants of crime is important since crime is not only costly to the victims, but also to taxpayers who fund police, courts, legal counsel and prisons to the tune of 147 billion (in 1999).[2] Private expenditures on self-protection are estimated to be at least as large. In fact, one estimate of all direct and indirect costs incurred by society as a result of crime exceeds 1 trillion dollars (Anderson, 1999). On the border, the cost of crime is particularly important since many border counties are already reeling under public expenses associated with high immigration and poverty rates. Legal costs aside, border counties face large expenditures related to public health and schooling of undocumented immigrants. Whether illegal immigration also increases crime rates on the border is hence an important question.

Another contribution of this paper is to help assess current immigration policy. If the ongoing border crackdown has been ineffective in reducing border crime rates by spurring more smuggling, then the justification for this type of border enforcement strategy is weaker than previously thought.

In this paper, we use monthly crime data from twenty border counties in California, Arizona and Texas and regress crime rates on migrant apprehensions (our proxy for illegal immigration) and border patrol linewatch hours (our proxy for enforcement intensity) and other controls including other forms of immigration and economic conditions.[3] We consider total

[2] See U.S. Department of Justice, Bureau of Justice Statistics, Trends in Justice Expenditure and Employment, NCJ 178272, Table 5 [Online]. Available: http://www.ojp.usdoj.gov/bjs/data/eetrnd05.wk1 [Mar. 27, 2002].
[3] These data are gathered at the county level and compiled by the state. The statistics are then reported to the FBI and make up the FBI's Uniform Crime Reports.

crime, property crime and violent crime committed between October, 1991 and December, 2000. Property crime is made up of less serious offenses and includes larceny, auto theft and burglary. Violent crime includes robbery, assault, rape and homicide. On average about 88 percent of all crime in the United States is property crime. Our findings imply a strong positive correlation between the volume of illegal immigration and violent crime, and a slight negative correlation between border enforcement and property crime.

Illegal Immigration and Crime

There are two important issues in studying the impact of illegal immigration on crime. First, there is the question of the causal nature of the link. Second, there is an empirical question regarding the measurement of illegal immigration, specifically the extent to which INS apprehensions data capture changes in the volume of illegal immigration. A relationship between illegal immigration and crime might be expected for three reasons: illegal immigrants commit more crime; illegal immigrants are more likely to be victimized by crime; and/or illegal immigrants use smugglers whom commit more crime. As discussed above, there is little empirical evidence that immigrants—legal or illegal—commit more crime than natives (apart from immigration-related offenses). Hence, the latter two reasons are the basis for the correlation we expect to find between illegal immigration and crime in this paper. It is widely known that immigrants are both more likely to be victimized by crime and less likely to report crime. The former suggests that immigrants are more vulnerable, while the latter suggests why that might be the case.

With regard to the third reason to expect a relationship between undocumented immigration and crime, it is also known that most undocumented immigrants from Mexico rely

on smugglers to make the border crossing into the United States (Massey et al, 2002; Reyes et al, 2002). The demand for assistance with illegal border crossings attracts criminals like smugglers and others who prey on migrants and commit crimes accordingly. Although smugglers were traditionally more like guides than seasoned criminals, anecdotal evidence suggests that as border enforcement and penalties on smuggling have risen, and the drug trade has expanded, the nature of smuggling has become more violent (Rico, 2003; Spener, 2002; U.S. GAO, 2000).

The earliest signs of the change may have come with the onset of the 'war on drugs' in the 1980s (Dunn, 1996). Interactions between border patrol, Mexican police, smugglers and migrants were transformed from what had been characterized as a harmless 'cat and mouse game' to more dangerous, tense and increasingly armed conflict. Although the 1986 amnesty, by legalizing over two million Mexican immigrants, ushered in some years of relative calm on the border, tensions resumed in the early 1990s as illegal immigration picked up again. A series of border crackdowns ensued (Operations Hold-the-Line and Gatekeeper are the best known) which, by shutting down traditional border crossings through El Paso, Texas, and San Diego, California, further increased the extent to which undocumented migrants rely on smugglers to make it across the border. The consequences to migrants have been widely reported as rising smuggler fees, more exploitation and abuse at the hands of smugglers and those posing as smugglers, and an increasing number of migrant deaths due to dehydration, hypothermia and drowning (Cornelius, 2001; Eschbach et al 1999; Orrenius, 2001; Spener, 2002;).

From the above discussion, we expect a positive correlation between the volume of illegal immigration and crime (and that the strength of this relationship may be increasing over time).[4] The next issue is how to measure illegal immigration. This paper uses the number of

[4] The 1994 U.S. Commission on Immigration Reform, charged with assessing the effect of Operation Hold-the-Line on El Paso/Juárez, looked into the determinants of El Paso's crime rate and whether illegal immigration played a

linewatch apprehensions by the border patrol as a proxy for changes in the volume of illegal immigration from Mexico (where *linewatch* simply refers to apprehensions within a border patrol sector which are along the *line*—or border—between Mexico and the U.S). 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 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 (although a much smaller proportion of immigrants from Mexico).

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.

Border Enforcement and Crime

This paper takes a two-pronged approach to studying crime on the border wherein the role that border enforcement has played is also a central question. The effect of border enforcement can be in two directions. By reducing the number of illegal immigrants upon whom criminals can prey, and by increasing the probability of crime detection and apprehension of

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role. In a cross-sectional regression of city characteristics on crime, they find that border cities have lower rates of crime as compared with non-border cities. El Paso is found only to have an above average rate of larceny-theft. The decline in the crime rate following implementation of Hold the Line is seen as possible evidence that illegal immigrants increase crime rates. However, the analysis only controls for time trends and seasonal effects.

criminals, border enforcement can act as a deterrent to crime. However, enforcement can also lead to an increase in crime if it leads to more smuggling and smugglers commit other crimes, as postulated above. In the first case, beefed-up enforcement has likely played a role in the reduction of crime on the border. In the second case, tougher enforcement may have been a countervailing force to otherwise falling crime rates on the border.

A key issue in studying the impact of law enforcement activity on the incidence of crime is the endogenous relationship of the two variables. While crime is generally modeled as a function of the payoff to crime, payoff to legal alternatives to crime such as work, the risk of apprehension and the severity of the expected punishment; enforcement is modeled as a function of, among other things, the incidence of crime (Ehrlich and Brower, 1987). Levitt (1997) suggests that much empirical work showing a zero or positive effect of policing on crime is likely a result of the endogenous relationship of these two variables. By using an innovative instrumental variable, Levitt is able to show that increases in the number of police significantly reduce violent crime, although they have a smaller impact on property crime.[5]

The good news is that this simultaneity problem is less severe when studying the impact of border enforcement on crime. As long as changes in border enforcement are not driven by changes in the forms of crimes studied here, we can argue that the border patrol measures we use are exogenously determined. The intensity of border enforcement is determined largely at the federal level, while local law enforcement agencies, such as police and sheriff departments, are charged with responding to changes in the local crime rate. While county and state coffers pay for local law enforcement, the U.S. Congress determines the budget of the INS, which in turn allocates funds to the U.S. border patrol.

Congressional funding of the INS has largely depended on the volume of illegal immigration. Large increases in INS resources have come at times when illegal immigration has been perceived to be high, not during surges of border crime rates. The two biggest increases in the INS budget came, for example, in 1987 in response to the passage of the Immigration Reform and Control Act (IRCA) and in 1995, following implementation of Operations Hold-the-Line and Gatekeeper. IRCA mandated a doubling of border patrol manpower while Hold-the-Line and Gatekeeper included not only large increases in personnel but also in equipment and infrastructure such as cameras, motion sensors, walls, fences and lights.

Data

The sample consists of crime and economic data for the twenty U.S. counties bordering Mexico for which data were available.[6] Apprehensions and enforcement data, meanwhile, are from the INS by border patrol sector. There are nine border patrol sectors along the Southwest border: San Diego, El Centro, Yuma, Tucson, El Paso, Marfa, Del Rio, Laredo and McAllen. These sectors consist of between one and five border-adjacent counties, so for those sectors that contain more than one border-adjacent county, we aggregate county crime and economic data up to the sector level. The crime data are monthly observations on reported crime spanning the years 1991-2000; they come from the state agencies that compile county crime data for FBI Uniform Crime Reporting purposes.[7] Local police authorities gather and report these data for seven types of crime: auto theft, larceny, burglary, assault, robbery, rape and homicide. The first

[5] Another complicating factor is the relationship of policing to the reporting of crime. Reported crime is an underestimate of actual crime, and the size of the bias is related to the degree of police presence.
[6] California counties include San Diego and Imperial; Arizona includes Yuma, Pima, Santa Cruz and Cochise. No crime data were available for any of the border counties in New Mexico. Texas counties include El Paso, Hudspeth, Jeff Davis, Presidio, Brewster, Terrell, Val Verde, Kinney, Maverick, Webb, Zapata, Starr, Hidalgo and Cameron.

three are generally referred to as property crimes, while the more serious offenses against individuals are considered violent crimes.[8]

Summary statistics are presented in Table 1. The dates for the analysis were constrained by the availability of monthly *sector-specific* INS data on apprehensions and enforcement.[9] As stated above, we expect apprehensions (enforcement) to be positively (negatively) associated with the county crime rate. We use border patrol officer linewatch hours to measure the intensity of border enforcement in a given sector. Although Border Patrol agents do not generally arrest individuals associated with crimes other than federal offenses such as entry without inspection and drug and human smuggling, we nevertheless expect the presence and visibility of agents and the proliferation of border checkpoints along major outgoing highways to serve as a deterrent to all forms of crime.[10]

Figure 1 graphs 3-month moving averages of the median county crime rate (relative to the national rate) and border patrol apprehensions over time. Whereas the relative rate of property crime shows a downward trend over the decade, violent crime is rising. The violent crime rate surges between 1995 and 1997 and again in the end of 1999 through 2000. The

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[7] Crime data was provided by the following state agencies: Special Request Unit, Criminal Justice Statistics Center, California Department of Justice; Uniform Crime Reporting Program, Access Integrity Unit, Arizona Department of Public Safety; Uniform Crime Reporting, Crime Information Bureau, Texas Department of Public Safety.

[8] There are many problems with reported crime data such as the UCR. First, victims report only an estimated one-half of all crimes committed. Under-reporting introduces measurement error that varies by crime type and county of jurisdiction. Also, the methods of collecting and reporting data also vary across local authorities. County fixed effects should pick up some of the fixed differences in reporting methods across counties in the sample.

[9] The INS data on apprehensions and enforcement are "linewatch," or activities at the U.S. border instead of in the interior. Each border sector incorporates large areas of the interior as well as the counties on the immediate border. Using linewatch measures allows us to concentrate on changes in variables along the border where crime is also being measured.

[10] As McCormick and Tollison (1984) demonstrate, the effect of police on crime is ambiguous. As the likelihood of detection and arrest rises and measured crime increases, the deterrent effect of more police should lower arrests and crime should fall. If border patrol serves more as a deterrent to crime than an engine for more arrests, then the analysis should be more likely to capture a negative effect of more border patrol on the incidence of crime.

correlation with apprehensions is fairly clear, although 1998 seems to be an exception. Figure 2 graphs the crime rate versus linewatch hours over the same period.

Among the control variables in the analysis are measures of other forms of inflows of Mexicans as well as local, state and national economic conditions. The additional 'inflow' variables—the number of non-immigrant visas issued to Mexicans and the number of Mexican immigrants receiving green cards—capture two facets of legal in-migrations. Non-immigrant visas measure the number of temporary visitors, and green card recipients captures the influx of permanent residents. Both variables are only available in annual values for the nation as a whole (in the regressions annual totals are divided by 12 so the sum of the months equals the yearly total). Non-immigrant visas are overwhelmingly issued to tourists ('temporary visitors for pleasure'), although the category also includes 'temporary visitors for business', temporary workers and students and their families.[11] Border counties saw a large increase in tourism in the 1990s, particularly in the post-NAFTA period. The predicted impact of more non-immigrant visitors on crime is likely positive. First, tourists more likely to be victimized than local residents. Second, for those with less honorable intentions, there are many incentives to commit crime on the U.S. side and escape back into Mexico.[12] Principal among these is a low probability of detection and apprehension in Mexico. This fact, along with laws that allow for the personal use of stolen goods by authorities until ownership is established in court, have further facilitated the proliferation of cross-border crime such as auto theft (U.S. Commission on Immigration Reform, 1994).

[11] In 2000, temporary visitors for pleasure made up 95% of all non-immigrant visas issued to Mexicans.
[12] It bears to mention that the great majority of non-immigrants cross the border to shop and do not commit any crime, but rather provide great benefit to the border economy. Moreover, the criteria for issuing tourist visas are stringent, and eligibles are typically affluent by Mexican standards.

Border counties also saw a large share of legal immigration from Mexico during this time period. Given the proximity to Mexico, legal immigrants from Mexico are over-represented in the border counties. In 2000, more than 24 percent of the total border population was foreign born. As Table 1 indicates, the average number of Mexicans adjusting to LPR status in the nation as a whole is about 10,660 per month. This number grows from a low of 4,636 in 1990 to a high of 14,487 in fiscal year 2000. In light of the evidence in the literature discussed above, there is no reason to believe that crime rates should be higher among legal immigrants as compared with natives. In fact, some studies such as Butcher and Piehl (1998) suggest immigrants are less likely to commit crime as compared with natives. Moreover, law abidingness is a criteria for obtaining legal U.S. residency. Hence, the predicted impact of more LPRs on crime is likely zero or negative.

Economic conditions on both sides of the border affect the likelihood of committing a crime.[13] The empirical model below includes measures at the sector, state and national level. County employment, personal income, population and unemployment are all included. State-level population is also included. At the national level we include the federal minimum wage.[14] We deflate the minimum wage and personal income by the consumer price index (CPI) for urban consumers. For Mexico, we include the real maquiladora wage (by border state) and maquiladora employment, and the real minimum wage, which are deflated using the Mexican CPI. We also include the real exchange rate between Mexico and the United States, deflated using the CPI for both countries, and the Mexican rate of inflation. In general, we expect better economic conditions at the local level, such as higher rates of job growth and lower

[13] 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).

unemployment, to lead to less crime. The impact of wages and income are less straightforward since economic well-being can also generate more gains to crime at the same time that it increases the opportunity cost of being a criminal.

Methodology

We regress the sector crime rate on linewatch apprehensions, linewatch border patrol hours, non-immigrant visas issued to Mexicans, legal permanent residents admitted from Mexico, measures of economic conditions, month, year and sector dummies. State and national crime rates are also included as control variables. Regressions are estimated in log-levels using feasible generalized least squares (FGLS) regressions that allow for county-level heteroscedasticity as well as an AR(1) error structure within counties and across time. Month dummy variables control for the seasonal components of crime and immigration. Many of the control variables, such as apprehensions, have strong seasonal factors, with apprehensions peaking in the spring and bottoming out during the year-end holiday season.

Year fixed effects capture changes in economic conditions or implementation of new immigration policies or any other year-specific effects that are not otherwise captured by the included right-hand side variables. Sector fixed effects will capture any fixed county characteristics that might otherwise bias the association of crime and immigration and enforcement measures. These can be institutional factors contributing to systematic under-reporting of crime or quality of policing or other cross-sectional influences such as geographic location and severity of climate or terrain.

[14] Data is monthly with the exception of sector employment, personal income, population, and state-level population.

In the regression analysis, observations are weighted by average sector population over the time period. Zeros in the sector crime rate are given the value 0.01 prior to taking the natural logarithm. The following shares of observations are zeros: 9.0 percent of total crime rate, 10.8 percent of property crime rate and 21.2 percent of violent crime rate.

Results

Tables 2 and 3 contain the regression findings. In Table 3 we include controls for the policing rate—the number of police officers per 100,000 people. As Table 2 shows, the results indicate that apprehensions, our measure of the volume of illegal immigration, are not significantly related to aggregate border crime rates. The net outcome in the first column, however, masks a positive and statistically significant effect of apprehensions on violent crime (column 3). The coefficient on apprehensions suggests that a ten percent increase in apprehensions leads to an approximate 0.60 percent increase in violent crime. This relationship does not appear to have changed over time in the 1990s. In regression results not shown here time interactions with apprehensions are not significantly different from zero.

As expected, linewatch hours, our measure of border enforcement, are negatively related to the aggregate crime rate although not significantly so. The effect is concentrated on property crime, where a 10 percent increase in border patrol linewatch hours leads to a 0.30 percent decline in the property crime rate (Table 2, column 2). There is no measured impact on violent crime. Again, in results not shown here, the relationship between crime and linewatch hours does not appear to have changed significantly over time in the 1990s.

The other measures of people inflows, the number of legal permanent residents (LPRs) admitted from Mexico and the number of non-immigrant visas issued to Mexicans, have mixed

results. The number of non-immigrants is significantly related to border county crime rates. Increases in the number of non-immigrants are positively correlated with overall and property crime. A ten percent increase in Mexican non-immigrants, meanwhile, is associated with a .73 percent increase in the incidence of property crime. Again, the effect is likely a combination of the tendency of criminals to prey on tourists and actual cross-border crime. The theft of U.S. cars for illegal export to Mexico is a well-known phenomenon on the border that is being picked up in the regression analysis presented here.[15]

Economic conditions have mixed results. Local job growth significantly reduces crime, as does a higher federal minimum wage. Unemployment rates are not significant here, although other studies have found they have an important role in determining crime. Higher personal income is not significant either in these regressions. There is some loss of precision in estimates as a result of aggregating from county to sector level. The minimum wage has a more clear-cut result. The coefficient on the minimum wage is negative and statistically significant for total and property crime. The coefficient implies a sizable impact on crime rates. For example, a ten percent increase in the minimum wage leads to a 3.8 percent decline in the rate of property crime. The regression results also imply a positive correlation between county and state population measures and the crime rate. Not only are more populated counties wealthier on average, but a higher concentration of people may imply better chances of avoiding detection and arrest and greater ease with which to dispose of stolen goods.

Also of considerable interest are economic conditions in Mexico and their impact on border county crime rates in the United States. From Table 2, the results suggest that lower rates of Mexican inflation and higher rates of maquiladora job growth lower border crime rates on the

[15] Regressions run by type of crime show rises in non-immigrant visitors are correlated with a greater incidence of larceny and auto theft.

U.S. side but the estimates are not significant. The coefficient on the Mexican minimum wage is negative but not significantly different from zero. The only confusing result is the positive and significant estimate of maquiladora wages on violent crime. Perhaps higher wages are correlated with access to the United States such as frequency of border crossings. This might increase the opportunity for cross-border crime. On the other hand, this coefficient may be picking up labor supply effects whereby periods of rising maquiladora wages are also periods of population growth on the Mexican side of the border. This might in turn be positively correlated with U.S. border crime rates.

Discussion

This paper attempts to sort out the confounding effects of immigration and enforcement on border crime rates in the 1990s. Not surprisingly, we find evidence of a positive and significant correlation between the volume of apprehensions of illegal immigrants and the incidence of violent crime. The underlying relationship is likely one in which the reliance of border crossers on smugglers, and the pervasiveness of drug smuggling, contribute to violent crime along the border. More surprisingly perhaps is the lack of a positive relationship between apprehensions and property crime. In any case, the result is more evidence that illegal immigrants per se are not contributing to more property crimes as they enter the country.

With regard to border enforcement, increased linewatch hours appear to have a deterrent impact on border crime, particularly on property-related crime such as theft and burglary.

There are several caveats to our analysis. First of all, we have not controlled for either local law enforcement such as the number of police or other county-level measures of law enforcement. If local law enforcement adjusts staffing taking the border patrol into

consideration, then the coefficient on linewatch hours is biased. However, if local police reduce patrols in areas where the border patrol is being beefed up, then the coefficient on linewatch hours is biased against finding an effect of border patrol on crime. We also need to control for local law enforcement however. Table 3 shows the results of adding control variable for the number of police officers per 100,000 residents. This measure is only available for four sectors, so the sample size is roughly half of the total. Policing has a negative coefficient but is not significant. The other results are largely the same.

We also have not controlled for socio-demographic variables besides the broad indicators of population and personal income. Factors such as race, education and family structure are known predictors of the probability of committing crime. If border county populations have undergone large demographic shifts that are correlated with levels of apprehensions and/or enforcement, then these factors could also bias the estimated coefficients. However, given the inclusion of year, sector and month fixed effects, it is likely that most county and time-specific variation has been accounted for with dummy variables. Moreover, demographic variables do not vary monthly so they would have limited explanatory power with regard to the month-to-month variation in crime rates.

Conclusion

Our results are consistent with the broader trends in border crime during the period of study. While property crime declined drastically on the border over most of the years under study, the fall in violent crime in the 1990s did not track the much deeper decline experienced at the national level. The result has been that a greater share of border crime is now violent crime, although total crime rates have fallen. Our results help explain these trends. Illegal immigration

is correlated with higher violent crime rates, while greater border enforcement has had a role in reducing property crime rates. The divergence with national trends with respect to violent crime suggests that the border is becoming a relatively more violent region—this despite massive increases in enforcement since the middle of the 1990s. Future work should look more carefully into the correlation between immigration policy and conditions on the border such as border crime.

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Table 1
Sample Means

	Oct-91 – Dec-00
Linewatch Apprehensions (thousands)	9.4 (11.0)
Linewatch Hours (thousands)	46.9 (44.7)
Non-immigrant visas issued to Mexicans (thousands)	194.1 (91.3)
Legal permanent residents admitted from Mexico (thousands)	10.7 (2.4)
Sector employment (thousands)	307.0 (446.9)
County unemployment rate	15.5 (8.7)
Sector personal income (millions, real dollars)	8,067.2 (13,024.5)
Sector population (thousands)	633.4 (796.7)
State population (thousands)	18,900.0 (9,295.7)
U.S. population (thousands)	26,900.0 (8,539.0)
U.S. minimum wage (real dollars)	2.97 (0.14)
Mexican border state maquiladora employment (thousands)	134.5 (68.2)
Mexican border state maquiladora hourly wage (real pesos)	9.5 (1.8)
Mexican minimum wage (daily wage, real pesos)	12.3 (1.5)

Table 1 continued	**Oct-91 – Dec-00**
Real exchange rate (pesos per $)	0.80 (0.12)
Mexican inflation	184.5 (86.4)
County total crime	421.8 (174.4)
State total crime	485.8 (84.5)
U.S. total crime	411.5 (48.5)
Police employment (thousands)	571.15 (426.8)

Note: Standard deviation is in parentheses. All crime rates are stated as offenses per 100,000 people.

Table 2
Regression Results for Crime along the U.S.–Mexico Border, 1991-2000

	Total Crime	Property Crime	Violent Crime
	FGLS	FGLS	FGLS
Linewatch Apprehensions	.010	.001	.057**
	(.010)	(.010)	(.017)
Linewatch Hours	-.023	-.030*	-.009
	(.017)	(.018)	(.028)
Non-immigrant visas issued to Mexicans	.059*	.073**	.042
	(.035)	(.035)	(.065)
Legal permanent residents admitted from Mexico	-.010	-.014	-.014
	(.023)	(.023)	(.042)
Sector employment	-1.016**	-.889**	.110
	(.435)	(.454)	(.817)
Sector unemployment rate	.038	.037	.069
	(.031)	(.032)	(.053)
Sector personal income	.054	-.001	-.197
	(.345)	(.359)	(.565)
Sector population	2.884**	2.929**	1.066
	(.446)	(.460)	(.878)
State population	.286	.317	.266
	(.421)	(.424)	(.502)
U.S. minimum wage	-.305	-.376*	-.112
	(.196)	(.198)	(.365)
Maquiladora employment	-.058	-.031	-.054
	(.078)	(.080)	(.116)
Maquiladora hourly wage	.097	.070	.241**
	(.061)	(.063)	(.110)
Mexican minimum wage	-.097	-.128	.187
	(.098)	(.098)	(.183)
Real exchange rate	-.004	.033	-.182
	(.071)	(.071)	(.131)
Mexican inflation	.063	.107	-.180
	(.113)	(.114)	(.195)
State total crime	.761**	.782**	.668**
	(.084)	(.081)	(.116)
U.S. total crime	.084	.007	.312
	(.155)	(.150)	(.259)

Table 2 continued

	Total Crime FGLS	Property Crime FGLS	Violent Crime FGLS
Number of Observations	972	972	972
Log-Likelihood	1360.1	1332.3	555.3

* p<.10; ** p<.05
Note: The time period is January 1991 to December 2000. All continuous variables except the time trend are in logs. State, year, month and county dummy variables are also included. In columns 2 and 3, state total crime and U.S. total crime correspond to property and violent crime, respectively. Standard errors are in parentheses.

Table 3
Regression Results for Crime along the U.S.–Mexico Border, 1991-2000
With Policing Rate

	Total Crime	Property Crime	Violent Crime
	FGLS	FGLS	FGLS
Linewatch Apprehensions	.010	-.006	.089**
	(.014)	(.014)	(.020)
Linewatch Hours	.010	.006	.004
	(.019)	(.020)	(.026)
Non-immigrant visas issued to Mexicans	.045	.064*	.031
	(.034)	(.036)	(.058)
Legal permanent residents admitted from Mexico	-.008	-.016	-.006
	(.023)	(.024)	(.038)
Policing Rate (# of police officers per 100,000 people)	-.022	-.037	.065
	(.040)	(.042)	(.053)
Sector employment	-1.892**	-2.133**	.649
	(.666)	(.712)	(1.008)
Sector unemployment rate	.029	.0026	-.021
	(.046)	(.048)	(.062)
Sector personal income	1.418**	1.545**	.703
	(.548)	(.577)	(.761)
Sector population	2.546**	2.825**	-.930
	(.835)	(.889)	(1.263)
State population	-.162	.031	-.305
	(.489)	(.515)	(.610)
U.S. minimum wage	-.289	-.386*	-.093
	(.198)	(.208)	(.328)
Maquiladora employment	-.035	-.026	-.076
	(.094)	(.010)	(.130)
Maquiladora hourly wage	.163**	.149*	.147
	(.079)	(.082)	(.125)
Mexican minimum wage	-.059	-.093	.339*
	(.108)	(.113)	(.185)
Real exchange rate	-.066	-.011	-.256**
	(.069)	(.073)	(.116)
Mexican inflation	.107	.185	-.290*
	(.108)	(.114)	(.170)
State total crime	.777**	.817**	.812**
	(.091)	(.091)	(.121)
U.S. total crime	.043	-.003	.275
	(.164)	(.166)	(.253)

Table 3 continued

	Total Crime FGLS	Property Crime FGLS	Violent Crime FGLS
Number of Observations	384	384	384
Log-Likelihood	629.6	615.4	461.1

* p<.10; ** p<.05

Note: The time period is January 1991 to December 2000. All continuous variables except the time trend are in logs. State, year, month and county dummy variables are also included. In columns 2 and 3, state total crime and U.S. total crime correspond to property and violent crime, respectively. Standard errors are in parentheses.