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A State-To-State Analysis Of Mexican Migration To The U.S.

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A STATE-TO-STATE ANALYSIS OF MEXICAN MIGRATION TO THE U.S.

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Dedication

To my parents.

A STATE-TO-STATE ANALYSIS OF MEXICAN MIGRATION TO THE U.S.

by

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THESIS

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Abstract[1]

The determinants of undocumented immigration flows from Mexican states to U.S. states utilizing data recently released by the Mexican consulate are analyzed. The impact of economic, demographic, and geographic factors on immigrant location choice in the year 2007 is analyzed using ordinary least squares, tobit, and two stage least squares to control for factors likely to be endogenous with immigration. The results generally support that immigrants tend to migrate towards states with higher Mexican immigrant populations, shorter distances, higher wages, and smaller populations. In addition, the relationship between undocumented immigration and economic freedom and the policy measures used to construct the economic freedom index are analyzed. Tax revenues and government transfers and subsidies as a percentage of GDP demonstrate a negative association with immigration. The results also point to a positive relationship between the minimum wage and immigration.

[1] This thesis is heavily based on the article "The determinants of immigration from Mexico to the United States: a state-to-state analysis" published in *Applied Economics Letters* (Ashby, Bueno, and Martinez, 2013.) I would like to thank Deborah Martinez for her significant contribution to the initial literature review.

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Chapter 1: Introduction

Approximately 33.5 million United States residents in 2011 self-identified as Hispanics of Mexican origin (Pew Hispanic Research Center, 2013). This is the largest population of Hispanic origin in the U.S. and accounts for nearly two-thirds of the U.S. total (undocumented and documented) Hispanic population; about one third of Mexicans residing in the U.S. are foreign born (Pew Hispanic Research Center, 2013). Passel and Cohn (2009) estimate the total undocumented, meaning unauthorized by the U.S. government, population in the United States to be around 11.9 million, 59 percent of which hail from Mexico suggesting that the unauthorized Mexican population in the United States is around 2.3 percent of the total U.S. population. According to the U.S. Census Bureau (2011), the percentage of the U.S. population that is Hispanic has increased from 13 percent of the total in 2000 to 16 percent in 2010.

Given these trends and the ongoing immigration debate, there is significant interest in analyzing the migration patterns of Hispanics and the factors that drive these patterns. Studies analyzing the economics of unauthorized immigration are difficult in practice due to the difficulty in estimating the actual number of unauthorized workers and where these are located. Mexican consulate data recently made available through the Instituto de Mexicanos en el Exterior (IME, 2011) provide information that has been difficult to gather in the past. These records report the number of Mexicans in the United States that register for a Mexican identification card at a particular locality in the United States while providing information on the locality from which they originate in Mexico. Given that authorized immigrants have little incentive to register with the consulate if they have legal documentation with the U.S. government, I assume that the majority of the individuals that register with the consulate within a given year are unauthorized immigrants, a group that has been significantly undercounted by census

surveys.[2] Massey, Rugh, and Pren (2010) also assume individuals who register for the card to be undocumented immigrants, a group that has been significantly undercounted by the U.S. Census.

Using a migration model, the relationship between relative wages, employment, weather, Mexican geographic networks, and undocumented immigration flows from the thirty two Mexican states to the fifty U.S. states is analyzed. A double-log scaled ordinary least squares method is employed to avoid losing observations where no known immigration has taken place in addition to unscaled regressions which omit censored values due to unmeasured immigration (Eichengreen and Irwin, 1995; Lewer and Van den Berg, 2008). Tobit, instrumental variable Tobit, and two-stage least squares are employed to deal with the censoring problem and the potential endogeneity between the covariates.

The results indicate that immigrant networks and distance between states appear to be robustly associated with immigrant location choice while weaker evidence is provided with regard to the relationship between immigration and wages. In addition, government transfers and subsidies as a percentage of GDP demonstrate a significant negative association with immigration. Immigrants may also be attracted to states with lower tax revenues as a percentage of GDP and the results point to a positive relationship between the minimum wage and immigration.

[2] Many individuals living in locations in the United States that border Mexico commute between the two countries. Many legal immigrants who travel by land into Mexico past the distance limit are required a permit; thus, some choose to purchase the card issued by the Mexican consulate as a cheaper solution. Anecdotally, I know this to be the case for many but definitely not all Mexican immigrants living on the border. However, there are no data to determine the prevalence of this practice among border immigrants.

Chapter 2: Literature Review

2.1 Immigration from Mexico to the United States

Research on migration demonstrates that individuals weigh the costs against the probable returns of moving when making migration decisions (Sjaastad, 1962; Borjas, 1987; Borjas, 1989). Such costs include monetary costs, an increase in distance from family members, and health and safety risks depending on whether or not the migration is legal. Benefits include higher wages and employment or escape from political and/or civil strife in the home country.

The nature of unauthorized immigration has been analyzed based on different theories including the neo-classical theory, the new economics of migration, world system theory, dual labor markets, and the "push-pull" framework (Arango, 2002). Push-pull factors include economic, demographic, political, social and/or environmental factors. An analysis by Chiquiar and Hanson (2005) finds that the Mexican economy is negatively related to overall immigration, and higher-skilled labor migration is more likely to occur in economic turmoil; In fact, after the recent financial crisis net migration from Mexico to the United States fell to zero and perhaps became negative (Passel, Cohn, and Gonzalez-Barrera 2012). On the contrary, as the economy recovers so does migration, but the level of immigrant education also decays. Also, using the Mexican and U.S Census data, they have found that the minimum wage in the United States is positively correlated with immigration flows.

Hanson and Spilimbergo (1999) suggest that border enforcement gets more relaxed when undocumented labor demand is high. They discuss the sentiment of the agricultural growers from California and Texas, expressing that they cannot sustain production levels without low-wage foreign labor and the consumer of those goods would not have them available in the market. The unauthorized immigration flow from Mexico to the United States, according to Hanson (2007) is a logical response to labor demand from the north side of the border. Given the requirements to obtain legal immigration

status, undocumented workers represent a mobile and flexible asset for the U.S economy by nature. On the contrary, most legal immigrants have the requirement to stay with their employers due to the nature of their legal work permits. Borjas (2001) argues that native workers incur high migration costs and are less prone to move to a place with the best economic opportunity. Contrastingly, he argues, immigrant workers choose to incur those costs, and that gives them the ability to locate in those places with the best economic opportunities.

Ambrosini and Peri (2012) analyze data from the Mexican Family Life Survey and find evidence of negative selection of immigrants. In addition, their results suggest that migration costs, geography, social networks, and initial wealth have a significant impact in migration decisions and that there is a particularly low propensity of highly educated workers to migrate. Villarreal and Blanchard (2012) use a multinomial logit model to analyze the impact job characteristics have on migration decisions and find that informality is an important predictor of migration even after controlling for other job characteristics and wages.

Davila, Pagan, and Syodemir (2002) find that U.S. policies are not effective at deterring undocumented immigration in the long run and that immigrants are motivated by the significant wages differentials between the two countries. Friedberg and Hunt (1995) argue that data constrain the ability to make any conclusions about the effect that immigration has on wages. Orrenius and Zavodny (2008) suggest that low-skilled immigrants may have been discouraged from settling in states that set wage floors substantially above the federal minimum. Ottaviano and Peri (2012) find that between 1990 to 2006 immigration had a small positive impact on average wages of natives and a substantial negative effect on wages of previous immigrants. Cortes (2008) analyzes the impact of immigration on the purchasing power of U.S. residents and finds that low-skilled immigration lowers the costs of immigrant-intensive services like gardening and housekeeping. Low-skilled labor lowers the purchasing power of low-skilled natives by an amount ranging from 0.43 and 1.14 percent, but increases it for

natives with a high school diploma or above, by a range of 0.31 to 0.4 percent. The amount of low-skilled natives represents a small and diminishing part of the U.S population suggesting that purchasing power is increasing for the nation as a whole.

Significant research has been conducted dealing with social networks as a "pull factor" for migration. According to Zenteno (2000) social networks reduce the monetary and psychological costs and decrease the risk of international migration. The increase in social capital helps immigrants to cope with the adaptation to a new foreign environment. A study by Davis, Stecklov, and Winters (2002) finds that the probability that a person from a rural Mexican municipality will migrate to the United States without relatives in the destination is 4.1 percent, with a close relative, the probability is 6.6 percent and with two or more relatives, the probability goes up to 9.6 percent. McKenzie and Rapoport (2010) find evidence supporting network effects. Relating to environmental factors, Warner et al. (2009) have found that worsening weather conditions in Mexico have become an incentive for immigration to the United States.

The measurement of unauthorized immigration represents a significant challenge which has been dealt with in several ways. Massey, Rugh and Pen (2010) mention the use of census data in the past, but express their discontent given the lack of information on the destination and origin of the people answering the surveys. They previously used data from the Encuesta Nacional de la Dinámica Demográfica (National Survey of Demographic Dynamics), where it is asked if the person has been in the United States over the past five years. Hanson and Spilimbergo (1999) also express their concern with the measurement of unauthorized immigration. They do not measure the number of people trying to cross to the United States, but rather account for the number of apprehensions and the resources the government invests in order to stop the flow of unauthorized immigrants. They use the monthly data of total apprehensions from the U.S Immigration and Naturalization Service (INS), the number of person hours that the U.S Border Patrol spends policing the U.S borders among other variables concerning

Mexican labor. The problem arises when a person cannot be differentiated and could potentially be counted more than once due to multiple migration attempts. Benhabib (1996) bases the measurement of immigration by skill and wealth requirements; he accounts for individuals by indexing them by units of capital they own and for the density of individuals by a continuous density function. No attention is provided to the issue of temporary labor or return migration.

The way in which this paper deals with these limitations is by accounting for the number of Matrículas Consulares de Alta Seguridad (High Security Consular Cards) collected from the Instituto de Mexicanos en el Exterior (IME, 2011). This card is issued by the Mexican consulate in the 53 different locations in the United States during 2007, and records the place of origin of the applicant and the place of destination. Due to its security and reliability, this document is accepted by numerous state government offices and police departments; it is useful to open bank accounts and register in public libraries; in some states it is even valid to apply for a driver's license (IME, 2011). This suggests that the incentive to obtain a card depends on the policies of the U.S. state where immigrants are located. This analysis attempts to control for this as will be discussed below in the empirical section. Massey, Rugh and Pren (2010) use these data in order to analyze, in an unprecedented manner, the destination of unauthorized Mexicans to the U.S. They assume that the individuals who apply for the Matrícula Consular card are undocumented migrants because legal migrants in the United States would use other documents such as passports with U.S visas. Nevertheless, they mention the possibility of these immigrants being already settled in the destination country, since they assume that unauthorized immigrants utilize it for the proceedings that IME suggest, and temporary workers do not benefit from it. This paper also assumes the data measures unauthorized immigration, however, anecdotal accounts suggests it is by no means a perfect measure.

Angrist and Kugler (2003) find empirical evidence of a rigid structure of economic institutions increasing the negative impact of immigrants on native employment. These institutions are found to be

related to firing costs, replacement rates, rigid wages and business entry costs. A policy paper by Baetjer (2007) suggests that unauthorized immigrants are willing to work for wages lower than the minimum. He argues that immigrants might be in a restrictive position fearing to be caught if they change jobs. Therefore, they might be depriving the economy of goods made by a more effective use of their skills.

The percentages in Figure 1 show the number of people who applied for the Matrícula Consular in 2007 in certain US states over the average of the total population from 2000 to 2007 in the Mexican state of origin. The pairs are sorted from low to high. As would be expected, most immigration takes place in Texas and California; however, the states of origin are not generally states that border the United States.

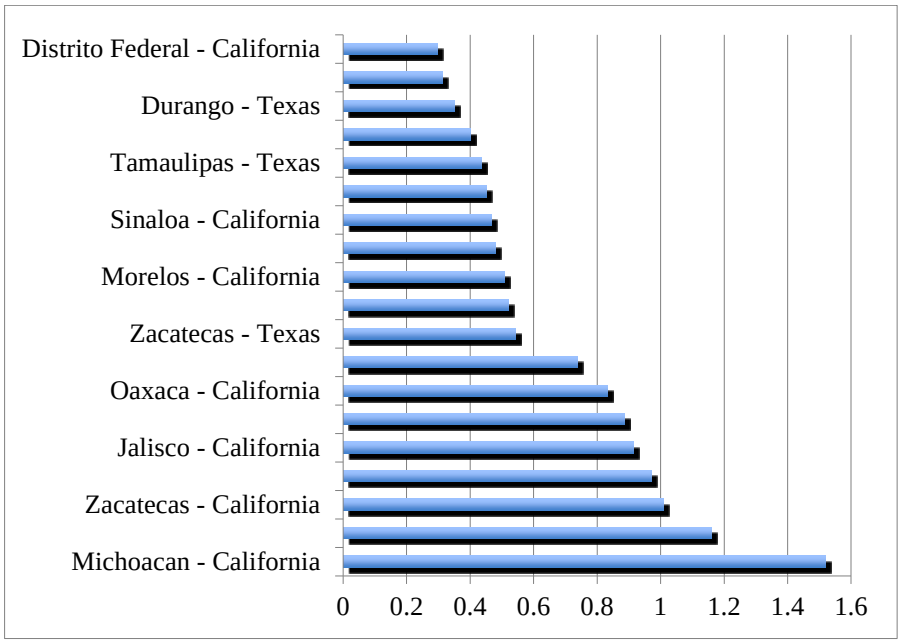

Figure 1: Top 20 Pairs from Origin to Destination

2.2 General Migration Models and Research

The methodology conducted in this study will be similar to Ashby (2007). He estimates a modified gravity model to analyze the impact of economic freedom on migration flows of U.S. residents between U.S. states from 1995 to 2000. He finds that income and employment growth tend to attract migrants into a given state while distance is inversely related to migration flows. When analyzing the effect of the components of economic freedom, he finds that individuals tended towards states with higher government expenditures and transfers and subsidies, less restrictive minimum wages, lower unionization rates, and less government employment. Ashby (2010) analyzes the association between economic freedom and political freedom with international migration flows using a similar model. He finds that economic freedom is positively associated with immigration.

A modified gravity model similar to that of Borjas (1989) is developed by Karemera, Oguledo and Davis (2000) to empirically measure international migration. A relevant contribution of their paper is the introduction and use of political variables into the model. They find that migration is positively related to political rights and individual freedom in the country of origin and negatively to political instability. Clark, Hatton, and Williamson (2007) estimate a migration model and find evidence that distance represents a cost that negatively affects migration, and social networks lower the cost of the decision to migrate.

Chapter 3: The Model

The basic model used in this analysis is shown in equation (1) below:

$$
\begin{aligned}
&Ln\ Migration_{ij} = \beta_0 + \beta_1\, Ln\ (Population_j/Population_i) \\
&+ \beta_2\, Ln\ (Wages_j/Wages_i) + \beta_3\, (Employment\ Growth_j - Employment\ Growth_i) \\
&+ \beta_4\, Ln\ (Unemployment_j/Unemployment_i) + \beta_5\, Ln\ (Mexican_j) \\
&+ \beta_6\, Ln\ Distance_{ij} + \beta_7\, Ln\ (Temperature_j/Temperature_i) \\
&+ \beta_8\, Ln\ (Precipitation_j/Precipitation_i) + \varepsilon_{ij}
\end{aligned} \tag{1}
$$

Specifying the variables in relative terms has been done by Clark, Hatton, and Williamson (2007) and Ashby (2010, 2007). In this model the subscript *i* represents the Mexican state of origin, while the subscript *j* represents the U.S. state of destination. Since there are thirty two Mexican States and fifty U.S. states, there are a total of 1,600 observations. Natural logs are used when possible because they can be interpreted as elasticities with respect to immigration flows. Table 1 presented below shows the descriptive statistics and data sources for each of the variables.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	Max.	Min.	Obs.	Sources
Ln (Migration$_{ij}$)	3.99	2.25	11.02	0.00	1406	IME (2011)
Migration$_{ij}$	566.52	2977.34	61152	0.00	1600	IME (2011)
Scaled Ln (Migration$_{ij}$)	3.59	2.39	11.02	0.00	1600	US Census Bureau (2009); INEGI(2000,2005)
Ln(Popj/Popi)	0.41	1.28	4.28	-3.30	1600	US Census Bureau (2009); INEGI(2000,2005)
Ln (Wages$_j$/Wages$_i$)	11.63	0.22	12.44	11.14	1600	BLS (2011a, 2011b); CONASAMI (2010) Heston et al (2009)
Employment Growth$_j$-Employment Growth$_i$	-0.76	1.55	4.18	-8.14	1600	BLS (2011d); INEGI (2010a)
Ln (Unemployment$_j$/Unemployment$_i$)	2.36	0.42	3.34	0.82	1600	BLS (2011c); INEGI (2010a)
Ln Mexican$_i$	10.15	2.06	15.17	5.82	1600	US Census Bureau (2009)
Ln (Temperature$_j$/Temperature$_i$)	8.21	0.18	8.74	7.70	1600	NCDC (2010); Comision Nacional de Agua (2010)
Ln (Precipitation$_j$/Precipitation$_i$)	6.89	0.77	8.58	4.12	1600	NCDC (2010); Comision Nacional de Agua (2010)
Ln Distance$_{ij}$	7.43	0.42	9.07	5.46	1600	Constructed by Author using U.S. Census Bureau (2007)
Instruments:						
Ln (Economic Freedom$_j$/Economic Freedom$_i$)	3.78	0.14	4.17	3.29	1600	Ashby et al (2010)
Ln (Creativityj)	4.50	0.55	5.24	2.83	1600	Catalytix Inc., and the Richard Florida Creativity Group (2003)
Ln (Crime$_j$/Crime$_i$)	4.60	0.68	6.36	2.80	1600	FBI (2008), ICESI (2010)
Ln (Mining_GDP$_j$)	6.41	1.93	11.15	1.83	1600	BEA (2011)
Ln (Singleratio$_j$/Singlemother$_i$)	0.29	0.33	1.26	-1.06	1600	The Annie E. Casey Foundation (2011); INEGI(2010b)
Ln (Female$_j$/Female$_i$)	0.67	0.03	0.74	0.62	1600	US Census Bureau (2005); INEGI (1980, 1990)

Migration$_{ij}$ is the number of immigrants who apply for the Mexican consulate card in each state *j* from each state *i* in the year 2007. *Population$_j$/Population$_i$* is the average relative population between 2000 and 2007. California/Baja California Sur has the highest population ratio and Wyoming/Mexico has the lowest. *Wages$_j$/Wages$_i$* is calculated using, for the United States, the average of the weekly wages reported by the Bureau of Labor Statistics (2011a) from 2000 to 2007 converted to 2007 US dollars using the CPI provided also by the BLS (2011b); for the Mexican states, I use the average of the weekly wages from 2000 to 2007 converted to US dollars using the purchasing power parity from the Penn World Tables (Heston et al, 2009). Connecticut/Distrito federal has the highest wage ratio and Montana/Durango has the lowest. *Employment Growth$_j$-Employment Growth$_i$* is the difference in the

average employment growth between 2000 and 2007 between the destination and origin state; this variable is an absolute difference instead of a relative measure because of the problems that arise when dividing by a negative number. $Unemployment_j/Unemployment_i$ is the average of the unemployment rate between 2000 and 2007. Alaska/Guanajuato federal has the highest unemployment ratio and North Dakota/Distrito Federal has the lowest.

$Mexican_j$ is the estimated number of individuals originating from Mexico residing in each U.S. state in the year 2000. The U.S. Census does not provide actual data on the number of Mexican immigrants by state in the year 2000. However, the American Community Survey does provide this information for the year 2009. The 2000 Mexican population by U.S. state is imputed by estimating the percentage change in the Latin American immigrant population for each U.S. state between 2000 and 2009. Admittedly, this measure is imperfect in that it assumes that the percentage change in the Mexican population for each state during this period is equal to the percentage change in the Latin American population. It is, however, preferred to using the total Hispanic population by U.S. state which is too aggregated to capture Mexican immigrant networks within the United States. The state with the highest number of people originating from Mexico is California, and the state with the lowest is Ohio.

$Distance_{ij}$ is the population-weighted distance in miles between the state of origin and the state of destination. This distance measure is estimated using the MSA population-weighted central longitude and latitude coordinates in each U.S. state and the coordinates in principal Mexican cities for each state. The MSA data are taken from the U.S. Census Bureau (2007). The climate variables $Temperature_j/Temperature_i$ and $Precipitation_j/Precipitation_i$ are the average daily temperature in Fahrenheit between 2000 and 2007 and the average monthly precipitation in inches between 2000 and 2007 respectively.

Many of the variables discussed in the previous paragraphs are potentially endogenous. To control for the endogeneity of these variables, instrument variables are used in the two-stage least squares (2SLS) and instrumental variable Tobit regressions[3]. The instruments used are *Economic Freedom$_j$/EconomicFreedom$_i$, Creativityj, Crime$_j$/Crime$_i$, Mining_GDP$_j$, Singleratio$_j$/Singlemother$_i$,* and *Female$_j$/Female$_i$.* To instrument wages and population I use the log of Creativity index in 2005 and the log of the average ratio of economic freedom in the U.S. state to economic freedom in Mexico averaged between 2003 and 2007. I use these same two variables to instrument for the difference in employment growth rates, and I add the average GDP attributable to mining by U.S. state between 2000 and 2007. For unemployment I use all of the instruments mentioned above. I also include the log of the relative homicide rate, the log of single parent ratio by U.S. state divided by the proportion of children with single mothers in the Mexican state. The intuition of the latter is that single mothers are known to have higher unemployment rates historically. Finally, to instrument for the percentage of Mexicans I use the log of the sex ratio in 2005 in the destination state divided by the percentage of female births in the Mexican state of origin between 1980 and 1990 because immigration from Mexico historically has been more prominent among males. Table 2 summarizes the instruments and which endogenous variables I hope to instrument with these variables and a correlation matrix is presented in the appendix.

Table 2. Instrument Variables

Endogenous Variables:	*Instruments*
Ln(Popj/Popi), Ln (Wages$_j$/Wages$_i$)	*Ln (Creativity$_j$), Ln (Economic Freedomj/Economic Freedomi)*
Employment Growth$_j$-Employment Growth$_i$	*Ln (Creativityj), Ln (Economic Freedom$_j$/Economic Freedom$_i$), Ln (Mining_GDPj)*
Ln (Unemployment$_j$/Unemployment$_i$)	*Ln (Creativityj), Ln (Economic Freedomj/Economic Freedomi), Ln (Mining_GDPj), Ln (Singleratio$_j$/Singlemother$_i$), Ln (Crimej/Crimei)*
Ln Mexican$_j$	*Ln (Singleratio$_j$/Singlemother$_i$), Ln (Femalej/Femalei)*

[3] For 2SLS I use ivreg2 command in STATA constructed by Baum, Schaffer, and Stillman (2010).

It should be noted that the benefits of attaining the consulate card vary from state to state depending on whether or not the card is recognized as a form of identification. The eleven states that recognize the consulate card as a form of identification are controlled for using a dummy variable which is not reported for conciseness.

As an extension to primary analysis using equation (1), I analyze the relationship between economic freedom and migration. The variable $Economic\ Freedom_j/Economic\ Freedom_i$ is added to the previous model; the variable is constructed using the average of the overall economic freedom scores of each state between 2003 and 2007; the scores are taken from *Economic Freedom of North America 2010* (Ashby et al., 2010). Admittedly, economic freedom is used as an instrument in previous regressions and should perhaps not be considered a direct determinant of immigration. The purpose of this exercise is more to analyze the association between economic freedom and its components with immigration and in no way should be construed to impute causality.

In addition to looking at the impact of economic freedom as a whole, this study looks at the impact that the individual components of economic freedom have on migration flows. Table 3 displays the variables used to represent the individual components which include $Ln\ (Government\ Consumption_i/Government\ Consumption_i)$, $Ln\ (Transfers_j/Transfers_i)$, $Ln\ (Tax\ Revenues_j/Tax\ Revenues_i)$, $Ln\ (Marginal\ Tax_j)$, $Ln\ (Minimum\ Wages_j/Minimum\ Wages_i)$, $Ln\ (Government\ Employment_j/Government\ Employment_i)$, and $Ln\ (Union\ Density_j/Union\ Density_i)$. The variables represent components 1A, 1B, 2A, 2B, 3A, 3B, and 3C of the index respectively (see Ashby et al., 2010, pp. 6-9). Components 2C and 2D are excluded because they are included as part of 2A and would introduce unnecessary collinearity to the model. The actual data to construct the economic freedom scores are used as opposed to the scores with the exception of marginal tax rate. For $Marginal\ Tax_j$ I use the inverse of the component score since this measure considers the income threshold at which the top

marginal tax rate takes place in addition to the top marginal tax rate (see Ashby et al, 2010, p. 98). The marginal tax rate of the U.S. states (component 2B) is not divided by the marginal tax of the Mexican states because all Mexican states have the same marginal tax rate; therefore, dividing all U.S. marginal tax rates by a constant would have no impact. The log of $(Crime_j/Crime_i)$ and $(Education_j/Education_i)$ are also included in the model. $Crime_j/Crime_i$ (FBI, 2008; ICESI, 2010) is the average of the murder and non-negligent manslaughter rate per 100,000 people between 2000 and 2007. $Education_j/Education_i$ is the average of the percentage of the population 25 and over with at least a high school diploma between 2000 and 2007 for the United States and the average of 2000 and 2005 for Mexico.

Table 3: Components of Economic Freedom

Area 1: Size of Government
1A: General consumption expenditures by government as a percentage of GDP
1B: Transfers and subsidies as a percentage of GDP
Area 2: Takings and Discriminatory Taxation
2A: Total government revenue from own source as a percentage of GDP
2B: Top marginal income tax rate and the income threshold at which it applies
Area 3: Labor Market Freedom
3A: Minimum wage legislation (annual income earned by an individual divided by per-capita GDP)
3B: Government Employment as a percentage of total state/provincial employment
3C: Union density

Source: Ashby, Karabegovic, McMahon, and Bueno (2010)

Chapter 4: Empirical Results

Table 4 reports regressions for six estimators. Most regressions control for both state-of-origin and state-of-destination fixed effects. Due to severe collinearity, important variables are dropped when controlling for fixed effects in the two-stage least squares estimates. For this reason, the reported estimates for the two regressions employing two-stage least squares do not control for fixed effects. The instruments used are generally strong as demonstrated by the large F-statistics in the first stage regressions and relevant tests (Angrist and Pischke, 2009) and the Wald exogeneity test for the IV Tobit. The first stage regressions are reported in the Appendix.

The network effect measured by the number of previous immigrants demonstrates a robust positive relationship with immigration. According to the estimates, a one percent increase in the percentage of Mexicans is associated with an increase in migration between 1 and 10 percent. Distance yields the expected negative sign in all regressions. A 1 percent increase in distance is associated with between a 0.4 and 1.42 reduction in immigration. The positive coefficients on all but one regression for relative wages suggest that undocumented immigrants are attracted to U.S. states with higher wages. However, these results are statistically significant in only two regressions. The difference in employment growth demonstrates a statistically significant positive impact in the unscaled 2SLS regression and a negative impact in the two OLS regressions. Finally, Mexican immigrants appear to be attracted to U.S. states with relatively smaller populations. An increase in one percent in relative population is associated with a decrease between 0.45 to 4.50 percent in immigration.

Table 4: Regression Results

	Coefficients (Standard Errors)					
	Scaled OLS	Unscaled OLS	Scaled 2SLS	Unscaled 2SLS	Tobit	IV Tobit
Ln(Pop_j/Pop_i)	-4.17***	-4.49***	***-0.45*** **	***-0.37*** **	-1,879.10**	***-3,259.06***
	(0.46)	(0.54)	***(0.18)***	***(0.16)***	(857.03)	(***2,011.80***)
Ln ($Wages_j/Wages_i$)	8.22***	8.38***	***2.78***	***-0.12***	2,044.21	***17509.18***
	(1.67)	(1.87)	***(1.96)***	***(1.17)***	(3,773.20)	(***13,827.21***)
Employ. $Growth_j$-Employ. $Growth_i$	-1.60***	-1.73***	***0.06***	***0.31*** **	-421.39	***-1,778.67***
	(0.34)	(0.40)	***(0.24)***	***(0.15)***	(723.98)	(***1,829.82***)
Ln ($Unemploy_j/Unemploy_i$)	0.04	0.13	***1.56*** ***	***0.90*** ***	433.16	***-2010.86***
	(0.13)	(0.10)	***(0.50)***	***(0.25)***	(370.96)	(***1704.88***)
Ln $Mexican_j$	9.36***	10.08***	***0.73*** ***	***0.97*** ***	4,619.12***	***4,771.42*** **
	(0.82)	(0.97)	***(0.16)***	***(0.10)***	(1,421.29)	(***2,296.61***)
Ln $Distance_{ij}$	-1.25***	-1.42***	-0.90***	-0.44**	-1,087.36***	-1,077.45***
	(0.17)	(0.18)	(0.35)	(0.19)	(499.42)	(390.02)
Ln ($Temp_j/Temp_i$)	-16.23***	-17.74***	-0.92	-2.06***	-7,272.19***	-7,750.62
	(1.48)	(1.74)	(0.76)	(0.51)	(3,414.49)	(5,030.53)
Ln ($Precip._j/Precip_i$)	-1.29***	-1.49***	-0.05	0.37**	-1,106.61**	-59.66
	(0.33)	(0.38)	(0.29)	(0.18)	(506.30)	(1,238.23)
Rsquared	0.8779	0.8596	-	-	-	-
Destination Effects	Y	Y	N	N	Y	Y
Origin Effects	Y	Y	N	N	Y	Y
Observations	1600	1406	1600	1406	1600	1600

Dependent Variable: *Ln $Migration_{ij}$* for OLS and 2SLS; *$Migration_{ij}$* for Tobit . ***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions are run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. Variables treated endogenously are in bold and italics. Due to severe collinearity, 2SLS cannot be run with fixed effects while instrumenting for all endogenous variables.

The coefficient estimates for the IV Tobit are likely to be most reliable, but due to inflated standard errors caused by collinearity issues, it is difficult to infer the statistical significance of these estimates. In addition, the coefficients for the Tobit estimations, which are employed to deal with the censoring problem, cannot be interpreted in the same manner as the OLS and 2SLS coefficients because Tobit is a non-linear estimation technique.

Tables 5 and 6 show the results for the second set of regressions, where economic freedom and its components are added to the equation, the results are less reliable and less robust. Table 6 omits the

temperature, precipitation and creativity variables for the sake of conciseness, however, the variables are included in the actual regressions and the results are similar to the previous ones. Endogeneity is not controlled for due to the difficulty of finding enough reliable instrument variables, and due to multicollinearity some of the variables of interest are dropped from the equation when both origin and destination fixed effects are used. Again, these estimates should be interpreted with caution and be considered to signal association rather than causation.

For the variable *Ln (Transfers$_j$/Transfers$_i$)*, all the coefficients are negative and statistically significant at the 1% level, meaning that higher government transfers are negatively associated with unauthorized immigration. *Ln (Tax Revenues$_j$/Tax Revenues$_i$)* yields negative coefficents in all regressions and is statistically significant at least at the 10% level in all regressions. *Ln (Minimum Wages$_j$/Minimum Wages$_i$)* also presents interesting results; the coefficients are positive and generally significant. This indicates that higher relative minimum wages are associated with a higher level of unauthorized migration. The variables controlling for distance, social networks, and employment growth yield the expected results and are statistically significant in all the specifications.

Government transfers and subsidies as a percentage of GDP both demonstrate a significant negative impact on immigration. This is opposite to that which is found by Ashby (2007) which finds that domestic migrants move to states with higher government benefits. Immigrants are also attracted to states with lower tax revenues as a percentage of GDP. One of the major arguments made against liberalizing immigration for low-skilled workers is that individuals are immigrating to the United States to free ride off of government services provided in the United States. The evidence provided herein suggests that migrants are entering states which spend less as a percentage of total GDP and likely offer less government services while domestic migration tends towards states with higher government expenditures.

Table 5: Regression Results Including Economic Freedom

	Coefficients (Standard Errors)				
	Scaled OLS	Scaled OLS	Scaled OLS	Scaled OLS	Unscaled Tobit
$Ln(Pop_j/Pop_i)$	-0.69***	0.54***	0.13	-0.37***	-0.43***
	(0.04)	(0.06)	(0.12)	(0.04)	(0.05)
$Ln\ (Econ\ Freedom_j/Econ\ Freedom_i)$	-0.92***	0.81*	-	-.004	0.61*
	(0.28)	(0.43)	-	(0.27)	(0.32)
$Ln\ (Wages_j/Wages_i)$	1.53***	-0.64*	-	1.18***	1.13***
	(0.24)	(0.33)	-	(0.23)	(0.28)
$Employ.\ Growth_j$-$Employ.\ Growth_i$	0.11***	0.25***	0.58***	0.21***	0.26***
	(0.03)	(0.04)	(0.06)	(0.03)	(0.03)
$Ln\ (Unemploy_j/Unemploy_i)$	-0.01	0.15*	0.04	-0.04	-0.05
	(0.02)	(0.03)	(0.13)	(0.03)	(0.04)
$Ln\ (Education_j/Education_i)$	-1.96***	1.35	2.76***	-1.89***	-1.98***
	(0.17)	(1.01)	(0.41)	(0.18)	(0.21)
$Ln\ (Crime_j/Crime_i)$	0.41***	-0.22***	0.06	0.32***	0.41***
	(0.07)	(0.08)	(0.11)	(0.06)	(0.07)
$Ln\ Mexican_j$	1.20***	0.60***	0.86***	0.92***	0.98***
	(0.05)	(0.03)	(0.08)	(0.03)	(0.04)
Creativity	-0.87***	0.11	0.98***	0.14*	0.08
	(0.19)	(0.07)	(0.18)	(0.08)	(0.08)
$Ln\ Distance_{ij}$	-0.46***	-0.70***	-1.25***	-0.48***	-0.54***
	(0.12)	(0.13)	(0.17)	(0.09)	(0.11)
$Ln\ (Temp_j/Temp_i)$	-3.56***	0.36	-	-1.62***	-2.04***
	(0.39)	(0.29)	-	(0.24)	(0.31)
$Ln\ (Precip._j/Precip_i)$	0.14*	-0.17*	0.42**	0.24***	0.30***
	(0.06)	(0.08)	(0.18)	(0.05)	(0.06)
Rsquared	0.8358	0.8287	0.8779	0.7247	-
Destination Effects	Y	N	Y	N	N
Origin Effects	N	Y	Y	N	N
Observations	1600	1600	1600	1600	1406

Dependent Variable: $Ln\ Migration_{ij}$. ***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions are run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1.

Table 6: Regression Results Including Components

	Coefficients (Standard Errors)				
	Scaled OLS	Scaled OLS	Scaled OLS	Scaled OLS	Unscaled Tobit
Ln(Pop_j/Pop_i)	-1.06***	0.50***	-1.78***	-0.38***	-0.44***
	(0.06)	(0.06)	(0.14)	(0.05)	(0.06)
Ln (Government $cons_j$/Government $cons_i$)	-0.21*	.652**	2.50***	-0.15	-0.003
	(0.11)	(0.31)	(0.52)	(0.12)	(0.14)
Ln ($Transfers_j$/$Transfers_i$)	-0.29***	-1.46***	-1.96***	-0.33***	-0.40***
	(0.06)	(0.18)	(0.34)	(0.06)	(0.07)
Ln (Tax $Revenues_j$/Tax $Revenues_i$)	-0.13*	-1.45***	-0.16**	-0.12*	-.159**
	(0.06)	(0.38)	(0.08)	(0.06)	(0.08)
Ln Marginal Tax_j	-0.25	0.56***	-0.46	0.08	0.11
	(0.52)	(0.19)	(0.29)	(0.21)	(0.24)
Ln (Minimum $Wages_j$/Minimum $Wages_i$)	12.06***	0.61	-	1.98***	1.89***
	(1.84)	(0.39)	-	(0.19)	(0.22)
Ln (Government $Employment_j$/Government $Employment_i$)	-1.43***	-0.05	0.53*	0.03	0.13
	(0.19)	(0.35)	(0.30)	(0.16)	(0.18)
Ln (Union $Density_j$/Union $Density_i$)	0.29**	0.39***	-1.27***	0.06	0.08
	(0.13)	(0.10)	(0.21)	(0.08)	(0.09)
Ln ($Wages_j$/$Wages_i$)	-9.29***	-2.00***	-	.943***	0.94***
	(1.73)	(0.39)	-	(0.24)	(0.28)
Employ. $Growth_j$-Employ. $Growth_i$	0.05**	0.24***	0.20***	0.19***	0.22***
	(0.03)	(0.06)	(0.03)	(.02)	(0.03)
Ln ($Unemploy_j$/$Unemploy_i$)	0.0002	0.09	0.04	-0.05	-0.06*
	(0.03)	(0.10)	(0.13)	(0.04)	(0.04)
Ln ($Education_j$/$Education_i$)	-1.69***	-.089	-	-2.14***	-2.24***
	(0.22)	(1.02)	-	(0.10)	(0.23)
Ln ($Crime_j$/$Crime_i$)	0.49***	-0.12	-1.85***	0.29***	0.35***
	(0.08)	(0.09)	(0.23)	(0.06)	(0.07)
Ln $Mexican_j$	1.80***	0.57***	1.87***	0.93***	1.01***
	(0.12)	(0.03)	(0.09)	(0.03)	(0.04)
Ln $Distance_{ij}$	-0.47***	-1.02***	-1.25***	-0.54***	-0.62***
	(0.13)	(0.13)	(0.17)	(0.11)	(0.12)
Rsquared	0.8472	0.8422	0.8779	0.7476	-
Destination Effects	Y	N	Y	N	N
Origin Effects	N	Y	Y	N	N
Observations	1600	1600	1600	1600	1406

Dependent Variable: *Ln $Migration_{ij}$* . ***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions are run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. Variables treated endogenously are in bold and italics.

Chapter 5: Conclusion

The determinants of undocumented immigration between Mexican and U.S. states are analyzed in this study using new data provided by the Mexican consulate. These data are a valuable resource as they provide a good estimate of the destination and origin of many unauthorized immigrants from Mexico, a group which tends to be undercounted in census estimates.

Various estimation techniques are used to analyze the determinants of undocumented immigration from Mexico. The estimates suggest that immigrant networks and distance between states appear to be robustly associated with immigrant flows while weaker evidence is provided with regard to the relationship between immigration and wages.

In addition, government transfers and subsidies as a percentage of GDP demonstrate a significant negative association with immigration. This is opposite to the belief that immigrants seek higher government benefits. Immigrants may also be attracted to states with lower tax revenues as a percentage of GDP. Another interesting finding is the positive relationship between the minimum wage and immigration. It is reasonable that more restrictive minimum wage policies incentivize firms in high-minimum wage states may be more likely to seek undocumented workers due to their inability to hire residents at the legal minimum wage. These findings are consistent with Chiquiar and Hanson (2005) and Angrist and Kugler (2003) but contrary to the findings of Orrenius and Zavodny (2008). Another interpretation is that migrants tend to be more likely to work in minimum wage jobs and seek the states with higher minimum wages. For future research, as more years of data become available this exercise should be replicated using a panel data set.

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Appendix

Table A.1 First Stage Regressions for Table 4
Dependent Variable: *Ln (Popj/Popi)*

Variables	Scaled 2SLS	Unscaled 2SLS	IV Tobit
Ln Distance$_{ij}$	-0.05	0.02	-4.39e-08
	(0.07)	(0.08)	(1.01e-07)
Ln (Temperature$_j$/Temperature$_i$)	2.03***	1.82***	-1.07***
	(0.16)	(0.17)	(7.93e-07)
Ln (Precipitation$_j$/Precipitation$_i$)	-0.18***	-0.12***	-0.28***
	(0.04)	(0.04)	(2.01e-07)
Ln (Creativity$_j$)	1.03***	1.05***	0.60***
	(0.05)	(0.05)	(7.01e-07)
Ln (Economic Freedom$_j$/Economic Freedom$_i$)	-0.55***	-0.42*	6.58***
	(0.17)	(0.19)	(8.45e-07)
Ln (Mining_GDP$_j$)	0.22***	0.23***	-
	(0.02)	(0.02)	
Ln (Singleratio$_j$/Singlemother$_i$)	0.07	0.17*	1.56***
	(0.08)	(0.09)	(2.33e-07)
Ln (Female$_j$/Female$_i$)	-12.46***	-10.59***	-
	(1.34)	(1.45)	
Ln (Crime$_j$/Crime$_i$)	-0.14***	-0.13*	2.47***
	(0.05)	(0.05)	(3.67e-07)
F Statistic	133.52***	104.43***	.
Destination Fixed Effects	N	N	Y
Origin Fixed Effects	N	N	Y
Observations	1600	1406	1600

***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions were run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. The values of the standard errors are in parenthesis.

Table A.2 First Stage Regressions for Table 4

Table A.2 First Stage Regressions for Table 4

Dependent Variable: *Ln (Wagesj/Wagesi)*

Variables	Scaled 2SLS	Unscaled 2SLS	IV Tobit
Ln Distance$_{ij}$	0.07***	0.08***	-2.98e-08
	(0.01)	(0.01)	(5.38e-08)
Ln (Temperature$_j$/Temperature$_i$)	0.04	0.01	-1.31***
	(0.03)	(0.03)	(4.21e-07)
Ln (Precipitation$_j$/Precipitation$_i$)	0.04***	0.03***	0.24***
	(0.01)	(0.01)	(1.07e-07)
Ln (Creativity$_j$)	0.21***	0.22***	0.32***
	(0.01)	(0.01)	(3.72e-07)
Ln (Economic Freedom$_j$/Economic Freedom$_i$)	-0.22***	-0.28***	-0.25***
	(0.03)	(0.03)	(4.49e-07)
Ln (Mining_GDP$_j$)	0.005*	0.006*	-
	(0.003)	(0.003)	
Ln (Singleratio$_j$/Singlemother$_i$)	0.05***	0.05***	0.44***
	(0.01)	(0.02)	(1.24e-07)
Ln (Female$_j$/Female$_i$)	0.77***	0.67***	-
	(0.24)	(0.25)	
Ln (Crime$_j$/Crime$_i$)	0.05***	0.04***	-0.26***
	(0.008)	(0.009)	(1.95-07)
F Statistic	108.56***	93.53***	.
Destination Fixed Effects	N	N	Y
Origin Fixed Effects	N	N	Y
Observations	1600	1406	1600

***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions were run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. The values of the standard errors are in parenthesis.

Table A.3 First Stage Regressions for Table 4
Dependent Variable: *Employment Growthj-Employment Growthi*

Variables	Scaled 2SLS	Unscaled 2SLS	IV Tobit
Ln Distance$_{ij}$	-0.10	0.08	-2.57e-07
	(0.11)	(0.11)	(2.96e-07)
Ln (Temperature$_j$/Temperature$_i$)	0.22	0.47*	-6.71***
	(0.24)	(0.25)	(2.32e-06)
Ln (Precipitation$_j$/Precipitation$_i$)	-0.04	-0.12*	0.83***
	(0.06)	(0.06)	(5.88e-07)
Ln (Creativity$_j$)	0.36***	0.34***	3.42***
	(0.07)	(0.07)	(2.05e-06)
Ln (Economic Freedom$_j$/Economic Freedom$_i$)	-1.64***	-2.14***	-9.18***
	(0.26)	(0.28)	(2.47-06)
Ln (Mining_GDP$_j$)	-0.05*	-0.07*	-
	(0.02)	(0.03)	
Ln (Singleratio$_j$/Singlemother$_i$)	-0.54***	-0.37***	0.22***
	(0.13)	(0.13)	(6.80e-07)
Ln (Female$_j$/Female$_i$)	19.50***	21.26***	-
	(2.01)	(2.09)	
Ln (Crime$_j$/Crime$_i$)	0.43***	0.40***	-3.42***
	(0.07)	(0.07)	(1.07e-06)
F Statistic	27.49***	30.10***	.
Destination Fixed Effects	N	N	Y
Origin Fixed Effects	N	N	Y
Observations	1600	1406	1600

***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions were run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. The values of the standard errors are in parenthesis.

Table A.4 First Stage Regressions for Table 4

Dependent Variable: *Ln (Unemploymentj/Unemployment i)*

Variables	Scaled 2SLS	Unscaled 2SLS	IV Tobit
Ln Distance$_{ij}$	-0.03	-0.13	0.001
	(0.08)	(0.09)	(0.03)
Ln (Temperature$_j$/Temperature$_i$)	-0.30*	-0.42*	-4.14***
	(0.18)	(0.20)	(0.23)
Ln (Precipitation$_j$/Precipitation$_i$)	0.25***	0.27***	1.63***
	(0.04)	(0.05)	(0.06)
Ln (Creativity$_j$)	0.01	0.005	-0.07
	(0.05)	(0.06)	(0.21)
Ln (Economic Freedom$_j$/Economic Freedom$_i$)	0.51***	0.61***	-0.17
	(0.20)	(0.22)	(0.25)
Ln (Mining_GDP$_j$)	0.07***	0.06***	-
	(0.02)	(0.02)	
Ln (Singleratio$_j$/Singlemother$_i$)	-0.59***	-0.74***	1.77***
	(0.10)	(0.10)	(0.07)
Ln (Female$_j$/Female$_i$)	-0.44	-0.27	-
	(1.52)	(1.68)	
Ln (Crime$_j$/Crime$_i$)	0.28***	0.29***	-1.12***
	(0.05)	(0.06)	(0.11)
F Statistic	18.46***	16.18***	.
Destination Fixed Effects	N	N	Y
Origin Fixed Effects	N	N	Y
Observations	1600	1406	1600

***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions were run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. The values of the standard errors are in parenthesis.

Table A.5 First Stage Regressions for Table 4

Dependent Variable: $Ln\ Mexican_j$

Variables	Scaled 2SLS	Unscaled 2SLS	IV Tobit
$Ln\ Distance_{ij}$	-1.10***	-0.84***	-
	(0.09)	(0.09)	-
$Ln\ (Temperature_j/Temperature_i)$	2.89***	2.42***	-
	(0.20)	(0.20)	-
$Ln\ (Precipitation_j/Precipitation_i)$	-0.18***	-0.17***	-
	(0.05)	(0.05)	-
$Ln\ (Creativity_j)$	1.91***	1.84***	-
	(0.06)	(0.06)	-
$Ln\ (Economic\ Freedom_j/Economic\ Freedom_i)$	2.27***	1.75***	-
	(0.22)	(0.22)	-
$Ln\ (Mining\_GDP_j)$	0.19***	0.19***	-
	(0.02)	(0.02)	
$Ln\ (Singleratio_j/Singlemother_i)$	-0.50***	-0.26*	-
	(0.11)	(0.11)	-
$Ln\ (Female_j/Female_i)$	12.07***	15.54***	-
	(1.67)	(1.69)	
$Ln\ (Crime_j/Crime_i)$	0.79**	0.64***	-
	(0.06)	(0.06)	-
F Statistic	223.51***	266.83***	.
Destination Fixed Effects	N	N	Y
Origin Fixed Effects	N	N	Y
Observations	1600	1406	1600

***indicates 1%, ** indicates 5%, and * indicates 10% probability for a two-tailed test. Regressions were run using robust standard errors adjusted for heteroskedasticity in STATA Version 11.1. The values of the standard errors are in parenthesis.

Table A.6 Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	*Ln (Migration$_{ij}$)*	1															
2	*Scaled Ln (Migration$_{ij}$)*	1.00	1.00														
3	*Ln(Popj/Popi)*	0.17	0.27	1.00													
4	*Ln (Wages$_j$/Wages$_i$)*	0.10	0.17	0.39	1.00												
5	*Employment Growth$_j$-Employment Growth$_i$*	0.37	0.37	-0.26	0.11	1.00											
6	*Ln (Unemployment$_j$/Unemployment$_i$)*	0.12	0.14	0.11	0.25	-0.04	1.00										
7	*Ln Mexican$_i$*	0.68	0.76	0.61	0.28	0.15	0.13	1.00									
8	*Ln (Temperature$_j$/Temperature$_i$)*	0.06	0.17	0.38	0.07	-0.04	0.05	0.36	1.00								
9	*Ln (Precipitation$_j$/Precipitation$_i$)*	-0.04	0.05	0.10	0.22	-0.13	0.14	-0.06	0.31	1.00							
10	*Ln Distance$_{ij}$*	-0.22	-0.27	-0.21	0.15	0.04	-0.01	-0.34	-0.33	0.00	1.00						
11	*Ln (Economic Freedom$_j$/Economic Freedom$_i$)*	0.14	0.18	0.01	-0.08	-0.10	0.03	0.27	-0.05	-0.19	-0.04	1.00					
12	*Ln (Creativityj)*	0.34	0.37	0.42	0.54	0.08	0.04	0.51	-0.01	0.08	0.10	0.19	1.00				
13	*Ln (Crime$_j$/Crime$_i$)*	0.31	0.41	0.29	0.18	0.09	0.21	0.44	0.41	0.21	-0.23	-0.10	0.07	1.00			
14	*Ln (Mining_GDP$_j$)*	0.35	0.36	0.31	-0.05	0.10	0.14	0.45	0.18	-0.18	-0.41	0.03	-0.04	0.47	1.00		
15	*Ln (Singleratio$_j$/Singlemother$_i$)*	-0.05	-0.03	0.17	0.02	-0.16	-0.12	0.09	0.26	0.11	-0.45	-0.01	-0.01	0.16	0.10	1.00	
16	*Ln (Female$_j$/Female$_i$)*	0.17	0.05	-0.24	-0.13	0.25	-0.06	0.05	-0.35	-0.60	0.09	0.14	-0.08	-0.29	0.22	-0.27	1.00

Vita

Avilia Bueno received her Bachelor of Business Administration, majoring in Economics and Marketing in 2010 from The University of Texas at El Paso. During her undergraduate studies she worked as a research assistant for Dr. Nathan Ashby. After finishing her undergraduate degree she enrolled again at UTEP to obtain her Master of Science in Economics. During this period she worked as a teaching assistant in the Department of Economics and Finance. She is currently the Sr. research analyst at the El Paso Branch of the Federal Reserve Bank of Dallas.

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