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Rural immigrant population growth, 1950-2000: waves or ripples?

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Abstract
Using U.S. Census data from 1950 to 2000, this paper provides a framework to compare the responses of immigrant and native population growth to the economic incentives offered by rural counties in the Midwest and the South. We find that in marked contrast to traditional destinations for new immigrants such as urban areas or rural California, growth of the immigrant population in these nontraditional rural destinations is not tied to concentrations of existing immigrant populations. Rural immigrant population growth is more responsive than native populations to economic incentives and immigrant growth is not affected by local welfare or other government services. The native-born population tends to respond more to growth in specific industries, while immigrant populations are more responsive to overall employment growth. Rural immigrant population growth is not positively influenced by levels of local welfare or other public services. Compared to earlier immigrant groups, more recent waves of rural immigrants are influenced more by the number of jobs than by income levels in deciding where to live.

Keywords
rural, population, migration, welfare, immigrant, native-born, incentives, income, jobs, public services

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Using U.S. Census data from 1950 to 2000, this paper provides a framework to compare the responses of immigrant and native population growth to the economic incentives offered by rural counties in the Midwest and the South. We find that in marked contrast to traditional destinations for new immigrants such as urban areas or rural California, growth of the immigrant population in these nontraditional rural destinations is not tied to concentrations of existing immigrant populations. Rural immigrant population growth is more responsive than native populations to economic incentives and immigrant growth is not affected by local welfare or other government services. The native-born population tends to respond more to growth in specific industries, while immigrant populations are more responsive to overall employment growth. Rural immigrant population growth is not positively influenced by levels of local welfare or other public services. Compared to earlier immigrant groups, more recent waves of rural immigrants are influenced more by the number of jobs than by income levels in deciding where to live.

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Keywords: rural, immigrant, population, native-born, migration, incentives, income, jobs, welfare, public services

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Introduction

With the passage of the Homestead Act of 1862, the United States committed to populating the vast expanses of land made available by the Louisiana purchase. However, the native population was too small to make use of all the available 160 acre parcels. Railroads and rural states actively recruited immigrants from Europe with the promise of free land, and soon the Midwest boasted towns named Hamburg, Warsaw, Belgrade, New Prague, and Moscow. The number of farms doubled between 1870 and 1882. By 1890 when all the available arable land had been distributed, the proportion foreign born stood at 8.9% in rural America. As shown in Figure 1, the proportion foreign born in rural areas declined every decade thereafter until 1980.

Except for that period when free land induced immigrants to become farmers, new arrivals to the United States have traditionally been geographically concentrated. Major urban centers have long been focal points for incoming immigrants arriving in the United States, and the fraction of immigrants in the population is consistently larger in urban than in rural areas (Figure 1). In 2000, over half of the immigrant population in the U.S. lived in thirteen gateway cities (Logan, 2003) with 70% living in just six states (Haider et al 2004). Since 1970, the fraction of immigrants has more than doubled in urban areas, but it has grown only modestly in rural areas.

Since 1990, however, immigrants have begun to locate in rural counties in increasing numbers. In 2000, the population of Hispanics, the largest immigrant group, grew more rapidly in rural counties than in urban areas. This raises the question of what factors are influencing the growth of the rural immigrant population after such a long period of decline.

Social networks have been used to explain why successive waves of immigrants consistently located in the same few areas. Bartel (1989) showed that new immigrants concentrated most heavily in SMSAs that had large populations of the same ethnic groups. Using state level data, Buckley (1996), Zavodny (1999) and Dodson (2001) all found strong links between the size of the foreign born population in the state and the numerical or proportional increase in new immigrants. The pattern of results in these studies is driven primarily by the relatively few states or SMSAs that have traditionally attracted immigrants and that have large ethnic populations. The small number of rural immigrants in these states would have little impact on state averages.

Social networks also appear to have a role in immigration to some rural areas. In rural California, Munshi (2003) found long-standing patterns dating back to 1885 of transitory

migrations from states in Mexico to specific locations in urban and rural California. These ethnic networks helped short-term and frequently repeat migrants to find better jobs than they would otherwise and provide other assistance such as housing or transportation. These migrants typically do not plan to stay in the United States, hoping to use their U.S. jobs to support home construction or a business start-up in Mexico.

It is not clear whether these long-standing social networks that appear to be important in urban areas and in rural California have relevance for less traditional areas of immigrant settlement such as the rural Midwest and the South. Having experienced a century of declining foreign-born populations and lacking large concentrations of any particular ethnic group, these rural communities would seem to lack the conditions necessary to establish an international network of worker flows that exist in urban areas and rural California. In addition, rural immigrants are more likely to be legal residents planning to remain in the United States, and so they may be better able to obtain necessary information on jobs, housing and transportation on their own. They may also have better education than the typical Mexican migrant laborer, contributing to their ability to leave traditional ethnic enclaves to less traditional immigrant locales (Bartel, 1989).

Wojan (2000) and Drabenstott et al (1999) have argued that rural heartland communities have experienced a shift in industry composition that may be more attractive to recent waves of immigrants. In particular, relatively low-skill and low-paying manufacturing such as electronic components or meatpacking have been relocating from urban areas to rural communities. These plants are located in communities with relatively low living costs which may make even relatively low pay attractive to recent arrivals lacking the resources to afford the expenses of living in urban areas.

Some analysts have suggested that public services are an additional inducement for immigrants to locate in an area (Buckley, 1996; Dodson, 2001). Even though the 1996 Personal Responsibility and Work Opportunity Reconciliation Act denied legal immigrants access to federal welfare, several states reinstated Temporary Aid to Needy Families (TANF), Medicaid, and Food Stamp assistance to new immigrants. These states tended to be those that have traditionally hosted past waves of immigrants including California, Illinois and New York, leading some to suspect that the positive correlation between welfare and immigration is due to reverse causality (Zavodny, 1999). Indeed the most careful of these studies (Kaushal, 2005) did not find a

link between welfare generosity and the migration patterns of single women who might have been thought to be most influenced by such programs. As only a few states in the Midwest and South have opted to provide these services, it is doubtful that they are influencing the incentives to migrate to the rural Midwest or South.[1]

Our study takes as a working hypothesis that the incentives of immigrants to enter nontraditional rural markets is driven predominantly by wage and job incentives rather than potential access to social safety net programs. If the lower skilled and lower paying jobs that traditionally employed immigrants are indeed shifting from urban to rural markets, they may be taking immigrant workforces with them. This tendency would be enhanced by the shift in policy under the Immigration and Nationality Act of 1965, which shifted emphasis of eligibility requirements for immigrants from educational attainment to family reunification. As emphasized by Borjas (1999), before 1965, two-thirds of immigrants came from either Canada or Western Europe and they had higher wages and higher educational attainment than the native population. After the Act, immigrants came mostly from Latin America or Asia (49% and 32% respectively), and they had lower wages and education levels than natives. Such workers may find attractive the combination of low skill jobs and low living costs in the rural Midwest and South.

In this study, we evaluate the relative importance of factors that attract or retain immigrants and native-born in rural counties. Using decennial U.S. Census data from the years between 1950 and 2000, we compare the relative importance of the existing foreign-born population, economic opportunities and government services in attracting foreign-born residents.[2] We find that, unlike the urban and rural areas that have been the traditional destinations for new immigrants, jobs are the dominant factor influencing immigrants to locate in rural counties of the Midwest and South. County public services and large immigrant populations are not important. It is plausible that these rural counties lack the large established immigrant communities necessary for social networks, and so immigrants have to obtain information on relative job prospects on their own.

[1] Georgia, Illinois, Minnesota, Nebraska, Tennessee, and Wisconsin offer at least one of the TANF, Medicaid, or food stamp programs. None of the other states offer any of these services, and none of these states offer Supplemental Social Insurance.

[2] We use "immigrant" and "foreign-born" interchangeably. By immigrant or foreign-born, we refer to someone who was born outside of the U.S.

The paper opens with a migration model that highlights the factors that may attract the foreign- and native-born to rural areas. The model can be adapted to provide ordinary least squares estimation. We then present stylized immigration facts in rural counties in the Midwest and the South-Central states to provide a historical background for current discussion. The article closes with an analysis of our regression results.

Model

In this section we develop a migration model to explain the factors that cause the foreign-born to locate in rural areas. The model generates an estimable form that we can use to address the factors that lead to the growth or decline in the rural immigrant population. We can extend this framework to also explain the factors that cause other populations, such as the native-born population, to locate in rural counties.

Suppose that an immigrant's expected utility from locating to county j is defined by the utility function $U^i_{j1}(W^i_{j1}, A^i_{j1}, P^i_{j1}, \varepsilon^i_{j1} | \Omega_0)$. The earnings that an immigrant would expect to receive in county j is denoted by W^i_j; A^i_j is a vector of county natural amenities or government public services that may benefit immigrant populations atypically; and P^i_j is the cost of living in the county, and ε^i_j is individual-specific effect related to moving from the origin to county *j*. The expectations are conditioned on information available to the immigrants at the start of the period, Ω_0. We assume that immigrants pick a county of residence so as to maximize their expected utility. The same factors and information that affect expected utility for the foreign-born would also enter into the expected utility function of the native-born, albeit presumably with different weights. The native-born's expected utility function in county *j* is assumed to be of the form $U^n_{j1}(W^n_j, A^n_j, P^n_j, \varepsilon^n_j | \Omega_0)$.

Both populations will have a reference utility which reflects the expected utility across all possible locations in the country during period 1. We denote this reference utility by $\bar{U}^i_1$ and $\bar{U}^n_1$. We assume that county *j* will attract migrants from other places if the expected utility in county *j* is large relative to the reference utility. The proportional change in the immigrant population in county j from period 0 to period 1 will be positively correlated with the expected utility of locating in j relative to all other locations.

$$\left(\frac{I_{j,1}}{I_{j,0}}\right) = \alpha_i \left(\frac{U^i_{j,1}}{\bar{U}^i_1}\right) \tag{1}$$

where α_i is a scalar specific to the foreign-born. Similarly, the change in the fraction of the total native-born, *N*, residing in the county will be

$$\left(\frac{N_{j,1}}{N_{j,0}}\right) = \alpha_n \left(\frac{U^n_{j,1}}{\bar{U}^n_1}\right) \tag{2}$$

where α_n is a scalar specific to the native population.

To operationalize the model for empirical work, we need to specify how the elements of W_j^m, A_j^m, P_j^m and ε_j^m enter the expected utility for population *m*; *m=i,n*. We specify the utility function as the Cobb-Douglas form:

$$U^m_{j1} = W_j^{\beta_W^m} A_j^{\beta_A^m} P_j^{\beta_P^m} \varepsilon_j^m \tag{3}$$

The parameters β_W^m, β_A^m and β_P^m are utility weights that translate the respective variable into the expected utility for group *m* in county *j*.

We assume that the wage, W_j^m, equals the probability that a person will obtain employment in county *j*, E_j^m, times the income that a person will receive conditional on being employed, denoted as ω_j. In notation, $W_j^m = E_j^m \omega_j$.

The probability of being employed, E_j^m, depends on the mix of industries located in the county. Industries that demand labor skills that match those of foreign-born workers will have high values of E_j^i, while counties whose labor skill requirements do not match immigrant workers' skills have low values of E_j^i.

We approximate E_j^m by:

$$E_j^m = \prod_{l=1}^{k} \left(\frac{E_{lj}}{E_j}\right)^{\eta_l^m} E^{\eta^m} = \left[\left(\frac{E_{1j}}{E_j}\right)^{\eta_1^m} \left(\frac{E_{2j}}{E_j}\right)^{\eta_2^m} \cdots \left(\frac{E_{kj}}{E_j}\right)^{\eta_k^m}\right] E_j^{\eta^m} \tag{4}$$

where (E_{lj} / E_j) is the share of county *j*'s employment in industry $l = 1, 2, \ldots, k.$ The exponent η_l^m represents the weight each population places on the particular industrial share of employment. The product of employment shares is then multiplied by the total employment of the county, $E_j^{\eta^m}$ where the exponent refers to the weight a group attaches to the county's total employment.

The conditional income ω_j is measured by the average income per unit of human capital in the county, which is assumed to be the same for foreign- and native-born labor. Letting H_j be an observed measure of human capital in county *j*, we approximate expected earnings per unit of human capital by:

$$\omega_j = Y_j H_j^{-\gamma} \tag{5}$$

where Y_j is per capita income in county *j* and γ>0 is a parameter translating observed human capital to actual human capital.

a. What causes foreign- and native-born growth in rural counties?

The change in the foreign-born population in county *j* between two periods is given by (1). Applying our specifications in equations (3)-(5) and taking logarithms and rearranging terms, we get:

$$ln\left(\frac{I_{j,1}}{I_{j,0}}\right) = \Delta ln(I_j) = ln\left(\frac{\alpha_i}{\bar{U}_1^i}\right) + ln(U_{j1}^i)$$

$$= \beta_1^i + \beta_W^i\, ln(Y_j) - \beta_H^i\, ln(H_j) + \sum_{l=1}^{k} B_{El}^i\, ln\left(E_{kj} \Big/ E_j\right) + \beta_E^i\, ln(A_j) + \beta_P^i\, ln(P_j) + ln(U_j^i) + ln\,\varepsilon_j^i \tag{6}$$

where $\beta_1^i = ln(\alpha_j / \bar{U}_1^i)$; $\beta_H^i = \beta_W^i \gamma$; $\beta_{El}^i = \beta_W^i \eta_l^i$, and $\beta_E^i = \beta_W^i \eta^i$. The constant term β_1^i changes from one period to another because of changes in the reference utility over time. The last term is the source of error in the model. We assume that the $ln\,\varepsilon_j^i$ are randomly drawn from a normal distribution.

We do not have direct information on local amenities and prices, and so we approximate them by:

$$\beta_A^i \ln(A_j) + \beta_P^i \ln(P_j) = \{\sum_{d=1}^{e} \beta_{Gd}^i \, ln(G_{dj}) + \beta_I^i \, ln(I_{j0})\} + \{\beta_B^i B_j + \beta_{Pt}^i P_t\}. \quad (7)$$

The first term in brackets is our approximation of the utility associated with local amenities. The second bracketed term represents utility associated with local prices. The vector of amenities that attracts immigrant populations has been argued to include expenditures on government services G_{dj} (indexed by $d = 1,2,\ldots,e$). If immigrants are heavy consumers of public services such as health, welfare or schooling, then they should seek out areas with more extensive government support.

Studies focused on traditional immigrant destinations such as cities or rural areas with long-standing ethnic populations have found a strong linkage between existing immigrant populations and the arrival of new waves of immigrants. A similar social network might be expected to operate in these nontraditional destinations as well, although after nearly a century of immigrant population decline, few Midwestern or Southern rural communities have large concentrations of foreign-born residents, much less concentrations from a specific foreign origin. To test for whether new waves of immigrants are attracted to rural areas with larger immigrant populations, we use the size of the existing population of foreign-born, I_{j0}, as a possible local amenity. If immigrants do seek out areas with larger existing immigrant populations, then we will find that find that $\beta_I^i > 0$.

We do not have sufficient time series information on the local cost of living. However, a major component of the variation in the cost of living will be captured by the price of land which will vary with population density and proximity to an urban market. We capture this source of price variation using the Rural-Urban Continuum Code, B_j, which increases with the rural nature of the county. Putting these elements together, the estimating equation for a given decadal change in the foreign-born population is:

$$\begin{aligned} \Delta ln(I_j) = \beta_1^i + \beta_W^i \, ln(Y_j) - \beta_H^i \, ln(H_j) + \sum_{l=1}^{k} B_{El}^i \, ln\left(E_{kj} \Big/ E_j\right) + \beta_E^i \, ln(E_j) \\ + \sum_{d=1}^{e} \beta_{Gd}^i \, ln(G_{dj}) + \beta_I^i \, ln(I_{j0}) + \beta_B^i B_j + \beta_{Pt}^i P_t + ln\, \varepsilon_j^i \end{aligned} \quad (8)$$

And the corresponding equation for growth of the native-born population is

$$\Delta ln(N_j) = \beta_1^n + \beta_W^n\, ln(Y_j) - \beta_H^n\, ln(H_j) + \sum_{l=1}^{k} B_{El}^n\, ln\left(E_{kj} \big/ E_j\right) + \beta_E^n\, ln(E_j) + \sum_{d=1}^{e} \beta_{Gd}^n\, ln(G_{dj}) + \beta_I^n\, ln(I_{j0}) + \beta_B^n B_j + \beta_{Pt}^n P_t + ln\,\varepsilon_j^n \quad (9)$$

Equations (8) and (9) provide us with regression equations that explain the log population changes as a function of variables presumed to enter into the expected utility of residing in county *j* relative to all other possible counties. A positive coefficient signifies that the associated factor attracts members of group *m* to the county. In practice, the equations will be estimated over a time series of cross-sections spanning the period 1950-2000. Population changes will be taken over a decade span. All right-hand-side variables are measured at their values at the start of the decade to reflect the presumption that expectations are conditioned on information available at time 0. A series of decade-specific dummy variables, P_t , will control for changing levels of the reference utility from one decade to the next as well as changing price levels over time.

b. How do the foreign- and native-born differ in response to economic variables?

We can identify how the growth of the native- and foreign-born populations differs in response to economic variables. Subtracting equation (9) from equation (8), we get

$$\Delta ln\left(\frac{I_j}{N_j}\right) = \delta_1 + \delta_W\, ln(Y_j) - \delta_H\, ln(H_j) + \sum_{l=1}^{k} \delta_{El}\, ln\left(E_{kj} \big/ E_j\right) + \delta_E\, ln(E_j) + \sum_{d=1}^{e} \delta_{Gd}\, ln(G_{dj}) + \delta_I\, ln(I_{j0}) + \delta_B B_j + \delta_{Pt} P_t + ln\,\varepsilon_j \quad (10)$$

where $\delta_f = \beta_f^i - \beta_f^n$ for a given factor f . If a factor differs in importance between the foreign- and native-born populations, then $\delta_f \neq 0$. If $\delta_f > 0$, then the factor encourages faster growth of the foreign–born relative to the native-born population, and the fraction foreign-born will increase.

We can extend equation (10) to measure the differing responses between the native adults and native youth.

c. Are immigrant cohorts after 1965 different than those before 1965?

Let X'_{tj} represent all the regressors used in equation (8) and let β_t^i represent the associated vector of parameters that are indexed by decade *t.* If there are changes over time in the factors attracting immigrant populations to rural areas, then we would reject the hypothesis that $\beta_t^i = \beta_{t'}^i = \beta^i$ for $t \neq t'$. Borjas (1999) argued that the skill attributes of immigrant populations changed dramatically after the 1965 change in immigration policies, and so we might anticipate that the parameters governing the incentives to move to rural areas may have changed as well. This would be particularly true if the mix of jobs offered in rural areas has been shifting toward sectors that traditionally employ immigrants. To test this, we consider the regression equation:

$$\Delta \ln(I_{jt}) = X'_{tj}\,\beta^i_{<65} + D_{65}X'_{tj}\,(\beta^i_{>65} - \beta^i_{<65}) + \xi^i_{jt} \qquad (11)$$

where D_{65} is a dummy variable indicating the observation that represents immigrant populations after 1965. Since we rely on Census data, we use the first decade after 1965 to approximate the change in immigrant behavior. The coefficients on the uninteracted factors will reflect the immigrant population response before 1970, while the coefficients on the dummy variable interacted factors will reflect the change in those responses after the policy change. A rejection of the null hypothesis $\beta^i_{>65} - \beta^i_{<65} = 0$ can be interpreted as evidence that the more recent immigrant cohorts are attracted by different local attributes than were older cohorts.[3]

Data and Empirical Strategies

In our analysis, we include each state in Table 1 except Texas. Texas and Illinois are two of the traditional destinations for new immigrants in the United States, but the percent foreign-born in rural Illinois is similar to that found in the other nontraditional destinations included in our sample. However, rural Texas has attracted foreign-born populations at a much higher rate than

[3] Because the change in policy occurred in the middle of the decade of the 1960s, we treat population changes before 1970 as the old immigration policy regime. Population changes after 1970 are treated as under the new policy.

the rest, and so the factors influencing rural migration in Texas would seem very different from the rest of the states. That, and the fact that Texas shares a long and continuous border with Mexico, suggests that the state does not fit our need for a sample of nontraditional immigrant destinations.

From the remaining 17 Midwest and South-Central states, we randomly chose 18 rural counties from each state to include in our sample for each decade. In these states, 1,266 counties were designated as rural. Consequently, the sample size for each decade was 306 counties, or approximately 25% of the total number of rural counties in the Midwest and South-Central states. However, not all data was available since the Census did not report the foreign-born population for all counties in all years (especially 1950).

Figure 1 provides the historical context we must consider when studying the 1950-2000 timeframe. The time series of the percentage of foreign-born in our sample of states mimics the time series for the U.S. as a whole, but the fraction foreign born in the Midwest and the South is always lower than that for the U.S. as a whole in both urban and rural areas. To economize on our data collection efforts, we focus on a random sample of rural counties in the Midwest and the South. To verify that the foreign-born densities in our rural county sample were representative of the states as a whole, we collected the rural foreign-born population proportions for the sampled states and for the nation for each decade between 1950 and 2000. The time series data are shown in Figure 2. It is apparent that our county sample trend is consistent with the state and national trends found in Figure 2. We note that the foreign-born proportion in our sample of counties exceeds the aggregates for the Midwest and the South. There are two reasons: 1) our sample of rural counties includes counties that grew to become urban by 2000, and urban areas have higher fractions of foreign-born, and 2) the state aggregate data distinguishes between urban and rural areas within counties while our data includes urban areas within an otherwise rural county.

Immigration in Context

Table 1 shows the proportion of the total population and the rural population in each state that is foreign-born for each decade between 1950 and 2000. In 1950, Wisconsin, South Dakota, Illinois, Minnesota, and North Dakota had foreign-born proportions similar to or above the U.S. average of 5%. By 2000, Illinois and Texas had a foreign-born population comparable to the U.S. average of 11%. It is clear from Table 1 that the Midwest and the South-Central states have

attracted a relatively small proportion of the past waves of immigrants compared to the U.S. as a whole.

In 1950, the South-Central states had foreign-born population densities ranging from 0.4% to 3.9%; the Midwest had higher densities ranging from 2.2% to 6.4% with Illinois, Minnesota, and North Dakota having densities above 7%. By 2000, with the exception of Texas and Illinois that had a foreign-born population density of 13.9% and 12.3% respectively, all other states had foreign-born population densities ranging from 1.4% to 5.3%, somewhat similar to their 1950 levels.

The South-Central states had modest increases in the proportion of foreign-born, both overall and as a proportion of their rural populations. Only half the Midwest states had rising proportions of foreign-born over the period, and only Missouri had an increase in its rural foreign-born density. However, these numbers mask intermediate gains and losses in foreign-born densities. Between 1990 and 2000, both the total and rural foreign-born densities in all the sample states increased. This shows that even though the foreign-born proportion remains low in most sample states, the Midwest and South-Central states have begun to absorb some of the most recent immigrant cohorts.

Table 2 shows the origin of rural immigrants compared to the rest of the U.S. in 2000. The Midwest and South-Central states have a considerably higher proportion of Europeans when compared to the U.S. average (22.4% and 15.8% respectively). Europeans make up an even larger fraction (29.7%) of the rural foreign-born in the Midwest and South-Central states. The fraction from Mexico in the rural Midwest and South-Central states is similar to that of the U.S. as a whole. The rural foreign-born in the Midwest and South-Central states are less likely to come from Canada or from South American countries than the U.S. as a whole.

Empirical Strategies

Since our timeframe spans half a century, many counties grew out of their rural status to become classified as urban in the years between 1950 and 2000. To avoid skewing our results, we chose counties that were rural in 1950, and then followed the same county sample throughout our timeframe. If we had chosen our rural counties from the 2000 data, and then gone back to 1950, we would have only included the slowest growing counties. If immigrants seek out the fastest

growing job markets, then limiting our analysis to the slowest growing counties would lead to a downward bias of rural foreign-born population growth[4].

To categorize counties as urban or rural, we use the Rural-Urban Continuum Codes developed by Calvin Beale at the USDA. However, these codes were first applied to Census data in 1980, so we must apply the Rural-Urban Continuum Codes' criteria to the 1950 data. A county is defined as rural if it corresponds to Rural-Urban Continuum Code indexed by 6-9, which means that a county had to have no more than 20,000 inhabitants in 1950.

We assume that the foreign-born are primarily of working age as approximately 71% of immigrants[5] are between the ages of 20 and 64, so it is appropriate to compare the experiences of the foreign-born to the native-born population aged 20-64. Concentrating on the working age population also allows us to ignore natives moving to rural counties in retirement and children migrating with their families. Limiting our analysis to this age group also minimizes possible problems due to natural population increases or decreases due to births and deaths.

We consider three populations in our analysis; these are the native-adult, native-youth, and foreign-born populations. The native-adults are those natives aged between 20 and 64, and the native-youth are natives aged 20-34. The native-youth should be the most responsive native population to economic circumstances in deciding where to live, and so we will be able to assess whether immigrants are even more responsive than the native-youth population.

The demographic variables used in our analysis include: median income, median number of school years completed, total employment, Rural-Urban Continuum Code, and current foreign-born population. Our industrial variables correspond to the sectors of employment that can be found in the U.S. Census. The sectors are: the manufacturing, agricultural, mining, government, financial, wholesale, retail, construction, transportation & utilities, and service sectors[6]. All demographic and industrial variables were gathered from the U.S. Census for each decade between 1950 and 2000. Our amenities' variables include per capita tax revenue, per capita welfare expenditure, and per capita education expenditure. These were compiled from the Compendium of Government Finances. The Compendium data is available only in the 2nd and 7th

[4] For a more complete discussion of bias in measuring rural growth, see Artz and Orazem (2007).
[5] Based on 1998 data from the Immigration and Naturalization Service.
[6] In our regression analysis we include the total employment of a county as well as the employment share of each industry. To prevent multi-collinearity problems, we leave out the mining sector from our analysis.

years of a given decade, so we use the average of the two to represent the pattern of county government expenditures over that time span.

Regression Results

The estimates for equations (8)-(10) are reported in Table 3. The model explains 51% of the variation in foreign-born population growth, 25% of the variation for the native-adult population growth, and 33% of the variation in the native-youth population growth. The higher R^2 for the immigrant population suggests that they are particularly sensitive to observable economic factors influencing their incentives to migrate. Presumably, residential choices of the native-born respond more to unobserved tastes including loyalty to the locale, family ties, and ownership of immovable wealth such as land and property. The native young adults are more sensitive to economic circumstances than is the native population as a whole.

Our results for median income are consistent with our migration theory, as the three populations respond positively to an increase in the median income. The foreign-born are much more sensitive to wage earnings; holding all else constant, a 10% increase in income leads to a 1.9% increase in the foreign-born population. The comparable effects for the native-adult and native-young are 0.5% for both populations.

The human capital effect is measured by the number of school years completed. The impact of residential human capital on foreign-born population growth is negative, consistent with the theory summarized by equation (8). For the native populations, the effect is positive but insignificant.

In most of the states in the sample, the foreign-born populations cannot get welfare benefits in the first five years of residence. Consistent with that fact, government welfare programs have an insignificant impact on foreign-born populations. Perhaps surprising given media reports of the strain on public services caused by the influx of foreign children, we find that public education expenditures have a negative effect on the foreign-born. The local tax levels have no effect on the growth of the foreign-born population. County government services have no impact on the growth of native-born populations. The only local fiscal measure that affects the rural native-born population is per capita tax revenue which slows growth. The effect of per capita taxes is slightly larger for the native-youth than for the native-adults.

Rising Rural-Urban Continuum Codes signify increasing remoteness. The results indicate that counties with higher Rural-Urban Continuum Codes are associated with modestly slower population growth for all groups, although the effect is only significant for the native-born groups.

The model captures the probability of employment with a vector of industry employment shares. Unlike native-born populations, the foreign-born are particularly sensitive to the overall size of the employment sector. Natives are attracted by strength in manufacturing and construction while the foreign born concentrate more intensively in counties with disproportionately large wholesale and government sectors and small agriculture sectors.

Perhaps the most interesting result of this analysis is how the populations' respond to the existing foreign-born population of a county. In urban areas, ethnic enclaves have been shown to attract new waves of immigrants with shared ethnicity. One would expect that larger foreign-born populations would attract new waves of immigrants in rural areas as well. However, we find that a 10% increase in the existing population of the foreign-born at the start of the decade lowers the growth of the foreign-born population by 3.2% over the following decade. Interestingly, the population of native-youth responded positively to the size of the local foreign-born population. Furthermore, the native-adults responded in a positive and significant way to the magnitude of the foreign-born population.

Are location decisions of recent immigrant cohorts different than past cohorts?

The Immigration and Nationality Act of 1965 changed the weight placed on refugee and family status relative to education in qualifying for U.S. residency. Before 1965, immigrants had higher educational levels than average U.S. citizen, but after 1965, immigrants had less education than the average native. This change in the composition of immigrant skills may have caused a change to take place in the foreign-born's incentives to locate in rural labor markets.

We partition the data into two periods: an early period (1950-1970) and a late period (1970-2000). We allowed the coefficients on each variable to vary between the periods. This allows us to test whether there was a change in either the native- or foreign-born's responses to rural economic incentives between the two periods. The coefficients from the split sample estimation are presented in Table 4. F-tests of the null hypothesis of no change in the coefficients were easily rejected at the 0.01 significance level for each population. Therefore, all three

populations' responded differently to the factors influencing location decisions in the late period compared to the early period.

Focusing on the most important findings, we note first that foreign-born population growth is negatively correlated with the size of the existing foreign-born population in both periods, and the magnitude of the negative effect increases in the later period. In contrast, native-born population growth is not adversely influenced by the size of the existing foreign-born population in either period. Apparently, these nontraditional rural destinations lack the social networks that have been argued to influence the concentration of immigrants in relatively few traditional urban and rural destinations. On the other hand, larger immigrant populations are not viewed negatively by native-born populations.

Median income seems to have become less important to all populations between the two periods. Prior to 1970, the three populations responded positively to median income with the foreign-born being the most responsive. But in the late period, all three populations displayed negative responses to the median income in a county.

In contrast to the findings on incomes, total employment becomes a more important attractor to foreign-born populations in the later period while the sectoral composition of jobs loses importance. For the most recent cohorts of immigrants, it is the total employment rather than strength in particular industries that attracts immigration. Apparently in these nontraditional destinations, the foreign-born are primarily interested in a strong overall labor market with less concern for strength in specific sectors. For the native-born, population growth is more sensitive to the composition of labor demand with construction and manufacturing jobs being particularly important in the later period. The general finding that rural population growth is more sensitive to jobs than wages is consistent with a similar finding based on BEA data reported in Khan et al (2001).

Conclusion

This study uses a stylized migration model to determine the factors that affect the population growth of immigrants, native-adults, and native-young adults in rural counties. Our analysis of Census data between 1950 and 2000 suggests that the immigrant population was the most responsive to economic incentives in deciding county of residence, both before and after the 1965 change in immigration law.

Unlike major metropolitan labor markets where immigrants congregate in areas with long histories of large ethnic populations, we find that new rural immigrants tend to migrate to counties with smaller existing immigrant populations. Surprisingly given frequent public statements opposing immigration or mandating English Only legislation in these states, larger immigrant populations in a county do not discourage the growth of the native population and may have even contributed modestly to the growth of the young native-born population.

While the native-born population tends to be more responsive to the growth of specific industries in a county, the immigrant population is more responsive to overall employment growth. More recent waves of immigrants react even more strongly to the growth in overall job numbers. In contrast, while older immigrant cohorts were sensitive to local income levels, more recent cohorts appear to follow jobs and not income levels.

A popular perception is that immigrants locate in areas with high levels of public services such as education and welfare. We find that this is not the case, consistent with prohibitions against immigrant receipt of many welfare benefits. Immigrant migration patterns are either insensitive or negatively related to levels of rural county government expenditures.

Our analysis of the patterns of immigrant population growth in the rural Midwest and South suggests that recent growth is more a ripple than a wave. The pattern of responses to jobs and public expenditures suggests that immigrants react to weakening labor market conditions in a county by leaving for counties with improving job prospects rather than staying and consuming government services. Consequently, rural areas that retain large populations of immigrants will do so only by having relatively strong demand for labor, the same factors that lead to retention of young populations of the native-born.

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Table 1: Foreign-Born as a Percentage of Total Population, by Rural Residence and State, 1950-2000.

	Foreign-Born as a Percentage of Total						1950-2000 Percent Change in		
	1950	1960	1970	1980	1990	2000	Total Population	Rural Total Population	Rural Foreign-Born Population
South-Central									
Alabama	.21[a]	0.25	0.19	0.54	0.45	1.1	45.2	15.1	404.9
	[.48][b]	[.46]	[.46]	[1.00]	[1.08]	[2.0]			
Arkansas	0.42	0.46	0.26	0.59	0.6	1.36	40	-0.76	236.1
	[.54]	[.42]	[.43]	[.98]	[1.06]	[2.8]			
Kentucky	0.29	0.36	0.17	0.46	0.35	0.76	37.3	-3.9	167.6
	[.58]	[.55]	[.52]	[.95]	[.93]	[2.0]			
Louisiana	0.49	0.34	0.32	0.83	0.64	0.85	66.5	0.95	75
	[1.15]	[.94]	[1.09]	[2.03]	[2.07]	[2.6]			
Mississippi	0.29	0.18	0.2	0.59	0.41	0.79	31.1	-7.3	156.9
	[.43]	[.37]	[.32]	[.93]	[.79]	[1.4]			
Oklahoma	0.74	0.56	0.33	0.7	0.71	1.32	54.5	-7.2	95.7
	[.91]	[.86]	[.79]	[1.86]	[2.08]	[3.8]			
Tennessee	0.23	0.2	0.19	0.56	0.49	1.1	72.8	12.5	381.4
	[.49]	[.44]	[.48]	[1.05]	[1.21]	[2.8]			
Texas	3.52	2.19	1.66	3.14	4.42	5.1	170.4	26.9	85.7
	[3.91]	[3.12]	[2.77]	[6.02]	[8.97]	[13.9]			
Midwest									
Illinois	3.17	2	1.32	3.07	1.12	1.2	42.6	-22.6	-71.2
	[9.17]	[6.81]	[5.66]	[7.21]	[8.33]	[12.3]			
Indiana	1.26	0.88	0.66	0.89	0.75	0.99	54.6	13	-10.9
	[2.62]	[2.00]	[1.60]	[1.85]	[1.70]	[3.1]			
Iowa	2.99	1.69	1.04	0.93	0.56	1.10	11.6	-16.9	-68.27
	[3.28]	[2.04]	[1.42]	[1.64]	[1.56]	[3.1]			
Kansas	2.06	1.39	0.84	1.05	1.15	1.70	41.1	-15.8	-34.3
	[2.17]	[1.53]	[1.24]	[2.03]	[2.53]	[5.0]			
Minnesota	5.96	3.16	1.8	1.38	0.83	1.40	64.9	5.3	-75.5
	[7.16]	[4.22]	[2.58]	[2.64]	[2.58]	[5.3]			
Missouri	0.84	0.65	0.42	0.7	0.57	1.00	41.5	12.5	38.3
	[2.40]	[1.80]	[1.40]	[1.74]	[1.63]	[2.7]			
Nebraska	3.71	1.98	1.23	1.01	0.75	1.40	29.1	-26.4	-72.1
	[4.38]	[2.85]	[1.94]	[1.97]	[1.79]	[4.4]			
North Dakota	8.24	4.78	2.93	1.94	1.07	1.20	3.6	-37.8	-91.5
	[8.02]	[4.73]	[2.98]	[2.27]	[1.47]	[1.9]			
South Dakota	4.97	2.76	1.54	1.19	0.69	0.80	15.5	-16.7	-86.7
	[4.82]	[2.73]	[1.63]	[1.39]	[1.11]	[1.8]			
Wisconsin	4.99	2.79	1.83	1.44	1.06	1.2	56.2	17.5	-71
	[6.43]	[4.34]	[2.96]	[2.66]	[2.48]	[3.6]			

Source: Authors' computations using Census data.

[a]Rural Foreign-Born as a percentage of all rural residents, using current Census definition of rural.

[b]Foreign-Born as a percentage of total population in brackets.

Table 2: Percent Distribution of the Foreign-born by Origin in 2000

			Midwest & South-Central	
	US	**Texas**	**Total**	**Rural**
Europe	15.8	5.3	22.4	29.7
Asia	26.4	16.1	28.2	22.2
North America	48.3	73.9	42.4	42.6
Mexico	29.4	64.8	33.4	29.5
South America	6.2	2.3	2.9	2.9
Africa	2.8	2.2	3.6	1.7

Table 3: Least Squares Regression Analysis for Sample Populations, 1950-2000

		Populations:		Difference Bewteen Foreign-Born and:	
Variables	**Foreign-Born**	**Natives 20-64**	**Natives 20-34**	**Natives 20-64**	**Natives 20-34**
Median Income	0.19**	0.05*	0.05	0.14	0.15
	(1.99)	(1.71)	(1.15)	(1.49)	(1.53)
Yrs of School Completed	-0.37**	0.04	0.10	-0.41*	-0.47**
	(8.02)	(0.51)	(1.02)	(-1.73)	(-1.96)
Per Capita Welfare Expenditure	-0.01	-0.00	0.00	-0.01	-0.01
	(-1.45)	(-0.39)	(-1.17)	(-1.32)	(-0.92)
Per Capita Education Expenditure	-0.14**	0.01	-0.03	-0.14**	-0.11
	(-1.99)	(0.23)	(-1.13)	(-2.11)	(-1.53)
Per Capita Tax Revenue	0.02	-0.07**	-0.10**	0.09*	0.12**
	(0.34)	(-4.53)	(-4.47)	(1.82)	(2.22)
Current Foreign-Born Pop.	-0.32**	0.01**	0.02*	-0.33**	-0.34**
	(-15.92)	(2.20)	(1.83)	(-16.73)	(-16.52)
Rural-Urban Continuum Code	-0.02	-0.01**	-0.02**	-0.00	-0.00
	(-1.36)	(-3.31)	(-3.04)	(-0.32)	(-0.09)
Total Employment	0.37**	-0.01	-0.01	0.38**	0.38**
	(8.02)	(-0.79)	(-0.68)	(8.32)	(8.21)
Proportion of Jobs in:					
Manufacturing	0.01	0.03**	0.06**	-0.01	-0.04
	(0.59)	(3.60)	(5.31)	(-0.57)	(-1.64)
Agriculture	-0.07**	-0.02	0.00	-0.06*	-0.08**
	(-2.11)	(-1.49)	(0.04)	(-1.66)	(-2.12)
Transportation & Utilities	0.01	-0.01	-0.01	0.02	0.02
	(0.19)	(-0.73)	(-0.52)	(0.44)	(0.41)
Wholesale	0.09**	0.00	-0.00	0.08**	0.09**
	(2.11)	(0.13)	(-0.09)	(2.07)	(2.10)
Financial	-0.08	0.02	0.01	-0.10*	-0.09*
	(-1.45)	(1.12)	(0.50)	(-1.86)	(-1.7)
Service	0.05	-0.03	0.02	0.08	0.03
	(0.54)	(-1.00)	(0.48)	(0.87)	(0.33)
Retail	0.06	0.02	0.05	0.05	0.01
	(0.66)	(0.51)	(1.28)	(0.51)	(0.13)
Government	0.12**	0.02	0.03	0.10**	0.09**
	(2.73)	(1.43)	(1.41)	(2.27)	(2.09)
Construction	0.05	0.09**	0.10**	-0.04	-0.06
	(0.86)	(5.03)	(4.28)	(-0.79)	(-0.98)
R^2	0.51	0.25	0.33	0.45	0.45
N	1329	1342	1342	1329	1329

All variables except Rural-Urban Continuum Code are in log form and can thus be thought of as elasticities. The t-statistics are in parentheses. ** implies significance at the .05 level. * implies significance at the 0.1 level.

Table 4: Population Growth Regressions for Early and Late Periods, by Population Group

	Foreign-Born			Natives 20-64			Natives 20-34		
Variables	**1950-1970[a]**	**1970-2000[b]**	**D[d]**	**1950-1970**	**1970-2000**	**D[d]**	**1950-1970**	**1970-2000**	**D[d]**
Median Income	0.54**	-0.10	††	0.15**	0.03	†	0.22**	-0.02	††
	(3.44)	(0.82)		(2.88)	(0.60)		(3.28)	(-0.44)	
Yrs of School Completed	-0.74**	0.29	††	0.17	-0.01		0.17	0.11	
	(-2.05)	(0.92)		(1.46)	(-0.08)		(1.11)	(0.84)	
Per Capita Welfare Expenditure	0.01	-0.02		-0.01	0.00		-0.00	0.00	††
	(0.70)	(-1.93)*		(-1.00)	(0.34)		(-0.48)	(-1.10)	
Per Capita Education Expenditure	-0.15	-0.07		-0.02	-0.06		-0.08*	0.03**	†
	(-1.48)	(-0.73)		(-0.55)	(1.25)		(-1.76)	(-3.08)	
Per Capita Tax Revenue	-0.15	0.02		-0.14**	0.04**	††	-0.20**	-0.08	††
	(-1.42)	(0.26)		(-4.22)	(-3.20)		(-4.54)	(1.18)	
Current Foreign-Born Population	-0.21**	-0.45**	††	0.02*	0.01		0.02	0.01	
	(-7.07)	(-16.82)		(1.79)	(1.32)		(1.45)	(0.80)	
Beale Code	-0.01	-0.02		-0.03**	-0.01*	††	-0.04**	-0.01	††
	(-0.17)	(-1.23)		(-3.26)	(-1.92)		(-3.45)	(-1.49)	
Total Employment	0.21**	0.56**	††	-0.03	0.00		-0.06	0.01	
	(2.68)	(9.89)		(-1.28)	(0.06)		(-1.64)	(0.34)	
Proportion of Jobs in:									
Manufacturing	0.09**	-0.01	†	0.03**	0.02*		0.08**	0.03*	††
	(2.19)	(-0.42)		(2.57)	(1.78)		(4.68)	(1.84)	
Agriculture	0.09	-0.05		0.01	-0.03**		0.07**	-0.03	††
	(1.12)	(-1.34)		(0.53)	(-2.08)		(2.02)	(-1.63)	
Transportation & Utilities	-0.01	0.05		0.01	-0.02		0.03	-0.04	
	(-0.07)	(0.71)		(0.36)	(-1.05)		(0.88)	(-1.35)	
Wholesale	0.09	0.04		0.00	0.00		-0.02	0.01	
	(1.23)	(0.76)		(0.08)	(0.11)		(-0.50)	(0.38)	
Financial	-0.17**	-0.02		-0.02	0.03		-0.03	0.03	
	(-2.00)	(0.71)		(-0.72)	(0.73)		(-0.91)	(1.13)	
Service	0.09	0.20		-0.02	-0.06*		0.05	-0.06	
	(0.63)	(-0.39)		(-0.46)	(1.66)		(0.84)	(0.93)	
Retail	0.23	0.09*		-0.00	0.03		0.02	0.06	
	(1.52)	(1.71)		(-0.06)	(-1.43)		(0.25)	(-1.08)	
Government	0.32**	0.04	††	0.07**	0.00	††	0.11**	-0.00	††
	(3.72)	(0.68)		(2.55)	(0.13)		(2.98)	(-0.21)	
Construction	-0.04	0.12*		0.06**	0.11**		0.07*	0.11**	
	(-0.42)	(1.68)		(2.02)	(4.63)		(1.95)	(3.60)	
R^2	0.49			0.19			0.24		
N	1336			1349			1349		
F(17, N-17)[C]	39.9		**	12.9		**	18.6		**

[a] The early period is from 1950 to 1970. [b]The late period is from 1970 to 2000.

[c] F-statistics for the hypothesis that all coefficients are jointly equal across the early and late periods.

[d] D: the test of equality of the specific coefficient between the early and late period.

† indicates that the difference is significant at the 10% level. †† indicates that the difference is significant at the 5% level.

* indicate significance at the 0.1 level. ** indicates significance at the 0.05 level

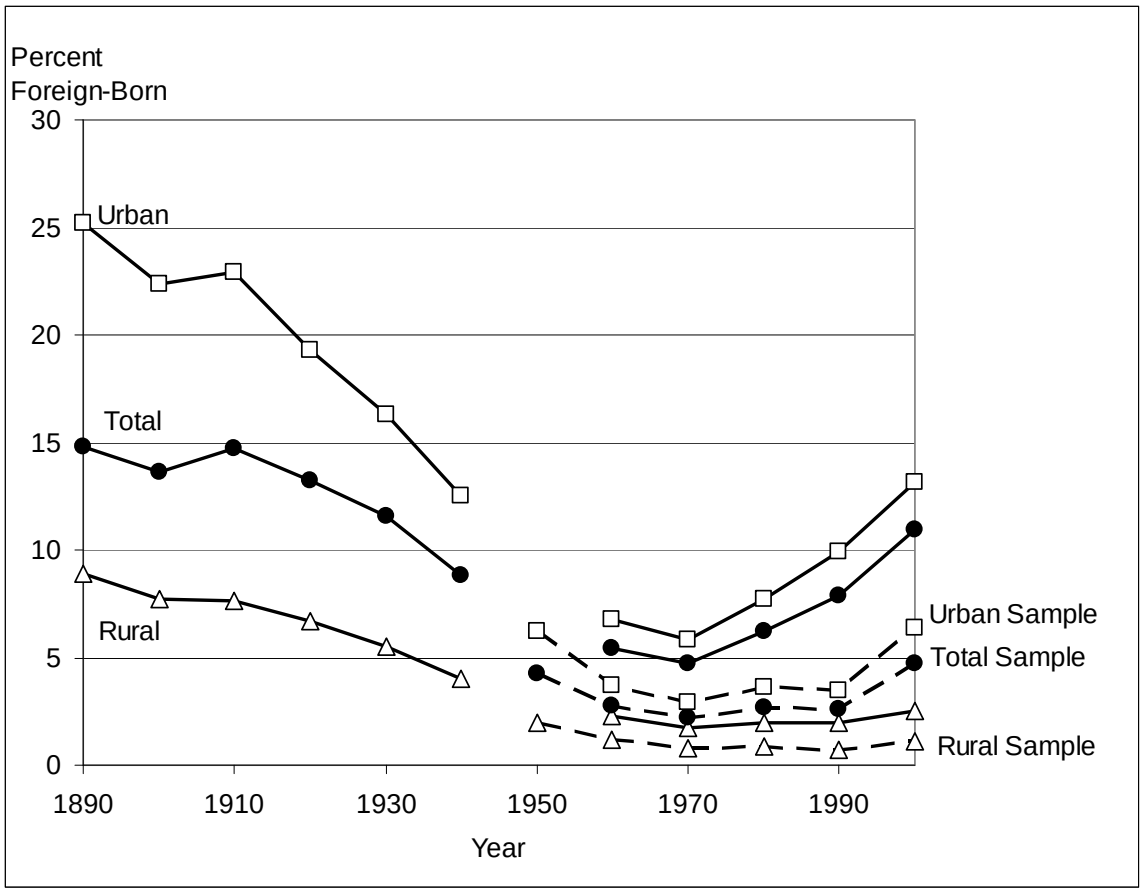

Fig. 1 Percent foreign-born in U.S. by Rural, Urban and Total, 1890 – 2000. Sample data from 1950 – 2000.
Source: Authors' compilations of data from the United Stated Department of Commerce, Bureau of the Census, various years. Series are for the total U.S. population, 1890-2000, and for the subset of Midwestern and Southern states used in the paper, 1950-2000.

Fig. 2 Percent foreign-born in sample rural counties, States, and U.S. 1950 – 2000.