DOES ECONOMIC FREEDOM LEAD TO SELECTIVE MIGRATION BY EDUCATION?

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Abstract

Using a spatial Durbin model (SDM), we estimate the migratory response of those with various levels of education to state differences in economic freedom. We find that states with greater overall economic freedom attract those with a secondary education and, to a lesser extent, those with some college experience. States with greater government expenditures as a percent of Gross State Product witness a net in-migration of those with college experience and outmigration of those with only an elementary education. The opposite is true for transfers and subsidies. States with greater union density witness non-selective out-migration.

JEL codes: H77, J11, R23

Keywords: intergovernmental relations, selective migration, economic freedom, education

Running Head: Economic Freedom and Migration by Education

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1. Introduction

Tiebout's 1956 paper explains why people "vote with their feet" and move "to that community whose local government best satisfies [their] set of preferences." Following Tiebout's insight, a vast literature exists on how policy differences and changes alter both the number and characteristics of those who live in a jurisdiction (Greenwood 1997). One line of research focuses on the overall migratory response to differences in economic and political freedom (Ashby, 2007; Barkley and McMillan, 1994). These works have not, however, looked at whether the migratory response to economic freedom differs on the basis of the potential migrants' educational background.

Policymakers in states such as California and Pennsylvania are particularly concerned about "brain drain" or the out-migration pattern of highly skilled college graduates (Johnson and Reed, 2007). Meanwhile other states, such as Colorado, have been touting the net inflows of college graduates (Metro Denver Economic Development Corporation, 2010). States, such as Maine, have instituted college loan repayment plans for some college graduates that stay and work in Maine upon graduation (Opportunity Maine, 2010). Pennsylvania developed the "Stay and Invent the Future" grant program for businesses to promote regional opportunities for recent graduates (Stay Invent Central Pennsylvania, 2010). The selective migration that these programs seek to address may be associated with overall differences in the economic freedom granted to citizens of various states.

Using data on migrants by educational level from the Integrated Public Use Microdata Series (IPUMS) 2000 Census, we show that states that score higher in an economic freedom index attract individuals with at most a secondary education and, to a lesser extent, those with some college experience. States with greater government expenditures as a percent of Gross State Product (GSP) witness an in-migration of those

with college experience and an out-migration of those with only an elementary education. The opposite is true for transfers and subsidies. States with greater union representation witness a net out-migration of individuals from all three education categories: elementary, secondary, and at least some college.

The underlying determinants that attract or repel potential migrants to or from one state may induce regional spillovers that affect migration patterns of neighboring states. Given our estimation strategy, we also find that polices of bordering states appear to influence the composition of a state's migrants. Approximately 23 percent of the total migratory response of those with a secondary education is due to the economic freedom of neighboring states. For those with some college education the percent of the response increases to 29 percent.

The following section discusses previous work on the economic determinants of migration as well as the relationship between economic freedom and migration. The third section discusses the spatial Durbin estimation methodology. Section IV introduces the data and discusses the components of the economic freedom index. Section V presents the results of the estimation using the overall economic freedom index; section VI presents the results using the components of the economic freedom index. Policy implications are discussed in the conclusion.

2. Propensity to Migrate, Selective Migration, and Economic Freedom

Much of the research on migration looks at the relationship between an individual or household's characteristics and their *overall* propensity to migrate (Greenwood, 1975, 1985, 1997; Cadwallader, 1992; Cebula, 1974; Plane and Bitter, 1997; Cushing and Poot, 2003; Shefer and Primo (1985). For instance, those with higher levels of education are more likely to migrate (Carrington and Detraigache, 1998; Docquier and Marfouk, 2004).

Another vein of the migration literature examines the magnitude of migration in response to policy differences. Some studies have examined how individuals' residential choices are affected by state and local taxes, typically finding that people move away from places with higher taxes (Hamilton, 1976; Islam, 1989). Barkley and Macmillan (1994) examine the migration from rural areas into the cities within 32 African countries. They find that civil liberties do not impact migration directly, but do interact with economic incentives to change the rate of migration out of agriculture. Ashby (2007) notes that the variation in economic freedom across the contiguous U.S. states helps explain the overall rates of migration. He finds that states with greater economic freedom attract new residents through economic freedom's effect on income and employment growth. Ashby argues that individuals are particularly responsive to the size of government, tax rates, and labor market characteristics such as union concentration and the minimum wage. Borjas, Bronars, and Trejo (1991) find that "interstate differences in return to skills [are] a major determinant of both the size and skill composition of internal migration flows" in the United States.

Other researchers have looked at how differences or changes in government policy attract or repel individuals with certain characteristics. One line of selective migration research looks the response to policies by those of various ages. The elderly migrate due to property tax policies, particularly to avoid school taxes, and are less likely to make within-state moves in states that have stricter school finance equalization (Shan, 2010; Farnham and Sevak, 2006). The elderly also respond favorably to estate tax laws that enable higher bequests to their beneficiaries upon their death (Bakija and Slemrod, 2004). Though other studies find the causality to run in the other direction (Rork and Conway, 2006).

Another prominent example of selective migration is the black Great Migration in the early half of the twentieth century. Studies, such as Margo (1990) and Hamilton (1959) of black migration have shown that "blacks with education levels higher than the median for their state and age cohort were more likely to exit the South than those with below-median education" (Vidgor, 2002). Their migration was large enough to have significant effects on the wages of the areas they migrated to (Vigdor, 2002; Boustan, 2009). In addition, selective migration can be used to explain how the relationship between segregation and the outcomes of blacks changes over time (Vigdor, 2002).

We are not the first to consider the relationship between migration, economic freedom, and education. Byars et al. (1999) develop an index of varying economic freedom among the 50 US states. To assess their index's usefulness, they estimate the effect of economic freedom on migration between the states. They find that people are moving away from states with less economic freedom to states that have more economic freedom. In addition, they include a control for of the average level of education in their regression, and find that, controlling for economic freedom, education has a negative but insignificant relationship with migration into a state. As noted earlier, Ashby (2007) also finds that economic freedom attracts migrants. Ashby and Sobel (2008) analyze data on economic freedom and income and conclude that states with higher levels of economic freedom have a larger percentage of their populations in the highest income quintile of US population (Ashby and Sobel, 2008). We expand on Asbhy (2007) by looking at whether economic freedom attracts those with various levels of schooling: elementary, secondary, and college.

Economic freedom indices, such as the one we use here, are an attempt to describe the overall economic policies of a state.[1] Policy makers can only affect their level of economic freedom by changing individual policies. Therefore, we also disaggregate the economic freedom index into its components to determine what policies, or at least policy areas, are driving the migratory response of individuals with various levels of schooling. By looking at the selective migratory response to components of the index, we are also seeking to determine how those with different levels of schooling view various components of the economic freedom index. Given that a number of the components measure transfers from one group to another, those in one educational category may view some elements favorably while viewing other components less favorably. For instance, tax transfers to those with less schooling might decrease the economic freedom of those in other groups, but may be viewed favorably by those with less schooling.

3. Methodology

We use a modified gravity equation to estimate the effect of economic freedom on migration. Following the line of Newtonian Physics, the gravity model of migration specifies trade as a positive function of the attractive "mass" or size of two economies and a negative function of their distance.[2] However, migration due to economic freedom, its various components, as well as other policies, in one state may affect migration patterns in neighboring states. For instance, a policy change in Pennsylvania that enhances employment opportunities may result in additional migrants into neighboring New Jersey (Card and Krueger, 1994). This can take place through two possible effects.

[1] Hall and Lawson (2011) discuss the causes and consequences of economic freedom.
[2] Although gravity models play a major role in empirical work on migration, see Hua and Porell (1979) for a critical review of their use.

At the industry level additional migrants may arrive through agglomeration effects: input sharing (Goldstein and Gronberg, 1984), knowledge spillovers (Glaeser, 1999), and labor market pooling (Helsley and Strange, 1990).[3] Second, this can occur at the household level. Even though the employment opportunity may be located in Pennsylvania, the choice of where to live, say in New Jersey, will be based on how an individual household values the bundle of amenities available to residents nearby the job opportunity. Although the value received from local amenities in New Jersey determine exactly where the individual household resides; it was the change in Pennsylvanian policy that motivated the household to relocate.

Given that state net migration may depend on neighboring state policies, this spatial dependency violates the conventional Gauss-Markov regression assumption of independence between disturbance term observations. Therefore, ordinary least squares regression models produce biased estimates, since they do not allow for spatial spillovers. We use a spatial Durbin regression model (SDM) that allows for spatial spillover effects and accounts for omitted variable bias (LeSage and Pace, 2009).

Following the notation of Kirby and LeSage (2009), the autoregressive process shown in Equation (1) models the structure of dependence between state net migrations observations.[4]

$$y = \alpha i_n + \rho W y + \varepsilon \qquad \text{(Equation 1)}$$

The dependent variable y represents an n×1 vector containing our measure migration: a log odds ratio of the number of migrants from state i to state j or $Ln\left[\frac{(Migrationrate_{ij})}{1-(Migrationrate_{ij})}\right]$. In Equation 1, the subscript n=1,…,2304 represents the

[3] Quigley 1998 discusses the theoretical literature on the micro-foundations of agglomeration economies.
[4] Much of this discussion is drawn from LeSage and Pace (2009) and Kirby and LeSage (2009).

number of observations; the scalar parameter α and associated n×1 vector i_n of ones reflect an intercept term in the relationship, since net migration has a non-zero mean. The n×1 vector ε represents a disturbance term that we assume follows a normal distribution with zero mean and constant scalar variance. The scalar parameter ρ reflects the average or overall strength of spatial dependence between observations in the sample. Thus if ρ = 0, the regression equation would result in a non-spatial regression equation.

The weight matrix *W* is based on the spatial configuration of states. The *W* matrix is developed from a binary indicator matrix that contains ones when a state borders another and zeros when states do not. This matrix is then row-normalized so that the sum of the rows equals one, generating the *W* matrix.

For example, if we are interested in the migratory effects for only five states: Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin, respectively, we would use the map below to determine *W*:

Keeping the states in alphabetical order- IA, MN, ND, SD, WI- the first-order contiguity matrix would produce the following matrix:

$$W = \begin{pmatrix} 0 & 1/3 & 0 & 1/3 & 1/3 \\ 1/4 & 0 & 1/4 & 1/4 & 1/4 \\ 0 & 1/2 & 0 & 1/2 & 0 \\ 1/3 & 1/3 & 1/3 & 0 & 0 \\ 1/2 & 1/2 & 0 & 0 & 0 \end{pmatrix} \qquad \text{(Equation 2)}$$

The matrix uses non-zero values in columns *j* for states that have borders touching each state in row *i*. The non-zero values take the value *1/k*, where *k* represents the total number of bordering state for state *i*.

We then matrix multiply *W* times the variable vector *y* to produce a spatial autoregressive relationship. The matrix multiplication results in a *k×1* vector *Wy* where each observation represents an average of *y*-values from neighboring state/observations. Continuing with the five state example above, the *Wy* matrix is:

$$Wy = \begin{pmatrix} (y_{mn} + y_{sd} + y_{wi})/3 \\ (y_{ia} + y_{nd} + y_{sd} + y_{wi})/4 \\ (y_{mn} + y_{sd})/2 \\ (y_{ia} + y_{mn} + y_{sd})/3 \\ (y_{ia} + y_{mn})/2 \end{pmatrix} \qquad \text{(Equation 3)}$$

Equation 1 can then be used to produce a spatial autoregressive model as Equation 4:

$$y = \rho Wy + X\beta + \varepsilon \qquad \text{(Equation 4)}$$

This spatial autoregressive estimator accounts for both the direct effect and indirect effect of a change an explanatory variable in state *i.* The direct effect is the effect state *i*'s explanatory variable has on state *i*'s dependent variable. While, the indirect effect is the effect of all state $k \neq i$'s explanatory variable on state *i*'s dependent variable. To identify the direct and indirect effects separately, we turn to a modified spatial Durbin model (SDM).

A traditional spatial Durbin model (SDM) with omitted variables that exhibit spatial dependence and are correlated with the vector of independent variables results in

biased coefficient estimates (LeSage and Pace, 2009 and Kirby and LeSage, 2009). Therefore, to disaggregate the direct and indirect effects and account for possible omitted variable bias, we use the spatial Durbin model (SDM) that contains a spatial lag of the dependent variable, *Wy*, and a spatial lag of the independent variable vector, *WX*:

$$y = \rho Wy + \beta_1 X + \beta_2 WX + \varepsilon \quad \text{(Equation 5)}.$$

LeSage and Pace (2009) show that the interpretation of vectors β_1 and β_2 is unique in the SDM model. In conventional regression models we assume that observations *i* of the dependent variable *y* depends on *i* observations of the exogenous variables in vector *X*. Therefore, the *rth* parameter from vector β, β_r, is the partial derivative of *y* with respect to a change in the *rth* explanatory variable. However, in the SDM model, the dependent variable for state *i* depends on the dependent variable values from other states $i \neq j$ and values from the explanatory variables *WX* from neighboring states as well. Thus we follow LeSage and Pace (2009) and use scalar summary measures of the partial derivatives so that we are able to disaggregate the total effects into the direct and indirect effects. In our estimation, the direct effect is the measured gross migration from state *i* to *j* due the relative differences in state *i* and state *j*'s explanatory variables. This direct effect enables us to determine how a state's own policies affect the state's in-migration. The indirect effect, or migratory spillover effect, is the measured gross migration from state *i* to all other states $k \neq j$ due the relative differences in state *i* and state *j*'s explanatory variables. This indirect effect measure enables us to determine how differences in state *i* and *j*'s policies affect neighboring states' $k \neq j$ in-migration.[5]

[5] Drawn from Kirby and LeSage (2009), we can formally show the "partial derivative of y_i with respect to changes in observations *i* and *j* for the *rth* explanatory variable of the model. For the SDM model in the simple case of a single explanatory variable we can express the [data generating process] as…:"

$$(I_n - \rho W)y = x\beta + Wx\theta + \varepsilon$$

$$y = S(W)x + V(W)\varepsilon$$

Gravity models typically do not include the origin as a possible destination. Spatial estimation, however, requires the weighted matrix, W, to be square. Thus we include the origin as a possible destination. This gives forty-eight destinations for forty-eight origins. We also include the variable $Stay_{ij}$, which equals 1 when origin and destination are the same state, i.e. when $i=j$, and the variable, $Move_{ij}$, when the origin is different from the destination, i.e. $i \neq j$, to separate out the effects of internal state migration.[6]

To determine the statistical significance of the estimates, we use a Bayesian Markov Chain Monte Carlo (MCMC) estimation method from LeSage (1997) and validated by Gelfand and Smith (1990) and Gelfand et al. (1990) for non-linear functions of these parameters. This methodology extends Ashby's findings in three ways: first, we control for possible omitted variable bias; second, we are able to disaggregate the total effect into the direct and indirect effects; and third we consider selective migration by

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$S(W) = V(W)(I_n \beta + W\theta)$

$V(W) = (I_n - \rho W)^{1-}$

$V(W) = I_n + \rho W + \rho^2 W^2 + \rho^3 W^3 \ldots$

It follows that $\frac{\partial E(y_i)}{\partial x_j} = S(W)_{ij}$

Where $S(W)_{ij}$ represents the *ij*th element of the matrix *S(W)*. LeSage and Pace (2009) propose that the direct effect of state *i* characteristics and policy changes on net migration of state *i* can be measured by using the average of the diagonal elements $S(W)_{ii} = \frac{\partial E(y_i)}{\partial x_i}$. To determine the indirect effect of state *j* characteristics and policy changes on net migration of state $i \neq j$, or the cross-partial derivative, $S(W)_{ij} = \frac{\partial E(y_i)}{\partial x_j}$ can be found by averaging the off-diagonal elements in each row and then averaging over all rows.

[6] Because these two variables would be perfectly collinear with the intercept, we exclude the intercept from the regression.

education by estimating the same regression above separately for three educational groups: elementary, secondary, and college.[7]

4. Data

The data on migration by level of education come from the IPUMS five percent sample of the 2000 census (Ruggles, et. al. 2009). The migration data returns the number of persons who lived in origin state, *i*, in 1995 and migrated and lived in destination state, *j*, during 2000. Following Schultz (1982), we specify a polychotomous logistic method to estimate the gravity equation. The dependent variable is a log odds ratio generated by taking the log of the probability of migrating from state *i* to state *j* divided by the rate of non-migration between state *i* and *j* between 1995 and 2000. For Table 2, $\text{Migrationrate}_{ij}$ is found by taking the number of migrants from state *i* to state *j* between 1995 and 2000 and dividing by the potential migrant population in state *i* in 1995. The resulting values can be interpreted as log of the odds that a citizen will migrate from state *i* to state *j*. Therefore, for every two-state combination there are two observations, totaling 2,304 observations for the 48 contiguous states.[8]

We estimate Equation 5 separately for each of the three educational attainment groups. Elementary migrants are individuals whose highest level of educational exposure is between first and eighth grade. Secondary migrants are those with nine to twelve years of schooling and include those with high school diplomas or GEDs but no college. The remaining category, college, includes those who have been exposed to some college.

[7] To the degree that migration and some of the elements of economic freedom are determined jointly, some endogeneity bias may remain.

[8] One potential source of bias can arise when zeroes are present in the underlying variables used to construct natural logs for use in the gravity estimation equation. Luckily, all state migration pairs have a value greater than zero.

Each group only includes those migrants aged 18 to 65 who are not in school during the 2000 Census year.[9]

The independent variables measure the relative differences between state *i* and *j* in various characteristics. The economic freedom and its components come from the 2005 Economic Freedom of North America publication written by Fred McMahon, Amela Karabegovic, and Glenn Mitchell and published by the Fraser Institute.[10] Though there are other studies on the economic freedom of the US states, we use the same source as Ashby (2007) and construct the relative economic freedom measure, *EconFreedom*, in a similar manner in order to make our results more comparable. Since our study examines migration between the years 1995 and 2000, we use the measure of economic freedom that would have been available to potential migrants: the average amount of economic freedom in the state from 1990-1995, shown in Table 1. The index, ranging from the least free, Montana at 5.37, to the most free, Delaware at 7.97, gives each state a number that describes that state's relative level of economic freedom. Using economic freedom measures for the five years before migration reduces, but does not eliminate, potential endogeneity.

The components of the economic freedom index, listed in Appendix A, are based on Karabegovic et. al. (2005) and grouped into three broad categories: the size of government; takings and taxation; and labor market freedom. The first three components

[9] By excluding the population who are in college in 2000, we are excluding current out-of-state students enrolled in college. It might be the case that a fraction of residents may have moved to a state to enroll in a college between 1995 and 2000 and stayed in their new state upon graduation. However, only 63 percent of high-school graduates enrolled in college, and less than 50 percent enrolled in four-year colleges. Of high-school graduates who attended 4-year non-profit institutions in this period, only about 16 percent attended college outside of their home states (NCES 2003). So although a portion of high-school graduates are highly mobile, they are still less than 14percent of all high-school graduates. Although these students are concentrated in the smaller states in the Northeast, the states losing the most students to attend college out-of-state are New Jersey and Illinois, and the biggest gainers are Pennsylvania, Massachusetts, and Florida.

[10] The most recent version, *Economic Freedom of North America* (Ashby, Bueno, and McMahon, 2011) includes measures of economic freedom of Canadian Provinces and Mexican states as well. For more information on economic freedom and quality of life worldwide see Gwartney, Lawson, and Hall (2011) and Miller, Holmes, and Feulner (2012).

fall under the size of government category: the variable *GovtSize* is generated from the general consumption expenditures by government as a percentage of GSP; the variable *Transfers* is generated using the transfers and subsidies as a percentage of GSP; and the variable *SocialSecurity* comes from the state social security payments as a percentage of GSP (these include employment insurance, workers compensation, and other pensions). Four components are included in the takings and taxation category. The variable *TaxRevenue* is constructed using the total tax burden as a percentage of GSP and includes income taxes, consumption taxes, property and sales taxes, contributions to social security plans, and other taxes. The second variable, *MarginalTax*, is generated from an index based on the top marginal income tax rate and the income threshold at which it applies. Because the third and fourth component of the takings and taxation category contains items used to construct the *TaxRevenue* variable, the third and fourth component are not included in the analysis. The final three components, categorized under labor market freedom, are used to construct the final three variables: *MinWage* uses annual income earned by a minimum-wage worker divided by per-capita GSP; *GovtEmploy* is generated from government employment as a percentage of total state employment; and *Union*, is constructed from a state's union density.

Our hypothesis is that states with greater economic freedom will realize greater in-migration than those with less. Many studies, including but not limited to, Gwartney, Lawson, and Gartzke (2005) and Miles et. Al. (2006), find a positive link between economic freedom and quality of life. If greater economic freedom increases overall quality of life, we should find greater in-migration to states with greater economic freedom. We also hypothesize that larger state governments and more extensive employment insurance will raise the cost of hiring employees, and thus reduce the number of jobs available for potential migrants. With higher taxes and thus a smaller net

return to risk and investment, we expect less in-migration into states with higher tax rates and revenues. Finally, we expect less state in-migration for states with higher minimum wages, more government employees, and greater union density. However, we can also envision some educational groups viewing certain polices as a net benefit. Therefore we can also envision some policies, such as government transfers, as raising the net in-migration of members of certain educational cohorts.

In addition to measures of economic freedom, the regression controls for other state characteristics that may be correlated with an individual's choice of where to migrate. These controls include the log of the population ratio between the states, *Pop*, and the log of the density ratio, *Density*, because individuals of different educational levels may have different preferences for urbanity.[11] We include a measure of the difference in size of the retired populations, *Retired*; the ratio of the days in a year where heating is necessary, *Temp*; and the ratio of the amount of precipitation, *Wetness*. To capture of the cost of moving, we include the *Distance* between the two states and this distance squared, *Distance2*. As previously mention, we include the variable $Stay_{ij}$, which equals 1 when origin and destination are the same state, i.e. when $i=j$, and the variable, $Move_{ij}$, when the origin is different from the destination, i.e. $i \neq j$, to separate out the effects of internal state migration. In a subset of regressions, we also include the log of the income ratio, *Income*, and the difference in the growth rate of employment, *Employgrowth*, because we expect individuals to migrate toward places with more easily available and higher paying jobs. However, the presence of these jobs may also be a

[11] We follow Ashby (2007) and use the logs of these measures.

result of greater economic freedom.[12] Summary statistics for these explanatory variables, excluding *Stay* and *Move*, are shown in Table 2.

5. Estimating the Effects of Economic Freedom on Selective Migration

To determine the migratory response to differences in economic freedom, we estimate Equation 5 separately for each education category. We use 4500 draws from the MCMC estimation procedure to calculate a standard deviation from the posterior distribution of the effects estimates. We then construct an associated pseudo t-statistic, shown in parentheses below the estimated coefficient, and marginal probability or p-level using this constructed standard deviation. These enable us to draw an inference of whether the estimated effect is significantly different from zero. The results for each group are shown in separate tables. The dependent variable in the estimation in Table 3 is the log odds ratio of migrants from state *i* to state *j* who have no more than an elementary education. We focus on the first three columns of results showing the direct, indirect, and total effects for these regressions without controlling for relative income and relative employment growth in the two states. The next three columns show the results for the same estimation with controls for the relative income and employment growth between the two states.[13] The results suggest that economic freedom as tallied in the aggregate index has no significant relationship to the migration choices of those with an elementary education. The few variables that are most significant represent items that the

[12] Economic theory predicts that greater economic freedom is associated with greater income and employment growth. If one includes income and employment growth along with economic freedom, the indirect effect of economic freedom through employment growth and income is no longer captured by the estimated coefficient economic freedom, but on the coefficients for income and employment growth.

[13] In order to capture both the direct and indirect effects of economic freedom, we follow Ashby (2007) and concentrate our analysis on the columns excluding income and employment growth. See footnote 3 for more details.

governments can do little about: elementary educated migrants tend to migrate to areas that are less populous and have cooler temperatures.

Table 4 reports the estimation for those with at least some secondary-level education. Greater relative economic freedom attracts those with a secondary education. Our estimate of the direct effect of economic freedom is about 25 percent smaller than Ashby's estimate (0.906 versus 1.271), meaning that a state's own policies only account for 75 percent of the full impact of economic freedom on migration. There are two differences between these two estimates: first, ours uses only those with a secondary education, while Ashby's uses the whole population, and second, ours is only the direct effect, while Ashby's is a combination of direct and indirect effects. Once indirect effects are included, we get a similar estimate of 1.171. The magnitude of the indirect effect is almost 30 percent of the total effect: the economic freedom of a state's neighbors is associated with about 30 percent of the total effect of economic freedom on migration. Finally, a few factors that states are unable to control are also significant predictors of migration: those with secondary educations tend to migrate towards states with large populations, low densities, and relatively high amounts of rainfall.

Table 5 presents the results of the same estimation for those with at least some college education. Potentially these results are of most interest to policy makers because, of our three population groups, this educational group is most often associated with higher levels of productivity and creativity. We find that those with at least some college education migrate toward states with greater economic freedom. They are less responsive than those in the secondary education group, though the difference is not statistically significant. The direct effect of a state's economic freedom appears to play a smaller role in the migratory response of those with some college relative to those with a secondary education. The indirect effect is similar in magnitude to the direct effect and represents

over 40 percent of the total effect, meaning that the indirect effect is relatively more important for the more highly educated population. Individuals who have attended college may be more informed or are more likely to investigate the characteristics of not just their future state of employment, but also neighboring states that can serve as their state of residence. The estimates respond to the inclusion of income and employment growth in a similar way to those in the previous set of estimates, suggesting that much of the effect of economic freedom stems from its effect on income and employment.

Tables 6 and 7 test whether the estimates in Tables 3, 4, and 5 are significantly different from each other. Table 6 includes income and employment growth, while Table 7 does not. Both reveal a similar pattern. Panel A tests whether the migratory response by those with an elementary education is different from those with a secondary education; panel B tests whether the response is statistically different for those with an elementary education than for those with a college education; and panel C tests whether the response by secondary educated migrants is statistically different than college educated migrants. The overall results suggest that the relationship between migration and economic freedom are significantly different for those with an elementary level education than those from the other two groups. Secondary- and college- exposed migrants are similarly attracted to states with greater levels of economic freedom. These results suggest that a state can craft policies that enhance economic freedom to increase the percentage of its population with a college education. If a state's neighbors have a low level of economic freedom, a state can still improve the education level of its in-migrants by increasing its economic freedom, but its effects will be dampened by the policies of its neighbors. An entire region can coordinate and increase its freedom together and improve not only each state's in-migration through a state's own policies, but through the positive spillovers from its neighbors.

6. Estimating the Effects of the Economic Freedom Components on Selective Migration

The economic freedom index, as described in the previous section, is comprised of several components. These include measures of the size of government, transfers and subsidies, social security and welfare, tax revenue, marginal tax rates, the minimum wages, the fraction of the labor force employed by government, and union concentration. If a state policy maker wants to impact a state's overall index, he can only do that by making changes to its underlying elements. The impact of making changes to these may be larger for some elements than for others. The list of components that make up the index is long, so it would be valuable to know which ones to focus on. Therefore, in Tables 8 through 10 we use the same educational based migration dependent variables as those in Tables 3 through 5, respectively, but replace the economic freedom index with its component measures. These estimates are of particular value to state policymakers: finding which particular policies increase the migration of the desired populations.[14]

Table 8 shows that the components that attract those with an elementary education are government transfers, tax revenue, and to a lesser extent, government employment. Those with low levels of education are likely to represent a large fraction of those with low incomes and are therefore more likely to be eligible for transfer programs such as food stamps and Section 8 housing assistance. Thus, states with more generous transfer programs are likely to attract those with an elementary education. Components of the economic freedom index that appear to repel those with an elementary education are increases in government expenditures and union concentration. Holding transfers

[14] As before, the significance of the component measures is less responsive to the inclusion of measures of income and employment.

constant, it appears that general government expenditures, on schools, parks, and the like do not attract elementary educated migrants. The sign on the minimum wage, though negative, is estimated imprecisely. One possible reason for our lack of precision may come from Cadena (2010) who argues that newly arrived immigrants, particularly ones with low levels of education, migrate away from states at greater rates than natives when the minimum wage increases. Because we only include individuals who are present in the United States for both 1995 and 2000, we do not observe the migration of newly arrived immigrants. Holding constant the portion of the labor force that works for the government, elementary educated workers flee states with greater union density. Unions typically prefer the interests of their members. Union members usually possess specialized skills and, more importantly, a greater level of specialized education than new, unskilled entrants.

Table 9 estimates the migratory response by those with at least some high-school education to state differences in the components of the economic freedom index. Security payments, in the form of employment insurance and workers compensation, attract those with some high school exposure. High school educated workers are more likely to be employed in industries with large swings in demand that require physical activity; therefore they are likely to place greater importance employment insurance and workers' compensation. States with a higher minimum wage and greater union density also appear to lose high-school educated migrants.

Table 10 estimates the relationship between economic freedom components and the migration of those with at least some exposure to college. The preferences of this group are quite different than those with only an elementary education: college exposed individuals prefer a higher level of government expenditures and a lower level of transfers. Individuals with some college are likely to have higher incomes and be

ineligible for transfer payments such as welfare payments, food stamps, housing assistance, and the like. However, they appear to value other sorts of government expenditures, such as state parks, increased automation at government offices, and higher schools spending. In addition, the indirect effects are small in magnitude compared to the direct effect of these components.

Tables 11 and 12 report the tests of whether the migratory responses by those with elementary, secondary, and college education to various components of the economic freedom index are statistically different from each other. Table 11 reports whether these responses are statistically significant when income and employment measures are included. Table 12 reports whether the responses are statistically significant when income and employment measures are not included. Focusing on the components suggests that state policy makers who want to increase the in-migration of those with higher levels of education should increase the provision of government services while reducing the size of transfers. Table 11 also shows that these elementary- and college-exposed individuals have significantly opposite responses to the size of the government employment. Those with an elementary education are attracted to states whose governments hire more employees; migrants with college experience prefer the opposite. In addition, the effects of an increase in tax revenue are significantly different for these two groups. An increase in tax revenue encourages in-migration of those with an elementary education.

There are fewer significant differences in the estimated effects of those with secondary education when compared to those with a college education. Those with a secondary education are attracted to states with more generous unemployment insurance and workers compensation, while those with some college experience are not. In addition, although both groups are attracted to states with relatively more state

government spending, college educated individuals are significantly more responsive to states with greater government spending than their high school educated counterparts.

7. Policy Implications and Conclusion

Although we have focused much of the discussion in terms of the willingness of individuals to move, migration decisions are not entirely up to the individual alone. These migration measures are interactions of human relations between both the potential employee and state policy and the potential employer and state policy. Thus, while we address migration mostly from the point of view of the potential worker, we must also note that, to the extent that the move is job related, a migration decision is also determined by an employer's choice to locate in a specific state (Hua and Porell, 1979). In addition, our methodology only allows us to measure migration flows over a relatively limited time spans of five years when it is often long-term relationships between state policy trends and human interactions that determine overall levels of migration to and from states.

Given these caveats, our results suggest that, *ceteris paribus*, states seeking to attract those with a college education can do so by increasing the level of government expenditures and by reducing the amount going to welfare payments, grants, agricultural assistance, food-stamp payments, housing assistance, and other forms of transfer payments. Increasing the minimum wage does not appear to alter the migration of those with a college education significantly. Those with a college education are unlikely to witness a reduction in the number of job opportunities given that their equilibrium wage is above the minimum wage. The minimum wage does, however, repel those with only a secondary education.

States with generous state social security payments, such as employment insurance and workers compensation, may lower the return to creativity and dampen the entrepreneurial spirit of its college educated citizens. College-educated citizens may work in industries with smaller swings in demand or self-insure and view generous state social security payments as a tax without any perceived benefit. However, those with only high school exposure are more likely to work in industries that involve physical labor or face large swings in the demand for their product. Therefore, more generous employment insurance and workers compensation attracts workers with a high school education.

Those with only an elementary education flee states with higher overall spending by the government. However, as the government directly employs more individuals, those with an elementary education are likely to in-migrate.

Finally, greater union density does not result in selective migration: citizens of all educational types flee states with greater union density. State regulations that grant workers the right of employment without union membership appear to increase net in-migration. Therefore, if states, such as California, would like to reverse the outflow of college educated workers, our research suggest that through reductions in government transfers and polices that grant workers the right of employment without union membership will go a long way toward fostering their goals.

8. Acknowledgements

We would like to thank Nathan Ashby, Angela Dills, James Gwartney, Todd Nesbit, Joe Price, and Kurt W. Rotthoff for their valuable comments. We are also indebted to Josh Hall and two anonymous referees. Nathan Ashby was kind enough to send us his data and source code. James P. LeSage deserves special recognition for his assistance both in designing the Bayesian spatial estimator and his guidance and support. Earlier versions of this manuscript were presented at the 2007 Southern Economics Association Meetings and the 2012 Association of Private Enterprise Education Meetings. Errors and deficiencies that have to this point survived this counsel are most assuredly ours alone.

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Table 1: Economic Freedom Rank 1990-1995 Average

Rank	State	Score	Rank	State	Score
1	Delaware	7.97	24	Kansas	6.62
2	Texas	7.45	26	Vermont	6.6
3	North Carolina	7.4	27	Minnesota	6.57
4	Georgia	7.28	27	Wisconsin	6.57
5	New Hampshire	7.17	29	Arizona	6.53
6	Connecticut	7.1	30	Arkansas	6.52
6	Tennessee	7.1	31	Ohio	6.5
8	Illinois	7.07	31	Pennsylvania	6.5
8	Nevada	7.07	33	Florida	6.47
8	Wyoming	7.07	34	Alabama	6.45
11	Louisiana	7.05	35	Idaho	6.43
12	Indiana	7.02	36	Michigan	6.4
13	Nebraska	6.98	36	Oklahoma	6.4
14	Colorado	6.95	38	Maryland	6.37
14	Massachusetts	6.95	39	New York	6.32
16	Virginia	6.92	40	Washington	6.23
17	Missouri	6.9	41	Oregon	6.22
18	South Carolina	6.82	42	Mississippi	6.13
18	Utah	6.82	43	New Mexico	6.1
20	South Dakota	6.78	44	Rhode Island	5.92
21	California	6.73	45	North Dakota	5.9
21	Kentucky	6.73	46	Maine	5.85
23	New Jersey	6.65	47	West Virginia	5.43
24	Iowa	6.62	48	Montana	5.37

Source: Karabegovic, McMahon, and Mitchell (2005)

Table 2: Summary Statistics

Variable Label	*Variable Construction*	*Mean*	*Std Deviation*	*Maximum*	*Minimum*
Migrate	Ln [Migrationrateij/(1-Migrationrateij)]	-7.6166	3.5056	6.6419	-13.9639
EconFreedom	Economicfreedomj/Economicfreedomi	1.006	0.108	1.484	0.674
GovtSize	Governmentconsj/Governmentconsi	1.023	0.221	2.241	0.446
Transfers	Transfersj/Transfersi	1.097	0.501	4.475	0.223
SocialSecurity	Socialsecurityj/Socialsecurityi	1.035	0.277	2.569	0.389
TaxRevenue	Taxrevenuesj/Taxrevenuesi	1.007	0.121	1.42	0.704
MarginalTax	Marginaltaxj/Marginaltaxi	1.023	0.221	1.808	0.553
MinWage	Minwagej/Minwagei	1.022	0.213	1.951	0.513
GovtEmploy	Governmentemployj/Governmentemployi	1.022	0.218	1.932	0.518
Union	Uniondensityj/Uniondensityi	1.151	0.644	5.259	0.19
Pop	Ln [Populationj/Populationi]	0	1.346	3.909	-3.909
Density	Ln [Densityj/Densityi]	0	1.788	5.223	-5.223
Income	Ln [Incomej/Incomei]	0	0.121	0.386	-0.386
EmployGrowth	Employmentgrowthj-Employmentgrowthi	0	4.5938	13.2191	-13.2191
Retired	Retiredj/Retiredi	1.02	0.204	2.103	0.475
Temp	Heatingdaysj/Heatingdaysi	1.304	1.276	13.612	0.073
Wetness	Precipitationj/Precipitationi	1.26	0.935	6.331	0.158
Distance	Distanceij	1,181.17	722.173	3,138	0
Distance2	Distancesquaredij	1,916x10^3	2,111x10^3	9,847x10^3	0

Note: The subscripts i and j denote an individual's origin and destination states, respectively.

Table 3: Bayesian Spatial Autoregression of Log-odds migration on relative state characteristics: Elementary-Educated Population

	Excluding Measures of Income and Employment			Including Measures of Income and Employment		
Independent Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
EconFreedom	-1.301	-0.605	-1.906	-1.026	-0.476	-1.502
	(1.31)	(1.30)	(1.31)	(0.96)	(0.95)	(0.96)
Pop	-0.200*	-0.093*	-0.293*	-0.176+	-0.082+	-0.257+
	(2.23)	(2.17)	(2.23)	(1.92)	(1.88)	(1.91)
Density	0.106	0.049	0.155	0.029	0.013	0.042
	(1.31)	(1.28)	(1.30)	(0.25)	(0.24)	(0.24)
Income				-0.401	-0.186	-0.587
				(0.35)	(0.34)	(0.35)
EmployGrowth				-0.042	-0.020	-0.062
				(1.04)	(1.03)	(1.04)
Retired	-0.545	-0.253	-0.798	-0.573	-0.266	-0.840
	(1.00)	(0.99)	(1.00)	(1.07)	(1.06)	(1.07)
Temp	-0.256**	-0.119**	-0.375**	-0.273**	-0.127**	-0.400**
	(3.21)	(3.04)	(3.19)	(3.32)	(3.14)	(3.30)
Wetness	0.165	0.077	0.242	0.136	0.063	0.200
	(1.13)	(1.13)	(1.13)	(0.86)	(0.85)	(0.86)
Distance	0.004**	0.002**	0.006**	0.004**	0.002**	0.006**
	(7.77)	(6.03)	(7.46)	(7.84)	(6.08)	(7.53)
Distance2	-1.063**	-0.494**	-1.557**	-1.070**	-0.498**	-1.567**
	(6.48)	(5.36)	(6.29)	(6.51)	(5.39)	(6.33)
Stay	11.029**	5.128**	16.157**	10.849**	5.048**	15.897**
	(7.33)	(5.88)	(7.09)	(7.18)	(5.86)	(7.00)
Move	-5.915**	-2.75**	-8.666**	-6.120**	-2.850**	-8.970**
	(4.28)	(3.91)	(4.23)	(4.30)	(3.90)	(4.24)
Observations	2304			2304		
R-squared	0.1783			0.1785		
Rbar-squared	0.1751			0.1745		

Pseudo t-statistics in parentheses
Sig: + 10%, * 5%, ** 1% on coeff

Table 4: Bayesian Spatial Autoregression of Log-odds migration on relative state characteristics:Secondary-Educated Population

	Excluding Measures of Income and Employment			Including Measures of Income and Employment		
Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
EconFreedom	0.906*	0.265*	1.171*	0.667	0.193	0.860
	(2.35)	(2.25)	(2.35)	(1.57)	(1.54)	(1.57)
Pop	0.434**	0.127**	0.561**	0.416**	0.121**	0.536**
	(12.16)	(6.76)	(11.38)	(11.32)	(6.67)	(10.72)
Density	-0.091**	-0.027**	-0.117**	-0.023	-0.007	-0.030
	(2.82)	(2.64)	(2.80)	(0.48)	(0.48)	(0.48)
Income				0.260	0.075	0.335
				(0.57)	(0.56)	(0.56)
EmployGrowth				0.035*	0.010*	0.045*
				(2.09)	(2.00)	(2.08)
Retired	0.269	0.079	0.348	0.290	0.084	0.374
	(1.29)	(1.27)	(1.29)	(1.36)	(1.34)	(1.36)
Temp	0.043	0.013	0.055	0.0575+	0.017+	0.074+
	(1.38)	(1.35)	(1.38)	(1.77)	(1.72)	(1.77)
Wetness	0.113*	0.033+	0.147*	0.132*	0.038*	0.170*
	(1.98)	(1.90)	(1.97)	(2.04)	(1.97)	(2.04)
Distance	-0.001**	-0.000**	-0.001**	-0.001**	-0.000**	-0.001**
	(4.90)	(4.17)	(4.84)	(5.02)	(4.27)	(4.96)
Distance2	0.256**	0.075**	0.330**	0.260**	0.075**	0.335**
	(3.75)	(3.38)	(3.72)	(3.80)	(3.43)	(3.77)
Stay	3.869**	1.133**	5.002**	4.049**	1.174**	5.223**
	(6.55)	(5.07)	(6.41)	(6.55)	(5.09)	(6.41)
Move	-6.967**	-2.039**	-9.007**	-6.788**	-1.967**	-8.756**
	(12.72)	(6.96)	(11.97)	(11.78)	(6.86)	(11.21)
Observations	2304			2304		
R-squared	0.5301			0.5317		
Rbar-squared	0.5282			0.5295		

Pseudo t-statistics in parentheses
Sig: + 10%, * 5%, ** 1% on coeff

Table 5: Bayesian Spatial Autoregression of Log-odds migration on relative state characteristics: College-Educated Population

	Excluding Measures of Income and Employment			Including Measures of Income and Employment		
Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
EconFreedom	0.593*	0.247*	0.840*	0.295	0.122	0.417
	(2.05)	(2.00)	(2.04)	(0.96)	(0.95)	(0.95)
Pop	0.524**	0.218**	0.743*	0.506**	0.210**	0.716**
	(20.76)	(9.79)	(17.79)	(19.17)	(9.52)	(16.67)
Density	-0.063**	-0.026*	-0.089**	-0.015	-0.006	-0.022
	(2.64)	(2.55)	(2.63)	(0.46)	(0.46)	(0.46)
Income				0.549+	0.227	0.777+
				(1.66)	(1.63)	(1.65)
EmployGrowth				0.033**	0.014**	0.047**
				(2.81)	(2.72)	(2.81)
Retired	0.151	0.063	0.214	0.140	0.058	0.198
	(0.98)	(0.98)	(0.98)	(0.88)	(0.87)	(0.88)
Temp	0.043+	0.018+	0.061+	0.054*	0.022*	0.077*
	(1.86)	(1.84)	(1.86)	(2.31)	(2.26)	(2.30)
Wetness	-0.016	-0.007	-0.023	0.019	0.008	0.027
	(0.38)	(0.38)	(0.38)	(0.43)	(0.43)	(0.43)
Distance	-0.001**	-0.001**	-0.002**	-0.001**	-0.001**	-0.002**
	(7.64)	(6.31)	(7.48)	(7.91)	(6.46)	(7.73)
Distance2	0.354**	0.147**	0.501**	0.364**	0.151**	0.515**
	(7.01)	(5.95)	(6.88)	(7.17)	(6.02)	(7.03)
Stay	4.456**	1.857**	6.313**	4.706**	1.947**	6.653**
	(10.15)	(7.48)	(9.74)	(10.29)	(7.49)	(9.84)
Move	-5.591**	-2.330**	-7.921**	-5.322**	-2.202**	-7.524**
	(13.64)	(8.59)	(12.68)	(12.42)	(8.32)	(11.74)
Observations	2304			2304		
R-squared	0.6477			0.6488		
Rbar-squared	0.6464			0.6471		

Pseudo t-statistics in parentheses

Sig: + 10%, * 5%, ** 1% on coeff

Table 6: Difference in Migratory Response to Index by Education, with Employment Growth and Income

	Direct Effect			*Indirect Effect*			*Total Effect*		
Panel A: Differences in the Response of Elementary Educated Migrants Relative to Secondary Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
EconFreedom	-1.708	(1.43)		-0.680	(1.27)		-2.388	(1.39)	
Pop	-0.593	(5.88)	**	-0.203	(4.21)	**	-0.593	(5.88)	**
Density	0.051	0.40		0.020	0.34		0.051	0.40	
Income	-0.635	(0.50)		-0.250	(0.44)		-0.635	(0.50)	
EmployGrowth	-0.077	(1.71)	+	-0.030	(1.47)		-0.077	(1.71)	+
Retired	-0.860	(1.43)		-0.350	(1.29)		-0.860	(1.43)	
Temp	-0.332	(3.82)	**	-0.144	(3.52)	**	-0.332	(3.82)	**
Wetness	0.007	0.04		0.026	0.34		0.007	0.04	
Distance	0.005	9.16	**	0.002	7.06	**	0.005	9.16	**
Distance2	-1.326	(7.48)	**	-0.572	(6.16)	**	-1.326	(7.48)	**
Stay	6.797	3.96	**	3.887	4.15	**	6.797	3.96	**
Move	0.689	0.43		-0.876	(1.09)		0.689	0.43	
Panel B: Differences in the Response of Elementary Educated Migrants Relative to College Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
EconFreedom	-1.348	(1.18)		-0.613	(1.15)		-1.962	(1.17)	
Pop	-0.684	(7.11)	**	-0.293	(6.04)	**	-0.977	(6.89)	**
Density	0.044	0.35		0.020	0.34		0.063	0.35	
Income	-0.914	(0.75)		-0.398	(0.70)		-1.313	(0.74)	
EmployGrowth	-0.075	(1.72)	+	-0.033	(1.63)		-0.108	(1.70)	+
Retired	-0.716	(1.23)		-0.326	(1.19)		-1.042	(1.22)	
Temp	-0.327	(3.85)	**	-0.149	(3.62)	**	-0.476	(3.82)	**
Wetness	0.120	0.72		0.057	0.73		0.176	0.73	
Distance	0.005	9.89	**	0.002	7.75	**	0.008	9.57	**
Distance2	-1.427	(8.34)	**	-0.646	(6.93)	**	-2.073	(8.13)	**
Stay	6.150	3.73	**	3.112	3.34	**	9.262	3.74	**
Move	-0.762	(0.50)		-0.632	(0.80)		-1.394	(0.61)	
Panel C: Differences in the Response of Secondary Educated Migrants Relative to College Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
EconFreedom	0.359	(0.67)		0.067	(0.37)		0.426	(0.60)	
Pop	-0.091	(2.05)	**	-0.089	(3.17)	**	-0.180	(2.78)	**
Density	-0.007	(0.12)		0.000	(0.01)		-0.007	(0.09)	
Income	-0.279	(0.49)		-0.149	(0.75)		-0.428	(0.56)	
EmployGrowth	0.002	0.10		-0.003	(0.47)		-0.001	(0.05)	
Retired	0.144	0.54		0.024	0.26		0.168	0.47	
Temp	0.005	0.13		-0.005	(0.37)		0.000	(0.00)	
Wetness	0.113	1.44		0.030	1.13		0.144	1.37	
Distance	0.000	0.71		0.000	1.99	*	0.000	1.12	
Distance2	-0.101	(1.20)		-0.074	(2.29)	*	-0.176	(1.54)	
Stay	-0.648	(0.84)		-0.775	(2.24)	*	-1.423	(1.34)	
Move	-1.451	(2.01)	**	0.244	0.62		-1.207	(1.19)	

Sig: + 10%, * 5%, ** 1% on coeff

Table 7: Difference in Migratory Response to Index by Education, without Employment Growth and Income

	Direct Effect			*Indirect Effect*			*Total Effect*		
Panel A: Differences in the Response of Elementary Educated Migrants Relative to Secondary Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
EconFreedom	-2.242	(2.10)	*	-0.887	(1.83)	+	-3.129	(2.02)	*
Pop	-0.633	(6.51)	**	-0.219	(4.73)	**	-0.633	(6.51)	**
Density	0.196	2.26	*	0.076	1.93	+	0.196	2.26	*
Retired	-0.827	(1.44)		-0.337	(1.30)		-0.827	(1.44)	
Temp	-0.300	(3.56)	**	-0.132	(3.38)	**	-0.300	(3.56)	**
Wetness	0.053	0.34		0.044	0.63		0.053	0.34	
Distance	0.005	8.99	**	0.002	6.97	**	0.005	8.99	**
Distance2	-1.317	(7.26)	**	-0.566	(6.02)	**	-1.317	(7.26)	**
Stay	7.189	4.57	**	3.988	4.43	**	7.189	4.57	**
Move	1.091	0.73		-0.674	(0.90)		1.091	0.73	
Panel B: Differences in the Response of Elementary Educated Migrants Relative to College Educated Migrants									
Variable									
EconFreedom	-1.942	(1.88)	+	-0.872	(1.79)	+	-1.942	(1.88)	+
Pop	-0.724	(7.71)	**	-0.310	(6.39)	**	-0.724	(7.71)	**
Density	0.169	2.01	*	0.075	1.92	+	0.245	1.98	*
Retired	-0.709	(1.27)		-0.321	(1.23)		-1.030	(1.26)	
Temp	-0.300	(3.74)	**	-0.137	(3.54)	**	-0.437	(3.72)	**
Wetness	0.180	1.21		0.083	1.19		0.263	1.20	
Distance	0.005	9.64	**	0.002	7.59	**	0.007	9.33	**
Distance2	-1.416	(8.11)	**	-0.638	(6.77)	**	-2.054	(7.91)	**
Stay	6.628	4.36	**	3.282	3.64	**	9.909	4.28	**
Move	-0.265	(0.18)		-0.386	(0.53)		-0.651	(0.31)	
Panel C: Differences in the Response of Secondary Educated Migrants Relative to College Educated Migrants									
Variable									
EconFreedom	0.300	0.62		0.015	0.09		0.315	0.49	
Pop	-0.092	(2.09)	*	-0.091	(3.16)	**	-0.183	(2.84)	**
Density	-0.027	(0.67)		0.000	(0.01)		-0.027	(0.50)	
Retired	0.118	0.45		0.016	0.18		0.134	0.38	
Temp	0.001	0.01		-0.005	(0.39)		-0.005	(0.09)	
Wetness	0.128	1.76	+	0.039	1.56		0.167	1.72	+
Distance	0.000	0.66		0.000	1.84	+	0.000	1.03	
Distance2	-0.098	(1.15)		-0.072	(2.16)	*	-0.170	(1.47)	
Stay	-0.561	(0.76)		-0.707	(2.12)	*	-1.268	(1.25)	
Move	-1.356	(1.98)	*	0.287	0.73		-1.069	(1.10)	

Sig: + 10%, * 5%, ** 1% on coeff

Table 8: Bayesian Spatial Autoregression of Log-odds migration on relative state characteristics: Elementary-Educated Population

	Excluding Measures of Income and Employment			Including Measures of Income and Employment		
Independent Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
GovtSize	-1.740*	-0.767**	-2.507*	-1.617*	-0.704*	-2.322*
	(2.40)	(2.30)	(2.38)	(2.17)	(2.10)	(2.16)
Transfers	1.137**	0.501**	1.637**	1.209**	0.526**	1.735**
	(3.70)	(3.42)	(3.66)	(3.74)	(3.46)	(3.70)
SocialSecurity	0.910	0.400	1.309	0.958	0.417	1.375
	(1.15)	(1.13)	(1.14)	(1.19)	(1.17)	(1.18)
TaxRevenue	2.518*	1.109**	3.627*	2.031	0.883	2.914
	(2.02)	(1.96)	(2.01)	(1.20)	(1.18)	(1.20)
MarginalTax	0.693	0.305	0.998	0.888+	0.387	1.275
	(1.43)	(1.41)	(1.43)	(1.61)	(1.58)	(1.61)
MinWage	-1.588	-0.698	-2.285	-1.425	-0.618	-2.044
	(1.49)	(1.46)	(1.48)	(1.06)	(1.05)	(1.06)
GovtEmploy	1.351+	0.596	1.947	1.302	0.566	1.867
	(1.65)	(1.61)	(1.64)	(1.58)	(1.55)	(1.57)
Union	-0.395+	-0.174+	-0.568+	-0.380+	-0.166+	-0.545+
	(1.90)	(1.87)	(1.90)	(1.83)	(1.77)	(1.82)
Pop	-0.118	-0.052	-0.170	-0.130	-0.057	-0.186
	(1.27)	(1.24)	(1.26)	(1.36)	(1.34)	(1.35)
Density	0.242+	0.107+	0.349+	0.284*	0.124+	0.408*
	(1.91)	(1.85)	(1.90)	(1.98)	(1.93)	(1.97)
Income				1.261	0.550	1.811
				(0.59)	(0.59)	(0.59)
EmployGrowth				0.034	0.015	0.048
				(0.71)	(0.71)	(0.71)
Retired	-1.317+	-0.580+	-1.897+	-1.315+	-0.573+	-1.888+
	(1.84)	(1.81)	(1.84)	(1.87)	(1.83)	(1.87)
Temp	-0.314**	-0.138**	-0.453**	-0.309**	-0.134**	-0.443**
	(3.37)	(3.14)	(3.34)	(3.35)	(3.13)	(3.32)
Wetness	0.040	0.018	0.058	0.065	0.028	0.093
	(0.22)	(0.22)	(0.22)	(0.34)	(0.34)	(0.34)
Distance	0.004**	0.002**	0.006**	0.004**	0.002**	0.005**
	(7.89)	(6.03)	(7.57)	(7.61)	(5.89)	(7.33)
Distance2	-1.043**	-0.459**	-1.502**	-1.031**	-0.448**	-1.479**
	(6.43)	(5.29)	(6.25)	(6.24)	(5.17)	(6.09)
Stay	7.660**	3.371**	11.031**	7.509**	3.266**	10.776**
	(4.50)	(4.09)	(4.45)	(4.30)	(3.91)	(4.25)
Move	-9.256**	-4.077**	-13.333**	-9.386**	-4.082**	-13.468**
	(5.73)	(4.83)	(5.58)	(5.72)	(4.90)	(5.61)
Observations	2304			2304		
R-squared	0.1783			0.1785		
Rbar-squared	0.1751			0.1745		

Pseudo t-statistics in parentheses
Sig: + 10%, * 5%, ** 1% on coeff

Table 9: Bayesian Spatial Autoregression of Log-odds migration on relative state characteristics: Secondary-Educated Population

	Excluding Measures of Income and Employment			Including Measures of Income and Employment		
Independent Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
GovtSize	-0.138	-0.040	-0.179	0.002	0.001	0.003
	(0.47)	(0.47)	(0.47)	(0.01)	(0.01)	(0.01)
Transfers	-0.112	-0.033	-0.145	-0.034	-0.010	-0.044
	(0.90)	(0.89)	(0.90)	(0.27)	(0.27)	(0.27)
SocialSecurity	0.653**	0.191**'	0.844**'	0.678**	0.195*	0.873*
	(2.08)	(2.00)	(2.07)	(2.14)	(2.05)	(2.13)
TaxRevenue	-0.207	-0.061	-0.267	-0.407	-0.117	-0.524
	(0.41)	(0.41)	(0.41)	(0.61)	(0.60)	(0.61)
MarginalTax	0.155	0.045	0.200	0.316	0.091	0.407
	(0.79)	(0.78)	(0.79)	(1.45)	(1.41)	(1.44)
MinWage	-0.797+	-0.233+	-1.029+	-0.884+	-0.254	-1.138+
	(1.89)	(1.82)	(1.88)	(1.67)	(1.63)	(1.67)
GovtEmploy	-0.457	-0.133	-0.590	-0.498	-0.143	-0.641
	(1.37)	(1.34)	(1.37)	(1.55)	(1.51)	(1.54)
Union	-0.193*	-0.056*	-0.249*	-0.173*	-0.050*	-0.223*
	(2.33)	(2.23)	(2.32)	(2.09)	(1.99)	(2.08)
Pop	0.456**	0.133**	0.589**	0.442**	0.127**	0.569**
	(12.21)	(6.80)	(11.46)	(11.76)	(6.73)	(11.14)
Density	-0.139**	-0.040**	-0.179**	-0.083	-0.024	-0.107
	(2.77)	(2.61)	(2.76)	(1.45)	(1.42)	(1.45)
Income				0.765	0.219	0.984
				(0.90)	(0.88)	(0.89)
EmployGrowth				0.041*	0.012*	0.052**
				(2.11)	(2.03)	(2.11)
Retired	0.041	0.012	0.053	0.073	0.021	0.094
	(0.15)	(0.15)	(0.15)	(0.26)	(0.26)	(0.26)
Temp	0.077*	0.022*	0.099*	0.083*	0.024*	0.107*
	(2.07)	(1.98)	(2.06)	(2.28)	(2.17)	(2.27)
Wetness	0.149*	0.044	0.193	0.183*	0.052*	0.235*
	(2.10)	(2.02)	(2.09)	(2.43)	(2.32)	(2.42)
Distance	-0.001**	-0.000**	-0.001**	-0.001**	-0.000**	-0.001**
	(4.85)	(4.17)	(4.81)	(5.10)	(4.31)	(5.05)
Distance2	0.251**	0.073**	0.324**	0.261**	0.075**	0.336**
	(3.70)	(3.36)	(3.67)	(3.88)	3.49	(3.85)
Stay	6.030**	1.759**	7.789**	5.841**	1.679**	7.519**
	(8.69)	(5.90)	(8.37)	(8.29)	(5.77)	(8.02)
Move	-4.781**	-1.393**	-6.174**	-4.962**	-1.425**	-6.387**
	(7.33)	(5.54)	(7.20)	(7.50)	(5.58)	(7.36)
Observations	2304			2304		
R-squared	0.1783			0.1785		
Rbar-squared	0.1751			0.1745		

Pseudo t-statistics in parentheses
Sig: + 10%, * 5%, ** 1% on coeff

Table 10: Bayesian Spatial Autoregression of Log-odds migration on relative state characteristics: College-Educated Population

	Excluding Measures of Income and Employment			Including Measures of Income and Employment		
Independent Variable	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
GovtSize	0.459*	0.189**	0.648*	0.574**	0.236**	0.810**
	(2.16)	(2.11)	(2.15)	(2.71)	(2.63)	(2.70)
Transfers	-0.284**	-0.117**	-0.402**	-0.224*	-0.092*	-0.316*
	(3.21)	(3.08)	(3.19)	(2.42)	(2.36)	(2.42)
SocialSecurity	-0.195	-0.080	-0.276	-0.170	-0.070	-0.241
	(0.86)	(0.86)	(0.86)	(0.76)	(0.76)	(0.76)
TaxRevenue	-0.290	-0.120	-0.410	-0.535	-0.219	-0.754
	(0.81)	(0.81)	(0.81)	(1.09)	(1.08)	(1.09)
MarginalTax	-0.073	-0.030	-0.103	0.060	0.025	0.085
	(0.51)	(0.51)	(0.51)	(0.38)	(0.37)	(0.38)
MinWage	-0.021	-0.009	-0.030	-0.029	-0.012	-0.040
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
GovtEmploy	-0.295	-0.122	-0.417	-0.329	-0.135	-0.464
	(1.28)	(1.26)	(1.27)	(1.39)	(1.38)	(1.39)
Union	-0.104+	-0.043+	-0.147+	-0.090	-0.037	-0.126
	(1.74)	(1.72)	(1.74)	(1.47)	(1.45)	(1.47)
Pop	0.524**	-0.216**	0.741**	0.513**	0.211**	0.724**
	(19.69)	(9.81)	(17.27)	(18.40)	(9.58)	(16.33)
Density	-0.103**	-0.042**	-0.145**	-0.062	-0.025	-0.087
	(2.88)	(2.79)	(2.87)	(1.51)	(1.48)	(1.50)
Income				0.729	0.299	1.028
				(1.18)	(1.17)	(1.18)
EmployGrowth				0.030*	0.012*	0.042*
				(2.17)	(2.12)	(2.17)
Retired	0.487*	-0.201*	0.688*	0.507*	0.208*	0.715*
	(2.40)	(2.34)	(2.39)	(2.52)	(2.45)	(2.52)
Temp	0.081**	-0.033**	0.115**	0.087**	0.036**	0.122**
	(3.09)	(2.96)	(3.07)	(3.24)	(3.12)	(3.23)
Wetness	0.010	-0.004	0.014	0.031	0.013	0.044
	(0.19)	(0.19)	(0.19)	(0.57)	(0.56)	(0.57)
Distance	-0.001**	-0.001**	-0.002**	-0.001**	-0.001**	-0.002**
	(7.78)	(6.40)	(7.60)	(7.85)	(6.48)	(7.69)
Distance2	0.352**	-0.145**	0.497**	0.359**	0.147**	0.506**
	(7.04)	(5.96)	(6.91)	(7.13)	(6.05)	(7.01)
Stay	5.442**	-2.246**	7.688**	5.331**	2.188**	7.519**
	(11.19)	(7.85)	(10.61)	(10.43)	(7.61)	(9.99)
Move	-4.575**	-1.888**	-6.463**	-4.693**	-1.926**	-6.618**
	(9.99)	(7.52)	(9.65)	(9.78)	(7.45)	(9.48)
Observations	2304			2304		
R-squared	0.1783			0.1785		
Rbar-squared	0.1751			0.1745		

Pseudo t-statistics in parentheses
Sig: + 10%, * 5%, ** 1% on coeff

Table 11: Difference in Migratory Response to Components by Education, with Employment Growth and Income

	Direct Effect			*Indirect Effect*			*Total Effect*		
Panel A: Differences in the Response of Elementary Educated Migrants Relative to Secondary Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
GovtSize	-1.646	(2.05)	*	-0.718	(2.06)	*	-2.364	(2.07)	*
Transfers	1.237	(3.48)	**	0.535	(3.35)	**	1.237	(3.48)	**
SocialSecurity	0.245	(0.29)		0.209	(0.57)		0.245	(0.29)	
TaxRevenue	2.476	(1.36)		1.020	(1.31)		2.476	(1.36)	
MarginalTax	0.565	(0.95)		0.294	(1.16)		0.565	(0.95)	
MinWage	-0.500	(0.35)		-0.351	(0.57)		-0.500	(0.35)	
GovtEmploy	1.822	(2.06)	*	0.721	(1.90)	+	1.822	(2.06)	*
Union	-0.208	(0.90)		-0.117	(1.18)		-0.208	(0.90)	
Panel B: Differences in the Response of Elementary Educated Migrants Relative to College Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
GovtSize	-2.208	(2.85)	**	-0.950	(2.72)	**	-3.158	(2.83)	**
Transfers	1.427	(4.20)	**	0.617	(3.88)	**	2.044	(4.15)	**
SocialSecurity	1.092	(1.33)		0.473	(1.31)		1.564	(1.33)	
TaxRevenue	2.601	(1.48)		1.123	(1.44)		3.724	(1.47)	
MarginalTax	0.816	(1.42)		0.358	(1.41)		1.174	(1.42)	
MinWage	-1.361	(0.99)		-0.595	(0.98)		-1.956	(0.99)	
GovtEmploy	1.655	(1.94)	+	0.714	(1.89)	+	2.368	(1.93)	+
Union	-0.292	(1.32)		-0.130	(1.31)		-0.421	(1.32)	
Panel C: Differences in the Response of Secondary Educated Migrants Relative to College Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
GovtSize	-0.562	(1.56)		-0.232	(1.88)	+	-0.794	(1.65)	+
Transfers	0.190	(1.19)		0.082	(1.52)		0.273	(1.28)	
SocialSecurity	0.847	(2.18)	*	0.263	(1.98)	*	1.110	(2.15)	*
TaxRevenue	0.125	(0.15)		0.103	(0.37)		0.228	(0.21)	
MarginalTax	0.251	(0.93)		0.064	(0.70)		0.315	(0.88)	
MinWage	-0.861	(1.31)		-0.244	(1.09)		-1.105	(1.26)	
GovtEmploy	-0.168	(0.43)		-0.007	(0.05)		-0.174	(0.33)	
Union	-0.084	(0.79)		-0.013	(0.36)		-0.097	(0.68)	

Sig: + 10%, * 5%, ** 1% on coeff

Note: All panels include the same control variables list in Table 6 and Table 7: Pop, Density, Retired, Temp, Wetness, Distance, Distance2, Stay, and Move

Table 12: Difference in Migratory Response to Components by Education, without Employment Growth and Income

	Direct Effect			*Indirect Effect*			*Total Effect*		
Panel A: Differences in the Response of Elementary Educated Migrants Relative to Secondary Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
GovtSize	-1.612	(2.04)	*	-0.730	(2.12)	*	-2.343	(2.08)	*
Transfers	1.244	(3.74)	**	0.530	(3.55)	**	1.244	(3.74)	**
SocialSecurity	0.234	(0.27)		0.200	(0.55)		0.234	(0.27)	
TaxRevenue	2.775	(2.05)	*	1.188	(2.03)	*	2.775	(2.05)	*
MarginalTax	0.531	(1.01)		0.257	(1.14)		0.531	(1.01)	
MinWage	-0.774	(0.67)		-0.458	(0.93)		-0.774	(0.67)	
GovtEmploy	1.841	(2.14)	*	0.742	(1.99)	*	1.841	(2.14)	*
Union	-0.207	(0.90)		-0.120	(1.22)		-0.207	(0.90)	
Panel B: Differences in the Response of Elementary Educated Migrants Relative to College Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
GovtSize	-2.216	(2.91)	**	-0.961	(2.78)	**	-3.177	(2.89)	**
Transfers	1.418	(4.38)	**	0.615	(4.10)	**	2.033	(4.35)	**
SocialSecurity	1.081	(1.30)		0.469	(1.28)		1.550	(1.30)	
TaxRevenue	2.855	(2.19)	*	1.246	(2.14)	*	4.102	(2.19)	*
MarginalTax	0.767	(1.49)		0.335	(1.47)		1.101	(1.49)	
MinWage	-1.544	(1.38)		-0.678	(1.37)		-2.221	(1.38)	
GovtEmploy	1.673	(2.01)	*	0.728	(1.95)	+	2.401	(2.00)	*
Union	-0.294	(1.35)		-0.132	(1.36)		-0.426	(1.36)	
Panel C: Differences in the Response of Secondary Educated Migrants Relative to College Educated Migrants									
Variable	Difference	t-statistic		Difference	t-statistic		Difference	t-statistic	
GovtSize	-0.604	(1.65)	+	-0.231	(1.85)	+	-0.835	(1.71)	+
Transfers	0.174	(1.14)		0.085	(1.62)		0.259	(1.27)	
SocialSecurity	0.847	(2.16)	*	0.269	(1.99)	*	1.116	(2.13)	*
TaxRevenue	0.080	(0.13)		0.059	(0.29)		0.139	(0.17)	
MarginalTax	0.236	(0.97)		0.078	(0.94)		0.313	(0.97)	
MinWage	-0.770	(1.48)		-0.220	(1.23)		-0.990	(1.43)	
GovtEmploy	-0.168	(0.42)		-0.014	(0.10)		-0.182	(0.34)	
Union	-0.088	(0.85)		-0.013	(0.35)		-0.100	(0.72)	

Sig: + 10%, * 5%, ** 1% on coeff

Note: All panels include the same control variables list in Table 6 and Table 7: Pop, Density, Retired, Temp, Wetness, Distance, Distance2, Stay, and Move

Appendix A: Components of the Economic Freedom of North America Index

Table A1: Components of the Economic Freedom of North America Index

Category 1: Size of Government	
1A	General consumption expenditures by government as a percentage of GSP
1B	Transfers and subsidies as a percentage of GSP
1C	Social Security payments: Employment insurance, workers compensation, and other pensions as a percentage of GSP
Category 2: Takings and Discriminatory Taxation	
2A	Total tax burden as a percentage of GSP: Includes income taxes, consumption taxes, property and sales taxes, contributions to Social Security plans, and other taxes
2B	Top Marginal income tax rate and the income threshold at which it applies
2C	Indirect tax revenue as a percentage of GSP: Includes property taxes, contributions to Social Security Insurance, and various other taxes
2D	Sales taxes collected as a percentage of GSP: Includes general sales tax revenues as well as revenue from liquor and tobacco taxes
Category 3: Labor Market Freedom	
3A	Minimum wage legislation: Annual income earned by a minimum wage worker divided by per-capita GSP
3B	Government employment as a percentage of total state/provincial employment
3C	Union density