2017-01-01

Mexican Migration Flows to the United States: A State-to-State Panel Data Analysis of the Consular Identification Card from 2011 to 2014

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MEXICAN MIGRATION FLOWS TO THE UNITED STATES: A STATE-TO-STATE PANEL DATA ANALYSIS OF THE CONSULAR IDENTIFICATION CARD FROM 2011 TO 2014

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Dedication

To my incredible wife, my beautiful daughter, my friends, and family, especially my mom and dad. I could not have done it without you.

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by

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THESIS

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF SCIENCE

Department of Economics and Finance

THE UNIVERSITY OF TEXAS AT EL PASO

May 2017

Acknowledgements

I would like to thank the Economics and Finance Department faculty and staff for their gracious support. I would like to acknowledge Dr. Nathan Ashby for all his patience, help as a professor, advisor, and friend. I would also like to give special thanks to Dr. Roberto Coronado because he has been a great mentor, supervisor, and friend. Dr. Eduardo Saucedo, thank you for your time, your commitment, and your helpful comments. I cannot thank my committee members enough because they provided valuable criticism of my work and helped me through this arduous process. To the plenty others that substantially helped me throughout my education, please do not think that I am not grateful, all of you have impacted me and changed me for the better.

Abstract

This analysis explores migration flows from Mexico to the United States at the state level. This study finds empirical evidence to support the idea that social and economic factors can help predict state-to-state migration flows. Using an alternative measure of migration flows, the *Matricula Consular de Alta Seguridad* (Consular Identification Card) data from 2011 to 2014, a panel data model is constructed from yearly data to analyze the effects of different determinants of migration flows. The migration flows' determinants analyzed are distance, established immigrant networks in the United States, the US and Mexican states' business cycles, populations, and crime rates, remittances received by Mexican states, and the nominal exchange rate. Due to the panel data nature of this study, ordinary least squares, random effects, fixed effects, and least squares dummy variable regression results are presented; scaled regression results are also explored. The results suggest that longer state-to-state distances, higher US states' violent crime levels, and increased economic activity in Mexico deter immigration from Mexico to the United States. In contrast, other evidence suggests that established Mexican immigrant networks in the United States, expanding US states' business cycles, higher Mexican states' crime levels, and nominal depreciation of the Mexican Peso to the US Dollar encourage migration flows from Mexico to the United States. Finally, the evidence is mixed and difficult to interpret for the effects of remittances, and Mexican and US states' population on migration flows from Mexico to the United States.

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Chapter 1: Introduction

Mexican immigration to the United States continues to be substantial, and the topic remains relevant for policy-makers, academics, and the public. This topic continues to be relevant even if in recent years Mexican migration dynamics are showing decreasing trends. In the United States, approximately 34 million people self-identify as Mexican (ACS Demographic and Housing Estimates, 2017). A part of that population are descendants of Mexicans that lived in the states of Arizona, California, Colorado, New Mexico, and Texas before they became US territories and states.[1] Others are second-generation Mexican-Americans, children of documented and undocumented immigrants from Mexico (Waldinger and Reichl, 2006). The rest are first generation, documented and undocumented immigrants. Passel and Cohn (2016) approximate that the number of unauthorized (undocumented) workers in the United States experienced a decreasing trend from a peak of 12.2 million in 2007 and has since stabilized to approximately 11.1 million undocumented workers in 2014. Passel and Cohn 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 exceeding departures to arrivals from Mexican immigrants.

The substantial decline in arrivals to the United States from Mexican immigrants may be attributed to several factors. On the US side, declining job opportunities and increased border security may have made the United States less attractive to Mexican immigrants. On the Mexican

[1] Not all descendants of Mexicans and Mexican-Americans from these states choose to identify as Mexicans. Historically, some have chosen to identify as Spanish-American. See the article "*Becoming 'Spanish-American': Race and Rhetoric in New Mexico Politics, 1880-1928*" published in *Journal of American Ethnic History* (Montgomery, 2001).

side, recent strong economic growth may have reduced traditional "push" factors that often lead Mexicans to emigrate to the United States (Passel and Cohn, 2009). Furthermore, Mexico experienced dramatic demographical changes. While the fertility rate of a child-bearing Mexican woman in the 1960s was 7.3 children, the fertility rate for the average woman in the United States was 3.6 children. By 2009, the fertility rates in Mexico and the United States decreased to 2.4 and 2.0 children, respectively (Pew Research Center, 2011). Going forward, this sharp decline in the Mexican fertility rate will not only affect immigration patterns from Mexico to the United States today but well into the future.

Immigration to the United States, documented and undocumented, has been a historically controversial topic where policy-makers, academics, and the public debate to stop it completely, to decrease it or to promote it. Undocumented immigration has become an increasingly divisive issue, not only in the traditional US host states, but also among non-traditional host states receiving increased migration flows (Massey, Rugh, and Pren, 2010). This increased divisiveness occurred even as net undocumented migration from Mexico to the United States is close to zero (Passel and Cohn, 2016). Adding to the debate is the effect that immigrants have on wages and jobs in the host country. The economic literature on the consequences of immigration on the labor supply suggests immigration impacts earnings in the host country (Card, 2001; Aydemir & Borjas, 2007; Cortes, 2008; Ottaviano & Peri, 2012). Recently, the US presidential election intensified the debate on whether immigration is net positive or negative for US welfare. President Donald J. Trump campaigned on deporting all undocumented immigrants and building a wall along the US-Mexico border to prevent any further undocumented immigrants from coming to the United States (Hayashi, 2016). Even though the campaign rhetoric may or may not materialize, the political spheres continue debating the issue. It is the case that research related to immigration issues

remains relevant and increases in importance in the foreseeable future given the contemporary demographic trends and the current political discourse.

Continuing to study the determinants of migration provides an opportunity to understand the impacts on migration patterns from economic and social conditions from both the host and home country's perspective. 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[2] (Instituto de los Mexicanos en el Exterior, 2015). The Consular Identification Card, in its current form, has been issued since March 2002 (Bruno and Storrs, 2006). Economic and social conditions' effects on migration flows are studied from the thirty-two Mexican states to the fifty US states from 2011 to 2014. This study employs state-to-state distances, established Mexican immigrant networks in the United States, Mexican and US populations, business cycles, and crime rates. This study also utilizes the Mexican Peso to US Dollar nominal exchange rate and remittances received by Mexican states.[3] This state-to-state migration flows study is possible because the Consular Identification Card provides information on the Mexican immigrants' state of origin and the US state of current residence. This paper assumes that Mexican immigrants obtaining the Consular Identification Card are newly arrived undocumented immigrants seeking means of identification in the host country (United States). Unscaled log-log ordinary least squares (OLS), random effects (RE), fixed effects (FE) and least squares dummy variable (LSDV) regressions are estimated. Scaled log-log OLS, RE, FE, and

[2] 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).

[3] This study does not attempt to explain return migration. However, the literature would greatly benefit from further research on the topic given the current estimates of zero net migration.

LSDV are also explored to avoid losing observations from US states with no perceived migration flows from Mexico.

This study provides empirical evidence that traditional economic and social factors from Mexico and the United States, at the state level, predict state-to-state migration flows. The evidence suggests that as distances increase, migration flows decrease. Additionally, evidence suggests that as the US crime rates at the state level increase, migration flows from Mexico fall. Evidence also suggests that expansions in the Mexican business cycles at the state level deter immigration to the United States. In contrast, results suggest that established Mexican immigrant networks in the United States, US economic expansions at the state level, surges in the Mexican crime rates at the state level, and nominal depreciations of the Mexican Peso against the US Dollar increase migration flows from Mexico. Moreover, state populations and remittances received by Mexican states yield mixed evidence of their impact on migrations flows.

The structure of this study is as follows: Chapter 1 is the introduction; it briefly presents the audience with the relevance of the issue and succinctly introduces the model and the overall results. Chapter 2 presents the relevant literature and the Consular Identification Card data highlights. Chapter 3 introduces, the econometric model employed in this analysis, the data in detail, expected signs, and descriptive statistics. Chapter 4 describes and presents the empirical results. Additionally, it discusses the empirical results' policy implications. Lastly, Chapter 5 concludes the study and recommends future research.

Chapter 2: Literature Review & Consular Identification Card Highlights

2.1 Background

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 seen in the last three decades are 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 can depict the US geography with the most undocumented Mexican workers. Massey et al. find that undocumented Mexican workers are coming to the United States from central Mexico instead of the 1980s and 1990s historical source of west-central Mexico. In the same analysis, Massey et al. find that Mexican immigrants' US destinations are also changing; places such as Atlanta, Charlotte, Las Vegas, and Minneapolis are becoming important Mexican immigrant destinations. While California, Texas, and Illinois continue dominating in magnitude, they are losing overall migration flows. Villarreal (2014) finds that migration patterns' 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,[4] 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.

[4] 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, Luttrell, & Rosenblum, 2013).

Arango (2000) states that undocumented workers' dynamics have been extensively studied in the past under different frameworks such as new-classical theory, new economics of migration, dual labor markets, world system theory, and push-pull frameworks. Arango explains that push-pull factors may include an array of different determinants such as economic, demographic, political, social, and environmental factors. Moreover, the decision to emigrate also comes from weighing the benefits of migrating versus its costs (Borjas, 1987). Some gains from migrating are possible employment, higher earnings and an overall better quality of life in the host country compared to the countries of origin.

Some of the costs of migration may include distance from the home state to the host state, which is related to the monetary costs, health and safety hazards that arise from dangerous areas on the Mexican side of the border controlled by drug gangs. The immigrant massacre[5] that occurred in San Fernando, Tamaulipas is an example of non-monetary risks that immigrants from Mexico, Central, and South America face when attempting to cross into the United States.

2.2 Determinants of Immigration from Mexico to the United States

Determinants of immigration such as distance, crime, climate, remittances, earnings, among others and the effects of migration on the host and home countries have been extensively studied in the past (Ambrosini and Peri, 2012; Ashby, Bueno, and Martinez Villareal, 2013; Borjas, 1987; Cañas, Orrenius, and Coronado, 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

[5] On August 22-23, 2010, a massacre involving the gruesome killing of 72 immigrants shocked the world. These immigrants were on their way to the United States. The massacre occurred in San Fernando, Tamaulipas near the Texas-Mexico border (Moore, 2012).

supports that they tend to migrate to those states with higher Mexican immigrant populations, higher wages, smaller populations and shorter distances from the home to the host states (Ashby et al., 2013). Hanson and McIntosh (2010) use decennial emigration rates from Mexico to the United States obtained from the Mexican Census to study the effects that labor supply shocks have on emigration rates. Hanson and McIntosh suggest that labor supply shocks account for about a third of the observed migration from Mexico to the United States from 1977 to 2000. Moreover, a study finds that traditional economic determinants, climatic, and social factors such as crime contribute to shaping regional migration patterns in the short-run (Chort and de la Rupelle, 2016).

2.2.1 Immigration Effects & Self-Selection

Immigration has been a contested issue in the United States due to the effects that immigrants may have on the local population's employment, earnings, crime levels, and welfare programs, among others. Aydemir and Borjas (2007) suggest that immigration has wage effects on the host and the home countries. In the United States, Canada, and Mexico a similar case arises. This evidence suggests an inverse relationship between wages and labor supply shifts due to immigration; a 10 percent induced shift in the labor supply has an effect of up to a 4 percent decrease in wages. Furthermore, Aydemir and Borjas document that immigration may increase or reduce wage inequality depending on the immigrant's skills. Their evidence suggests that wage inequality widened in the United States due to the low-skills of the Mexican immigrant relative to those of the US worker. For Mexico, emigrants come from the middle-skilled worker, relative to Mexican workers; this, in turn, increased the wages of the middle-skilled worker in Mexico.

Card (2001) finds that in large immigrant cities, inflows of immigrants decreased the wages of unskilled workers by up to 3 percent. However, Card suggests that for non-large immigrant cities, immigration effects on wages are probably smaller. Ottaviano and Peri (2012) study the

effects of immigration on wages by native worker and immigrant worker previously established in the host country. From 1990 to 2006, immigration positively affected native workers' average wages, although the impact is small. In contrast, immigration during the same period negatively and considerably impacted the previous immigrants' average wages. Additionally, Cortes (2008) finds a connection between immigration and the US consumer overall purchasing power. Cortes argues that low-skilled immigration decreases the cost of low-skilled immigrant-intensive services such as gardening and positively affects the high-skilled worker's (consumer) purchasing power in the United States. However, low-skilled immigration also decreases the overall low-skilled worker's (consumers) purchasing power in the United States. Low-skilled native workers in the United States are declining as a share of the total workforce; this suggests that the overall effect of immigration on the consumer purchasing power in the United States is positive. Other evidence suggests that economic institutions with rigid structures increase the negative effect of immigrants on native employment such as firing costs and rigid wages (Angrist and Kugler, 2003). If the mix of immigrants' self-selection changes, the effect on wages of skilled and unskilled workers may also change. Therefore, it becomes relevant to study the immigrants' skills composition coming to the United States.

Some economic literature argues that negative self-selection by possible immigrants to the United States exists; this means that the immigrants with the lowest skills are the ones that have the greatest incentive to emigrate (Borjas, 1987). However, Chiquiar and Hanson (2005) test Borjas' hypothesis and concluded that immigrants from Mexico to the United States have less education than the average US native, but have more education than the average Mexican native has. This finding suggests that the average Mexican immigrant comes from the middle and upper portions of the Mexican wage distribution. This result is not consistent with Borjas' negative self-

selection hypothesis but consistent with positive self-selection. Given this evidence, it is the immigrants from Mexico with high skills, relative to the average Mexican worker, the ones with the most incentive to emigrate. Furthermore, this effect is increased when the Mexican economy experiences a crisis (Chiquiar and Hanson, 2005). When immigrant networks in the host country are included in the self-selection analysis, positive self-selection is encountered in Mexican communities where these immigrants do not have strong networks in the United States. Interestingly, negative self-selection in Mexican communities is found with strong immigrant networks in the United States (McKenzie and Rapoport, 2010). This conclusion is consistent with other previous evidence (Borjas, 1987; Chiquiar and Hanson, 2005). Using data from the Mexican Family Life Survey, another analysis finds negative self-selection of immigrants. The authors also conclude that factors such as initial wealth, migration costs, geography, and social networks have a significant effect on immigrant decisions (Ambrosini and Peri, 2012). Additionally, Mexicans in the informal sector of the economy are found to have a higher propensity to emigrate (Villareal and Blanchard, 2013).

2.2.2 Business Cycles & Wages

Economic literature suggests that the US business cycle affects inward migration flows. Jerome (1926) suggests there was a procyclical nature of European migration to the United States during the 19th and early 20th 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. Villarreal (2014) finds that the downturn, due to the

Great Recession, partly explains the decrease in immigration from Mexico to the United States because there was a decline in labor demand from industrial sectors in the United States were these immigrant workers are traditionally hired.

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). Low-skilled immigrants have also been found to be discouraged to move to states that have set minimum wage laws considerably higher than the federal minimum wage (Orrenius and Zavodny, 2008). 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).

2.2.3 Border Enforcement, Immigrant Networks & the Exchange Rate

Hanson and Spilimbergo (2009) 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 study suggests that undocumented labor demand exists due to different industries relying on low-wage workers to keep production costs down. Thus, illegal immigration can be explained as a response to the increase in the demand for low-wage labor workers (Hanson and Spilimbergo, 1999). The literature also suggests that the undocumented labor force in the United States is more

flexible given the lack of employer-related restrictions faced by their documented worker counterparts (Hanson, 2007).

Border enforcement policies may impose a cost on immigration and therefore act as a deterrent in the short-run. However, in the long-run, immigrants will likely still be determined to migrate due to wage differentials between the United States and Mexico (Dávila, Pagán, and Soydemir, 2002). Regarding immigrant network effects, they are shown to reduce costs of migration; these costs are not only financial but also psychological (Zenteno, 2000). Moreover, the probability of a rural Mexican to emigrate to the United States increases as access to Mexican immigrant networks increases (Davis, Stecklov, and Winters, 2002).

The relationship between the exchange rate and depreciations of the Mexican Peso to migration flows has been previously studied and found to be substantial. A depreciation of the Mexican Peso, defined as two or more standard deviation increases in the Mexican Peso to US Dollar exchange rate in the previous month, is associated with an increase of 6.5 to 8.2 percent in border apprehensions (Hanson and Spilimbergo, 1999). At the international level, Keita (2016) employs data of 30 OECD destination countries and 165 origin countries to explore the relationship between the exchange rate and migration flows. Keita finds that a real appreciation of the destination country's currency against the home country's currency is associated with an increase in migration flows between 18.2 and 19.4 percent. Keita argues that the purchasing power of the expected income influences the decision to migrate not only from the prospect of higher earnings in the destination country but also through the prospect of transferring some of the income back to the destination country through remittances.

2.2.4 Crime

Crime levels also affect Mexican migration flows to the United States. Rios Contreras (2014) documents the increased migration from the northern Mexican states, which experienced an increase in violent crimes due to the drug war in Mexico. Albuja (2014) documents that due to generalized violence in Mexico, many Mexicans sought asylum in the United States. Albuja states that municipalities that experienced violence had residents leave at a rate that is four to five times higher than a non-violent municipality with similar socio-economic status. However, Basu and Pearlman (2016) find little evidence of forced domestic Mexican migration due to drug-related violence. On the subject of international forced migration in Mexico, Basu and Pearlman find little evidence at the municipal level and stronger evidence at the state level. Furthermore, Chort and de la Rupelle (2015) find a small and negative significant relationship to migration flows when including all Mexican states.

At the international level, Bohra-Mishra and Massey (2011) document that in Nepal violence does not have a linear relationship to migration because low and moderate levels of violence reduced the probability of migration, while elevated levels of violence increased the likelihood of movement.

Immigration and crime literature has largely focused on assessing crime rates and incidence immigrants may or may not cause in their host country. Rumbaut et al. (2006) find that the incarceration rate of the native population is four times the rate of the foreign-born population. However, second generation immigrants' incarceration rates rise rapidly compared to the first-generation immigrants. Although the relationship between immigration and crime in the United States is mostly studied on assessing rates and incidence immigrants may or may not cause, the literature also documents Mexicans' perceptions of immigration authorities and crime in the

United States. Menjivar and Bejarano (2004) find that immigrants tend to perceive crime and the police authorities in the United States through past experiences with crime and the justice system in their homelands, through contact with US immigration officials, and through the social networks in which they learn what to expect from the police authorities and the levels of crime in the United States. Menjivar and Bejarano document that Latino immigrants in the Phoenix metropolitan area, especially undocumented immigrants, fear crime and the police.

Vidales, Day, and Powe (2009) document that a similar case arises in Costa Mesa, California where the city started involving local police in enforcing immigration laws. Latino residents reported that they were more likely to be stopped by the police, increased their negative perception of the police, and felt less accepted by the community when comparing to the period prior to the local police involvement in immigration law enforcement. Acculturation also plays a role in fear of crime. Luo and Zao (2017) find that Hispanics in Houston, Texas fear crime more than Whites and African Americans. The fear of crime is amplified if the person is a Hispanic immigrant that does not speak English.

2.2.4 Remittances

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. For example, Mexican immigrants are a considerable part of the US population since immigration from Mexico grew 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, Zavodny, Cañas, and Coronado, 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. In the Latin American case, remittances became an important source of income. Remittances had a small positive effect on growth, decreased poverty and inequality (Acosta, Calderon, Fajnzylber, and Lopez, 2008). In the case of Mexico, it is observed that wages and school enrollment increased. However, remittances did not play a statistically significant role in these changes. Nonetheless, they are found to reduce income inequality (Orrenius et al., 2010).

Using remittances to El Salvador, Acosta, Lartey, and Mandelman (2009) find that remittances decreased the labor supply, and that remittances encourage growth in consumption services in the non-tradeable sectors of the economy. These effects, in turn, support an expansion towards non-tradeable sectors and reallocates labor towards these sectors. In addition, due to smooth income flows, improved welfare effects are found such as increases in leisure time and consumption. Using surveys to Mexican households and separating persistent and sporadic remittance flows to Mexico, limited evidence is found for changes in the Mexican labor force (Cox-Edwards and Rodriguez-Oreggia, 2009). 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). Carling (2002) argues that remittances may increase the aspiration of people to work abroad. Furthermore, remittances in areas of conflict are used to meet living costs, fund education, and sometimes to finance migration for family members (Koser & Van Hear, 2003).

The economic literature suggests that the host country macroeconomic conditions are a larger determinant for remittances to the home country. Through several econometric techniques such as variance decomposition, impulse response functions and Granger causality tests derived from vector error correction models, results show that remittances have a higher response to host country macroeconomic conditions than those of the countries of origin. This study is conducted using data from different Latin American countries in which Mexico is included (Vargas and Huang, 2006). 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).

2.3 Matricula Consular: A New Data Set for Migration Flows

Unauthorized migration flows are difficult to measure accurately. Therefore, there have been concerns expressed in the literature about the measurements of unauthorized immigration. Census data may provide some information on unauthorized immigration. However, there is a lack of information from this source on origin and destination given that the survey does not ask these questions (Massey et al., 2010). Others have attempted to measure unauthorized immigration through proxies such as apprehensions and resources to deter unauthorized immigration. This type of measurement also exhibits limitations because it is difficult to differentiate between different individuals, it may be the case that the same person may count more than once at different migration attempts (Hanson and Spilimbergo, 1999).

Given that the previous literature presented some shortcomings with their estimations of migration flows, this analysis uses an alternative data set (with its set of shortcomings) to try to corroborate previous findings in the economic literature. The Consular Identification Card is the means used to obtain a proxy of migration flows of undocumented Mexican immigrants to the

United States on a state-to-state basis. The Consular Identification Card data are obtained from the Instituto de los Mexicanos en el Exterior from 2011 through 2014. In the United States, 53 locations across the United States issue the Consular Identification Card (Instituto de los Mexicanos en el Exterior, 2015). Other analyses of immigration have used this measurement method in the past (Massey et al., 2010; Ashby et al., 2013; Bueno, 2013).

The Mexican government issues the Consular Identification Card in the country where the immigrant resides. Consular Identification Cards have the Mexican immigrants' full name, photograph, place of birth, date, signature, and US address. Moreover, the Consular Identification Card has a serial number, the issuing consulate's name, issuance and expiration dates. In the United States, some states, some municipalities, and some financial institutions accept the Consular Identification Card as an official identification document for Mexican citizens (Bruno and Storrs, 2006). Given that undocumented immigrants can use the Consular Identification Cards as means of identification with some mainstream financial institutions[6], 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 means of identification in the United States. The variation of benefits between US states can derive 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. Thus, undocumented immigrants residing in a state with more perceived

[6] 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 that and financial institutions that accept the Consular Identification Card as means of identification.

benefits from the Consular identification card may exhibit higher rates of undocumented Mexican immigrants in the data (Bueno, 2013).[7]

Any Mexican immigrant, regardless of their immigration status, may obtain the Consular Identification Card as they are the same requirements to get a Mexican Passport (National Immigration Law Center, 2015). This is a drawback from this measurement because not everyone that possesses the Consular Identification Card is an unauthorized worker.[8] The application to obtain the Consular Identification Card asks to report the state of origin in Mexico and the state of current residence in the United States; this is a distinct advantage of this measurement versus others because the questionnaire asks these questions. Proof of residence within the consular district must be provided. Additionally, it would be safe to assume that documented Mexican workers or Mexicans who happen to be legal residents in the United States would use passports with visas or other documents such as green cards to initially identify themselves in the United States. Massey et al. (2010) acknowledge that a drawback to this measurement is that there is a possibility that Mexicans who obtain a Consular Identification Card were established in the country well before obtaining it. Nevertheless, Massey et al. also argue that even though this measurement is far from perfect, it has helped the analysis on immigration by establishing a measure of origin and destination of undocumented workers by state of origin and state of destination.

[7] As of 2015, immigrants regardless of their immigration status may obtain drivers' licenses in the following states: California, Colorado, Connecticut, District of Columbia, Illinois, Maryland, Nevada, New Mexico, Utah, Vermont, and Washington (The Pew Charitable Trusts, 2015).
[8] I know from anecdotal evidence that the vast majority of the Mexican citizens that apply for a Consular Identification Card in the Consular Section of the Embassy of Mexico in Washington D.C. are undocumented immigrants.

2.3.1 Consular Identification Data Highlights

Figure 1 depicts the total number of Consular Identification Cards issued in the span of one year in the United States from 2011 to 2014. During this period, the total number of Consular Identification Cards issued per year grew by approximately 16 percent. Year over year growth tapers down from 11 percent to 1 percent from 2012 to 2014.

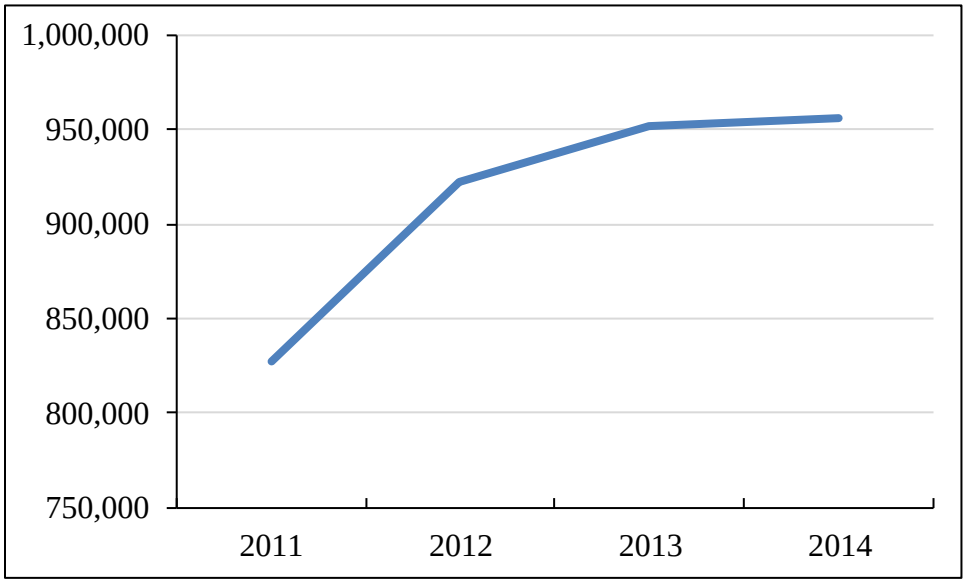

Figure 1: Total Consular Identification Cards Issued per Year from 2011 to 2014

Figure 2 depicts the average number of Mexican citizens that obtained the Consular Identification Card by the state of origin and state of destination from 2011 through 2014. As expected, California and Texas dominate as destination states due to their historical context and population size. The top five states of origin are Michoacán, Jalisco, Oaxaca, Guerrero, and Guanajuato.

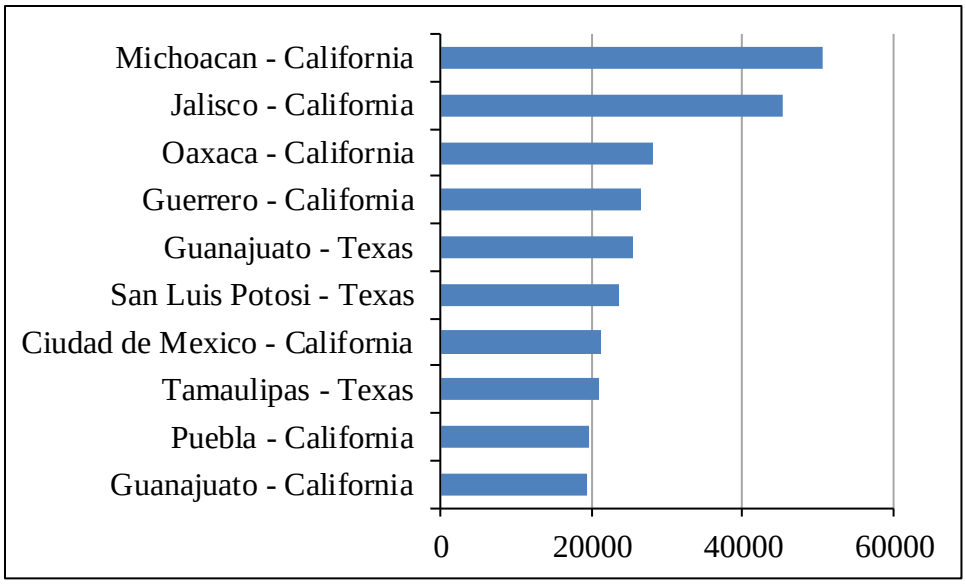

Figure 2: Top 10 Pairs from Origin to Destination, 2011 through 2014 Average

However, Figure 2 may be misleading as states in Mexico and the United States can drastically vary population levels from one state to the other. For this reason, Figure A3 and Figure A4, in the Appendix section of this study, depict the average number of Mexican citizens per hundred thousand inhabitants in the state of origin and the average number of Mexican citizens per hundred thousand inhabitants in the state of destination that obtained Consular Identification Cards from 2011 to 2014. Furthermore, state rankings, both of origin and destination are presented in Figure A5 and Figure A6 in the Appendix Section. Descriptive graphical analyses of other variables employed in this study are also presented in the Appendix. Given the broad economic literature and new Consular Identification Card data availability compared to previous studies that use the Consular Identification Card as a proxy for undocumented migration flows (Massey et al., 2010; Ashby et al., 2013; Bueno, 2013), it is imperative to continue measuring the effects of traditional economic and social determinants of state-to-state migration flows.

Chapter 3: Econometric Model & Variables

This chapter presents the econometric model employed in this analysis and explains the logic behind using these specific data. Furthermore, this chapter presents Table 1 with the variables' descriptive statistics and provides expected signs from the results along with the rationale behind them.

3.1 Econometric Model

Equation 1 shows the econometric model specification below:

$$\begin{aligned} lmigration_{ijt} = \beta_1 + \beta_2 ldistance_{ij} + \beta_3 lnetwork_j + \beta_4 lstatepop_{jt} \\ + \beta_5 lstatebci_{jt} + \beta_6 lcrime_{jt} + \beta_7 lstatepop_{it} + \beta_8 lstatebci_{it} \\ + \beta_9 lcrime_{it} + \beta_{10} lremittances_{it} + \beta_{11} lfix_t + u \end{aligned} \quad (1)$$

The dependent variable employed in this analysis is state-to-state migrations flows. Where $lmigration_{ijt}$ is the variable representing migration flows to US states[9] (*j*) from Mexican states[10] (*i*) from 2011 through 2014 (*t*). This variable is proxied through the natural log of the number of Consular Identification Cards issued from 2011 through 2014 in the United States on a yearly basis. As discussed before, these data provide the current state of residence and the state of origin of Mexican immigrants which in this analysis are assumed and interpreted as migration flows from state (*i*) to state (*j*) in year (*t*) from arriving undocumented immigrants. Other studies, have used these data before as a proxy for undocumented immigrant flows (Ashby et al., 2013; Bueno, 2013).

[9] The Consular Identification Card has Mexican immigrant data from all US states and the District of Columbia. However, the District of Columbia is not included in the analysis because not all the independent variables that correspond to the District of Columbia exist.
[10] The 32 Mexican states are included in the analysis.

The independent variable $ldistance_{ij}$ is the natural log of the population weighted center arc distance in miles between US states (j)[11] and Mexican states (i) capitals. The independent variable $lnetwork_j$ measures the level of Mexican immigrant networks in the US states (j); in this analysis, a proxy represents this variable through the natural log of the percentage of self-identified Mexicans (stock) to total population in US states as reported in the 2010 population census (United States Census Bureau, 2016). Although this is an imperfect measure of the Mexican immigrant networks because second and higher order generations of Mexican Americans should start to lose their connection to their Mexican families, these data should still be highly correlated to the actual immigrant networks. This variable is assumed to be constant across time. However, this assumption should hold as there should not be any drastic changes to immigrant networks in a period of 4 consecutive years (2011 to 2014). Additionally, this variable may suffer from measurement errors due to its self-reporting nature. It may be the case that illegal immigrants are reluctant to provide their information to government sources for fear of deportation.

The next independent variable is $lstatepop_{jt}$, it measures the US states' (j) total population in natural log form from 2011 to 2014 (t) (United States Census Bureau, 2016). The independent variable $lstatebci_{jt}$ is the broad measure of the US states (j) economic conditions from 2011 through 2014 (t). The variable is transformed to the natural log of the business cycle index (BCI). The data were obtained from the Federal Reserve Bank of Philadelphia. The US states BCIs include four indicators: non-farm payroll employment, the unemployment rate, average hours worked in manufacturing, and wages and salaries (Federal Reserve Bank of Philadelphia and Federal Reserve Bank of St. Louis, 2016). Therefore, this variable combines different

[11] I cannot thank Dr. Nathan Ashby, Avilia Bueno, and Deborah Martinez Villareal enough for kindly providing the state-to-state distance data they employed in their analysis "*The Determinants of Immigration from Mexico to the United States: a state-to-state analysis*."

measures of the broad economy to obtain one cohesive movement of the economic conditions. Additionally, this variable allows for comparisons between the growth of economies of different sizes (California being compared against New Mexico). Thus, this variable allows for the comparison across states' economic growth during the studied period.

The subsequent independent variable is $lcrime_{jt}$, the natural log of the US states' (j) violent[12] crime rates per hundred thousand residents published by the Federal Bureau of Investigation Unified Crime Reporting statistics from 2011 to 2014 (t) (UCR, 2015). The independent variable $lstatepop_{it}$ 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 $lstatebci_{it}$ is the measure of the broad economic conditions by Mexican state. This 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). This variable is obtained by adding the total number of users of all the municipalities and the electric consumption in all municipalities by state. Then averaging the number of megawatt hours per user by state by year. 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.

[12] The violent crime rates per state in the United States include: Murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault.

The independent variable $lcrime_{it}$ measures violent crimes by Mexican state (i)[13] from 2011 to 2014 (t). This variable is measured by natural the log of violent crime rates obtained from Milenio[14] per hundred thousand residents. The independent variable $lremittances_{it}$ is the US Dollar amount of remittances received by Mexican state (i) that originated in the United States from 2011 to 2014 (t) and published by Bank of Mexico (Banco de Mexico, 2016). The causal direction of remittances and immigration is hard to determine. It can be the case that an increase in migration flows to the United States increases remittances sent to Mexico. It can also be the case that the increase in remittances may encourage or may discourage migration. Thus, this relationship between immigration and remittances is suspected to be endogenous. Future research should take this into consideration to obtain unbiased results.

The following independent variable is $lfix_t$, 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[15] (Banco de Mexico, 2016). The data was constructed by averaging the monthly average by year (See Figure A10). This measurement does not vary across states. However, it is recognized that for retail transactions from US Dollars to Mexican Pesos there may exist some variation across states.[16] The last term is u, with assumed traits of a stochastic error term with normal distribution and constant variance.

[13] The number of observations for $lcrime_{it}$ is less than the other variables because there is no violent crime presented for Tlaxcala in 2011. $lcrime_{it}$ presents 6096 observations versus the usual 6,144. This is the only case of no violent crimes for any state during the period 2011 to 2016.
[14] 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.
[15] An increase in the variable's level denotes a depreciation of the Mexican Peso against the US Dollar. Conversely, a decrease in its level denotes an appreciation of the Mexican Peso against the US Dollar.
[16] From anecdotal evidence, I am aware that for the border the nominal exchange rate exhibits differences from the nominal exchange rate in the rest of the country. It may also be the case that variations exist across interior, non-US border states.

3.2 Expected Signs

The expected sign of $ldistance_{ij}$ is negative. One would expect that as immigrants need to travel longer distances, the costs of migrating become higher; therefore, it discourages immigrants to settle in those states that would be expensive for them to migrate to. This hypothesis would be consistent with previous literature (Ashby et al., 2013; Chort & de la Rupelle, 2016).

The expected sign of $lnetwork_j$ is positive. One would expect that as immigrants have access to networks of past immigrants (friends or family members), it would reduce the cost of migrating to those states. These reductions are not only monetary but also may include lower costs associated with social and cultural shocks that the immigrant may experience. Additionally, it may prove easier for an undocumented immigrant to find a job with an existing immigrant network than an undocumented immigrant without one. This hypothesis would be consistent with previous findings in the economic literature of immigration (Hanson & McIntosh, 2010; Chort & de la Rupelle, 2016; Ashby et al., 2013).

The expected sign of $lstatepop_{jt}$ is not defined a priori as it is hypothesized to be ambiguous since immigrants may decide to move to populated areas or they can also look for opportunities in non-traditional areas. Literature documents widespread spatial dispersion of Hispanics in the 1990s and that the Hispanic population grew rapidly in the non-metro areas and the less dense areas of the United States (Kandel and Cromartie, 2004). Additionally, some evidence demonstrates that Mexican immigrants propped up economic growth in struggling rural counties starting in the 1990s; these rural counties had been losing population in the 1970s and 1980s (Coates & Gindling, 2012). Also, it may be the case that more populated states may receive more immigrants due to their size and job opportunities.

The sign of $lstatebci_{jt}$ is expected to be positive as the increasing US states' economic activity would be considered a pull factor enticing immigrants to move to those states where there is increasing economic activity. This hypothesis is consistent with immigration economic literature (Mandelman & Zlate, 2012; Jerome, 1926). Furthermore, it has been documented that immigrants that enter the country at a time of low unemployment rates obtain higher wages (Chiswick & Miller, 2002). Thus, this may be an additional argument to the reason why the business cycle can be expected to be an immigration flow pull-factor.

The sign for $lcrime_{jt}$ is expected to be negative, as immigrants will, all else equal, seek to migrate to relatively safe places. Literature documents the fear of crime among immigrant populations (Ackah, 2000; Menjivar & Bejarano, 2004; Luo & Zhao, 2017). Menjivar and Bejarano (2004) document that it is not only crime that immigrants fear, but also fear the interaction with local police authorities for the fear of deportation. Menjivar and Bejarano also document that immigrants' perceptions of crime and police authorities are shaped by previous crime experiences in their home country and the experiences learned from their immigrant networks. Luo and Zhao (2017) use data obtained from a survey in Houston, Texas to understand the relationship between acculturation and the fear of violent crime; they find that these are negatively correlated. Additionally, they find that Hispanics are the group that report the highest fear of crime and that not understanding the community and not speaking English were factors that increased the fear of crime. Furthermore, it has been documented that immigrants' perceptions of law enforcement, especially the local police, become more negative among Latino residents when local law enforcement becomes involved with immigration law enforcement (Vidales, Day, & Powe, 2009). To the best of my knowledge, this is the first attempt so far to bridge the extensive

literature of the established immigrants' fear of crime, police authorities, and immigration authorities and test if this fear can be considered a predictor (deterrent) of migration flows.

The expected sign for $lstatepop_{it}$ is ambiguous because one could expect that this could be interpreted as the stock of possible Mexican immigrants (Chort & de la Rupelle, 2016). Thus, expecting a positive relationship to immigration flows. However, the economic literature suggests a bi-directional, long-run causal relationship between economic growth and population in Mexico (Garza-Rodriguez, Andrade-Velasco, Martinez-Silva, Renteria-Rodriguez, & Vallejo-Castillo, 2016). Thus, a state with higher populations may be expected to send less immigrants to the United States given the relationship of population to higher levels of economic activity.

The sign of $lstatebci_{it}$ is expected to be negative as one can expect that as the Mexican states' economic activity increases, the opportunity cost of migrating to the United States would increase. Hanson et al. (2017) argue that increased economic activity and decreasing income gaps in migrant-sending nations to the United States have eased pressures for net immigrant labor going to the United States.

The expected sign of $lcrime_{it}$ is positive as one would expect that as violent crime increases in the Mexican states, there is increased incentive for migrating to other Mexican states or to US states to escape the violence and seek employment in safer places. Rios Contreras (2014) finds that violence is a predictor for immigration to the United States. However, Chort and de la Rupelle (2015) find a small and negative relationship.

The expected sign of $lremittances_{it}$ is not defined a priori. Remittances may be a deterrent to migration because remittances can act as an economic development tool (Orrenius et al., 2010). However, remittances can also increase migration through a signal of increased welfare

in the host country or using received remittances to afford the cost of migrating. Carling (2002) suggests that the aspirations of people to move abroad to work may be increased by remittances received.

The expected sign of $lfix_t$ is not defined a priori; a depreciation of the Mexican Peso against the US Dollar may be reflected in increased exports from Mexico and more manufacturing and farming jobs on the Mexican side. However, economic literature suggests that there is a positive relationship between depreciations of the Mexican Peso against the US dollar (Hanson & Spilimbergo, 1999). Furthermore, a substantial positive relationship is suggested between the real appreciation of the destination currency against the home currency and migration flows (Keita, 2016). In addition, Mexican Pesos depreciations may increase prices in Mexico and create lower standards of living, incentivizing immigrants to move to the United States.

3.3 Descriptive Statistics

Table 1 presents the descriptive statistics for the data employed in this study. The descriptive statistics in Table 1 are from the data in levels. The data employed in the econometric analysis was transformed to natural logs. The descriptive statistics of the natural log transformed data are presented in Table A10 in the Appendix. Simple correlation tables for both the data in levels and the data in natural log form are shown in the Appendix in Table A8 and Table A9, respectively.

Table 1: Descriptive Statistics

	Observations	Mean	Standard Deviation	Min	Max
$migration_{ijt}$	5368	648.30	2833.38	1.00	55809.00
$Scaled\ migration_{ij}$	6144	595.91	2720.03	1.00	55810.00
$distance_{ij}$	6144	1614.87	454.75	222.51	2725.68
$network_{j}$	6144	6.52	8.03	0.40	31.60
$statepop_{jt}$	6144	6510.83	7033.09	567.63	38802.50
$statebci_{jt}$	6144	165.24	23.45	115.31	237.92
$crime_{jt}$	6144	348.54	122.53	99.30	638.50
bci_{it}	6144	5837.87	2376.64	1946.05	11851.71
$statepop_{it}$	6144	3678476.00	3085936.00	672263.00	16618928.00
$remmitances_{it}$	6144	712.43	36.65	36.65	2245.06
fix_{t}	6144	12.91	0.34	12.43	13.31
$crime_{it}$	6144	10.02	14.29	0.00	98.28

Unscaled migration has 5,368 observations. The reason behind fewer observations is that some states do not report any perceived migration flows in the Consular Identification Card data set. Therefore, the minimum number of migration flows that the dataset presents is 1. The maximum number is 55,809; this represents the flow from Michoacán to California in 2012. The observed mean is 648.30 Consular Identification Cards per state-to-state flow from 2011 to 2014. The standard deviation is 2,833.38.

Some state observations are lost because once the data is transformed to the natural log form because the natural log of zero is undefined. To avoid losing observations from non-perceived migration flows at the state level, a 1 is added to every observation in migration. Thus, where some states presented zero observed migration flows before, now they have migration flows of 1 by

design. The states that previously presented migration flows of 1, now have migration flows of 2 and so on. This variable was named scaled migration[17]. Scaled migration presents a minimum of 1 and a Maximum number of 55,810. The scaled migration mean is 595.91 Consular Identification Cards per state-to-state flows from 2011 to 2014. Scaled migration has a standard deviation of 2,720.03.

The distance between states is measured in miles. The minimum distance observed is for Chihuahua to New Mexico with 222.51 miles. The longest distance observed between states is 2,725.68 miles between Chiapas and Washington. The mean distance between states is 1,614.87 miles with a standard deviation of 454.75. Top 10 longest distances and top 10 shortest distances between states are presented in Table A3 and Table A4 in the Appendix. Immigrant networks, measured as the percentage of self-identified residents of Mexican heritage by US state, have a minimum value of 0.40 percent for Maine and maximum of 31.60 percent for Texas. Immigrant network has a mean of 6.52 percent and a standard deviation of 8.03.

The following variable is US states' population. The least populous state is Wyoming in 2011 with 567.63 thousand residents. The maximum value for US state population is California with 38,802.5 thousand residents in 2014. The mean US state population is 6,510.83 thousand residents. A standard deviation of 7,033.09 is observed for this variable. The US state business cycle is an index of the states' economic conditions. The index is at a 100 in 1992 for all US states.

[17] It is unlikely that for the states in the contiguous United States or for that matter, any of the US states, that the number of Mexican immigrants at any given point can be zero. However, some of the Consular Identification Card data presents this situation for certain Mexican states. For example, a state like Montana may have a small Mexican immigrant community. Thus, the Consular Identification Card data shows no Mexican immigrants present in Montana from Baja California Norte in 2011. Nevertheless, this is an unlikely scenario but still close to the reality of a minimal population of Mexican immigrants from the state of Baja California Norte in Montana. Hence, a scaled version of the data may be closer to reality and helps the analysis with increased observations.

The state that had the lowest index is Michigan with 115.3 for the year 2011. The state with the highest index is North Dakota with 237.92 in 2014. The mean index was at 165.24 and had a standard deviation of 23.45.

Crime in US states is measured as violent crimes per hundred thousand inhabitants. The maximum value is for Alaska with 638.5 violent crimes per hundred thousand inhabitants. The minimum value is Maine with 99.30 violent crimes per hundred thousand inhabitants. The mean value is 348.54 violent crimes per hundred thousand inhabitants and a standard deviation of 122.53. The subsequent variable is Mexican states business cycles proxied through electric consumption. This variable is measured as average customer consumption in megawatt hours. The maximum value is Coahuila with 11,851.71 megawatt hours per customer in 2011. The minimum value is 1,946.05 megawatt hours per customer in Oaxaca in 2014. Mean electric consumption per customer is 5,837.87 megawatt hours and a standard deviation of 2,376.64.

Mexican state population is the subsequent variable. The lowest state population in Mexico is Colima with 672,263 residents in 2011. The maximum value is Estado de Mexico with 16,618,928 residents. The mean is 3,678,476 residents per Mexican state and the standard deviation is 3,085,936. The following variable is remittances received by Mexican states measured in millions of dollars. The state that received the most remittances is Michoacán with $2,245.1 million in 2011. The state that received the least remittances was Baja California Sur with $36.7 million in 2011. Remittances averaged $712.43 million per state from 2011 to 2014 and have a standard deviation of 36.65.

The nominal exchange rate is stated as Mexican Pesos per US Dollar. The nominal exchange rate was at its lowest of $12.43 Mexican Pesos per US Dollar in 2011. The nominal exchange rate was at its highest in 2014 when it averaged $13.31 Mexican Pesos per US Dollar.

The mean value is $12.91 Mexican Pesos per US Dollar, and it has a standard deviation of 0.34. Crime in Mexico is measured as homicides in Mexican states per hundred thousand residents. This violent crime variable has 6096 observations. The state with the most violent crimes committed in Mexico is Chihuahua in 2011 with a maximum value of 98.28 homicides per hundred thousand residents. Tlaxcala is the state with the lowest value. No perceived violent crimes (homicides) were committed in Tlaxcala in 2011. The mean crime is 333.42 homicides per hundred thousand residents with a standard deviation of 484.97.

Due to the panel data nature of the analysis, the estimation methods employed are ordinary least squares, random effects, fixed effects, and least squares dummy variable regression[18]. Unscaled and scaled estimates for the different estimation methods are obtained. Alaska and Hawaii observations are dropped from the regression analysis because of their longer than normal distances to Mexican states. Thus, this study focuses only on the contiguous United States. Regression results are analyzed and discussed in Chapter 4.

[18] The least squares dummy variable regression is included because it helps, along with random effects to obtain results of time constant variables to be able to interpret them. For example, the Department of Homeland Security may want to understand if immigrants are willing to move to distant states and their propensity to do so to better allocate resources across US states.

Chapter 4: Empirical Results

4.1 Results

Section 4.4.1 presents results for unscaled ordinary least squares (OLS), unscaled random effects (RE), unscaled fixed effects (FE), and unscaled least squares dummy variable (LSDV) estimation methods. Moreover, it discusses relevant statistical tests. Section 4.1.2 presents the scaled OLS, RE, FE and LSDV estimations results. Furthermore, it presents relevant statistical tests. Given that all the data are log-transformed, results are interpreted as elasticities. Sensitivity analyses for scaled OLS, RE, FE, and LSDV and unscaled OLS, RE, FE, and LSDV estimation methods are presented in the Appendix in Table A15 and Table A16.

4.1.1 Unscaled OLS, RE, FE, & LSDV Regression Results

Results suggest a statistically significant negative relationship between the population-weighted distance between states. These results are statistically significant, at the 1 percent level in all unscaled estimation methods. Evidence suggests that as distance increases by 10 percent, migration flows decrease between 12.65 and 22.40 percent. Furthermore, the results suggest that higher levels of immigrant networks increase migration flows. The results are significant at least at the 10 percent level and suggest that as immigrant networks increase by 10 percent, migration flows increase between 8.37 and 19.52 percent.

Unscaled OLS and unscaled RE results suggest a positive and statistically significant relationship, at the 1 percent level, between US state populations and migration flows from Mexican states. Results suggest that a 10 percent increase in population increases migration flows between 10.22 and 10.70 percent. The evidence is mixed once unscaled FE and unscaled LSDV

are analyzed because none of the results derived from these estimation methods are sign consistent with unscaled OLS and unscaled RE or statistically significant. The results suggest that a 10 percent increase in US state population decreases migration flows between 4.67 and 9.50 percent.

Table 2: Unscaled Regression Results

	OLS	RE	FE	LSDV
$ldistance_{ij}$	-1.270***	-1.265***		-2.240***
	(0.108)	(0.108)		(0.174)
$lnetwork_{j}$	0.841***	0.837***		1.952*
	(0.032)	(0.032)		(1.015)
$lstatepop_{jt}$	1.022***	1.070***	-0.950	-0.467
	(0.036)	(0.034)	(0.374)	(1.227)
$lstatebci_{jt}$	-0.968***	-0.626***	1.256 ***	0.958**
	(0.240)	(0.147)	(1.041)	(0.440)
$lcrime_{jt}$	-0.327***	-0.499***	-0.756***	-0.713***
	(0.094)	(0.081)	(0.131)	(0.172)
$lstatepop_{it}$	0.403***	0.691***	-0.881	-0.992
	(0.052)	(0.045)	(0.792)	(0.871)
$lstatebci_{t}$	-0.995***	-1.076***	-0.423**	-0.421*
	(0.068)	(0.062)	(0.208)	(0.240)
$lcrime_{it}$	0.059***	0.035***	0.007	0.009
	(0.020)	(0.007)	(0.008)	(0.009)
$lremittances_{it}$	0.813***	0.452***	-0.086*	-0.083
	(0.041)	(0.032)	(0.047)	(0.052)
$lfix_{t}$	1.374***	1.053***	0.865***	1.061***
	(0.325)	(0.205)	(0.222)	(0.258)
$\_cons$	7.245***	7.554	19.210**	30.179***
	(1.754)	(1.540)	(9.194)	(9.648)
R squared	0.752			0.871
F	478.36		27.69	174.93
chi-square		4921.81		
Observations	5594	5594	5594	5594

Dependent variable: $lmigration_{ijt}$ for OLS, RE, FE, and LSDV. ***indicates 1 percent, ** indicates 5 percent, and * indicates 10 percent probability for a two-tailed test. Standard Errors are shown in parentheses. Regressions are run using robust standard errors adjusted for heteroskedasticity and autocorrelation in STATA Version 13.1.

Mixed evidence also arises when analyzing the results from the effects of the US states' BCIs on migration flows. Unscaled OLS and RE results suggest that as the US states' BCIs rise by 10 percent, migration flows decrease to the United States in a statistically significant manner. They suggest that the decrease is between 6.26 and 9.68 percent. These results are clearly unexpected and counterintuitive. Unscaled FE and unscaled LSDV results suggest a positive and statistically significant increase between 9.58 and 12.56 percent from a 10 percent increase in the US states' BCIs. Clearly, these results align with the expected ones. The US states' violent crime effect is negative in all unscaled estimation methods and statistically significant at the 1 percent level. These results suggest that as violent crime in the United States increases, migrations flows decrease. An increase of 10 percent in violent crimes would lead to a reduction in migration flows between 3.27 and 7.56 percent.

Mexican states population yields mixed evidence of its relationship to migration flows. The results from unscaled OLS show a positive and statistically significant relationship, at the 1 percent level, between the Mexican states' population and migration flows. It is suggested by unscaled OLS and unscaled RE that migration flows increase between 4.03 and 6.91 percent from a 10 percent change in population. The unscaled FE and unscaled LSDV results are not statistically significant and indicate that a 10 percent increase in Mexican states' population decrease migration flows between 8.81 and 9.92 percent.

Mexican states business cycles present a negative and statistically significant relationship to migration flows from all unscaled estimation methods. Results suggest that as the Mexican business cycle increases 10 percent, migration flows decrease between 4.21 and 10.76 percent. Additionally, evidence suggests, in all the estimations methods, a small positive relationship between Mexican states' violent crime and migration flows to US states. However, these are only

statistically significant, at the 1 percent level, in unscaled OLS and unscaled RE. The results suggest that a 10 percent increase in violent crimes in Mexico increase migration flows between 0.07 and 0.59 percent.

Remittances to Mexican states from the United States also present mixed results. Both unscaled OLS and unscaled RE results suggest a positive and statistically significant relationship at the 1 percent level between remittances sent to the Mexican states and migration flows. This relationship is suggested to be between 4.52 and 8.13 percent. The results from unscaled FE and unscaled LSDV suggest a negative relationship between remittances and migration flows. Unscaled FE results suggest that a 10 percent change in remittances would negatively impact migration flows by 0.86. This relationship is statistically significant at the 10 percent level. Although the unscaled LSDV estimations also suggest a negative relationship between remittances and migration flows, this relationship is not statistically significant. The estimate suggested by the unscaled LSDV estimate is a 0.83 percent decrease from a 10 percent increase in remittances.

The nominal exchange rate estimates suggests a positive and statistically significant relationship to migration flows in all unscaled estimation methods. Evidence suggests that as the nominal exchange rate increases by 10 percent (Mexican Peso depreciating against the US Dollar), migration flows increase between 8.65 and13.74 percent.

Statistical Tests

A Breusch and Pagan Lagrangian multiplier test for random effects is conducted for the unscaled RE estimations (See Table 3). The null hypothesis that the variances across entities are zero is rejected. Hence, the unscaled RE estimates are preferred to the unscaled OLS results.

Table 3: Unscaled Breusch and Pagan Lagrangian Multiplier Test for Random Effects

Unscaled lmigration $_{ijt}$ *[id,t] = Xb + u[id] + e[id,t]*

	Var	SD.
lmigration $_{ij}$	4.67	2.16
e	0.10	0.32
u	1.06	1.03
Test:	Var(u) = 0	
chibar2(01) =		6459.3
Prob. > chibar2 =		0

Furthermore, a test of overidentifying restrictions between FE and RE (See Table 4) is conducted for unscaled estimations. The null hypothesis that both estimators are consistent is rejected. Thus, unscaled FE is preferred to unscaled RE. The tests performed suggest that when evidence is mixed, unscaled FE estimations should be preferred.

Table 4: Unscaled Fixed Effects Vs Unscaled Random Effects

Test of Overidentifying Restrictions: Fixed vs Randome Effects

Sargan-Hansen statistic	257.411
Chi-squared	8.000
P-Value	0.000

4.1.2 Scaled OLS, RE, FE & LSVD Regression Results

Scaled regression results for OLS, RE, FE, and LSDV are presented in Table 5. Evidence suggests that as the population-weighted distance between states increases by 10 percent, migration flows decrease between 11.84 and 21.14 percent. The results are statistically significant, at the 1 percent level, across all scaled estimation methods. Furthermore, these results are consistent with the unscaled estimations presented before.

Table 5: Scaled Regression Results

	Scaled OLS	Scaled RE	Scaled FE	Scaled LSDV
$ldistance_{ij}$	-1.223***	-1.184***		-2.114***
	(0.105)	(0.104)		(0.164)
$lnetwork_{j}$	0.822***	0.797***		2.130**
	(0.030)	(0.030)		(0.895)
$lstatepop_{jt}$	1.012***	1.063***	-0.777	-0.778
	(0.034)	(0.033)	(0.994)	(1.082)
$lstatebci_{jt}$	-0.912***	-0.289*	1.973***	1.910***
	(0.222)	(0.147)	(0.317)	(0.410)
$lcrime_{jt}$	-0.318***	-0.407***	-0.579***	-0.632***
	(0.084)	(0.073)	(0.117)	(0.123)
$lstatepop_{it}$	0.401***	0.668***	-1.448**	-1.380**
	(0.048)	(0.044)	(0.666)	(0.677)
$lstatebci_{t}$	-0.964***	-1.010***	0.026	0.014
	(0.065)	(0.061)	(0.214)	(0.215)
$lcrime_{it}$	0.052***	0.033***	0.009	0.009
	(0.018)	(0.007)	(0.008)	(0.008)
$lremittances_{it}$	0.739***	0.428***	-0.093**	-0.093**
	(0.038)	(0.030)	(0.046)	(0.046)
$lfix_{t}$	1.414***	0.717***	0.430**	0.452**
	(0.296)	(0.199)	(0.217)	(0.218)
$\_cons$	6.824***	5.439***	14.442*	27.134***
	(1.581)	(1.502)	(7.953)	(7.866)
R squared	0.792			0.883
F	610.86		28.56	163.21
chi-square		5842.55		
Observations	6096	6096	6096	6096

Dependent variable: $lmigration_{ijt}$ for OLS, Scaled OLS, RE, Scaled RE, FE, Scaled FE, LSDV, and Scaled LSDV. ***indicates 1 percent, ** indicates 5 percent, and * indicates 10 percent probability for a two-tailed test. Standard Errors are shown in parentheses. Regressions are run using robust standard errors adjusted for heteroskedasticity and autocorrelation in STATA Version 13.1.

Access to immigrant networks presents a positive and statistically significant relationship, at the 1 percent level, across all scaled estimation methods. The results suggest that as immigrant networks increase by 10 percent, migration flows increase between 7.97 and 21.30 percent. This evidence is consistent with unscaled results.

Scaled OLS and scaled RE results suggest a positive and statistically significant relationship, at the 1 percent level, between US state populations and migration flows from Mexican states. Results suggest that a 10 percent increase in population increases migration flows between 10.12 and 10.63 percent. These results are consistent with the unscaled results. The evidence is mixed once scaled FE and scaled LSDV are analyzed because none of the results derived from these estimation methods are sign consistent with scaled OLS and scaled RE or statistically significant. The results suggest that a 10 percent increase in US state population decreases migration flows between 7.77 and 7.78 percent.

Mixed evidence also arises when analyzing the results from the effects of the US states' BCIs on migration flows. Scaled OLS and scaled RE results suggest that as the US states' BCIs rise, migration flows decrease to the United States in a statistically significant manner. The results suggest that as the US state BCIs increase, migration flows decrease between 2.89 and 9.12 percent. These results are consistent with the unscaled evidence analyzed. Scaled FE suggests a positive and statistically significant increase of 19.73 percent. Scaled LSDV results suggest that a 10 percent change in US states' BCIs will impact migration flows by 19.10 percent. These results are clearly aligned with the expected results and consistent with the unscaled results. The US states' violent crime effect is negative and statistically significant in all scaled estimation methods. These results suggest that as violent crime in the United States increases by 10 percent, migrations flows decrease between 3.18 and 6.32 percent. This evidence is consistent with the results derived from the unscaled estimations.

Mexican states population yields mixed evidence of its relationship to migration flows. The results from scaled OLS and scaled RE show a positive and statistically significant relationship, at the 1 percent level, between the Mexican states' population and migration flows. It is suggested

that a 10 percent increase in Mexican state population increases migration flows to the United States between 4.01 and 6.68 percent. These results are consistent with the unscaled estimation results. The scaled FE and scaled LSDV results suggest a negative relationship between Mexican states' population and migration flows but these estimations are significant at the 5 percent level. The result suggests that as Mexican states' population increases by 10 percent, migration flows decrease between 13.80 and 14.48 percent. These results are somewhat consistent with the unscaled estimation results. While the suggested relationship continues to be negative, the scaled results are statistically significant.

Mexican states business cycles present a negative and statistically significant relationship to migration flows in scaled OLS and scaled RE estimation methods. Results suggest that as the business cycle increases 10 percent, migration flows decrease between 4.21 and 10.76 percent. These results are consistent with unscaled estimations. Scaled FE and scaled RE suggest a small and positive relationship between the Mexican states business cycles and migration flows. These results are not statistically significant. Evidence suggests that as the Mexican states business cycles increase by 10 percent, migration flows increase between 0.14 and 0.26 percent. These results are not consistent with unscaled estimations. While the unscaled estimations are negative and statistically significant, scaled estimations are now positive and not statistically significant.

Evidence from scaled OLS and scaled RE suggests a small and positive relationship between Mexican states' violent crime and migration flows to US states. These results are statistically significant, at the 1 percent level. The results are consistent with the evidence derived from the unscaled estimations. The scaled FE and LSDV results suggest a small and positive relationship between crime and migration flows. However, these results are not statistically significant. The evidence suggests that as violent crimes in Mexico increase by 10 percent

migration flows increase by 0.09 percent. These results possess the same sign as the unscaled estimates but are not statistically significant whereas unscaled estimates are.

Remittances to Mexican states from the United States also present mixed results. Both scaled OLS and scaled RE results suggest a positive and statistically significant relationship at the 1 percent level between remittances sent to the Mexican states and migration flows. These results are suggested to be between 4.28 and 7.39 percent. These estimates are consistent with unscaled estimations. The results from scaled FE and scaled LSDV suggest a negative and statistically significant relationship between remittances and migration flows. The results suggest that as remittances increase by 10 percent, migration flows decrease by 0.93 percent. These results are mostly consistent with unscaled estimations. While the signs are the same, scaled LSDV is statistically significant compared to a not statistically significant unscaled LSDV.

The nominal exchange rate estimates suggest a positive and statistically significant relationship to migration flows in all scaled estimation methods. Evidence suggests that as the nominal exchange rate increases by 10 percent (Mexican Peso depreciating against the US Dollar), migration flows increase between 4.30 and 14.14 percent. These results are consistent with unscaled estimates.

Statistical Tests

A Breusch and Pagan Lagrangian multiplier test for random effects is conducted for scaled RE estimations (Table 6). The null hypothesis that the variances across entities are zero is rejected in both cases. Hence, the scaled RE estimates are preferred to the scaled OLS results.

Table 6: Scaled Breusch and Pagan Lagrangian Multiplier Test for Random Effects

Scaled lmigration $_{ijt}$ *[id,t] = Xb + u[id] + e[id,t]*

	Var	SD.
lmigration $_{ij}$	5.26	2.29
e	0.10	0.32
u	0.99	0.99
Test:	Var(u) = 0	
chibar2(01) =		7231.3
Prob. > chibar2 =		0

Furthermore, a test of overidentifying restrictions between FE and RE (See Table 7) is conducted for scaled estimations. The null hypothesis that both estimators are consistent is rejected. Thus, scaled FE is preferred to scaled RE. The tests performed suggest that when evidence is mixed, FE scaled estimations should be preferred.

Table 7: Scaled Fixed Effects Vs Scaled Random Effects

Test of Overidentifying Restrictions: Fixed vs Randome Effects

Sargan-Hansen statistic	283.310
Chi-squared	8.000
P-Value	0.000

4.2 Discussion

Evidence strongly suggests that distance negatively affects migration flows between Mexican and US states. This is consistent with the expected sign and with relevant literature (Ashby et al., 2013; Bueno, 2013; Chort and de la Rupelle, 2016). It would seem logical that as distance increases between the home and host states, monetary migration costs and safety risks increase. Thus, deterring migration flows to the host states with longer distances from the home states. Evidence also suggests having access to immigrant networks increases migration flows.

This result is consistent with previous findings in the literature (Ashby et al., 2013; Chort & de la Rupelle, 2016; Hanson & McIntosh, 2010). Furthermore, this result is consistent with the idea that immigrant networks tend to alleviate some of the costs to migrating, not only monetary but that it can lower the cost of job entry and other social costs. Immigrant networks can decrease the culture shock that may be experienced when migrating to a drastically different community from those in the home states.

When controlling for US states population evidence is mixed. The evidence presented in this study would seem to suggest that population may not be an important factor at least at the state level. One possibility is that immigrants or unauthorized workers may care about population at a more local level, and that it is not necessarily population that they are taking into consideration but rather urbanism levels. For example, it is the case that unauthorized workers tend to move to low-skilled industries in both, rural and urban areas. Some immigrants may prefer to work in industries such as agriculture or farming that are rural in nature and others may choose work in urban construction sites. However, it is interesting that population at a state level in the United States seems to be an unimportant factor to migration flows. These findings were not consistent with previous findings that suggest that undocumented immigrants tend to move to less dense areas (Ashby et al., 2013; Kandel & Cromartie, 2004).

When controlling for Mexican states' population, a similar conclusion is encountered. Some evidence points to a positive relationship while others point to a negative relationship. It is hard to conclude why this may be the case but one possibility is that there are Mexican states, with large populations, that offer opportunities for their residents while other large states (in population) do not, making it unclear and difficult to draw any definite conclusions. This is inconsistent with previous finding by Chort and de la Rupelle (2015).

The evidence is somewhat mixed when controlling for the US states' business cycles. This study expected the relationship to be clearly positive. Moreover, that broad economic expansions have a positive effect on job availability for immigrants, acting as a "pull" factor. Unscaled and scaled FE and LSDV suggest the relationship to be positive. However, unscaled and scaled OLS and RE suggest a negative relationship. Given that the statistical tests suggest that FE should be preferred to RE and RE to OLS. The unscaled and scaled FE estimations are preferred to RE and OLS estimations, both unscaled and scaled. Positive effects from expansions in the business cycle have been documented in the past (Jerome, 1926; Mandelman & Zlate, 2012). Although, decreasing income gaps and better standards of living in the traditional immigrant-sending countries is changing historical relationships to migrations flows (Hanson et al., 2017), US states business cycles are still suggested to be a "pull" factor to migration flows from Mexican states.

Evidence suggests that when controlling for the Mexican states' business cycle, it exhibits a negative but small relationship to migration flows. This outcome would indicate that when the Mexican states go through an economic upturn, migration flows to the United States would decrease. This conclusion is consistent with the Mexican states' economies acting as a push-pull factor, though a rather small one. It may also be the case that the relationship to the broader economy may not be as relevant as it would seem at first but rather the connection between certain industries in Mexico, such as agriculture and farming, and the rise of others such as increased manufacturing opportunities, better expose the relationship to migration flows.

Evidence for the US states' crime levels affecting migration flows is stronger than the evidence of those of the Mexican states' crime levels. The evidence presented in this analysis suggests that increases in the levels of crime in the US states have a deterrent effect on migration flows. There are several possible explanations for this phenomenon. It may be that immigrants

seek to avoid crime and its effects altogether; this is consistent with immigrants seeking not only better opportunities but a higher quality of life than the one experienced in the home state. Immigrants may obtain the information of the crime levels from other immigrants already established in the United States (immigrant networks). It may also be that they avoid higher crime areas to avoid any possible unfortunate encounter with the local police authorities for fears of deportation. Furthermore, first-generation immigrants are incarcerated at a much lower rate than the native population. While all of the previous ideas are already suggested in the literature for established immigrants, (Ackah, 2000; Menjivar & Bejarano, 2004; Luo & Zhao, 2017; Rumbaut et al., 2006; Vidales et al., 2009), to the best of my knowledge this is the first time that an attempt has been made to bridge the gap in the immigration literature to incorporate violent crime as a predictor for new immigrant arrivals into the United States.

Evidence from violent crime in Mexican states suggests a small but positive "push" factor to migration flows. Mexican states have been rattled by an increase in violence for over half a decade. The period used in this study for violent crime is part of that era; one would expect that violent crimes and the overall decrease in the economic opportunities and quality of life would act as a larger "push" factor. One possibility is that immigrant waves in Mexico were not as large as expected to the United States from violent states. It may be the case that this time the increase in violence had more significant migration effects within Mexico and states without violence related to the drug cartels in Mexico were mostly the recipients of the population rattled by increases in drug-related violence.

Remittances received by Mexican states from the United States present mixed evidence. This outcome may be due to remittances not having a clear "push" or "pull" relationship to migration flows in the short run. Some economic literature accepts remittances as an economic

development tool. Although this seems to be the case in the long-run, it may be that they also used to finance other immigrants to emigrate to the United States and can be seen as a signal mechanism that may encourage (incentivize) other would-be immigrants to decide to emigrate to the United States. Nominal depreciations of the Mexican Peso against the US Dollar appear to have a large and positive effect on migration flows to the United States. One possibility for this occurring is that unauthorized workers care about the nominal value of the US Dollar in Mexico because this affects the purchasing power of remittances received in Mexico. This result is consistent with previous findings in the literature where real appreciations of the destination country's currency against the home currency positively impact migration flows (Hanson & Spilimbergo, 1999; Keita, 2016).

4.3 Policy Recommendations

The Consular Identification Card is a great tool not only to the Mexican living abroad but also for researchers. Consular Identification Card data need to continue to be readily available to the general public through the Instituto de los Mexicanos en el Exterior website. The Consular Identification Card helps establish a measure of the state of origin and state of destination. However, the data available can be significantly improved and expanded. Differentiating from established immigrants and new immigrant arrivals is a substantial and enriching improvement to the data. Furthermore, it would be a valuable addition to the data to provide information on the average years the Mexican immigrants obtaining the Consular Identification Card have been established in the United States. Another significant data improvement is to provide data on the number of renewals to total Consular Identification Cards issued per year. Furthermore, it would be ideal that the Mexican Government makes it transparent and readily available in the data the

levels of documented versus undocumented Mexican immigrants obtaining the Consular Identification Card in the United States. This would help researchers by improving the proxy of Mexican undocumented workers flows to the United States. Moreover, researchers and policy-makers can arrive to sound conclusions on how to better serve these two different type of immigrants because they face different problems and therefore have different needs from consular offices.

Given this paper's findings and previous economic literature conclusions, it is likely that net migration flows to the United States from historical sources such as Mexico will continue to fall. Demographical changes along with decreasing real income gaps partially explain the decrease in net migration to the United States from traditional sources (Hanson et al., 2017). For industries that have historically benefited from the low-cost labor of the low-skilled Mexican immigrant, the impacts will be seen in the short-term. Policy-makers and researchers should pay attention to trends in historical undocumented worker industries. Labor shortages in those industries will likely arise. Some of the industries to pay attention to are farming, agriculture, residential and commercial construction. If labor shortages arise in these industries, productivity will likely be affected in the short-run. As the native low-skilled ratio to total workers in the United States continues to decrease, this may prove to be a longer-term issue, even if native worker wages may increase in response. Furthermore, even if undocumented immigrants continue to respond to economic cycles, the US government should make it easier for low-skilled immigrants to arrive and leave. The US Government should provide a simple pathway to legal and temporary immigrant workers. This would greatly benefit the low-skilled temporary worker and the industries that they have historically worked for.

Most of the evidence from this analysis suggests that increased economic activity in Mexico is a deterrent to migration. Recent policies such as the Mexican structural reforms, if implemented correctly, can improve economic conditions in Mexico. These actions by the Mexican government can have effects on decreasing future migration flows. This will in turn continue to affect the low-skilled, undocumented labor in the United States by decreasing the incentives of Mexicans to work in farming and construction in the United States. Again, low-skilled industries in the United States could greatly benefit from temporary and seasonal low-skilled worker permits to make these industries more competitive in the short-run by decreasing some of the costs to illegal migration and by making it easier for immigrants to go back to their home country if needed.

The results from this econometric analysis suggest that for undocumented migration flows to the United States, distance and immigrant networks continue to be strong predictors. It is important to understand that immigrants will tend to establish in states that have a shorter distance to their home state and settle where they have access to immigrant networks, all else equal. From the Mexican government perspective, it is important to continue to allocate resources efficiently throughout their different consulates in the United States to better serve Mexican citizens abroad. Consulates with already dense Mexican populations will likely continue to see new arrivals and new Mexican citizens that they will need to serve.

Given that the evidence suggests that crime in the US is a deterrent to migration flows, the consular offices in the United States and non-government organizations should expand their education of the rights of undocumented Mexicans when they become victims of crime abroad. Police authorities that have to enforce immigration laws due to state legislation and local ordinances should understand that the immigrant population will likely be disincentivised to report

crimes and to cooperate with local law enforcement. Crime in Mexico is suggested to be a predictor for migration to the United States. However, the evidence points to a weak positive relationship. Immigration officials and courts should expect small increases in the population that seeks asylum in the United States when violence increases in Mexico. Additionally, some of these immigrants will arrive to the United without seeking asylum. Consular offices may want to expand their services to victims of crime in Mexico that are now in the United States. They can recommend legal courses of action in both the United States and Mexico to help guarantee that their rights are protected. Furthermore, the Mexican government needs to continue its work on decreasing the crime waves so that Mexicans are not exposed to forced migration due to safety reasons.

Evidence suggests that immigration officials in the United States and Mexican consular offices should take into account international currency movements when planning their operations. Strong appreciations of the US Dollar against the Mexican Peso will likely derive in increased migration flows.

Chapter 5: Concluding Remarks

Immigration continues to be a relevant and contested topic that is still discussed in the US political, academic, and public spheres. Immigration to the United States is not a static phenomenon. In the past, European immigrants came to the United States to look for better economic and quality of life opportunities than those they encountered in their home countries. For example, in the 19th century, it was well-known that unskilled construction workers, in large proportions, were foreign-born workers (Jerome, 1926). Afterward, the same has been the case for a different set of immigrant nationals, which have come from Mexico, Central America, and South American countries looking for those same opportunities. As the economic conditions of the United States and Mexico change, the immigration patterns should also be expected to change and decrease (Hanson et al., 2017). Although net migration from Mexican immigrants is estimated to be close to zero (Passel & Cohn, 2016), understanding the determinants of these migration patterns is still valuable and can provide insight on how to study future migration waves into the country from Mexico and other nations.

This study attempts to contribute to the vast literature on the migration of unauthorized workers from Mexico into the United States by looking at traditional economic and social factors on a state-to-state basis. However, this analysis employs an underutilized alternative to provide origin and destination information for undocumented Mexican immigrants and tries to corroborate previous findings in the literature that utilized other undocumented immigrant estimations. This study employs the following econometric estimation methods: scaled and unscaled log-log ordinary least squares, random effects, fixed effects, and least square dummy variable regressions.

This study finds that factors such as distance, immigrant networks, violent crime in Mexico and the Mexican Peso depreciation against the US Dollar contribute as "push-pull" factors to migration flows. Interestingly, it appears that immigrants also take into consideration crime levels in the United States as it deters migration flows. This conclusion is an attempt to bridge a gap in the literature where there is only analysis on immigrants already established. State populations, neither in Mexico or the United States appear to have a clear influence on migration flows. When studying the US states business cycles, evidence suggests a positive relationship to migration flows. The evidence supports migration flows being affected by the Mexican business cycles at the state level; this means that the Mexican states business cycles act as a deterrent to migration flows when they expand. Remittances' effects on migration flows are difficult to interpret as evidence is mixed.

These findings can inform policies on both sides of the border. The United States is facing demographical changes in its labor force. Mexican demographics have also changed to where fertility rates have converged to US fertility rates. Historically, Mexican immigrant exposed industries would benefit from the United States allowing temporary and seasonal legal workers to avoid potential labor shortages. The Mexican Embassy and consulates should continue to expand and provide data to the public in more detail so that future conclusions can improve and become more robust. Given that undocumented Mexican immigrants may fear crime, police authorities, and immigration authorities, Mexican undocumented immigrants can also benefit from the expansion of programs from Consular offices to let them know their rights to legal course of action in the United States. Furthermore, state legislators, local governments, and police authorities need to understand that if they help enforce immigration laws, victims of crime among the immigrant population will likely tend to underreport them and tend to cooperate less.

This study does not attempt to explain return migration flows from the US states to Mexican states. This has become a relevant topic that begs further research as net migration from Mexico is close to zero. Another important topic that begs further research is how different Mexican workers, documented and documented, make the destination decisions based on skill sets. The literature can also benefit from increased knowledge on immigrants' perceptions of the police authorities in the United States. Furthermore, future studies using this type of data can benefit from treating possible endogeneity issues with remittances and migration flows.

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Appendix

A.1 Figures

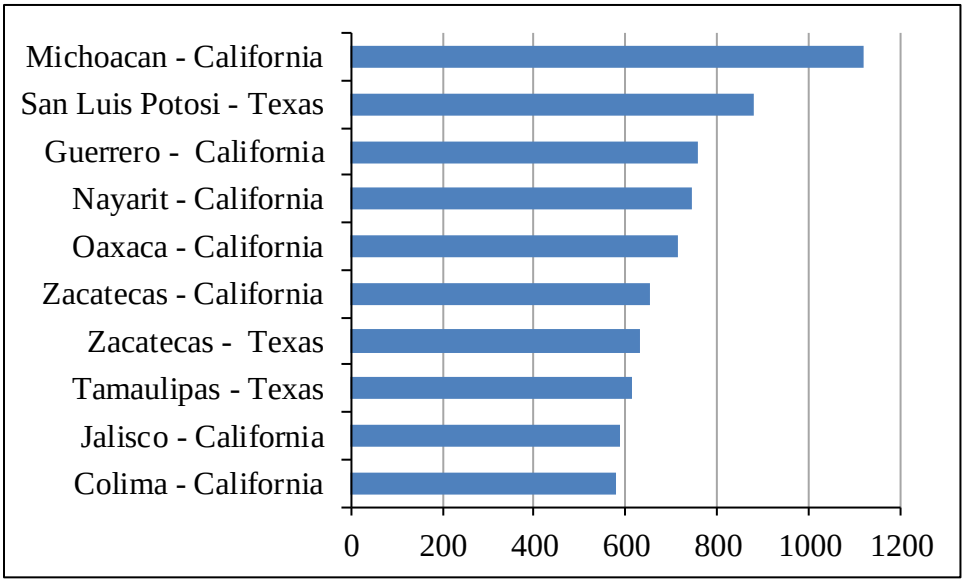

Figure A3: Top 10 Pairs from Origin to Destination Adjusted to Per Hundred Thousand Inhabitants in the State of Origin, 2011 through 2014 Average

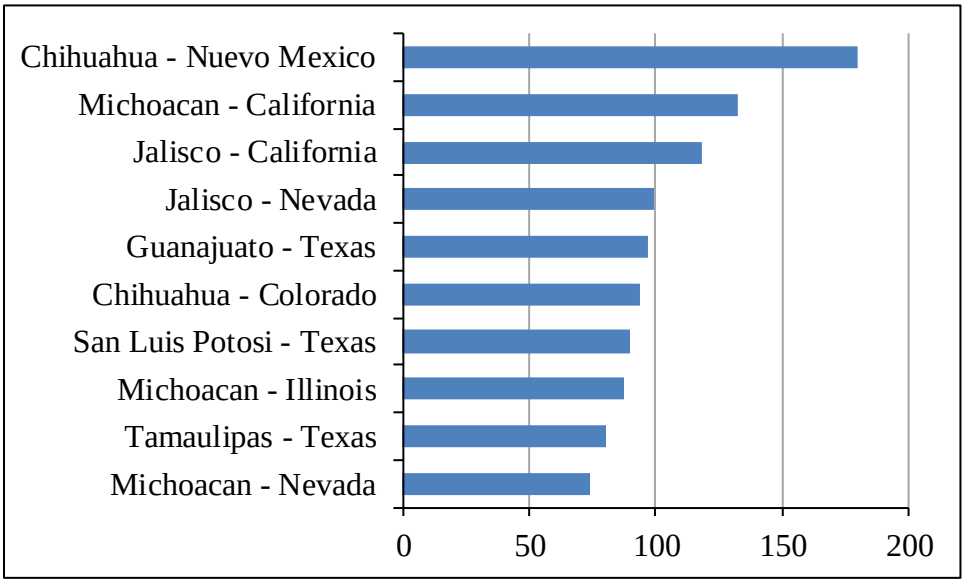

Figure A4: Top 10 Pairs from Origin to Destination Adjusted to Per Hundred Thousand Inhabitants in the State of Destination, 2011 through 2014 Average

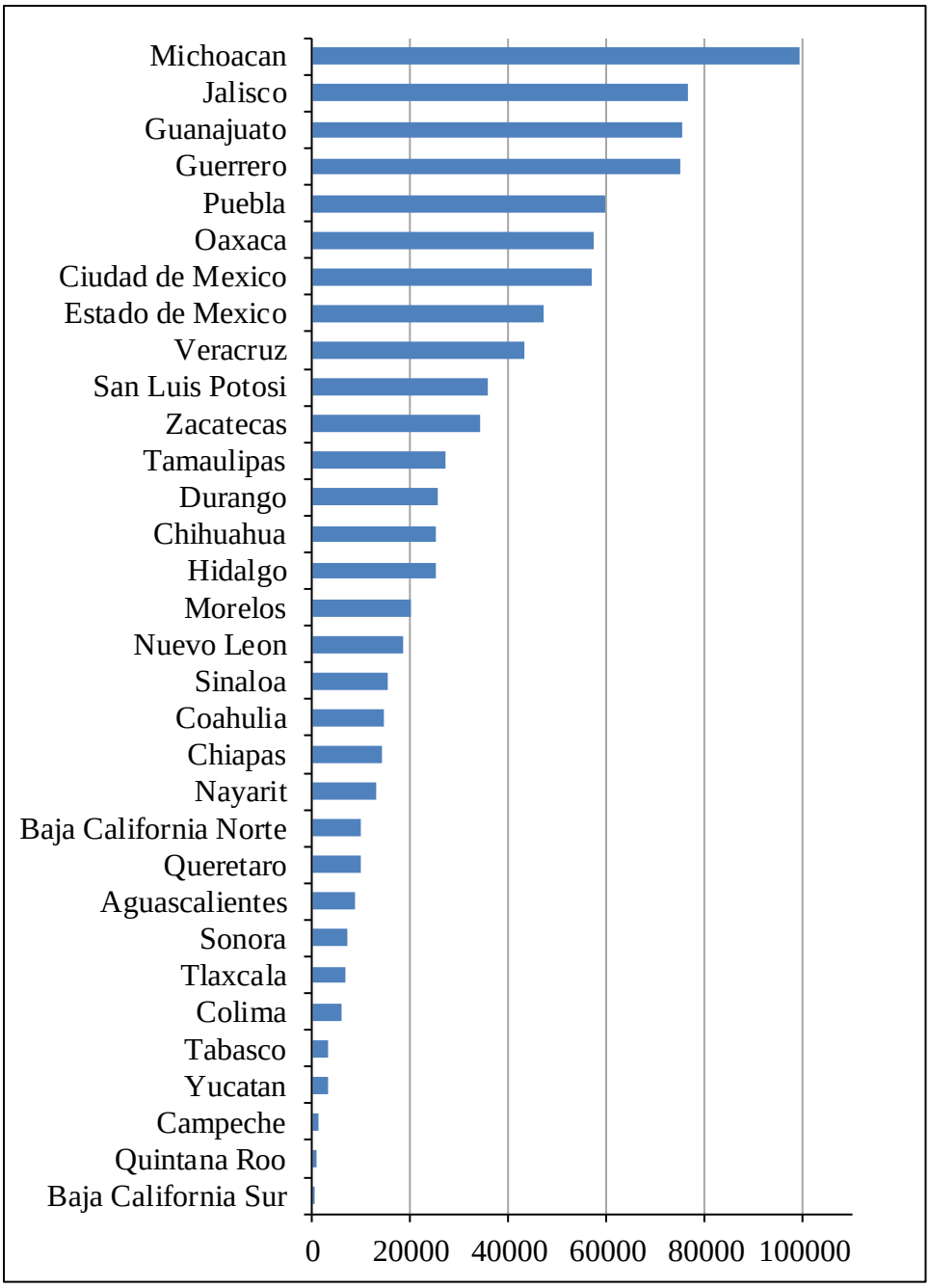

Figure A5: State of Origin Total Average from 2011 to 2014

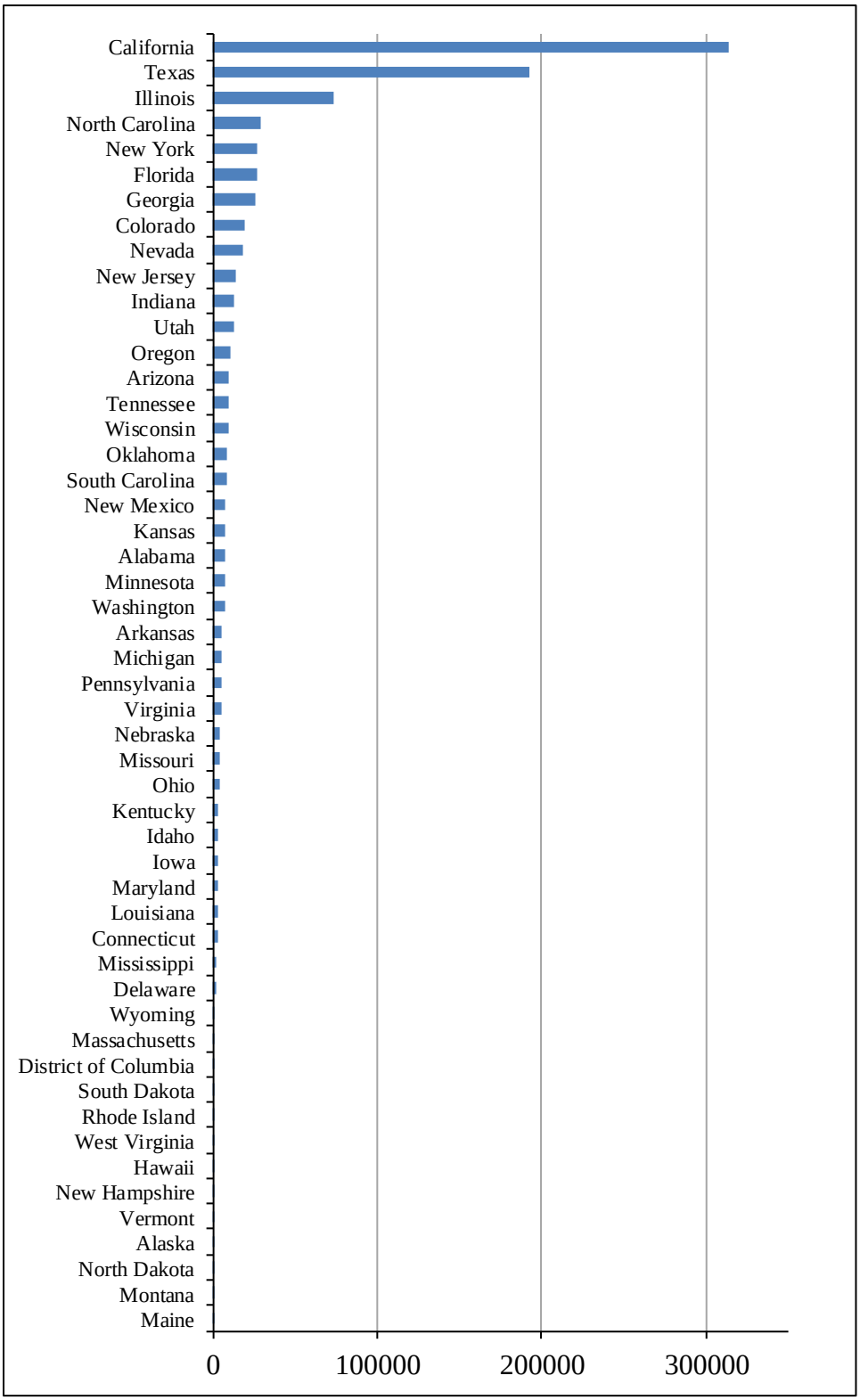

Figure A6: State of Destination Total Average from 2011 to 2014

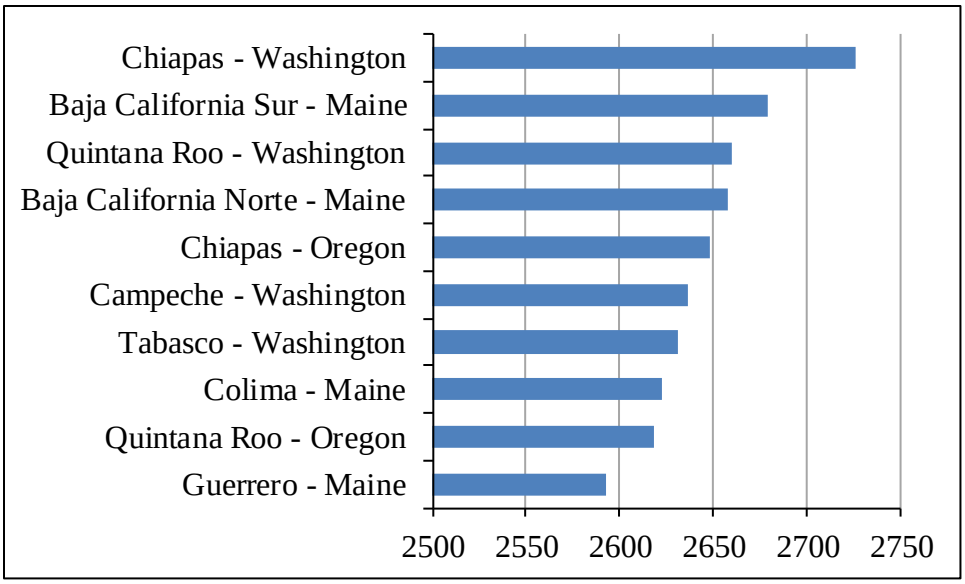

Figure A7: Top 10 Longest Distance State Pairs, Not Including Alaska and Hawaii

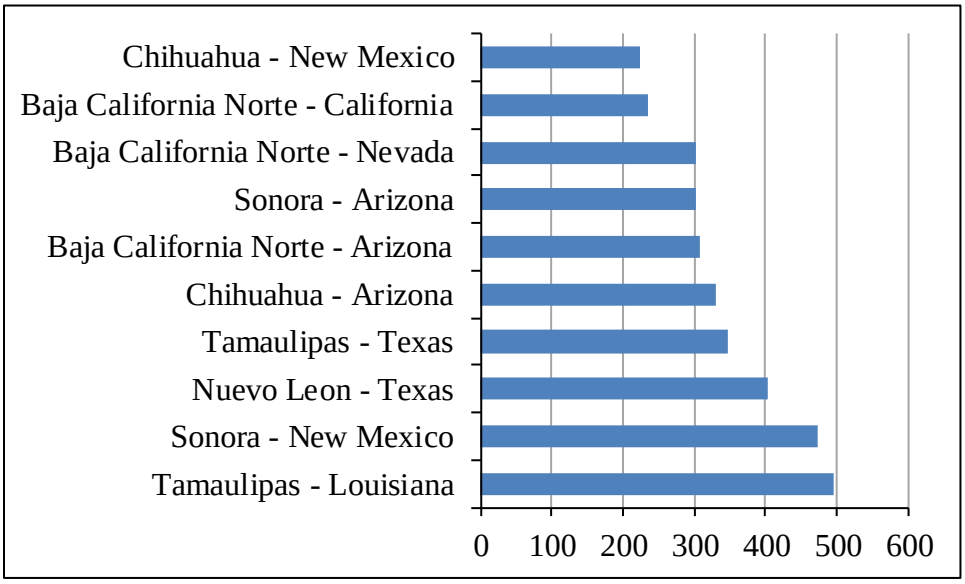

Figure A8: Top 10 Shortest Distance State Pairs

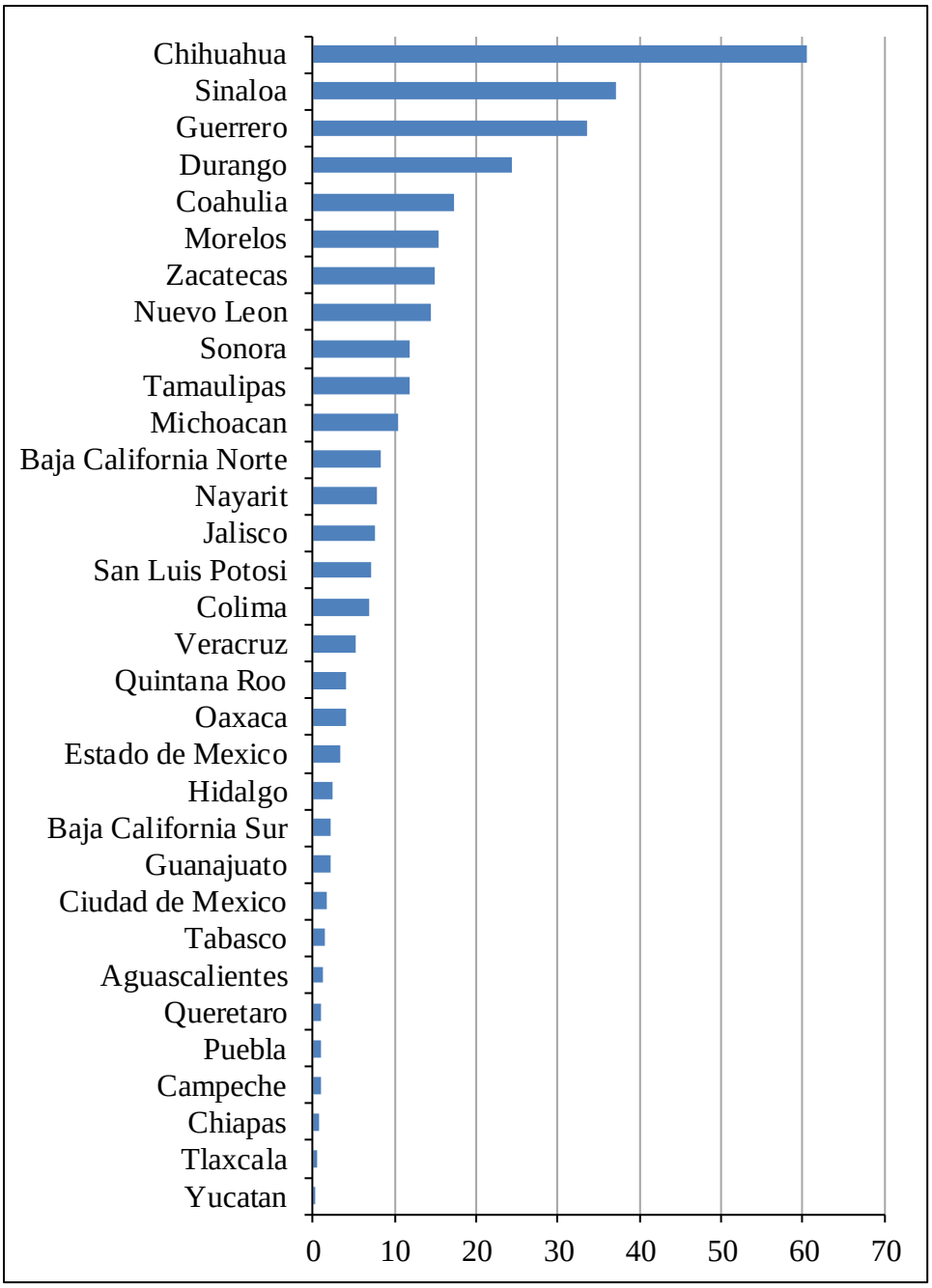

Figure A9: Mexican States Violent Crimes per Hundred Thousand Inhabitants, Average from 2011 to 2014

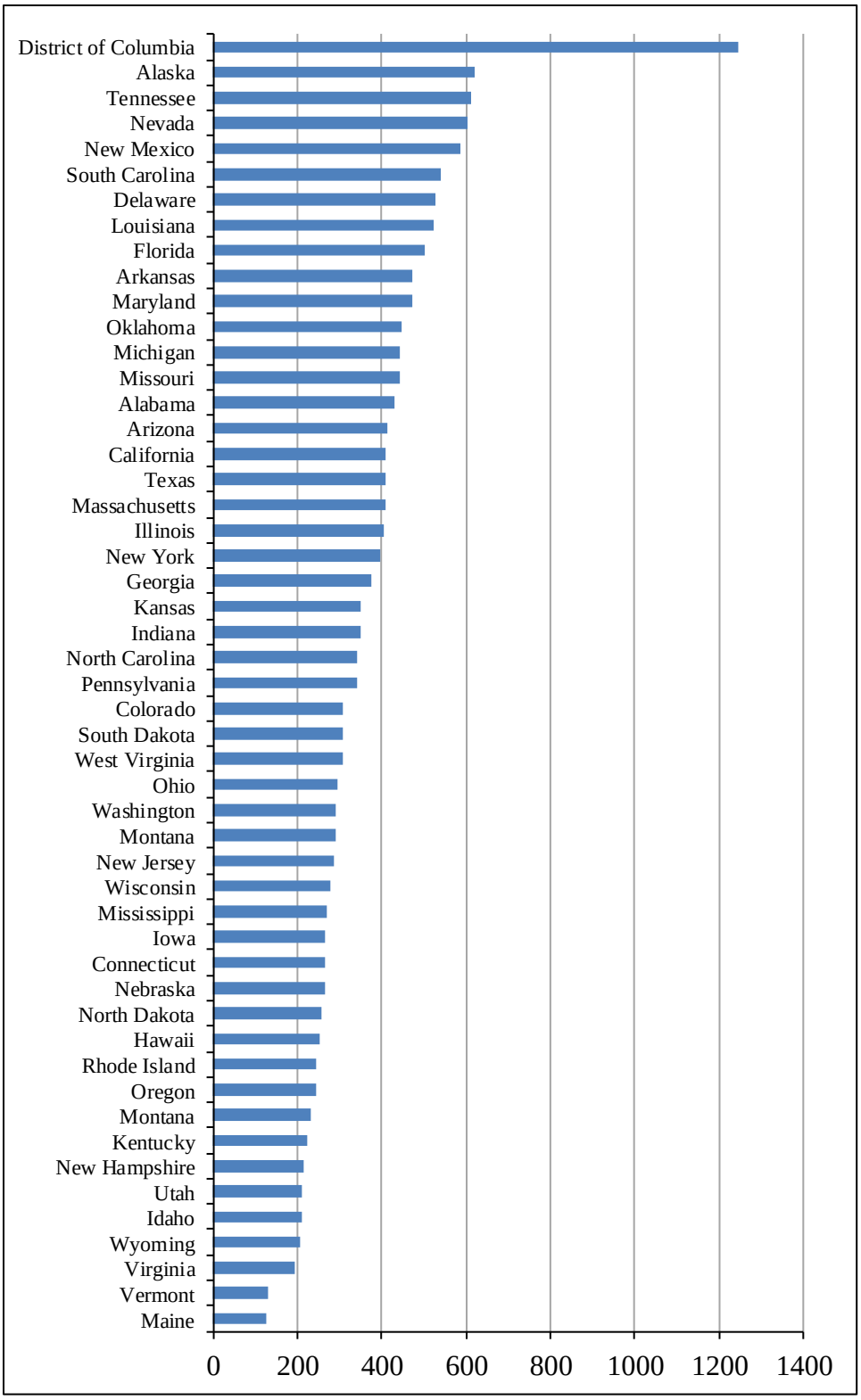

Figure A10: US States Violent Crime per Hundred Thousand Inhabitants, Average from 2011 to 2014

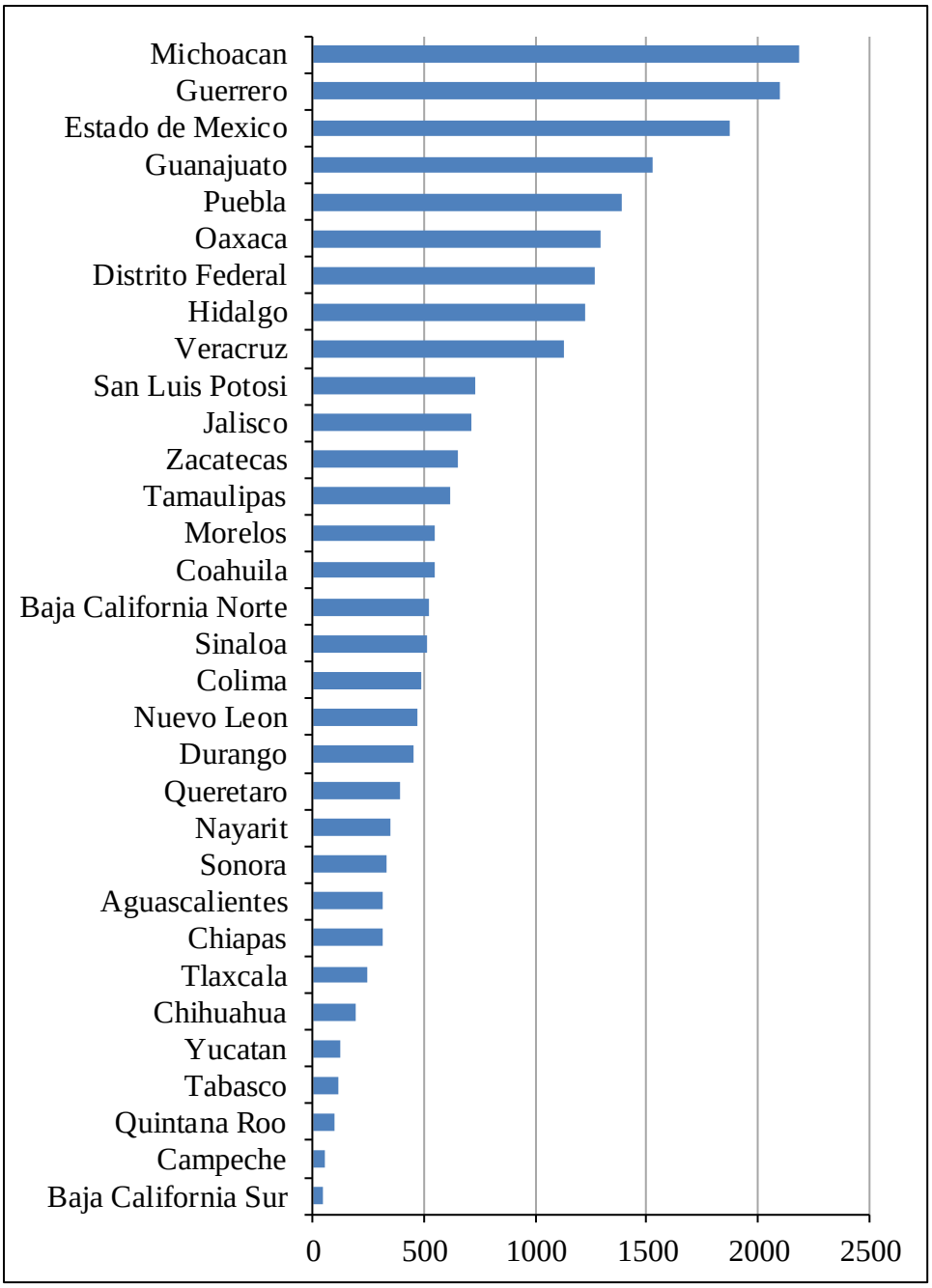

Figure A11: Remittances in US Dollars (Millions) to Mexican States, Average from 2011 to 2014

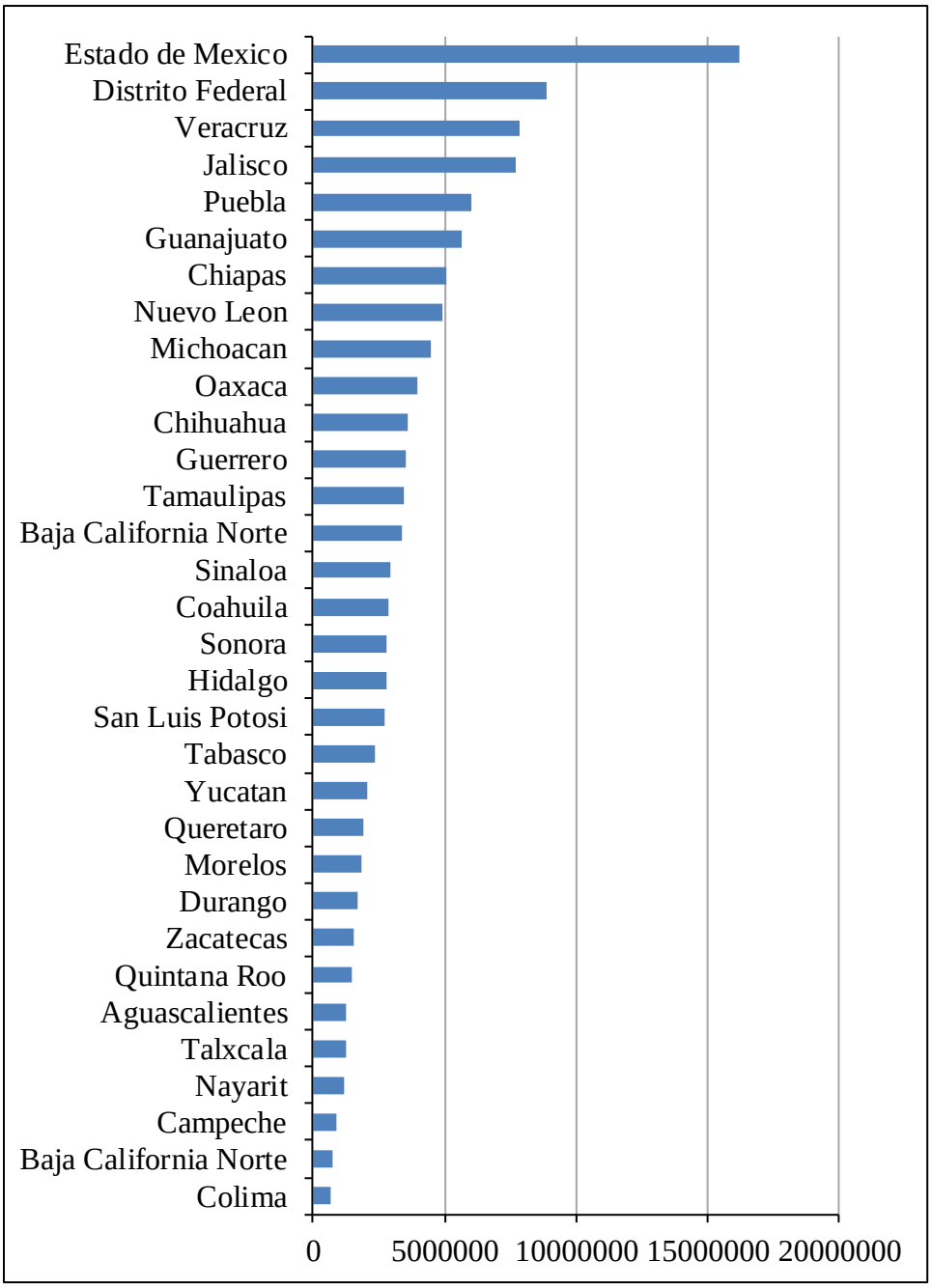

Figure A12: Mexican States' Population Average from 2011 to 2014

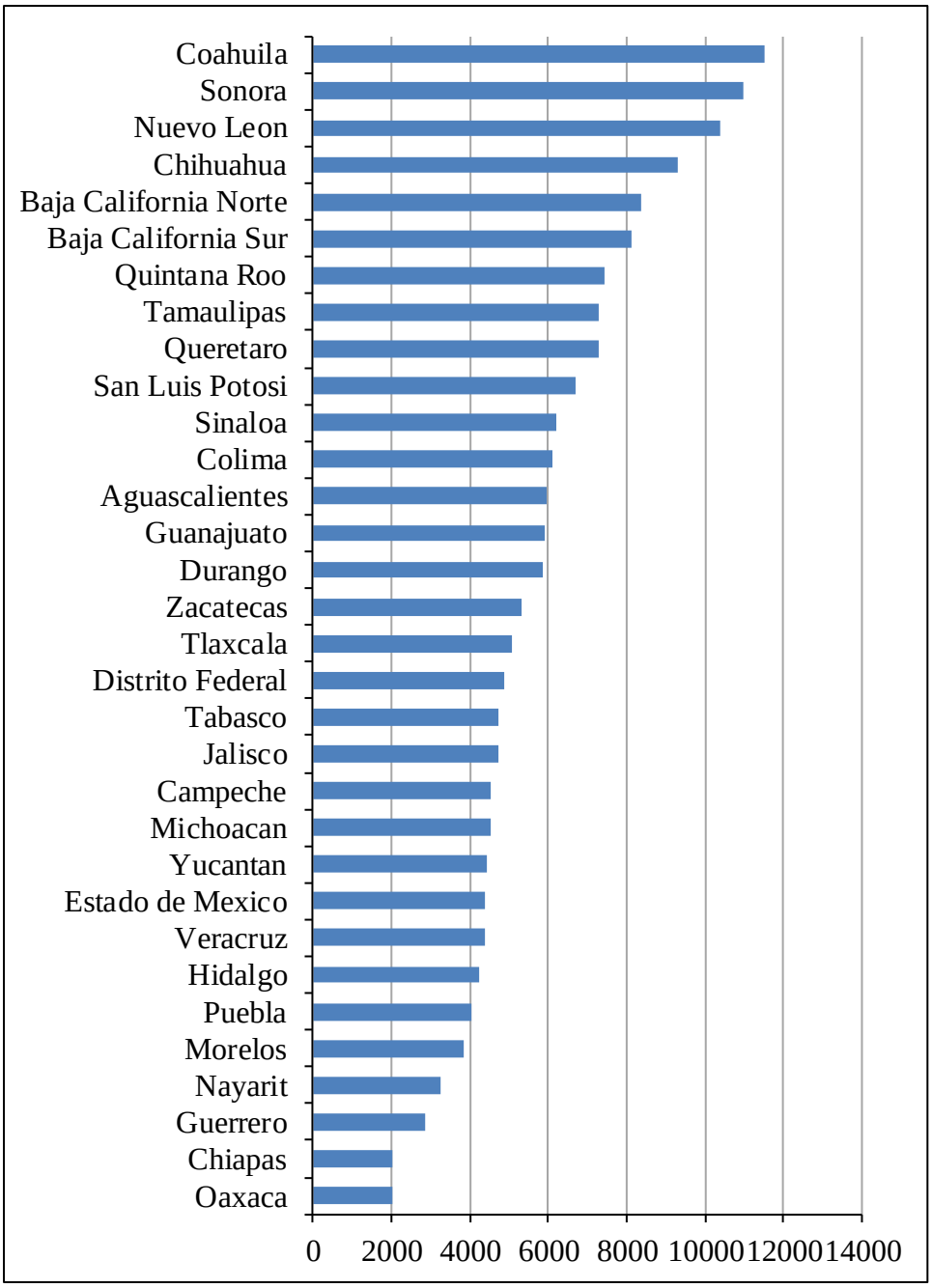

Figure A13: Average Electric Consumption by User by Mexican State from 2011 to 2014 in Megawatt Hours.

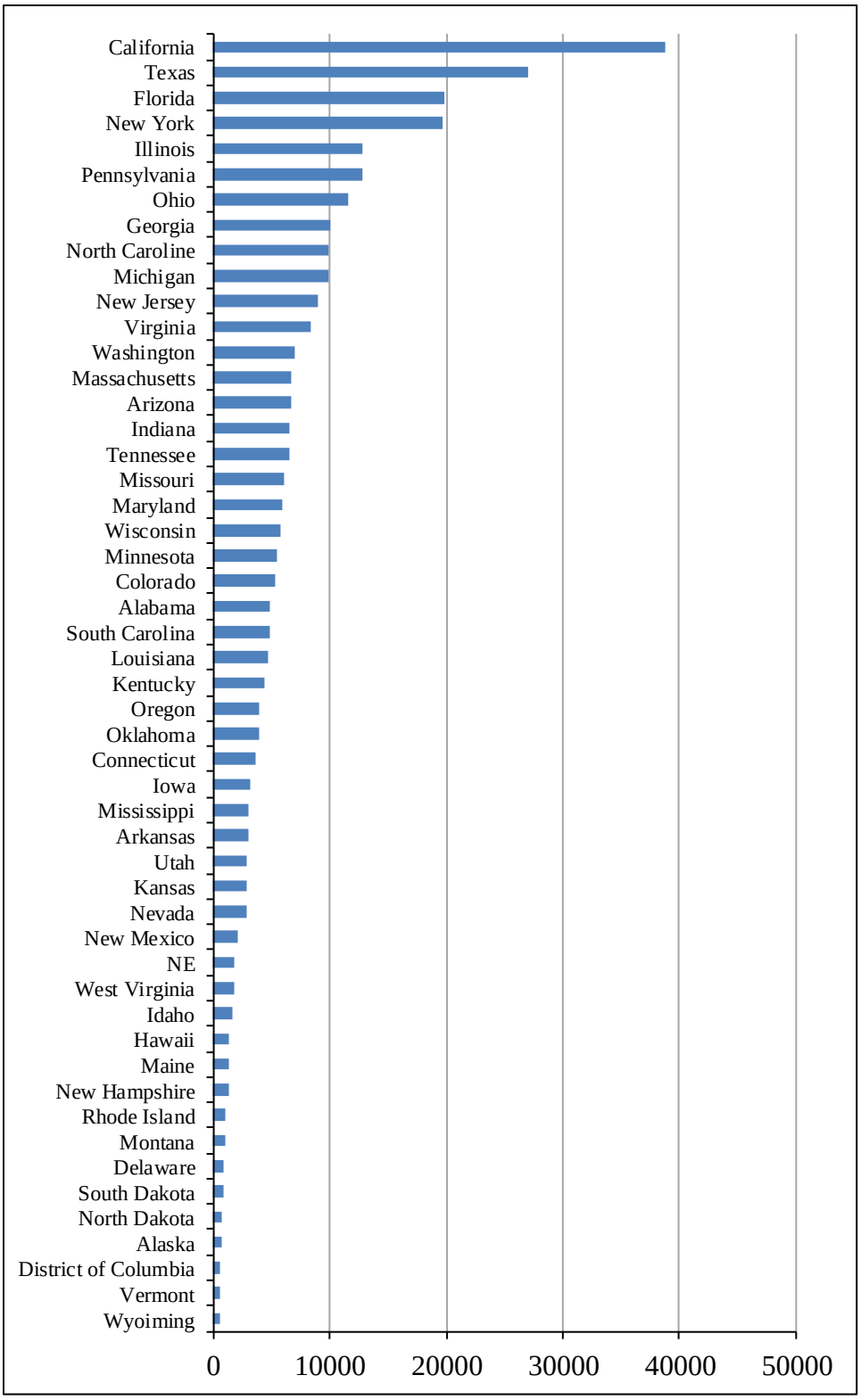

Figure A14: US States' Population Average from 2011 to 2014

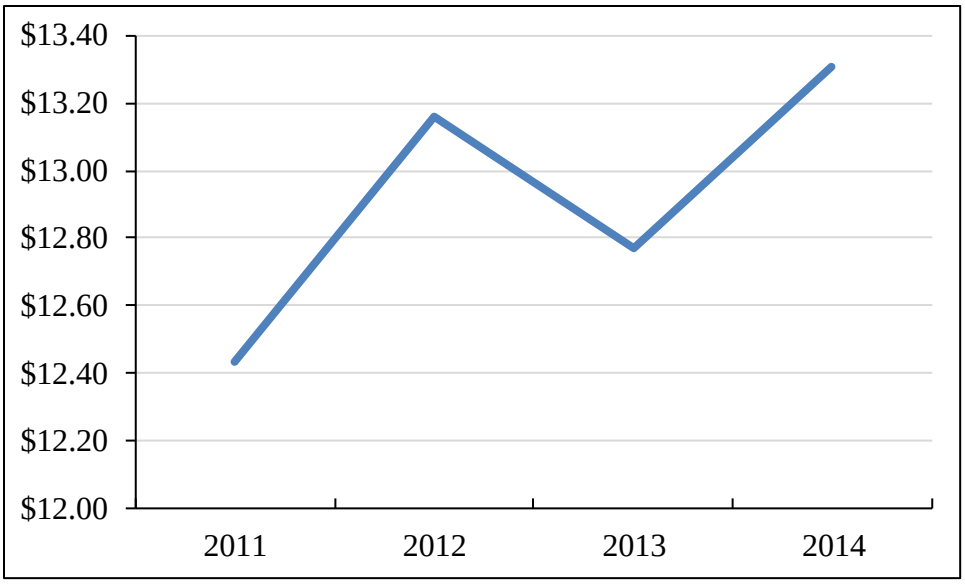

Figure A15: Nominal Exchange Rate – Mexican Pesos per US Dollar from 2011 to 2014

A.2 Tables

Table A8: Variable Correlations Unscaled Data

		1	2	3	4	5	6	7	8	9	10	11
1	$lmigration_{ij}$	1.00										
2	$ldistance_{ij}$	-0.29	1.00									
3	$lnetwork_{j}$	0.53	-0.42	1.00								
4	$lstatepop_{jt}$	0.52	-0.11	0.24	1.00							
5	$lstatebci_{jt}$	0.00	-0.08	0.36	-0.29	1.00						
6	$lcrime_{jt}$	0.27	-0.36	0.28	0.35	-0.18	1.00					
7	$lbci_{it}$	-0.23	-0.27	0.04	0.04	-0.01	0.03	1.00				
8	$lstatepop_{it}$	0.36	0.04	-0.06	-0.06	0.02	-0.04	-0.18	1.00			
9	$lremmitances_{it}$	0.44	0.14	-0.07	-0.08	0.03	-0.05	-0.30	0.66	1.00		
10	$lfix_{t}$	0.01	0.00	0.00	0.00	0.20	-0.02	-0.02	0.00	0.02	1.00	
11	$lcrime_{it}$	0.10	-0.11	-0.01	-0.02	0.00	0.00	0.28	0.09	0.26	-0.03	1.00

Table A9: Variable Correlations Scaled Data

		1	2	3	4	5	6	7	8	9	10	11
1	$lmigration_{ijt}$	1.00										
2	$ldistance_{ij}$	-0.35	1.00									
3	$lnetwork_{j}$	0.60	-0.47	1.00								
4	$lstatepop_{jt}$	0.60	-0.19	0.34	1.00							
5	$lstatebci_{jt}$	-0.02	-0.08	0.32	-0.29	1.00						
6	$lcrime_{jt}$	0.37	-0.41	0.39	0.42	-0.12	1.00					
7	$lbci_{it}$	-0.25	-0.24	0.00	0.00	-0.01	0.00	1.00				
8	$lstatepop_{it}$	0.38	0.00	0.00	0.00	0.00	0.00	-0.18	1.00			
9	$lremmitances_{it}$	0.46	0.09	0.00	0.00	0.01	0.01	-0.03	0.67	1.00		
10	$lfix_{t}$	0.02	0.00	0.00	0.01	0.19	-0.02	-0.02	0.00	0.02	1.00	
11	$lcrime_{it}$	0.11	-0.11	0.00	0.00	0.01	0.00	0.28	0.11	0.28	-0.04	1.00

Table A10: Natural Log Transformed Variables Descriptive Statistics

	Observations	Mean	Standard Deviation	Min	Max
$lmigration_{ijt}$	5368	4.23	2.16	0.00	10.93
$Scaled\ lmigration_{ij}$	6144	3.95	2.29	0.00	10.93
$ldistance_{ij}$	6144	7.34	0.32	5.40	7.91
$lnetwork_{j}$	6144	1.25	1.13	-0.92	3.45
$lstatepop_{jt}$	6144	8.32	0.99	6.34	10.57
$lstatebci_{jt}$	6144	5.10	0.14	4.75	5.47
$lcrime_{jt}$	6144	5.79	0.37	4.60	6.46
$lbci_{it}$	6144	8.59	0.42	7.57	9.38
$lstatepop_{it}$	6144	7.93	0.74	6.51	9.72
$lremmitances_{it}$	6144	6.16	1.00	3.60	7.72
$lfix_{t}$	6144	2.56	0.03	2.52	2.59
$lcrime_{it}$	6096	1.39	1.55	-3.39	4.59

Table A11: Unscaled OLS Variance Inflation Factor

Variable	VIF
$ldistance_{ij}$	1.47
$lnetwork_{j}$	1.70
$lstatepop_{jt}$	1.36
$lstatebci_{jt}$	1.55
$lcrime_{jt}$	1.37
$lstatepop_{it}$	1.82
$lstatebci_{t}$	1.37
$lcrime_{it}$	1.30
$lremittances_{it}$	2.21
$lfix_{t}$	1.06
Mean VIF	1.52

Table A12: Scaled OLS Variance Inflation Factor

Variable	VIF
$ldistance_{ij}$	1.54
$lnetwork_{j}$	1.86
$lstatepop_{jt}$	1.52
$lstatebci_{jt}$	1.50
$lcrime_{jt}$	1.49
$lstatepop_{it}$	1.87
$lstatebci_{t}$	1.37
$lcrime_{it}$	1.32
$lremittances_{it}$	2.28
$lfix_{t}$	1.06
Mean VIF	1.58

Table A13: Unscaled LSDV Variance Inflation Factor

Variable	VIF
$ldistance_{ij}$	3.89
$lnetwork_{j}$	35795.64
$lstatepop_{jt}$	40151.70
$lstatebci_{jt}$	114.95
$lcrime_{jt}$	70.04
$lstatepop_{it}$	9155.72
$lstatebci_{t}$	403.57
$lcrime_{it}$	6.23
$lremittances_{it}$	104.38
$lfix_{t}$	2.08
Mean VIF	1990.42

Table A14: Scaled LSDV Variance Inflation Factor

Variable	VIF
$ldistance_{ij}$	3.89
$lnetwork_{j}$	38547.08
$lstatepop_{jt}$	43745.80
$lstatebci_{jt}$	113.02
$lcrime_{jt}$	69.38
$lstatepop_{it}$	8197.72
$lstatebci_{t}$	392.39
$lcrime_{it}$	6.16
$lremittances_{it}$	111.38
$lfix_{t}$	2.08
Mean VIF	1983.92

Table A15: Unscaled OLS Sensitivity Analysis

$lstatebci_{jt}$	0.027	-0.476	-3.297***	-3.666***	-3.855***	-0.752***	-0.772***	-0.953***	-0.968***
	(.0392)	(0.349)	(0.298)	(0.248)	(0.260)	(0.246)	(0.242)	(0.241)	(0.240)
$lstatebci_{it}$	-1.185***	-1.712***	-1.518***	-0.859***	-0.855***	-0.891***	-0.896***	-0.912***	-0.995***
	(0.121)	(0.108)	(0.093)	(0.086)	(0.086)	(0.066)	(0.065)	(0.065)	(0.068)
$ldistance_{ij}$		-2.543***	-1.032***	-1.140***	-1.131***	-1.227***	-1.171***	-1.276***	-1.269***
		(0.159)	(0.154)	(0.124)	(0.125)	(0.108)	(0.104)	(0.110)	(0.108)
$lnetwork_{j}$			1.099***	1.157***	1.166***	0.808***	0.819***	0.838***	0.841***
			(0.049)	(0.041)	(0.041)	(0.034)	(0.033)	(0.032)	(0.032)
$lremittances_{it}$				1.015***	1.013***	1.049***	0.855***	0.858***	0.813***
				(0.037)	(0.037)	(0.029)	(0.04)	(0.040)	(0.041)
$lfix_{t}$					4.198***	1.034***	1.054***	1.158***	1.374***
					(0.349)	(0.324)	(0.319)	(0.314)	(0.325)
$lstatepop_{jt}$						0.994***	0.996***	1.022***	1.022***
						(0.036)	(0.036)	(0.036)	(0.036)
$lstatepop_{it}$							0.384***	0.379***	0.413***
							(0.052)	(0.052)	(0.052)
$lcrime_{jt}$								-0.331***	-0.327***
								(0.095)	(0.094)
$lcrime_{it}$									0.059***
									(0.020)
$\_cons$	14.243***	39.971***	40.081***	30.706***	20.824***	6.013***	3.810***	7.086***	7.245***
	(2.286)	(2.522)	(2.030)	(1.718)	(1.548)	(1.481)	(1.444)	(1.750)	(1.754)
R squared	0.054	0.189	0.401	0.592	0.594	0.738	0.747	0.749	0.752
F	48.00	144.84	275.57	424.82	353.24	612.74	554.88	525.82	478.39
Observations	5638	5638	5638	5638	5638	5638	5638	5638	5594

Table A16: Scaled OLS Sensitivity Analysis

$lstatebci_{jt}$	-0.417	-1.024***	-3.772***	-3.808***	-4.001***	-0.772***	-0.783***	-0.906***	-0.912***
	(0.413)	(0.353)	(0.280)	(0.232)	(0.243)	(0.228)	(0.224)	(0.222)	(0.222)
$lstatebci_{it}$	-1.332***	1.896****	-1.547***	-0.874***	-0.869***	-0.864***	-0.870***	-0.889***	-0.964***
	(0.125)	(0.108)	(0.089)	(0.082)	(0.082)	(0.062)	(0.062)	(0.062)	(0.065)
$ldistance_{ij}$		3.106***	-1.128***	-1.188***	-1.178***	-1.183***	-1.120***	-1.228***	-1.223***
		(0.158)	(0.147)	(0.119)	(0.120)	(0.104)	(0.100)	(0.106)	(0.104)
$lnetwork_{j}$			1.203***	1.196***	1.205***	0.789***	0.798***	0.820***	0.822***
			(0.44)	(0.037)	(0.036)	(0.031)	(0.031)	(0.030)	(0.030)
$lremittances_{it}$				0.975***	0.973***	0.971***	0.777***	0.780***	0.739***
				(0.034)	(0.034)	(0.027)	(0.037)	(0.037)	(0.038)
$lfix_{t}$					4.617***	1.147***	1.165***	1.202***	1.414***
					(0..318)	(0.293)	(0.290)	(0.287)	(0.296)
$lstatepop_{jt}$						0.981***	0.981***	1.012***	1.012***
						(0.033)	(0.033)	(0.339)	(0.034)
$lstatepop_{it}$							0.386***	0.381***	0.401***
							(0.049)	(0.049)	(0.048)
$lcrime_{jt}$								-0.322***	-0.318***
								(0.084)	(0.084)
$lcrime_{it}$									0.052***
									(0.018)
$\_cons$	17.528***	48.230***	43.237***	32.086***	21.140***	5.930***	3.651***	6.735***	6.824
	(2.380)	(2.536)	(1.951)	(1.640)	(1.427)	(1.370)	(1.336)	(1.573)	(1.581)
R squared	0.061	0.242	0.485	0.650	0.653	0.779	0.788	0.789	0.792
F	56.99	203.57	405.00	581.31	482.92	802.90	725.20	679.50	610.86
Observations	6144	6144	6144	6144	6144	6144	6144	6144	6096

Table A17: Unscaled Random Effects Sensitivity Analysis

$lstatebci_{jt}$	0.885***	0.657***	0.328***	-0.227*	-1.058***	-0.458***	-0.476***	-0.646***	-0.626***
	(0.124)	(.0123)	(0.120)	(0.119)	(0.151)	(0.148)	(0.142)	(0.147)	(0.147)
$lstatebci_{it}$	-1.047***	-1.473***	-1.442***	-1.244***	-1.254***	-1.111***	-1.031***	-1.057***	-1.076***
	(0.110)	(0.100)	(0.091)	(0.083)	(0.082)	(0.063)	(0.063)	(0.063)	(0.062)
$ldistance_{ij}$		-2.732***	-1.226***	-1.334***	-1.305***	-1.216***	-1.111***	-1.274***	-1.265***
		(0.156)	(0.151)	(0.127)	(0.127)	(0.110)	(0.105)	(0.109)	(0.107)
$lnetwork_{j}$			0.984***	1.016***	1.054***	0.789***	0.810***	0.838***	0.837***
			(0.048)	(0.041)	(0.040)	(0.033)	(0.032)	(0.032)	(0.032)
$lremittances_{it}$				0.569***	0.562***	0.685***	0.444***	0.443***	0.452***
				(0.033)	(0.032)	(0.028)	(0.033)	(0.033)	(0.032)
$lfix_{t}$					1.938***	1.078***	1.038***	1.083***	1.053***
					(0.206)	(0.207)	(0.205)	(0.205)	(0.205)
$lstatepop_{jt}$						1.012***	1.019***	1.067***	1.070***
						(0.034)	(0.034)	(0.035)	(0.034)
$lstatepop_{it}$							0.712***	0.708***	0.691***
							(0.046)	(0.046)	(0.046)
$lcrime_{jt}$								-0.500***	-0.500***
								(0.081)	(0.081)
$lcrime_{it}$									0.035***
									(0.007)
$\_cons$	8.514***	33.356***	22.439***	20.788***	19.943***	8.316***	2.802***	7.481***	7.554***
	(1.301)	(1.783)	(1.671)	(1.462)	(1.460)	(1.372)	(1.335)	(1.555)	(1.540)
Chi-square	210.98	593.49	1187.65	1714.07	1776.37	4215	4553.13	4874.75	4921.81
Observations	5638	5638	5638	5638	5638	5638	5638	5638	5594

Table A18: Scaled Random Effects Sensitivity Analysis

$lstatebci_{jt}$	1.026***	0.796***	0.462***	-0.094	-0.758***	-0.182	-0.194	-0.305**	-0.289*
	(0.125)	(0.123)	(0.120)	(0.119)	(0.153)	(0.148)	(0.143)	(0.148)	(0.147)
$lstatebci_{it}$	-0.933***	-1.379***	-1.353***	-1.164***	-1.170***	-1.036***	-0.965***	-0.984***	-1.001***
	(0.110)	(0.099)	(0.089)	(0.081)	(0.080)	(0.060)	(0.061)	(0.061)	(0.061)
$ldistance_{ij}$		-2.883***	-1.210***	-1.305***	-1.280***	-1.164***	-1.056***	-1.191***	-1.183***
		(0.151)	(0.146)	(0.122)	(0.122)	(0.106)	(0.102)	(0.105)	(0.104)
$lnetwork_{j}$			1.028***	1.036***	1.066***	0.758***	0.773***	0.798***	0.798***
			(0.045)	(0.038)	(0.038)	(0.031)	(0.031)	(0.030)	(0.030)
$lremittances_{it}$				0.568***	0.561***	0.658***	0.421***	0.421***	0.428***
				(0.031)	(0.031)	(0.026)	(0.031)	(0.031)	(0.030)
$lfix_{t}$					1.593***	0.756***	0.715***	0.719***	0.718***
					(0.199)	(0.199)	(0.198)	(0.198)	(0.199)
$lstatepop_{jt}$						1.017***	1.017***	1.060***	1.063***
						(0.033)	(0.033)	(0.033)	(0.033)
$lstatepop_{it}$							0.687***	0.684***	0.668***
							(0.044)	(0.044)	(0.44)
$lcrime_{jt}$								-0.405***	-0.407***
								(0.072)	(0.073)
$lcrime_{it}$									0.033***
									(0.007)
$\_cons$	6.738***	32.902***	20.808***	19.199***	18.387***	6.930***	1.675	5.352***	5.439***
	(1.331)	(1.745)	(1.646)	(1.419)	(1.412)	(1.326)	(1.298)	(1.510)	(1.503)
Chi-square	228.73	675.90	1414.40	2078.86	2132.42	5021.44	5570.03	5806.40	5842.55
Observations	6144	6144	6144	6144	6144	6144	6144	6144	6096

Table A19: Unscaled Fixed Effects Sensitivity Analysis

$lstatebci_{jt}$	1.240***	1.338***	0.888***	1.522***	1.755***	1.281***	1.256***
	(0.146)	(0.150)	(0.201)	(0.302)	(0.370)	(0.372)	(0.374)
$lstatebci_{it}$	-0.445**	-0.388*	-0.485**	-0.469**	-0.493**	-0.441**	-0.423**
	(0.205)	(0.205)	(0.208)	(0.207)	(0.208)	(0.205)	(0.208)
$lremittances_{it}$		-0.091*	-0.088*	-0.901*	-0.081*	-0.092**	-0.086*
		(0.047)	(0.047)	(0.047)	(0.046)	(0.046)	(0.047)
$lfix_t$			0.813***	0.768***	0.824***	0.877***	0.865***
			(0.221)	(0.220)	(0.220)	(0.221)	(0.222)
$lstatepop_{jt}$				-2.743***	-2.751***	-1.100	-0.950
				(1.038)	(1.038)	(1.037)	(1.042)
$lstatepop_{it}$					-0.758	-0.932	-0.881
					(.764)	(0.761)	(0.793)
$lcrime_{jt}$						-0.765***	-0.756***
						(0.129)	(.131)
$lcrime_{it}$							0.007
							(0.008)
$\_cons$	1.726	1.300	2.329	22.222***	27.156***	20.971**	19.206**
	(2.237)	(2.230)	(2.260)	(7.930)	(9.116)	(9.019)	(9.194)
F	66.41	46.61	40.17	32.75	29.71	31.57	27.69
Observations	5638	5638	5638	5638	5638	5638	5594

Table A20: Scaled Fixed Effects Sensitivity Analysis

$lstatebci_{jt}$	1.481***	1.594***	1.402***	1.934***	2.356***	1.979***	1.974***
	(0.148)	(0.156)	(0.215)	(0.307)	(0.381)	(0.385)	(0.388)
$lstatebci_{it}$	-0.032	0.030	-0.008	0.016	-0.041	0.012	0.026
	(2.297)	(0.208)	(0.213)	(0.214)	(0.211)	(0.210)	(0.214)
$lremittances_{it}$		-0.107**	-0.107**	-0.111**	-0.091**	-0.097**	-0.093**
		(0.044)	(0.044)	(0.045)	(0.044)	(0.044)	(0.046)
$lfix_t$			-0.363	0.303	0.414*	0.436**	0.430**
			(0.221)	(0.222)	(0.214)	(0.215)	(0.217)
$lstatepop_{jt}$				-2.224**	-2.365**	-0.814	-0.777
				(0.970)	(0.961)	(0.984)	(0.994)
$lstatepop_{it}$					-1.332**	-1.519**	-1.448**
					(0.658)	(0.657)	(0.666)
$lcrime_{jt}$						-0.583***	-0.578***
						(0.115)	(0.117)
$lcrime_{it}$							0.009
							(0.008)
$\_cons$	-3.329	-3.770	-3.395	12.363*	22.02***	15.447**	14.442*
	(2.297)	(2.296)	(2.356)	(7.211)	(7.853)	(7.852)	(7.953)
F	74.06	50.83	41.44	34.71	31.08	32.50	28.56
Observations	6144	6144	6144	6144	6144	6144	6144

Table A21: Unscaled Least Squares Dummy Variable Regression Sensitivity Analysis

$lstatebci_{jt}$	1.117***	1.117***	1.117***	1.220***	0.684***	1.138***	1.436***	1.023**	0.958**
	(0.184)	(0.180)	(0.180)	(0.185)	(0.249)	(0.346)	(0.412)	(0.414)	(0.440)
$lstatebci_{it}$	-0.390	-0.403*	-0.403*	-0.344	-0.459*	-0.446*	-0.479**	-0.435*	-0.421*
	(0.237)	(0.234)	(0.234)	(0.235)	(0.239)	(0.238)	(0.239)	(0.237)	(0.240)
$ldistance_{ij}$		-2.236***	-2.236***	-2.236***	-2.236***	-2.236***	-2.236***	-2.236***	-2.240***
		(0.174)	(0.174)	(0.174)	(0.174)	(0.174)	(0.174)	(0.174)	(0.174)
$lnetwork_{j}$			1.569***	1.562***	1.597***	3.212***	3.208***	1.992**	1.952*
			(0.079)	(0.079)	(0.080)	(0.949)	(0.949)	(0.935)	(1.015)
$lremittances_{it}$				-0.095*	-0.092*	-0.094*	-0.082	-0.090*	-0.083
				(0.052)	(0.051)	(0.052)	(0.051)	(0.050)	(0.052)
$lfix_{t}$					0.976***	0.942***	1.012***	1.057***	1.062***
					(0.255)	(0.253)	(0.226)	(0.257)	(0.258)
$lstatepop_{jt}$						-1.961*	-1.979*	-0.516	-0.467
						(1.148)	(1.146)	(1.129)	(1.227)
$lstatepop_{it}$							-0.966	-1.128	-0.992
							(0.837)	(0.833)	(0.871)
$lcrime_{jt}$								-0.663***	-0.713***
								(0.163)	(0.171)
$lcrime_{it}$									0.009
									(0.009)
$\_cons$	1.995	17.960***	16.460***	16.000***	17.100***	29.929***	35.526***	31.055***	30.179
	(2.723)	(2.946)	(2.931)	(2.934)	(2.965)	(8.215)	(9.132)	(9.027)	(9.648)
R squared	0.840	0.869	0.869	0.869	0.869	0.869	0.869	0.869	0.871
F	159.27	183.21	183.21	180.90	179.82	177.57	175.47	173.49	174.94
Observations	5638	5638	5638	5638	5638	5638	5638	5638	5594

Table A22: Scaled Least Squares Dummy Variable Regression Sensitivity Analysis

$lstatebci_{jt}$	1.473***	1.474***	1.474***	1.586***	1.388***	1.903***	2.313***	1.935***	1.908***
	(0.149)	(0.149)	(0.149)	(0.157)	(0.216)	(0.309)	(0.384)	(0.388)	(0.410)
$lstatebci_{it}$	-0.038	-0.037	-0.038	0.023	-0.016	0.008	-0.048	0.005	0.15
	(0.209)	(0.208)	(0.208)	(0.209)	(0.214)	(0.215)	(0.213)	(0.211)	(0.214)
$ldistance_{ij}$		-2.112***	-2.112***	-2.112***	-2.112	-2.112***	-2.112***	-2.112***	-2.114***
		(0.164)	(0.164)	(0.164)	(0.164)	(0.164)	(0.164)	(0.164)	(0.164)
$lnetwork_{j}$			1.525***	1.518***	1.630***	3.301***	3.389***	2.095**	2.131**
			(0.076)	(0.076)	(0.077)	(0.808)	(0.801)	(0.822)	(0.895)
$lremittances_{it}$				-0.107**	-0.106**	-0.110**	-0.090**	-0.097**	-0.093**
				(0.045)	(0.045)	(0.045)	(0.045)	(0.044)	(0.046)
$lfix_{t}$					0.374*	0.316	0.425**	0.446**	0.452**
					(0.222)	(0.223)	(0.215)	(0.216)	(0.218)
$lstatepop_{jt}$						-2.152**	-2.288**	-0.732	-0.778
						(0.977)	(0.968)	(0.993)	(1.082)
$lstatepop_{it}$							-1.297*	-1.486**	-1.379**
							(0.663)	(0.663)	(0.677)
$lcrime_{jt}$								-0.586***	-0.632***
								(1.660)	(0.123)
$lcrime_{it}$									0.009
									(0.008)
$\_cons$	-2.847	12.128***	10.671***	10.210***	10.557	24.531***	32.901***	27.233	27.135***
	(2.322)	(2.599)	(2.586)	(2.588)	(2.632)	(6.791)	(7.708)	(7.317)	(7.866)
R squared	0.859	0.882	0.882	0.882	0.882	0.882	0.882	0.882	0.883
F	153.82	171.22	171.22	169.24	167.23	165.37	164.97	164.25	163.21
Observations	6144	6144	6144	6144	6144	6144	6144	6144	6096

Vita

Jesus Elias Mendoza Hernandez received his Bachelor of Business Administration in Economics in 2013 from The University of Texas at El Paso. Throughout his undergraduate studies, he worked as an undergraduate assistant in different departments for the School of Nursing where he worked on various projects, including spearheading the revamping of the School of Nursing website. He later became a research intern at the Federal Reserve Bank of Dallas El Paso Branch and worked under Dr. Roberto Coronado to assist with qualitative and quantitative regional economic research. After finishing his undergraduate degree, he enrolled at UTEP to pursue his Master of Science in Economics. During his graduate studies, he continued to intern at the El Paso Branch of the Federal Reserve Bank of Dallas. At the same time, he was a graduate research assistant at the Institute for Policy and Economic Development and later at the Hunt Institute for Global Competitiveness of the College of Business Administration. There, he co-authored numerous technical reports, which included survey studies, economic impact studies, and forecasts, and presented research findings at an academic conference. Towards the end of his graduate studies, he became a graduate assistant for the Department of Educational Leadership and Foundations at the College of Education where he assisted Dr. Julia Duncheon with qualitative research on Early College High Schools in El Paso, Texas.

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