Economics Bulletin

Volume 39, Issue 2

Mexican Migration Flows to the United States: The Impact of Business Cycles on Unauthorized Immigration to the United States

Jesus Mendoza
The University of Texas at El Paso

Nathan Ashby
The University of Texas at El Paso

Abstract

Using Mexican consulate data on Mexican presence in US states, a panel data set is constructed between 2011 and 2014 to analyze the effects of different determinants of migration flows. The determinants of migration flows analyzed are the US and Mexican state business cycles, home and host state populations, Mexican state crime rates, the stock of Mexican immigrants by US state, remittances received by Mexican states, and the nominal exchange rate. Fixed effects regressions suggest that stronger US economic activity attracts immigrants to a given US state while an expanding economy in the home state tends to decrease emigration although the latter effect is quite small. Higher remittances also tends to decrease emigration out of Mexico. Two stage least squares are used to deal with endogeneity between the measures of economic activity, remittances, and immigration. These results also find evidence of a positive impact of US economic activity, but yield mixed results with regard to Mexican economic activity on outward migration.

We would also like to thank Roberto Coronado and Eduardo Saucedo for their helpful comments.
Citation: Jesus Mendoza and Nathan Ashby, (2019) "Mexican Migration Flows to the United States: The Impact of Business Cycles on Unauthorized Immigration to the United States", *Economics Bulletin*, Volume 39, Issue 2, pages 798-815
Contact: Jesus Mendoza - Jeslias24@gmail.com, Nathan Ashby - njashby@utep.edu.
Submitted: February 14, 2018. **Published:** April 03, 2019.

1. Introduction

Although unauthorized immigration flows from Mexico have slowed down in recent years, Mexican immigration to the United States continues to be substantial, and the topic remains relevant for policy makers, academics, and the public at large. In the United States, approximately 34 million people self-identify as Mexican (ACS Demographic and Housing Estimates, 2017). Passel and Cohn (2016) estimate that even though the share of undocumented Mexican immigrants has been declining, Mexican immigrants remain more than half of the total undocumented workers in the United States with approximately 5.8 million workers (approximately 52 percent of the total undocumented labor force). The authors attribute this decline to excess departures to arrivals from Mexican immigrants.

This study employs data from the *Matricula Consular de Alta Seguridad* (Consular Identification Card) issued by the Mexican Embassy and Consulates to Mexican immigrants in the United States[1] (Instituto de los Mexicanos en el Exterior, 2015). The purpose of this study is to analyze the impact of state-level fluctuations in economic activity in both the home and receiving states on unauthorized migration flows from Mexico to the United States. The data are analyzed between the years 2011 and 2014 using fixed effects estimates to control for omitted time invariant factors and two stage least squares to deal with the endogeneity of the variables of interest with immigrant flows.

The structure of this study is as follows: Section 2 presents the relevant literature. Section 3 introduces the econometric model employed in this analysis, the data in detail, expected signs of key variables, and descriptive statistics. Section 4 presents and describes the empirical results. Lastly, Section 5 concludes the by summarizing the results.

2. Literature Review

2.1 Background

Although the majority of immigrants from Mexico entered the United States legally, the number of undocumented immigrants is still substantial. Gonzalez-Barrera and Krogstad (2018) estimate that 45 percent of the 12 million Mexican immigrants entered illegally. The focus of this study will be on unauthorized immigration from Mexico to the United States between 2011 and 2014.

Undocumented workers from Mexico have played a historical role in US immigration. Although the high level of migration flows from Mexico to the United States observed in the last three decades is likely to subside due to decreases in the Mexican fertility rate, this period was one of the most significant migration episodes in the history of the two countries (Hanson & McIntosh, 2009). Massey et al. (2010) document Mexican immigration patterns to the United States through data obtained from the Consular Identification Card. These data measure the distribution of unauthorized Mexican workers across US states. Massey et al. find that undocumented Mexican workers are coming to the United States from central Mexico in contrast to trends from the 1980s and 1990s in which these tendentiously hailed from west-central Mexico. Villarreal (2014) finds

[1] The *Matricula Consular de Alta Seguridad* is argued to be part of the consular activities allowed by the 1963 Vienna Convention on Consular Relations (United Nations, 1963).

that migration pattern shifts can be, in part, attributed to changes in the US and Mexican economies across time. Villarreal uses as a clear example, the United States Great Recession,[2] which affected unauthorized Mexican labor demand in industries such as construction. Moreover, Villarreal's analysis suggests that the Great Recession affected the economically active, uneducated worker at a larger scale.

Understanding the relationship of business cycles and unauthorized immigration from Mexico has important policy implications. In the United States, restrictions for low skilled workers are much higher compared to restrictions on skilled workers. Immigration may be considered as a mechanism to smooth out cyclical variation between localities. Mandelman and Zlate (2012) provide evidence using a two-country business cycle model that restrictions of low-skilled immigration from Mexico have caused greater volatility in wages of unskilled immigrants; the wages of these immigrants are much higher during economic booms, but due to the difficulty of returning to the home country during recessions, there is downward pressure on the wages of native workers. Less restrictions on unskilled immigration would lead to greater productivity during expansions and dampening of recessions as excess workers return to countries of origin.

2.2 Business Cycles & Wages

Economic literature suggests that the US business cycle affects inward migration flows. Jerome (1926) suggests there was a pro cyclical nature of European migration to the United States during the Nineteenth and early Twentieth centuries. US recessions seemed to be related to slower inward migration from European countries. Conversely, larger inflows of European immigrants were documented during times of expansion. Chiswick and Miller (2002) study the wages of foreign-born workers at the time of entrance; they suggest that wages are lower for the immigrants that entered at a time of high unemployment. However, these effects do not seem to be permanent and decrease with duration in the United States.

Furthermore, there has been a long-run rising trend of employment rates and a falling trend of unemployment rates among the US immigrant population. However, immigrants' economic outcomes are, in the short-run, more strongly tied to the business cycle than those of the native workers because they tend to be less educated and overrepresented in sectors that are sensitive to cyclical economic movements (Orrenius & Zavodny, 2009). Using macroeconomic data from Mexico and the United States, Mandelman and Zlate (2012) estimate a two-country business cycle model of labor migration. They find that over the cycle, immigration increases with the expected stream of future wage gains. Additionally, it is suggested that increased economic activity along with decreasing income gaps and income volatility in the home countries will continue to decrease net immigrant flows to the United States (Hanson, Liu, & McIntosh, 2017).

Hanson and Spilimbergo (1999) find that border enforcement responds to business cycle changes or changes in undocumented labor demand in the United States. The study concludes that as undocumented labor demand increases, border enforcement tends to decrease. Additionally, the

[2] The Great Recession was the longest post-WWII recession; it lasted from December 2007 to June 2009. The financial effects of this crisis were large; home prices fell approximately 30 percent on average, and the net worth of US households fell from a peak of close to $69 trillion to $55 trillion during this period (Rich, 2013). Other estimates conservatively measure the cost of the Great Recession to be at least between $6 trillion and $14 trillion (Atkison et al., 2013).

study suggests that undocumented labor demand exists due to different industries relying on low-wage workers to keep production costs down.

2.3 Other Determinants of Immigration from Mexico to the United States

Determinants of immigration such as distance, crime, climate, remittances, earnings, and the effects of migration on the host and home countries have been extensively studied in the past (Ambrosini and Peri, 2012; Ashby et al., 2013; Borjas, 1987; Cañas et al., 2007; Chort and de la Rupelle, 2016; Cox-Edwards and Rodriguez-Oreggia, 2009; Hanson and McIntosh, 2010; Vargas and Huang, 2006). Recent research on the determinants of undocumented workers flows from Mexico to the United States supports that they tend to migrate to those states with higher Mexican immigrant populations, higher wages, smaller state populations, and shorter distances between the home and host states (Ashby et al., 2013). Hanson and McIntosh (2010) suggest that labor supply shocks account for about a third of the observed migration from Mexico to the United States from 1977 to 2000.

Exchanges rates can have a significant impact on immigration. Hanson and Spilimbergo (1999) and Keita (2016) find evidence of a movement of immigrants towards the country with the appreciating currency. Studies demonstrate that crime in the Mexican state of origin is a significant push factor (Rios Contreras, 2014; Albuja, 2014; Chort and de la Rupelle, 2016).

Remittances play a major role in immigration because they allow for the continued study of the relationship between immigrants in a host country and their country of origin. Mexican immigrants are a considerable part of the US population since immigration from Mexico grew substantially over a century (Massey et al., 2010). Therefore, it should be expected that throughout this period, remittances should have increased in volume (Cañas et al., 2007). In the Mexican case, about 2.5 million Mexicans migrated to the United States from 1997 to 2002, and 1.6 million sent remittances to their families (Cox-Edwards and Rodriguez-Oreggia, 2009). Remittances, in turn, can also affect immigration patterns. The effect of remittances on the home country have been studied, and in some cases, they have been studied as a development tool for the home country (Orrenius et al., 2010). If this is the case, they can act, in the long-run, as a deterrent to migration as the economic and quality of life conditions improve in the home country. A study that uses a business cycle model of the Unites States and Mexico documents that remittances to Mexico are used as insurance to smooth consumption (Mandelman & Zlate, 2012). Other evidence supports remittances to be counter-cyclical with respect to output in the countries of origin for the nations studied, but they are found to be both, counter and pro-cyclical with respect to output in the host country depending on the case (Coronado, 2009).

3. Econometric Model

Table I displays the descriptive statistics for the variables used in this study. Equation 1 below displays the main econometric model specification to be tested:

$$
\begin{aligned}
Ln\,(migration_{ij,t}) \\
&= \beta_1 + \beta_2 Ln\,(statebci_{j,t-1}) + \ \beta_3\, Ln\,(statebci_{i,t-1}) \\
&+ \beta_4\, Ln\,(statepop_{j,t-1}) \\
&+ \beta_5\, Ln\,(statepop_{i,t-1}) + \beta_6\ \ Ln\,(Mexican\, Stock_{j,t-1}) \\
&+\ \beta_7\, Ln\,(crime_{i,t-1}) + \beta_8\, Ln\,(remittances_{i,t-1}) + \beta_9 Ln\,(fix_{t-1}) + T\mu \\
&+ u
\end{aligned}
\tag{1}
$$

The dependent variable employed in this analysis is Mexican state to US state immigration flows. Where $Ln\,(migration_{ij,t})$ is the variable representing migration flows to US states[3] (*j*) from Mexican states[4] (*i*) from 2011 through 2014 (*t*). This variable is proxied using the natural log of the number of Consular Identification Cards issued by the Mexican consulate from 2011 through 2014 in the United States (see Massey et al., 2010, Ashby et al., 2013; and Bueno, 2013). Consular Identification Cards have detailed information about these Mexican immigrants. Given that undocumented immigrants can use the Consular Identification Cards as means of identification with some mainstream financial institutions,[5] it becomes easier for undocumented immigrants to remit money to the home country (O'Neil, 2003). Also, the Consular Identification Card is a valid identification means to obtain a driver's license in some US states (The Pew Charitable Trusts, 2015). These benefits provide an incentive for undocumented workers to obtain the Consular Identification Card as a means of identification in the United States. The variation of benefits between US states can result in a measurement problem because incentives vary from state to state depending on how useful it will be for the Mexican immigrant to obtain the Consular Identification Card.

Our explanatory variables are all lagged by one year to capture the delayed response of immigrants to changes in factors the destination and origin localities. The independent variable $Ln\,(statebci_{j,t-1})$ is the broad measure of the US states (*j*) economic conditions from 2011 through 2014 (*t*). A common measure used to measure state business cycles using a monthly coincident index is constructed by the Federal Reserve (Federal Reserve Bank of Philadelphia and Federal Reserve Bank of St. Louis, 2016). This measure estimates cycles in the US states using four indicators: non-farm payroll employment, the unemployment rate, average hours worked in manufacturing, and wages and salaries. Unfortunately, we are unable to take advantage of this measure of economic activity. Since our dependent variable of interest cannot be separated by quarters let alone months, we must use yearly data rather than quarterly or monthly data. We use state-level GDP (in millions of 2012 chained dollars) provided by the Bureau of Economic Analysis (2018) which is much more likely to pick up economic activity smoothed over four quarters than quarterly GDP. We recognize this as a shortcoming of the study, but there is little alternative given that the annual immigrant data are central to our analysis. It is expected that immigrants react positively to an increase in economic activity in a given US state.

---

[3] The Consular Identification Card has Mexican immigrant data from all US states and the District of Columbia. The District of Columbia (DC) is not included in the main analysis. For robustness we do run regressions which include DC and the results are substantively the same.

[4] All 50 US state and all 32 Mexican states are represented in the analysis.

[5] Bank of America, Citibank, HSBC, Chase, US Bank, and Wells Fargo accept the Consular Identification Cards as means of identification to open bank accounts (Cosumer Action, 2007). However, this is a non-exhaustive list of banks and financial institutions that accept the Consular Identification Card as means of identification.

Table I. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Ln $(migration_{ij,t})$	4.146	2.191	0	10.93
Ln $(statebci_{j,t-1})$*-GDP (millions of chained 2012 dollars)*	12.272	0.967	10.244	14.613
Ln $(statebci_{i,t-1})$*:*				
Electricity Consumption per capita	22.316	0.778	20.814	23.702
GDP (millions of constant 2013 pesos)	12.745	0.797	11.314	14.799
Ln $(remittances_{i,t-1})$	6.192	0.983	3.519	7.716
Ln $(statepop_{i,t-1})$	14.869	0.74	13.384	16.611
Ln $(statepop_{j,t-1}$ *(1000's))*	15.294	0.956	13.243	17.462
Ln $(Mexican\ Stock_{i,t-1})$	12.04	1.573	7.922	16.294
Ln $(crime_{i,t-1})$	4.784	1.794	0	8.447
Ln (fix_{t-1})	2.558	0.026	2.521	2.5882
Ln $(GDP)_{j,t-10}$	12.127	0.989	10.074	14.459
Ln $(Patents)_{j,t-10}$	-8.456	0.702	-9.968	-6.567
Ln $(GDP)_{i,t-8}$	12.59	0.825	11.123	14.68
Ln $(Schooling)_{i,t-8}$	2.11	0.121	1.795	2.381

N=5,788

The independent variable $Ln\ (statebci_{i,t-1})$ is a measure of the economic conditions by Mexican state of origin. Two different measures are considered in our regression analysis. The first is measured through a proxy, the Mexican states (i) average consumption of electricity per customer in megawatt hours in natural log form from 2011 to 2014 (Comision Federal de Electricidad, 2016). Unlike the United States, measures of state-level GDP per capita in Mexico have been demonstrated to be weakly related to economic wellbeing in Mexico. For instance, Campeche has usually been ranked to be by far the highest in GDP per capita despite the fact that most experts rank it much lower in wellbeing. Nuevo Leon, Mexico City, and Chihuahua generally are considered states with the highest level of economic activity. Electricity consumption per capita is much more consistent with this understanding (OECD, n.d.). Gomez and Rodriguez (2015) demonstrate that there is a causal relationship going from economic growth to electricity consumption in Mexico for the period of 1971 to 2011. Thus, electric consumption may shed additional light on overall (formal and informal) economic activity in Mexico by state. In addition to using electricity consumption, we use the log of real state GDP (in millions of 2013 constant pesos) to measure fluctuations in Mexico as a robustness test. It is expected that Mexicans are less likely to emigrate from their home state as economic activity increases.

The independent variable $Ln\ (statepop_{i,t-1})$ is the population by Mexican state (i) in natural log form from 2011 to 2014 (t). This variable is obtained from INEGI's Information Bank (Instituto

Nacional de Estadistica y Geografia, 2016). The independent variable $Ln\ (crime_{i,t-1})$ measures violent crime by Mexican state (i) from 2011 to 2014 (t). This variable is measured by the natural log of violent crime rates obtained from Milenio[6] per hundred thousand residents. The independent variable $Ln\ (remittances_{i,t-1})$ is the US Dollar amount of remittances received by Mexican state (i) from the United States between 2011 and 2014 (t) and published by Bank of Mexico (Banco de Mexico, 2016a).

The independent variable $Ln\ (fix_{t-1})$ is the annual average of the exchange rate between the Mexican Peso and the US dollar obtained from Banco de Mexico. The variable is stated in nominal Mexican Pesos per US Dollar[7] (Banco de Mexico, 2016b). The data was constructed by averaging the monthly average by year. This measurement does not vary across states. The last term is u, with assumed traits of a stochastic error term with normal distribution and constant variance. All regressions control for dyadic (Mexican state to US state pairs) fixed effects and some control for time fixed effects as well as measured by the last vector T_t. We do not include a measure of distance since this variable is time invariant and is automatically omitted by fixed effects.

Endogeneity issues are present between the measures of business cycles and the dependent variable. Remittances also are likely to be highly endogenous. This concern may partially be alleviated by the use of lagged explanatory variables. However, to further treat this we utilize two stage least squares which requires instrumental variables. We utilize four instruments for these three endogenous variables. To treat US state GDP, we employ state patents per capita and the log of state GDP ten years prior. Remittances and Mexican state GDP are instrumented by schooling and Mexican GDP eight years prior (the Mexican data are only available back to 2003). The idea of using variables from eight and ten years prior is that there may be some persistence of variables over time and some correlation would be expected to be present between these and more current observations. It would, however, be unlikely that there would be any correlation between these lagged variables and the dependent variable in its current year and thus it would be expected that these instruments would be uncorrelated with the error term of the primary equation. The first stage regressions are available in the Appendix and standard tests of instrument strength and identification are reported in the tables below.

4. Results

Table II shows fixed effects estimations using electricity consumption per capita in Mexico as a measure of fluctuations in Mexican economic activity. The first two regressions do not control for year effects. In the second and fourth columns remittances is dropped due to correlation with the business cycle in Mexico. The correlation with the US business cycle is negative and quite low, but the correlation with state-level electric consumption and GDP in Mexico is quite high (0.48 and 0.29) respectively. The third and fourth columns control for year effects. A similar pattern is used in all of the regressions tables.

The two focal variables yield estimates consistent with expectations in sign and statistical significance. A 1 percent in improvement in US state business cycle is associated with a 1.2 percent

---

[6] Milenio is a national newspaper in Mexico. It is owned by Grupo Multimedios. Milenio kept a tally of homicides in Mexico. Milenio started counting this type of violent crimes in 2007.

[7] An(A) increase (decrease) in the variable's level denotes a(n) depreciation (appreciation) of the Mexican Peso against the US Dollar.

increase in migration. Likewise, a 1 percent increase in business activity as measured by average electricity consumption is associated with a decrease in migration to the United States which is statistically significant. However, it is highly inelastic with a coefficient between -0.024 and -0.03. Year effects are likely to control for much of the cyclical information we are trying to pick up with our focal variables and would be expected to dampen these results. The estimated coefficient on US business cycle suggests an increase of about 1.2, not much different from the first two columns. The coefficients on electric consumption in Mexican states are also very similar in statistical significance and magnitude. The exchange rate yields positive and statistically significant coefficients in all four specifications. These results suggest that for a 1 percent depreciation of the peso against the dollar, immigration increased between 0.85 and 1.88 percent. Mexican state and US state populations yield negative estimates suggesting that immigrants are attracted to less populated states in the United States and are more likely to migrate if they hail from low population Mexican states. The coefficient on remittances suggests that for every 1 percent increase in remittances received in a Mexican state, immigration will decrease by 0.04 percent. Although statistically significant, the impact appears to be quite small.

Table II. Fixed Effects Regressions Using Average Electric Consumption for Mexican Economic Activity

DependentVariable: *Ln* $(migration_{ij,t})$				
Explanatory Variables	*Coefficients (standard errors)*			
Ln $(statebci_{j,t-1})$	1.214***	1.218***	1.195***	1.2***
	(0.317)	(0.318)	(0.324)	(0.325)
Ln $(statebci_{i,t-1})$	-0.024*	-0.0294**	-0.021	-0.025*
	(0.014)	(0.013)	(0.014)	(0.014)
Ln $(remittances_{i,t-1})$	-0.046*	-	-0.043	-
	(0.0263)		(0.026)	
Ln $(statepop_{i,t-1})$	-0.160	-0.274	-1.961**	-2.096**
	(0.712)	(0.714)	(0.859)	(0.862)
Ln $(statepop_{j,t-1}$ *(1000's))*	-2.270*	-2.244**	-3.701***	-3.705***
	(0.991)	(0.992)	(1.047)	(1.047)
Ln $(Mexican\ Stock_{i,t-1})$	0.834***	0.843***	0.272	0.271
	(0.274)	(0.275)	(0.330)	(0.330)
Ln $(crime_{i,t-1})$	0.018*	0.018**	0.009	0.009
	(0.008)	(0.008)	(0.008)	(0.008)
Ln (fix_{t-1})	0.854***	0.842***	1.851***	1.870***
	(0.227)	(0.227)	(0.462)	(0.463)
Constant	14.86	15.86	67.96***	69.78***
	(12.44)	(12.49)	(19.03)	(19.09)
N	5,788	5,788	5,788	5,788
Year Fixed Effects	N	N	Y	Y
R^2	0.082	0.0874	0.385	0.380

Note: The sample includes observations in years 2011-14. Standard errors in parentheses are clustered by Mexican State and US state pairs. Statistical significance as follows: *** =1%, * =5%,*=10%.

Table III. Fixed Effects Regressions Using Mexican State GDP as a Measure of Economic Activity

DependentVariable: *Ln (migration$_{ij,t}$)*

Explanatory Variables	Coefficients (standard errors)			
Ln (statebci$_{jt-1}$)	1.208***	1.213***	1.196***	1.201***
	(0.318)	(0.318)	(0.323)	(0.325)
Ln (statebci$_{it-1}$)	0.366	0.349	-0.058	-0.082
	(0.243)	(0.243)	(0.271)	(0.271)
Ln (remittances$_{i,t-1}$)	-0.05*	-	-0.044*	-
	(0.026)		(0.026)	
Ln (statepop$_{i,t-1}$)	-0.457	-0.573	-2.004**	-2.155**
	(0.753)	(0.755)	(0.856)	(0.86)
Ln (statepop$_{jt-1}$ (1000's))	-2.479**	-2.433**	-3.699***	-3.702***
	(0.997)	(0.998)	(1.047)	(1.048)
Ln (Mexican Stock$_{it-1}$)	0.736***	0.751***	0.273	0.272
	(0.286)	(0.286)	(0.33)	(0.330)
Ln (crime$_{i,t-1}$)	0.017**	0.017**	0.009	0.008
	(0.008)	(0.008)	(0.008)	(0.008)
Ln (fix$_{t-1}$)	0.800***	0.778***	1.882***	1.912***
	(0.219)	(0.219)	(0.466)	(0.467)
Constant	18.71	19.45	68.77***	70.96***
	(12.93)	(12.98)	(19.03)	(19.11)
N	5,788	5,788	5,788	5,788
Year Fixed Effects	N	N	Y	Y
adj. R^2	0.0003	0.003	0.3826	0.3769

Note: The sample includes observations in years 2011-14. Standard errors in parentheses are clustered by Mexican State and US state pairs. Statistical significance as follows: *** =1%, * =5%,*=10%.

Table III shows the results using the log of Mexican real GDP at the state level as measures of Mexican economic fluctuations. The results for US state business cycles are not too different from the results in Table II and are statistically robust. The results for Mexican GDP on the other hand are quite different. The results yield the expected negative coefficient when controlling for year effects, but the results are positive without these controls. This is possibly due to omitted variable bias. At the same time, remittances yields similar coefficients to Table II. The R squared suggests a much better fit when time effects are included.

Tables IV and V treat for the endogeneity of the measures of economic activity, remittances to Mexico, and immigration. It makes economic sense that immigrants are attracted to states with better economic activity. At the same time it is plausible that an increase in the labor force in US states may lead to greater economic activity. Likewise, just as we might expect a reduction in economic activity in the home state to lead to an increase in outward migration, it is also possible that a reduction in the labor force in Mexican states would decrease economic activity in the home state. Four instruments are included. The first is the log of state-level GDP ten years prior. The second is patents per capita in US states ten years prior. The log of GDP and the average years of schooling by Mexican state eight years prior are used to treat for remittances and the measures of economic activity in Mexico. First stage regressions are included in the Appendix.

At the bottom of the tables we report the results of underidentification tests using the Kleibergen-Paap LM test, the Sanderson-Windmeijer F statistic to test the relative bias and distortion of each specification, the weak identification Kleibergen- Paap Wald F statistic as developed by Stock and

Table IV. 2SLS Fixed Effects Regressions Using Average Electric Consumption for Mexican Economic Activity

Explanatory Variables:	*Coefficients (standard errors)*			
Ln (statebci$_{j,t-1}$)	13.08***	13.00***	12.67***	12.64***
	(3.472)	(3.358)	(3.101)	(3.108)
Ln (statebci$_{i,t-1}$)	-1.508*	-1.208**	-0.555	-0.818
	(0.627)	(0.398)	(1.369)	(0.499)
Ln (remittances$_{i,t-1}$)	0.252	-	-0.119	-
	(0.351)		(0.581)	
Ln (statepop$_{i,t-1}$)	0.492	0.815	-0.567	-0.398
	(1.124)	(1.050)	(1.704)	(1.484)
Ln (statepop$_{j,t-1}$)	-21.17***	-20.89***	-20.40***	-20.37***
	(5.077)	(4.828)	(4.238)	(4.276)
Ln (Mexican Stock$_{i,t-1}$)	-0.587	-0.563	-0.759	-0.769
	(0.489)	(0.463)	(0.471)	(0.476)
Ln (crime$_{i,t-1}$)	0.0404**	0.0355**	0.0191	0.0241
	(0.0149)	(0.0126)	(0.0289)	(0.0151)
Ln (fix$_{t-1}$)	3.624***	3.231***	2.260**	2.164***
	(1.003)	(0.737)	(0.874)	(0.745)
N	5,732	5,732	5,732	5,732
Year Dummies	N	N	Y	Y
Kleibergen-Paap LM (Null: Underidentified)	17.86***	66.587***	12.89***	102.456***
Weak Identification Tests for Individual Instruments: (Sanderson-Windmeijer F)				
Ln (statebci$_{j,t-1}$)	23.33[a]	13.88[a]	23.61[a]	17.63[a]
Ln (statebci$_{i,t-1}$)	10.42[a]	15.42[a]	6.84	24.62[a,b]
Ln (remittances$_{i,t-1}$)	13.41[a]	-	5.69	-
Weak Identification Joint: Kleibergen-Paap Wald F	4.55	15.42[a]	3.281	18.41[a,b]
Hansen J (Null: Instruments Are Valid)	0.02	0.580	1.823	1.815

Note: The sample includes observations in years 2011-14. Standard errors in parentheses are clustered by Mexican State and US state pairs. Statistical significance as follows: *** =1%, * =5%,*=10%. The superscript “a” indicates that a variable is below 10 percent of relative IV bias and the superscript “b” indicates that it is less than 10 percent of size distortion.

Table V. 2SLS Fixed Effects Regressions Using Mexican State GDP As a Measure of Economic Activity

	Coefficients (standard errors)			
Ln (statebci$_{j,t-1}$)	12.68***	12.05***	12.62***	12.96***
	(3.296)	(2.994)	(2.985)	(3.107)
Ln (statebci$_{i,t-1}$)	2.499*	0.351	0.741	-1.599
	(1.132)	(0.770)	(5.117)	(1.032)
Ln (remittances$_{i,t-1}$)	-0.935**	-	-0.487	-
	(0.302)		(1.042)	
Ln (statepop$_{i,t-1}$)	-0.00785	-0.756	-0.492	-2.265*
	(1.120)	(1.025)	(3.917)	(1.098)
Ln (statepop$_{j,t-1}$)	-21.37***	-18.21***	-20.35***	-20.73***
	(4.764)	(4.142)	(4.141)	(4.256)
Ln (Mexican Stock$_{i,t-1}$)	-1.158	-0.290	-0.736	-0.747
	(0.608)	(0.471)	(0.474)	(0.475)
Ln (crime$_{i,t-1}$)	0.0119	0.0135	0.0110	0.00270
	(0.0114)	(0.0100)	(0.0201)	(0.0104)
Ln (fix$_{t-1}$)	1.507***	1.151***	2.153	3.189***
	(0.333)	(0.272)	(2.378)	(0.747)
N	5,732	5,732	5,732	5,732
Year Dummies	N	N	Y	Y
Kleibergen-Paap LM (Null: Underidentified)	56.65***	39.55***	3.462	40.691***
Weak Identification Tests for Individual Instruments: (Sanderson-Windmeijer F)				
Ln (statebci$_{j,t-1}$)	25.57[a,b]	25.30[a,b]	9.10	17.66[a]
Ln (statebci$_{i,t-1}$)	45.00[a,b]	12.92[a]	1.78	76.89[a,b]
Ln (remittances$_{i,t-1}$)	30.93[a,b]	-	1.74	-
Weak Identification: Kleibergen-Paap Wald F	14.249	12.92[a]	0.868	13.233[a]
Hansen J (Null: Instruments Are Valid)	1.273	12.748***	1.987	1.986

Note: The sample includes observations in years 2011-14. Standard errors in parentheses are clustered by Mexican State and US state pairs. Statistical significance as follows: *** =1%, * =5%,*=10%. The superscript “a” indicates that a variable is below 10 percent of relative IV bias and the superscript “b” indicates that it is less than 10 percent of size distortion.

Yogo (2002, 2005), and the Hansen J statistic with a null hypothesis of instrument validity, no correlation with the error term, and the excludability of these instruments in the main equation.

The Kleibergen-Paap Wald F statistic does not provide critical values with more than two endogenous variables. This statistic is not reported in columns 1 and 3 which include all three endogenous variables. The notes below the table describe the symbols to determine whether the coefficient estimates for US GDP are biased in the two stage regressions based on critical values. The coefficients for US GDP are much higher in the two stage regressions than the fixed effects estimates, but they are quite stable. These coefficients suggest that a 1 percent increase in US state GDP is associated with between 12.64 and 13.08 percent increase in immigration from Mexico. The coefficients for Mexican economic activity, electric consumption per capita in this case, are negative as expected but much less stable. The yielded estimates are -1.51, -1.21, -0.56, and -0.82 respectively in columns 1-4. Based on the reported tests, the best estimates using electricity consumption in Table IV are in the fourth column which deals with pairwise and year fixed effects excluding remittances. Although not statistically significant at conventional levels, the magnitude of electric consumption is much larger than the fixed effects estimates. The estimate is still technically inelastic with a magnitude less than 1, but it is much closer to 1. Remittances yields coefficient estimates of 0.252 and -0.119, but is statistically insignificant in both cases

Table V displays the results using Mexican state GDP. The coefficients for US state GDP are very similar to Table IV. Mexican state GDP is even less stable than electric consumption per capita. The coefficients are respectively 2.499, 0.351, 0.741, and -1.599. The result in column 1 is statistically significant, but falls just short in column 4 with a p-value of 0.12. The tests perform slightly better in column 1 than column 4. Remittances yields a coefficient of -0.935 indicating that remittances received from the US states in the Mexican states are associated with reduction in immigration that is nearly unit elastic.

5. Conclusion

This study analyzes Mexican consulate data on Mexican immigration to US states using a panel data between 2011 and 2014. Fixed effects regressions suggest that stronger US economic activity attracts immigrants to a given US state while an expanding economy in the home state tends to decrease emigration. The impact of increased economic activity in the home state is much less stable and smaller in magnitude than the impact of higher economic activity in destination states. Higher remittances also tends to decrease emigration out of Mexico.

Two stage least squares are used to deal with endogeneity between the measures of economic activity and immigration. These results also show evidence of a positive impact of US economic activity, but the results are mixed when it comes to the impact of Mexican economic activity on outward migration. Similar to previous studies, our analysis demonstrates much stronger immigrant response to host state macro economy than home state fluctuations in economic activity.

References

ACS Demographic and Housing Estimates (2017) *2011-2014 American Community Survey 5-Year Estimates* . (2017, January 3). Accessed on January 3, 2017 at American Fact Finder, U.S. Census Bureau: https://factfinder.census.gov/bkmk/table/1.0/en/ACS/15_5YR/DP05/0100000US.

Albuja, S. (2014) *Criminal Violence and Displacement in Mexico.* The Norwegian Refugee Council's Internal Monitoring Centre, Africa and Americas Department. The Norwegian Refugee Council's Internal Monitoring Centre.

Ambrosini, J. W., and G. Peri (2012) "The determinants and the selection of Mexico-US migrants" *The World Economy* **35**, 11-151.

Ashby, N., A. Bueno, and D. Martinez Villareal (2013) "The determinants of immigration from Mexico to the United States: a state-to-state analysis" *Applied Economics Letters* **20**, 638-641.

Atkison, T., D. Luttrell, and H. Rosenblum (2013) *How Bad Was It? The Costs and Consequences of the 2007-09 Financail Crisis.* Federal Reserve Bank of Dallas. Federal Reserve Bank of Dallas. Retrieved April 4, 2017, from https://www.dallasfed.org/assets/documents/research/staff/staff1301.pdf

Banco de Mexico (2016a) *Ingresos por remesas familiares, distribución por entidad federativa*. Retrieved from Balanza de Pagos - Sistema de Informacion Economica - Banco de Mexico: http://www.banxico.org.mx/SieInternet/

Banco de Mexico. (2016b). *Mercado Cambiario (Tipos de Cambio)*. Retrieved from Banco de Mexico: http://www.banxico.org.mx/portal-mercado-cambiario/index.html

Borjas, G. (1987) "Self-selection and the earnings of immigrants." *The American Economic Review* **77**, 531-553.

Bueno, A. (2013). A state-to-state analysis of mexican migration to the U.S. *The University of Texas at El Paso*. Retrieved from Dissertations & Theses @ University of Texas - El Paso: http://search.proquest.com/docview/1442476281?accountid=7121

Bureau of Economic Analysis (2018) *Regional Data*. Accessed on December 18, 2018 at https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1.

Cañas, J., P.Orrenius and R. Coronado (2007) "Commentary on Session III U.S.–Mexico Remittances: Recent Trends and Measurement Issues." In J. Hollifield, P. Orrenius, & T. Osang (Ed.), *Migration, Trade and Development: Conference Proceedings* (pp. 213-222). Federal Reserve Bank of Dallas.

Chiswick, B. R. and P.W. Miller (2002) "Immigrant earnings: language skills, linguistic concentrations and the business cycle" *Journal of Population Economics* **15**, 31-57.

Chort, I. and M. de la Rupelle (2016) "Determinants of Mexico-U.S. outward and return migration flows: a state-level panel data analysis" *Demography* **53***,* 1453-1476.

Comision Federal de Electricidad (2016) *Usuarios y Consumo de Electricidad por Municipio*. Retrieved from datos.gob.mx at https://datos.gob.mx/busca/dataset/usuarios-y-consumo-de-electricidad-por-municipio.

Consumer Action (2007) Retrieved from Consumer Action: http://www.consumer-action.org/downloads/spanish/ConsularIDCards_SP.pdf

Coronado, R. A. (2009). “Business cycles and Remittances: Can the Beveridge-Nelson Decomposition Provide New Evidence” *Working Paper No. 40*, 1-49

Cox-Edwards, A and E. Rodriguez-Oreggia (2009) “Remittances and Labor Force Participation in Mexico: An Analysis Using Propensity Score Matching” *World Development* **37**, 1004-1014.

Federal Reserve Bank of Philadelphia and Federal Reserve Economic Data from the Federal Reserve Bank of St. Louis (2016) *Coincident Indexes for the 50 States*.

Gomez, M. and J.C. Rodriguez (2015) “Electricity consumption and economic growth” *International Journal of Social, Behavioral, Educational, Economic and Management Engineering* **9**, 2471-2476.

Gonzalez-Barrera, A. and J.M. Krogstad (2018) “What we know about illegal immigration from Mexico?” Pew Research Center. Accessed on March 1, 2019 at http://www.pewresearch.org/fact-tank/2018/12/03/what-we-know-about-illegal-immigration-from-mexico/

Hanson, G. H. and C. McIntosh (2009) “The demography of Mexican migration to the United States” *American Economic Revew* **99**, 22-27.

Hanson, G. H. and C. McIntosh (2010) “The Great Mexican Emigration” *The Review of Economics and Statistics* **92**, 798-810.

Hanson, G. H. and A. Spilimbergo (1999) “Illegal immigration, border enforcement, and relative wages: evidence from apprehensions at the U.S.Mexico border” *The American Economic Review* **89**, 1337-1357.

Hanson, G.H., C. Liu, and C. McIntosh (2017) “Along the watchtower: The rise and fall of U.S. low-skilled immigration” *Brooking Papers on Economic Activity*.

Instituto de los Mexicanos en el Exterior (2015) *Mexicanos en Estados Unidos*. Retrieved from Instituto de los Mexicanos en el Exterior: http://www.ime.gob.mx/gob/estadisticas/usa/historico/h_2015/historico_2015.html

Instituto Nacional de Estadistica y Geografia. (2016). *Banco de Informacion INEGI*. Retrieved from Instituto de Estadistica y Geografia: http://www.inegi.org.mx/biinegi/

Jerome, H. (1926). *Migration and Business Cycles.* Retrieved 2017, from The National Bureau of Economic Research: http://www.nber.org/chapters/c5273.pdf

Keita, S. (2016) “Bilateral Real Exchange Rates and Migration” *Applied Economics* **48**, 1937-2951.

Mandelman, F.S. and A. Zlate (2012) “Immigration, remittances and business cycles”. *Journal of Monetary Economics* **59**, 196-213.

Massey, D. S., J.S. Rugh, and K.A. Pren (2010) “The Geography of undocumented Mexican migration” *Mexican Studies/Estudios Mexicanos* **26**, 129-152.

O'Neil, K. (2003, April 1). *Consular ID Cards: Mexico and Beyond*. Retrieved April 4, 2017, from Migration Policy Institute: http://www.migrationpolicy.org/article/consular-id-cards-mexico-and-beyond.

Organization for Economic Cooperation and Development (OECD). (n.d.) Measuring Well-being in Mexican States: Highlights. Accessed on February 19, 2019 at http://www.oecd.org/cfe/regional-policy/Mexican-States-Highlights-English.pdf.

Orrenius, P. M. and M. Zavodny (2009). *Tied to the Business Cycle: How Immigrants Fare in Good and Bad Economic Times.* Retrieved 2017, from Migration Policy Institute: https://www.researchgate.net/profile/Pia_Orrenius/publication/267955007_Tied_to_the_Business_Cycle_How_Immigrants_Fare_in_Good_and_Bad_Economic_Times/links/54d7b3c70cf246475817a75e.pdf

Orrenius, P. M., M. Zavodny, J. Cañas, and R. Coronado (2010) "Do remittances boost economic development? Evidence from Mexican states" *Law and Business Review of the Americas* **16**, 803-822.

Passel, J. S., & Cohn, D. (2016, September 21). *Unauthorized immigrant population stable for half a decade.* Retrieved January 3, 2017, from Pew Research Center: http://www.pewresearch.org/fact-tank/2016/09/21/unauthorized-immigrant-population-stable-for-half-a-decade/

Rich, R. (2013) *The Great Recession of 2007-09*. Retrieved 2017, from Federal Reserve History: http://www.federalreservehistory.org/Events/DetailView/58

Rios Contreras, V. (2014) "The role of drug-related violence and extortion in promoting Mexican migration: unexpected consequences of a drug war" *Latin American Research Review* **49**, 199-217.

The Pew Charitable Trusts (2015) *Deciding Who Drives: State choices surrounding unauthorized immigrants and driver's licenses.* The Pew Charitable Trusts.

United Nations. (1963). *Vienna Convention on Consular Relations.* Retrieved from United Nations Office of Legal Affairs: http://legal.un.org/ilc/texts/instruments/english/conventions/9_2_1963.pdf

Vargas, C. and P. Huang (2006) "Macroeconomic Determinants of Workers' Remittances: Host versus Home Country's Economic Conditions" *The Journal of International Trade & Economic Development* **15**, 81-99.

Villarreal, A. (2014) "Explaining the decline in Mexico-U.S. migration: The effect of the Great Recession" *Demography* ***51***, 2203-2228.

Appendix

Table A.I. First Stage Regressions for Table 4 Estimates.

Dependent Variable: Ln *(statebcij,t-1)- US GDP*				
Explanatory Variables:	Coefficients (standard errors)			
$Ln\ (statebc_{j,t-10})$	-0.098***	-0.098***	-0.095***	-0.095***
	(0.016)	(0.016)	(0.022)	(0.022)
$Ln\ (patents_{j,t-10})$	-0.028***	-0.028***	-0.029***	-0.029***
	(0.009)	(0.009)	(0.01)	(0.01)
$Ln\ (Schooling_{i,t-8})$	0.016	0.016	-0.007	-0.007
	(0.023)	(0.023)	(0.023)	(0.023)
$Ln\ (statebc_{j,t-8})$	0.008	0.008	0.0051	0.0051
	(0.013)	(0.013)	(0.013)	(0.013)
$Ln\ (statepop_{i,t-1})$	0.0406	0.0406	0.006	0.006092
	(0.054)	(0.054)	(0.053)	(0.053)
$Ln\ (statepop_{j,t-1}\ (1000's))$	1.557***	1.557***	1.533***	1.533***
	(0.119)	(0.119)	(0.137)	(0.137)
$Ln\ (Mexican\ Stock_{i,t-1})$	0.106***	0.106***	0.092***	0.092***
	(0.021)	(0.021)	(0.026)	(0.026)
$Ln\ (crime_{i,t-1})$	0.0004	0.0004	0.0002	0.0002
	(0.001)	(0.001)	(0.001)	(0.001)
$Ln\ (fix_{t-1})$	-0.042**	-0.042**	-0.04	-0.04
	(0.02)	(0.02)	(0.068)	(0.068)
F Statistic	13.18***	13.18***	13.25***	13.25***
Sanderson-Windmeijer F	23.33***	15.96***	23.61***	17.63***
Dependent Variable: $Ln\ (statebci_{i,t-1})$*- Electricity Consumption per Capita*				
$Ln\ (statebc_{j,t-10})$	-0.671***	-0.671***	0.004	0.004
	(0.111)	(0.111)	(0.107)	(0.107)
$Ln\ (patents_{j,t-10})$	0.095***	0.095***	0.017	0.017
	(0.03)	(0.03)	(0.03)	(0.03)
$Ln\ (Schooling_{i,t-8})$	-0.439***	-0.438***	-0.344***	-0.344***
	(0.118)	(0.118)	(0.07)	(0.07)
$Ln\ (statebc_{j,t-8})$	0.374***	0.374***	0.453***	0.453***
	(0.044)	(0.044)	(0.054)	(0.054)
$Ln\ (statepop_{i,t-1})$	1.519***	1.519***	1.821***	1.821***
	(0.149)	(0.149)	(0.202)	(0.202)
$Ln\ (statepop_{j,t-1}\ (1000's))$	-0.41	-0.41	-0.129	-0.129
	(0.362)	(0.362)	(0.374)	(0.374)

Table A.I (continued)

Ln (Mexican Stock$_{i,t-1}$)	0.071	0.071	-0.046	-0.046
	(0.093)	(0.093)	(0.105)	(0.105)
Ln (crime$_{i,t-1}$)	0.026***	0.026***	0.026***	0.026***
	(0.003)	(0.003)	(0.003)	(0.003)
Ln (fix$_{t-1}$)	1.568***	1.568***	-0.728***	-0.728***
	(0.153)	(0.153)	(0.158)	(0.158)
F Statistic	22.13***	22.13***	18.44***	18.44***
Sanderson-Windmeijer F	10.42***	26.07***	6.84***	24.62***
Dependent Variable: *Ln (remittances$_{i,t-1}$)*				
Ln (statebc$_{j,t-10}$)	-0.42**	-	-0.089	-
	(0.191)		(0.227)	
Ln (patents$_{j,t-10}$)	0.071	-	0.04	-
	(0.047)		(0.049)	
Ln (Schooling$_{i,t-8}$)	-0.473***	-	-0.118	-
	(0.164)		(0.216)	
Ln (statebc$_{j,t-8}$)	1.081***	-	1.158***	-
	(0.124)		(0.122)	
Ln (statepop$_{i,t-1}$)	1.924***	-	2.551***	-
	(0.457)		(0.481)	
Ln (statepop$_{j,t-1}$ (1000's))	-0.627	-	-0.16	-
	(0.709)		(0.733)	
Ln (Mexican Stock$_{i,t-1}$)	-0.107	-	0.02	-
	(0.177)		(0.2)	
Ln (crime$_{i,t-1}$)	0.014**	-	0.017***	-
	(0.006)		(0.006)	
Ln (fix$_{t-1}$)	0.085634	-	-1.192***	-
	(0.126)		(0.363)	
F Statistic	28.31***		24.53***	
Sanderson-Windmeijer F	13.41***		5.69***	
Year Effects	N	N	Y	Y

Notes: The sample includes observations in years 2011-14. Standard errors in parentheses are clustered by Mexican State and US state pairs. Statistical significance as follows: *** =1%, * =5%,*=10%.

Table A.II. First Stage Regressions from Table 5.

Dependent Variable: *Ln (statebcij,t-1)- US GDP*				
Explanatory Variables:	Coefficients (standard errors)			
Ln ($statebc_{j,t-10}$)	-0.098***	-0.098***	-0.095***	-0.095***
	(0.016)	(0.016)	(0.022)	(0.022208
Ln ($patents_{j,t-10}$)	-0.028***	-0.028***	-0.029***	-0.028***
	(0.009)	(0.009)	(0.01)	(0.010391
Ln ($Schooling_{i,t-8}$)	0.016	0.016	-0.007	-0.007
	(0.023)	(0.023)	(0.023)	(0.023031
Ln ($statebc_{j,t-8}$)	0.008	0.008	0.005	0.005084
	(0.013)	(0.013)	(0.013)	(0.01298
Ln ($statepop_{i,t-1}$)	0.041	0.041	0.006	0.006092
	(0.054)	(0.054)	(0.053)	(0.053211
Ln ($statepop_{j,t-1}$)	1.557***	1.557***	1.533***	1.533***
	(0.119)	(0.119)	(0.137)	(0.136924
Ln (*Mexican* $Stock_{i,t-1}$)	0.106***	0.106***	0.092***	0.092***
	(0.021)	(0.020732	(0.026)	(0.025726
Ln ($crime_{i,t-1}$)	0.0004	0.0004	0.0002	0.000236
	(0.001)	(0.001)	(0.001)	(0.000582
Ln (fix_{t-1})	-0.042**	-0.042**	-0.04	-0.04044
	(0.02)	(0.02)	(0.068)	(0.068342
F Statistic	13.18***	13.18***	13.25***	13.25***
Sanderson-Windmeijer F	25.57***	17.62***	9.1***	17.66***
Dependent Variable: *Ln* ($statebci_{i,t-1}$)*- Mexican State GDP*				
Ln ($statebc_{j,t-10}$)	0.018)	0.018	-0.004	-0.00431
	(0.021)	(0.021)	(0.023)	(0.022557
Ln ($patents_{j,t-10}$)	0.004	0.004	0.0001	0.0001
	(0.005)	(0.005)	(0.005)	(0.005)
Ln ($Schooling_{i,t-8}$)	0.18***	0.18***	-0.105***	-0.105***
	(0.019)	(0.019)	(0.023)	(0.023)
Ln ($statebc_{j,t-8}$)	0.268***	0.268***	0.23***	0.23***
	(0.017)	(0.017)	(0.015)	(0.015)
Ln ($statepop_{i,t-1}$)	0.222***	0.222***	-0.225***	-0.225***
	(0.061)	(0.061)	(0.064)	(0.064)
Ln ($statepop_{j,t-1}$ *(1000's))*	0.328***	0.328***	0.018	0.018
	(0.08)	(0.08)	(0.073)	(0.073)
Ln (*Mexican* $Stock_{i,t-1}$)	0.172***	0.172***	0.008	0.008
	(0.019)	(0.019)	(0.017)	(0.017)

Table A.II (continued)

Ln (crime$_{i,t-1}$)	0.002***	0.002***	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Ln (fix$_{t-1}$)	-0.006	-0.006	0.211***	0.211***
	(0.014)	(0.014)	(0.039)	(0.039)
F Statistic	144.44***	144.44	58.72***	58.72***
Sanderson-Windmeijer F	45***	193.16	1.78	76.89***
Dependent Variable: *Ln (remittances$_{i,t-1}$)*				
Ln (statebc$_{j,t-10}$)	-0.42**	-	-0.089	-
	(0.191)		(0.227)	
Ln (patents$_{j,t-10}$)	0.071	-	0.04	-
	(0.047)		(0.049)	
Ln (Schooling$_{i,t-8}$)	-0.473**	-	-0.118	-
	(0.164)		(0.216)	
Ln (statebc$_{j,t-8}$)	1.081***	-	1.158***	-
	(0.124)		(0.122)	
Ln (statepop$_{i,t-1}$)	1.924***	-	2.551***	-
	(0.457)		(0.481)	
Ln (statepop$_{j,t-1}$ (1000's))	-0.627	-	-0.16	-
	(0.709)		(0.733)	
Ln (Mexican Stock$_{i,t-1}$)	-0.107	-	0.02	-
	(0.177)		(0.196)	
Ln (crime$_{i,t-1}$)	0.014**	-	0.0169***	-
	(0.006)		(0.01)	
Ln (fix$_{t-1}$)	0.086	-	-1.192***	-
	(0.126)		(0.363)	
F Statistic	28.31***		24.53***	
Sanderson-Windmeijer F	30.93***		1.74	
Year Effects	N	N	Y	Y

Notes: The sample includes observations in years 2011-14. Standard errors in parentheses are clustered by Mexican State and US state pairs. Statistical significance as follows:
*** =1%, * =5%,*=10%.