Country Road Take Me Home: Migration Patterns in the Appalachia America and Place-Based Policy

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Country Road Take me Home—
Migration Patterns in the Appalachia America and Place-Based Policy*

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Abstract: This research fills a void in the regional development literature by assessing how labor force migration affects regional adjustment in peripheral regions and whether it differs than the rest of the country. We do this by comparing patterns for the lagging Appalachian region to the U.S. as a whole for the 1990s and post-2000 periods. We appraise whether successful job creation helps the original residents seeking employment, or primarily goes to outsiders, rendering place-based development policy ineffective. In a novel addition, we also appraise whether local job creation is associated with attracting relatively wealthier net-migrants. Because different relative migration elasticities imply different responses for other labor market outcomes, we also assess whether employment growth supports original residents in terms of lifting median household incomes and employment/population rates and reducing unemployment rates and poverty rates. We find that migration post-2000 has become less responsive to employment growth differentials, which allows successful economic development to lift the employment prospects of original residents, which also produces a stronger response in reducing local poverty rates.

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1. Introduction

Development of lagging regions has been a long-running concern of national and regional governments. Such "place-based" policies have been advocated as a way of promoting equity for poor residents. Economists are often highly critical of these policies because they focus on the place and not on the "people". Economists also suggest such policies may slow the regional adjustment process and that the winners may be wealthy business owners or landowners—not the intended low-income residents (Glaeser, 1998; Pettus, 2006; Polese and Shearmur, 2006; Vigdor, 2007; World Bank, 2009).

The relative success of place-based policies relies on changing/correcting externalities that prevent people from pursing better economic opportunities (Blank, 2005). One example is by promoting growth or industrial clusters, place-based policies may be successful, but such policies require monumental knowledge for policymakers (Glaeser and Gottlieb, 2008). Place-based policies may also be successful when there are mobility costs such as the lack of information about job availability, physic moving costs of moving to very different locations without friends and family, and financial moving costs including selling a home (Partridge and Rickman, 1997, 2008). Such mobility costs inhibit the movement to economic opportunity, creating regional pockets of economic deprivation. Partridge and Rickman (2008) found indirect evidence that low migration responsiveness in remote and rural regions allows job growth to produce significantly better outcomes for disadvantaged households in those areas.

The above analysis suggests that understanding the influence of migration on lagging regions is necessary to assess the influence and effectiveness of economic development and potential of place-based policy. Namely, on the negative side, if job growth induces migration, then successful economic development will attract new residents who will take most or all of the jobs, so that disadvantaged residents benefit less. On the positive side, high migration responses may induce residents of lagging regions to relocate to better opportunities. Then, the best policy is to provide skills and information to facilitate migration to better opportunities. However, if migration is less responsive, then some of the new jobs from successful economic development will go to the original residents, though not all of the adversely affected residents in slow-growing regions will migrate to economic opportunities.

So what does the evidence suggest? Blanchard and Katz (1992) find that there is an almost one-

for-one migration response to employment growth, which would render place-based policy ineffective in helping disadvantaged original residents. However, those results were challenged by Bartik (1991, 1993), Partridge and Rickman (2006), Rowthhorn and Glyn (2006), among others. Generally, their results suggest that in the long-term (about 7 years), approximately 80% of the new jobs go to migrants, leaving 20% of the jobs to original residents, with a larger share going to original residents in the short-term. Using evidence from after 2000, Partridge et al. (2012) find that migration responses to job growth had further declined from the 1990s, suggesting even greater scope for place-based policies (though they did not consider the costs of such policies). Results in Renkow (2003) and Eliasson et al. (2003) suggest that introducing commuting into the model further expands the role of place-based policy in terms of benefiting the original residents. Besides creating employment opportunities, Persky and Felsenstein (2008) argue that job growth benefits original residents in two ways—(1) by increasing wages for everyone as labor demand shifts out on an upward-sloping labor supply curve and (2) by allowing employed residents to take better jobs—i.e., they advance up so-called "job chains."

While there has been considerable research on individual migration decisions, there has been virtually no attention to whether relatively rapid economic growth affects the average incomes of the migrants. Specifically, does migration resulting from economic development attract relatively "wealthy" (usually higher-skilled) migrants, as predicted by a human capital model of migration? Conversely, does job growth attract lower-income (usually lower-skilled) migrants who are attracted to economic opportunity? The former may help build more skills in the region, promoting a virtuous cycle of future growth, while the latter lifts economic prospects of disadvantaged households. Lagging regions in particular may need more high-skilled workers in order to promote sustainable economic growth.

Clearly these issues are most paramount in lagging regions that have historically suffered from economic degradation. In the United States, the region surrounding the Appalachian Mountains has long been more isolated and its residents have suffered deep poverty. In the early 1960s, most of the counties in this rural region faced poverty rates exceeding 50% (Ziliak, 2012), which provided the impetus to form the Presidential Appalachian Regional Commission (1964) to propose solutions to the region's historic poverty. The Commission called for the formation of a multistate federal-state partnership to help develop

the region through better management of its natural and human resources and provision of infrastructure. This report resulted in the formation of the Appalachian Regional Commission (ARC) in 1965, which today spans all of West Virginia and parts of 12 other states (Widner, 1973, 1990). Because the ARC is the longest running and largest (in terms of geographical size and in expenditures) major regional program in the U.S., the ARC region has received considerable attention in assessing the effects of development policy and the effects of economic growth on lagging regions.

While the ARC region has made strides in reducing the economic gap with the rest of the country (Isserman and Rephann, 1995; Ziliak, 2012), there remains great debate whether economic policy played much if any role in this pattern (Glaeser and Gottlieb, 2008). Nevertheless, research shows that economic growth in the ARC region is associated with a host of spillovers, such as raising marriage rates, reducing poverty rates, increasing population growth in remote communities, and decreasing welfare and disability expenditures (Partridge and Rickman, 2007; Black et al., 2002, 2003). Thus, understanding how successful economic development affects migration and labor market outcomes becomes an imperative first-step in appraising the potential for place-based policy.

This paper will examine the responsiveness of migration flows to economic growth and the responsiveness of average income per migrant to local economic development. We do this using 1993-2000 and 2000-2007 county-to-county migration data employing tax return based data from the Internal Revenue Service (IRS). This data allows us to draw comparisons of economic outcomes among counties that have steady migration flows between them—i.e., the counties that migrants themselves have revealed as competing location possibilities. After drawing preliminary conclusions that migration responses are falling over time, we then appraise whether relatively faster employment growth is associated with greater employment of original residents, higher median household incomes, and lower poverty rates. We find that migration flows in the Appalachian region are increasingly less responsive to employment growth, leaving greater scope post-2000 for successful local economic development to help original residents. In addition, we find that relatively faster job growth is associated with lower income per migrating household, suggesting that growth is creating opportunities for the poorest people through migration (but that does not necessarily help the lagging region). However, we find that it is county-to-county migration

with counties outside of the ARC region that is the primary (economic) adjustment mechanism. In fact, recent intra-ARC region migration is inversely associated with faster job and income growth, suggesting other causes for intra-Appalachian migration. Finally, we also conclude that while the Appalachian region is usually held out as being distinct from the rest of the U.S., we find the migration and labor market responses are not all that different than the country as a whole.

In what follows, Section 2 will present a short review of the literature followed by a brief discussion our conceptual framework. Section 3 will present the data and empirical implementation. Section 4 will discuss the empirical results followed by our concluding thoughts in Section 5.

2. Literature Review and Conceptual Model

In situ politicians typically call for place-based policies to help their constituents. When they are aimed at helping lagging regions, such policies can draw broader public support at the national or regional scale because of their promise to benefit poor residents. We have already noted that economists are often skeptical of such efforts for a variety of reasons including problems of "picking winners," political economy concerns that such policies are really aimed to help politicians not residents, these policies slow needed adjustment mechanisms from poor to prosperous regions, and any benefits are dispersed to those who are already economically well off. Critics point to a list of supposed failed place-based initiatives that support this conclusion (Glaeser and Gottlieb, 2008).[1]

Proponents of place-based policies point to exceptions such as when migration costs limit the ability of disadvantaged residents to move to more prosperous locations.[2] Using data from the 1990s, Partridge and Rickman (2007, 2008) found evidence that local economic growth is more effective at helping disadvantaged residents in remote and lagging regions due to a more inelastic labor supply in these areas. They also rule out selection-based arguments that residents in lagging regions are less-inclined to work in the formal labor market as a primary explanation for lower incomes. Namely, selection-based arguments imply that local economic growth would not greatly affect poverty rates or

[1]Among the problems with actual place-based policies is that they may be completely inappropriate. For example, innovation based strategies for lagging regions are likely to fail because of a lack of human capital capacity to absorb the knowledge (Rodrıguez-Pose and Crescenzi, 2008). One example is the failure of advanced technology clusters to take hold in Appalachia (Feser et al., 2008).

[2]For related discussion of situations where place-based policy may be appropriate, see Barca (2010) and Rodríguez-Pose (2010).

employment rates because a large share of the population is disinclined to enter the labor market. Yet, Partridge and Rickman (2008) found that economic growth increased employment rates (which suggest formally nonemployed workers are now working) and reduced poverty rates. Likewise, Black et al. (2002; 2003) found that a large part of the Central Appalachian population moves between welfare and disability programs and the active labor market depending on economic conditions. However, even a successful place-based initiative aimed at helping poor residents would fail if migrants took all of the jobs. Yet, Partridge et al. (2012) find that post-2000, there is a much smaller migration response to job growth, leaving greater scope for place-based initiatives to put the original residents in newly created jobs.

The ARC has been one of the more controversial place-based policy initiatives. On one hand, we should not expect major effects as the annual non-infrastructure spending has been in the range of $75 million per year for a region with over 20 million residents (Glaeser and Gottlieb, 2008). Perhaps for this reason, Glaeser and Gottlieb (2008) find that the ARC region statistically performed no differently than neighboring counties over the 1970-2000 period. However, using broader matching strategies for the ARC region, Isserman and Rephann (1995) and Ziliak (2012) find that the ARC region has fared better than similar counterparts elsewhere.

Partridge and Rickman (2008) proposed several reasons for spatial frictions that would increase the effectiveness of local economic development in remote or lagging regions such as the ARC. They follow on the work of Blumenberg and Shiki (2004) in proposing a form of rural spatial mismatch between the types of jobs offered by employers and the skills and location of the residents.[3] Specifically, great distances can separate workers and employers in rural labor markets. Rural labor markets are often thin with fewer employers that are concentrated in primary-sector and manufacturing industries (Lobao et al., 2008; Weber et al., 2005). There is also a smaller available labor force, reducing the range of skills available to employers. Thus, it is difficult to form the strong labor market matches that are observed in urban areas, which results in lower wages for rural workers. Further exacerbating matters is that long commutes further reduce the ability of workers to take higher-paying jobs (Renkow, 2003). Limited

[3]See Lucas (2001) for a review of spatial frictions that limit the scope of migration to eliminate spatial differences in utility and see Ihlanfeldt and Sjoquist (1998) for a review of the spatial mismatch hypothesis in urban labor markets.

opportunities for formal childcare with expanded hours to facilitate long commutes is also lacking in rural areas. It is not surprising that nonmetropolitan wages tend to be lower and unemployment in many cases may be more prolonged, especially in lagging regions (Mills, 2001).

Migration to better opportunities is the standard neoclassical solution to regional inequities. But as already mentioned, there are physic and tangible monetary moving costs, including the costs of selling a house (Hughes and McCormick, 1994). Depressed housing markets in lagging areas may further raise mobility costs. Nord (1998) finds that poor families regularly move in directions that are unexpected from the neoclassical perspective. Poor families often migrate to low-wage locations that are perceived to have more opportunities for low-skilled work and affordable housing, even though this migration pattern may widen regional inequalities. Job search costs could also be higher when potential migrants from lagging regions have less information about the workings of urban labor markets (Gibbs, 1994), which reduces the effectiveness of migration as a solution to regional inequities. One spouse may be tied to the region for family or work reasons (such as owning a farm), which also limits mobility.

One implication of spatial frictions is that place-based policy can be more effective in lagging regions. Namely, if the local workforce is not particularly mobile, creating local job opportunities may be the best avenue to increase employment among their disadvantaged workers. Moreover, for some of the same information reasons that many residents of lagging regions do not migrate to prosperous regions, people from urban areas may find migrating or commuting to lagging regions equally unappealing. For one, urban migrants would have less information about the workings of a lagging region's labor market and may not believe that job opportunities in a lagging region will be permanent—i.e., risk averse people may not want to risk moving to a lagging region.

Migration responses will also be affected by spatial frictions. In lagging regions, stronger spatial frictions imply smaller responses to employment growth. For example, within the lagging region, low housing costs and a low-wage distribution may be attractive to low-income migrants (Nord, 1998), which may imply an unexpected negative employment growth-migration relationship. The search for low-cost housing may especially affect migration within lagging regions, especially for those who are not formally in the labor market (e.g., on public assistance). Likewise, migration between lagging regions and the rest

of country may be depressed due to a lack of information on both parties.

Our conceptual model is based on a labor demand and labor supply framework, though we will control for other non-labor market factors that affect outcomes. Essentially, factors that increase local labor demand increase employment and wages, inducing net in-migration, raising employment rates, and reducing poverty rates. Likewise, factors that increase local labor supply will increase employment but reduce wages, which in turn reduce net in-migration, decrease employment rates, and raise poverty rates (assuming the labor supply shift is independent of labor supply changes among those in poverty). One possible labor supply response in lagging regions is the movement of lower-income households to locations with lower housing costs or more low-skilled occupations.

Thus, we can write the change in the economic outcome in location *i* in period *t* as:

(1) $\Delta OUTCOME_{it} = f_{it}(\mathbf{LD}_{it}, \mathbf{LS}_{it}, \mathbf{DEM}_{it}, \mathbf{X}_{it})$

Where **LD**, **LS**, **DEM**, and **X** are respectively vectors associated with labor demand, labor supply, demographic factors, such as education or age structure, that may be associated with both demand and supply, and other non-economic factors that influence economic outcomes such as state government policy or cultural factors associated with a particular region. Our empirical model described below follows from this conceptual formulation

3. Empirical Model

We separately consider the two economic expansion periods of 1993-2000 and 2000-2007—though the earlier period experienced significantly more job growth than the post 2000 period. The empirical specification follows Partridge et al. (2012) in differentiating the 1990s economic expansion from the post-2000 economic expansion in terms of changing migration and structural responses over time. We end the analysis at 2007 in order to not confound the influence of the Great Recession and housing bust with our estimates. Partridge et al. (2012) and almost all of the related literature only consider aggregate county behavior without regard to the origin or destination of migrants. Instead, we consider net county-to-county migration behavior. Using county-to-county migration provides much richer information than only considering aggregate net-migration or even aggregate in- or out-migration rates (without regard to

the destination/origin). We will follow the income and migration models with auxiliary regressions on other economic indicators to assess the validity of the results and to draw further economic implications.

The migration dependent variable is county-to-county net migration rates following Ali et al. (forthcoming).[4] Our first dependent variable is represented by the following expression:

$$(2) \qquad NET_{ij} = [(M_{ij} - M_{ji})/[(P_i + P_j)/2]]*1{,}000{,}000.$$

In equation (2), we define gross in-migrants moving from county *i* to county *j* as M_{ij}, meaning that the *net* migration between i and j is (M_{ij}-M_{ji}).[5] The term is multiplied by 1,000,000 to obtain more manageable figures in our regression results. We will consider all possible net migration pairs that are allowed by our data (as described below). Net migration from *j* to *i* is the direct inverse of net migration from *i* to *j*, so the latter pairing is omitted from the sample to prevent double-counting.

The migration data is from the IRS county-to-county migration dataset that contains of gross in-flows and out-flows using personal income tax returns. A county-to-county migration is defined as the filer's address changing counties between tax years. The gross flow numbers are based on the number of exemptions on individual tax returns. The tax return data forms the core of U.S. Census Bureau estimates of domestic migration and population estimates, but has some imperfections. For example, not every domestic migrant household files tax returns and there are cases such as people not using a residential address in filing, older children leaving the household, and marriages and divorces in which migration data is missed or miscoded (see Gross 2005 for details). The underlying assumption is total domestic moves are in proportion to the IRS figures, which just changes the scaling of the regression coefficients.

The second dependent variable assesses the types of migrant the county is typically attracting. It is measured as total taxable income from migrants to county *i* originating from county *j* minus taxable income of migrants to county *j* originating from county *i* divided by the gross flow of migrants between i and j (M_{ij}+M_{ji}):

[4]Other examples of place-to-place migration include Douglas (1997), Nakajima and Tabuchi (2011), and Biagi et al. (2011). Yet, we are unaware of a study that considers place-to-place net-migration rates at the county level.

[5]The average of the two populations is used to approximate the average net-migration rate. A similar net migration variable is used by Douglas (1997): [(M_{ij}-M_{ji})/(Pop_i*Pop_j)]*1000000, though Ali et al. (forthcoming) show that the measure we employ and the one used by Douglas produce similar regression results. Nakajima and Tabuchi (2011) further discuss other place-to-place migration measures.

(3) $AVGMIGINC_{ij} = (MIGINC_{ij} - MIGINC_{ji})/(M_{ij}+M_{ji})$,

where $MIGINC_{ij}$ is taxable income of migrants moving to county *i* from county *j*. AVGMIGINC measures the average income per gross migrant coming into county *i* relative to county *j*.[6]

The first sample includes county-to-county migration pairs where at least one of the counties in the pair is an Appalachian county as defined by the ARC's boundaries. The second sample includes the rest of the United States in which neither county in the county-to-county migration pair is in the ARC region. The two samples allow us to assess whether the historically lagging ARC region has a different response than rest of the U.S.

The annual IRS data is reported if at least 10 households (approximately 25 people) moved from *i* to *j* or from *j* to *i*, meaning we need at least 10 household moves in each direction for each of the seven years in the respective two seven-year time periods. Thus, we are considering county pairs with consistent migration relationships as revealed by the preferences of migrants. As a result, we are more likely to pick up more labor market migration flows as opposed to just "noisy" random moves for personal reasons (e.g., recent marriage, divorce, etc). To better ensure we are considering moves across labor markets, we remove county pairings within the same metropolitan area (for metropolitan areas with at least two counties) because many of those moves are for housing and public service considerations and not due to cross labor market differentials.

The explanatory variables are measured as county *i*'s respective value minus county *j's* value, which is the specification used by Clark et al. (2003) and Ali et al. (forthcoming). With the exception of contemporaneous job growth (or variables that are fixed over time), the variables are lagged to be as close to the initial sample starting point as possible (1990 and 2000). Thus, the employment growth measure equals the contemporaneous job growth rate in county *i* over the seven year period minus the contemporaneous value for job growth in county *j*. The base regression model can be summarized as:

(4) $OUTCOME_{ij} = \beta_0 + \beta_1(EMP_i - EMP_j) + \beta_2(\mathbf{ED_i} - \mathbf{ED_j}) + \beta_3(\mathbf{DEMOG_i} - \mathbf{DEMOG_j}) + \beta_4(AMENITY_i - AMENITY_j) + \beta_5(METRO_i - METRO_j) + \beta_6(\mathbf{IND_i} - \boldsymbol{IND_j}) + (\boldsymbol{\sigma_{is}} - \boldsymbol{\sigma_{js}}) + e_{ij.}$

where OUTCOME is the dependent variable measuring relative outcomes in counties *i* and *j*. EMP is the

[6]Gebremariam et al. (2011) also model Appalachian migration patterns but their model is considerably different, making the results incomparable. Foremost, they consider levels of in- and out-migration (not rates of change) and they use *aggregate* flows from Census data, not the disaggregated county-to-county data we use.

employment growth rate (1993-2000 or 2000-2007) using employment from the Bureau of Economic Analysis (BEA) REIS data set. **ED** includes three educational attainment variables and **DEMOG** is a vector containing five age shares, the percent of the population that is married, and the percent of the population that is foreign born. The amenity index variable measures natural amenity attractiveness and there is a metropolitan indicator. **IND** is a vector of four-digit industry employment shares. We also include state fixed effects $\boldsymbol{\sigma}_{is}$ for each county located in state *s*.[7] The residuals are depicted as e_{ij} and are assumed to be heteroscedastic.

The employment growth rate is the key variable in the model as it reflects whether local economic development affects migration and other economic outcomes. Across the country, we expect job growth to be less associated with post-2000 migration based on Partridge et al. (2012), but Partridge and Rickman (2008) suggest that lagging or remote regions will generally have even smaller migration and commuting responses—leaving more job opportunities for disadvantaged locals, leading to a stronger impact on poverty. It is not certain whether relatively faster job growth attracts higher income migrants on balance. Further auxiliary analysis will investigate whether relatively faster job growth is associated with increased labor force participation, lower unemployment rates, higher median household income, and lower poverty rates. In particular, if migration responses declined beginning in 2000—we would expect that employment growth would have stronger "positive" effects on these indicators as there is a smaller offsetting labor supply response.

We briefly describe the other control variables, focusing on their influence on migration. They are drawn from the 1990 and 2000 Census of Population unless otherwise stated. We include three educational attainment variables that are expected to have mixed effects. On one hand, Glaeser et al. (1995), Simon (1998) and Simon and Nardinelli (2002) argue that greater initial concentrations of educated individuals are associated with higher regional growth. Likewise, Moretti (2004) shows that higher shares of educated people spill over and raise productivity of all workers in a region regardless of their educational attainment. These two patterns suggest workers will be attracted to regions with more educated workers. However, the human capital theory of migration suggests that educated workers are

[7]Distance between counties is not included because distance-cost effects that reduce gross migration flows from county A to county B would likewise depress gross migration flows from B to A—producing little *net* impact.

more prone to migrate (Yankow, 2003). Having a higher relative share of educated workers who are at greater "risk" of leaving suggests that out-migration rates may be larger, especially in lagging regions with fewer employment opportunities. Thus, the effects of education on net migration are *a priori* unclear.

We also include five age shares of the population to account for demographic and life cycle migration effects. Because married households may have higher implicit and explicit moving costs (especially for dual employed couples), we also control for the share of the population that is married. Similarly, we control for the initial share of the population that is foreign born, as immigrants have dispersed away from beachheads such as New York and Los Angeles (Lichter and Johnson, 2009). In this case, greater shares of the population that are foreign born may attract new migrants seeking to be in more diverse locations or whose labor market skills may be complementary to domestic workers (Ottaviano and Peri, 2006, 2008). Yet, higher initial immigrant shares may repel domestic migrants due to cultural avoidance (Ali et al., forthcoming; Faggian et al., 2012).

We include a 1 to 7 indicator of natural amenities provided by the U.S. Department of Agriculture's Economic Research Service to account for amenity migration. To control for different migration patterns due to agglomeration effects, a metropolitan indicator variable is included using the 1999 definition. We also add four-digit industry shares in the traded agricultural, mining, and manufacturing sectors to account for heterogeneity in shocks across traded sectors. Certain counties may be especially associated with particular traded-sector firms (e.g., coal, textiles, steel), which could be lost if we used more aggregated one-digit employment shares.[8] The state fixed effects of counties *i* and *j* are included to account for state-specific factors such as tax policy, welfare policies, and regulatory environment. State dummies also control for effects associated with the cultural and socioeconomic differences between the Northern and Southern regions of Appalachia, and especially the more impoverished Central region (Ziliak, 2012).

A possible concern is that employment growth is endogenous in which a positive shock improves

[8]The employment data source for the industry data is the Economic Modeling Specialists Incorporated (EMSI), found at EMSI.com. EMSI uses algorithms to create estimated employment figures for county-industry cells that are not disclosed. As described by Dorfman et al. (2011), "EMSI combines covered employment data from Quarterly Census of Employment and Wages (QCEW) produced by the Department of Labor with total employment data in the State and Local Personal Income Reports (S/LPI) published by the Bureau of Economic Analysis (BEA), modified with County/ZIP Business Patterns (CBP) and Non-employer Statistics (NES), both published by the U.S. Census Bureau." EMSI reports that state agencies confirm their estimates are quite accurate even for sparsely populated counties.

economic outcomes (e.g., migration) and employment growth, positively biasing β_1. To account for this, we follow a long literature in using industry mix employment growth from shift-share analysis as an instrument (Bartik, 1991; Blanchard and Katz, 1992), which is the predicted growth rate if all of the industries grew at the national rate over the period.[9]

4. Empirical Results.

The Appendix presents the descriptive statistics. We will discuss the main migration and then the net-income per migrant followed by some sensitivity analysis and auxiliary regressions to assess place-based development policy. Table 1 reports the regression results using the net-migration variables as the dependent variable. Columns (1) and (2) respectively report the 1993-2000 OLS results for the Appalachian region (always net of intra-metropolitan county pairs) and the U.S. without the Appalachian region (always net of intra-metropolitan county pairs). Columns (3)-(4) show the respective results using two-stage least squares (2SLS) using the industry mix variable as the instrument for employment growth. Columns (5)-(8) repeat the same results for the 2000-2007 period.

4.1. Base Empirical Results.

The Hausman test results suggest that the employment growth coefficient is biased at the five percent level, while the first-stage (weak instrument) F-statistics for the industry mix variable are between 32 and 564, suggesting it is a strong instrument. Indeed, comparing the OLS to the respective 2SLS results, the OLS relative employment growth coefficients are more positive as expected, illustrating that the OLS results overstate the migration response to employment growth. Though the differences are insignificant, the 2SLS results suggest a weak pattern where the U.S. migration response appears to be larger than in the Appalachian region, which weakly suggests that more of the jobs go to local residents in the Appalachian region. Nonetheless, the results are not fundamentally different, implying that Appalachia responds somewhat like the rest of the country. Comparing across decades, there is weak evidence in the 2SLS results that the employment response is smaller in the post-2000 period—especially

[9]Industry mix growth is defined as:
$\text{INDMIX\_GR}_s=\sum_i S_{is}^t * EMP\_GR_{i,USA}^{t,t+n}$
Where S_{is}^t is the county employment share in industry *i* (two-digit NAICS from EMSI) in the initial year *t* (1990 or 2000) and $EMP\_GR_{i,USA}^{t,t+n}$ is the national growth rate in industry *i* for the period [t, t+n] (1993-2000 or 2000-2007). Changes in *national industry* demand are the exogenous shifters that identify demand shocks.

in the ARC region where the migration response is actually negative, though statistically insignificant. Using different data, Partridge et al. (2012) also found a negative response for rural areas after 2000, which they attribute to historic primary sector out-migration patterns, even as the primary sector was rebounding with strong commodity prices post-2000. Another possibility is that low-income households were attracted to slower growing places with lower housing costs in the midst of the run-up of U.S. housing prices during the housing bubble, which is a bubble version of Nord's (1998) argument.[10] As we describe below, this possibility likely relates to intra-ARC migration, especially after 2000.

The education results suggest that having relatively higher population shares with more education (relative to non-high school attainment) is inversely associated with net migration in the U.S. sample, consistent with having a greater share of the population at risk to migrate. Likewise, there appears to be a larger negative association with educational attainment after 2000. There is a similar negative association for Appalachia, though it is not quite as strong. After 2000, one "plus" for the Appalachian region is that university educated share is not statistically associated with net out-migration, which implies its educated individuals are not particularly at risk of leaving the region, even if the availability of higher-income jobs is limited. This low migration response may help explain why Bollinger et al. (2011) found that returns to education declined in Appalachia in recent decades—i.e., a smaller supply response. In both samples, the initial relative foreign born share is inversely associated with subsequent net migration, which is consistent with Ali et al. (forthcoming).[11]

We now turn to factors associated with attracting relatively higher-income (and perhaps higher-skilled) migrants. These results are shown in columns 1-4 of Table 2, in which only the 2SLS results are reported for the sake of brevity. They suggest that relatively faster job growth is statistically associated with attracting higher income migrants for the U.S. in the earlier period, but not after 2000. A parsimonious model described below suggests positive and statistically significant association between

[10]Partridge et al. (2012) present arguments that the housing bubble was not a major driver of spatial differences in migration over the period and, if anything, the bubble would normally increase migration in most of the country as it would facilitate selling one's house.

[11]Most domestic migration research related to immigration focuses on how *contemporaneous* immigration affects migration flows with those arguing immigration induces net-out migration versus those who argue there are few effects (e.g., Ali et al., forthcoming; Ottaviano and Peri, 2006). The results in this paper are more of a 'test' of cultural avoidance and do not focus on the contemporaneous immigration-migration effects.

income per migrant and job creation in both periods, though there is no statistical association for the ARC region. These results suggest that for the U.S. as whole, local economic growth is associated with attracting higher income (and perhaps more skilled-) migrants, which seems to support a virtuous cycle of growth, but in the lagging ARC region, this is not the case. One possible reason may be the region's industry composition, but also potential high-income migrants may be skeptical of growth occurring on a sustainable basis and may be less willing to migrate to Appalachia. Likewise, examining in- and out-migration levels, Gebremariam et al. (2011) also found that net migration also tended to reduce average income in Appalachia. It is also worth noting that for the U.S. model, relatively higher educational attainment is inversely associated with attracting high-income migrants. This finding is consistent with our prior migration results that show if educated people are more inclined to out migrate, then it is not surprising that average income per migrant is inversely associated with relative educational attainment.

4.2 Sensitivity Results

We assess the sensitivity of our results in several ways. First, we consider a much more parsimonious model that omits the education, age, marriage, and immigration variables. The corresponding 2SLS results are reported in columns (5)-(8) of Table 2. With the exception of the U.S. income per migrant result described above, all of the key results were robust in this parsimonious specification. Our second sensitivity model assesses whether growth had a nonlinear relationship with migration. For instance, Black et al. (2005) found that Appalachian migration responses were larger during the coal bust of the 1980s than during the coal boom of the 1970s. Thus, we created a "high-growth" dummy variable that indicates when the faster-growing county pair had employment growth one standard deviation above the national average and a "slow-growth" dummy variable that indicates when the slower-growing county pair had job growth one standard deviation below the national average. We then interacted the indicator variables with employment growth (results not shown).[12] The only statistically result was for the low-employment ARC indicator variable, which was negative and

[12]Because the interaction with employment growth may still be endogenous, we need two more instruments. For this, our instruments are an indicator variable if the industry mix employment growth for that respective fast-growing county is more than one-standard deviation above the national average and another indicator if the respective slow-growing county's industry mix employment growth is more than one standard deviation below the national average. These instruments were strong in the first stage.

statistically significant. These results suggest that strongly declining counties had a much smaller out migration response to poor economic conditions, which may explain some of the persistence in lagging regions of Appalachia. One reason may be the lower housing costs in these areas retained some of the poorest residents who did not have the resources to relocate.

We now examine if our sample affects our results by dividing the ARC sample into the following two samples: (1) both counties are from the ARC region and (2) one county is from the ARC region and the other is outside the region. We are investigating whether the employment growth/migration association is different for migration that occurs entirely within the ARC region versus migration between the ARC region and the rest of the country. The relative employment growth results are respectively reported in Table 3, Rows 1 and 2. They suggest no statistically significant different migration response to employment growth in the 1990s sample. However, for 2000-07, the ARC-U.S. migration employment growth coefficient is positive, though only very weakly significant with a t=1.21, while the intra-ARC employment growth coefficient is negative and significant (t=-1.96)—leading to a statistically significant difference at the 5% level between the coefficients.[13]

After 2000, this Appalachian migration pattern suggests that standard economic migration towards higher employment growth occurs more when considering an origin/destination outside Appalachia than when both the origin and destination are within the region. It is possible that intra-ARC migration is increasingly influenced by lower housing prices in depressed areas. Namely, weak employment conditions after 2000 pushed workers onto public assistance, such as disability, and out of the formal labor market, potentially reducing the migration-employment response (e.g., see Black et al., 2002, 2003). Such households would likely be sensitive to housing prices, reinforcing the smaller employment response.

Rows 3 and 4 of Table 3 show that the net income per migrant results suggest a similar pattern when

[13]When limiting the sample to only include cases where one ARC county was in poorest Central Appalachia region (Kentucky, Tennessee, Virginia, West Virginia), the negative employment/migration association was slightly stronger than when considering the ARC-only sample. It is not surprising that few migrants are attracted to job growth in Central Appalachia, while housing costs are particularly low in these lagging areas (attracting low-income residents outside of the labor market). In other auxiliary results, we find that in the intra-Appalachian sample post 2000 (and for the Central ARC region sample), relative job growth is associated with greater reductions in poverty rates and unemployment rates and larger positive responses for employment/population rates and median income, consistent with the original residents taking the jobs.

splitting the ARC sample. For the 1990s, the difference between the US-ARC and intra-ARC employment growth coefficients is not statistically significant. For the 2000-07 period, the US-ARC net income per migrant response to employment growth is positive (t=1.27) and the corresponding intra-ARC response is negative and statistically significant (t=-2.20), producing a statistically significant difference between the two. Hence, employment growth is much more strongly associated with attracting lower income residents from within Appalachia. Thus, we find support for the notion that migration within Appalachia widened regional disparities after 2000, but this is offset by Appalachian migration with the rest of the country.

4.3. Other Indicators of the Influence of Economic Growth.

We have found some evidence that employment growth has a smaller influence on net-migration after 2000, weakly supporting the notion that place-based policy of helping original residents would be more effective in recent years (perhaps slightly more effective in Appalachia than elsewhere). To appraise this conclusion and to assess the consistency of our results across other measures, we consider other economic outcomes to see if the original residents benefit in response to the job growth. We continue to use our county pairings because the consistent gross migration flows between those destinations reveal that residents of these counties consider both county pairs as potential residential choices.

We first consider whether job growth influences the employment/population ratio. Namely, if job growth primarily attracts new migrants on a one-to one ratio (or spurs proportional changes in commuting behavior) as in the case of Blanchard and Katz (1992), then the employment-population rate would not greatly change and all of the new jobs would on balance go to outsiders. Conversely, if the migration (or commuting) response is less than proportional (as in Bartik, 1993; Partridge and Rickman, 2008; Partridge et al., 2012), then more of the original residents will obtain work, raising the employment/population rate through greater labor force participation rates or lower unemployment rates.

To assess this possibility, we use the change in employment/population rate over the sample period as the dependent variable. For example, for the 2000-2007 sample, the employment/population dependent variable is the county-pair difference in how much their respective employment/population rates changed

between 2000-07. The 2SLS employment/population rate responses to employment growth are reported in Row 1 of Table 4. These results indicate that relatively faster employment growth in the 1990s was associated with falling employment/population rates, suggestive of some combination of rising labor force participation, new migrants attracted to the location, or changes in commuting patterns (for example, out-commuters now are employed locally and new in-commuters). The decline suggests that original residents did not benefit from the growth. However, after 2000, consistent with smaller migration responses, relatively faster job growth is associated with rising employment/population rates, suggesting more original residents gain employment. In addition, we do not see a clear difference between the ARC region and the rest of the United States, suggesting that successful economic development has roughly equal employment *benefits* for the original population—though we have not considered the relative *costs* of economic development policies (which could be higher in the ARC region).

Row 2 of Table 4 reports the corresponding unemployment rate responses to relative job growth. Consistent with the employment/population results, relative job growth has little association with ARC unemployment rates in the latter 1990s, but there is a highly statistically significant negative relationship post-2000. The negative association for the U.S. also became stronger after 2000. After 2000, the ARC and the rest of the U.S. look similar in terms of the benefits of place-based policy for original residents.

Enhanced job growth has ambiguous *expected* effects on median household income. The answer somewhat depends on the wage composition of expanding industries. It also depends on the relative elasticity of local labor supply. All else equal, wages should be more positively linked to local employment growth when the local labor supply is more inelastic, in which the migration evidence suggests a stronger wage response after 2000. Row 3 of Table 4 reports the responsiveness of relative median household income to relative employment growth. In the 1990s, median household was *inversely* related to local job creation, consistent with some combination of a relatively more elastic labor supply curve through high migration (or commuting) responses and the relative expansion of low-wage jobs, with both the ARC response and the U.S. response being statistically significant. However, both the ARC and the U.S. response to job growth become positive and statistically significant post 2000. Though employment growth was much slower post-2000, places that experienced relatively faster job growth

appears to have had higher median income gains regardless of being located in the lagging ARC region or the rest of the U.S. Thus, the middle class benefits from local job growth, though the macroeconomic dilemma is job growth was anemic even before the onslaught of the Great Recession.

To assess whether the benefits of new jobs extended down to disadvantaged workers to reduce the poverty rate, Row 4 of Table 4 reports the response of the seven-year change in the (relative) poverty rate to relative employment growth. In the 1990s sample, there is a small negative response in the ARC region, but the link is statistically insignificant in the rest of the U.S. After 2000, there is a stronger inverse relationship between relative poverty rates and relative employment growth in both the U.S. and the ARC region, again supportive of fewer new migrants, which allow more disadvantaged households to take advantage of local job growth.

Overall, local growth had more positive effects for both the poor and the middle class post-2000 in that it had stronger effects in lifting the employment/population rate, reducing the unemployment rate, increasing median household income, and reducing the poverty rate. One important observation is that while local job growth seems to have become more important for improving local outcomes—increasing the scope for place-based initiatives—local economic development policies are increasingly focused on fads and tax incentives that are unlikely to be effective (Partridge and Olfert, 2011). Another observation is that while policymakers and academics have focused on Appalachia due to its seeming distinctiveness, these results suggest that in terms of the effectiveness (benefits) of economic development policy, Appalachia is not all that different than the rest of the U.S. Of course, costs may be substantially different.

6. Conclusion

Policies aimed at enhancing the prospects of lagging regions and improving economic equity are an international phenomenon. Such policies are controversial and can often lead to wasteful outcomes, making it all that more important to identify ways to improve their effectiveness and target higher-valued prospects. Place-based policies have a stronger chance of success when they correct some externality or more likely, when moving costs are sufficiently high to keep sufficient numbers of disadvantaged residents from moving from lagging regions to more prosperous communities. Past research has identified spatial frictions that allow local job growth to improve economic outcomes in remote communities.

Understanding how migration is affected by local economic conditions is a key factor in determining whether place-based policy is effective because higher migration responses imply fewer disadvantaged original residents will be able to obtain work. There are some reasons to expect this migration response to be smaller in lagging regions due to information constraints and risk aversion.

This study examined this issue focusing on the Appalachian Regional Commission region, a prime example of a persistently lagging region. We compare migration patterns for the ARC region to the rest of the United States for the 1993-2000 and 2000-2007 periods using county-to-county migration data from the IRS. Comparing across the two decades allows us to ascertain whether there was a shift over time and comparisons with the rest of the U.S. create a benchmark to appraise the ARC results. County-to-county data allows us to examine county pairs that the residents themselves have revealed as viable competing location alternatives. As an added novelty, we further consider whether faster job growth attracts relatively wealthier migrants on balance, which likely affects the skill composition of the region.

Our findings indicate that net-migration is slightly less responsive to employment growth in the ARC region than in the rest of the U.S., but the main story is that the responsiveness declined for both groups post-2000. Likewise, employment growth is not associated with greater net-income per migrant in the ARC region, but it is associated with higher income per migrant in the rest of the U.S. These results suggest that migration leads to somewhat different outcomes for the ARC sample—namely economic development attracts slightly fewer people and to the extent that income is associated with skills, it attracts lower-skilled migrants.

In further results, we decomposed the ARC sample to one sample of county pairs located solely in the ARC region and another sample of one county being in the ARC region and the other county in the rest of the United States. While there was not much difference in the 1990s between the samples, after 2000, employment growth was associated with negative net-migration within the ARC region and attracted lower-income migrants. However, for the ARC/rest of the U.S. model, employment growth had a more positive influence on net migration and net-income per migrant, which were statistically significant. This pattern suggests that migration within the region may be associated with low-income residents moving to places with lower housing costs and lower living costs, consistent with Nord's (1998)

findings for the Mississippi Delta. However, Appalachian migration with the outside region takes on more traditional patterns with people more likely to moving for jobs.

The declining response of migration to employment growth after 2000 suggests that place-based policy would be more effective in both the ARC region and the rest of the U.S. Auxiliary regression analysis for the county pairs suggested that after 2000 in both the ARC region and in the rest of the U.S., greater relative employment growth was associated with greater increases in the median household income and in the employment/population rate, and in larger reductions in the unemployment rate and poverty rates. Thus, the potential benefits from successful economic development policy increased, though we did not consider the costs. Yet, one challenge is that local economic development efforts are increasingly concentrated on fad-based approaches that have little likelihood of success. More effort needs to be given to identify successful local development strategies, though we caution that such policies will likely require policymakers to be more patient. One possibility is promoting entrepreneurship and small business development, which has been found to be promising in rural and lagging regions such as Appalachia (Loveridge and Nizalov, 2007; Goetz and Rupasingha, 2009; Stephens and Partridge, 2011).

We did not jointly consider housing prices and migration due to their endogenous relationship and for the most part, migration research has not jointly modeled housing and migration (Jeanty et al., 2010 is one exception). Even so, this research suggests a possible link, especially for low income households, which may produce unexpected results. Since the housing market's interdependence with migration appears to differ across prosperous and lagging regions and across income groups, more research is needed in understanding how economic growth affects economic outcomes of poor households.

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Table 1. Net Migration Rates for ARC and Non-ARC counties in the rest of US

	1993-2000				2000-2007			
	OLS		2SLS		OLS		2SLS	
	ARC	Non-ARC	ARC	Non-ARC	ARC	Non-ARC	ARC	Non-ARC
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Employment growth	3.67***	3.97***	0.56	1.94*	1.45*	3.33***	-2.13	1.28
	(3.76)	(8.30)	(0.18)	(1.72)	(1.81)	(7.03)	(-0.89)	(1.12)
% College graduates	-8.43***	-4.11***	-7.63**	-3.82***	-3.47*	-8.25***	-2.52	-8.10***
	(-2.68)	(-2.98)	(-2.47)	(-2.68)	(-1.80)	(-4.63)	(-1.32)	(-4.53)
% Some college	-6.02	-5.13***	-5.66	-5.87***	-16.5***	-9.49***	-15.5***	-9.27***
	(-1.59)	(-3.34)	(-1.56)	(-3.70)	(-3.26)	(-5.83)	(-3.30)	(-5.75)
% HS graduates	-6.69	-1.94	-7.22*	-2.87*	-8.19***	-10.1***	-7.81***	-10.4***
	(-1.59)	(-1.11)	(-1.75)	(-1.69)	(-2.78)	(-4.12)	(-2.77)	(-4.27)
% Married	-3.41*	-2.77***	-0.72	-1.02	1.14	1.43	4.87	4.39**
	(-1.77)	(-3.96)	(-0.23)	(-1.06)	(0.47)	(1.04)	(1.43)	(2.25)
% Foreign born	-4.81**	-4.99***	-5.86***	-5.65***	-4.47***	-5.58***	-4.44***	-5.50***
	(-2.46)	(-6.99)	(-2.74)	(-6.27)	(-2.79)	(-7.08)	(-2.86)	(-6.92)
Amenity scale	-0.96	2.89	5.58	2.17	-10.85*	-5.75*	-4.32	-6.39*
	(-0.09)	(1.01)	(0.50)	(0.78)	(-1.83)	(-1.75)	(-0.71)	(-1.95)
Metro	-158.97***	-56.17***	-164.2***	-52.83***	30.58	52.63***	31.09	56.60***
	(-3.89)	(-3.58)	(-4.10)	(-3.40)	(1.30)	(4.37)	(1.36)	(4.75)
Constant	-1189.6***	-292.67	515.21	-47.77	-67.62	203.61	46.43	256.26
	(-9.57)	(-1.21)	(1.43)	(-0.86)	(-1.06)	(0.69)	(0.41)	(1.07)
State fixed effects†	Y	Y	Y	Y	Y	Y	Y	Y
Age shares††	Y	Y	Y	Y	Y	Y	Y	Y
N	970	10,470	970	10,470	1,472	11,251	1,472	11,251
R-squared	0.14	0.11	0.13	0.11	0.09	0.08	0.08	0.08
Weak instrument F-test			32.26	515.43			67.83	564.37

Notes: Robust t-statistics are in parentheses. See the text for further details.

†State fixed effects for both counties *i* and *j*

††Population age shares for cohorts 18-24, 25-54, 55-64, 65-84, and over 85

Table 2. Net Adjusted Gross Income Per Migrating Household for ARC and Non-ARC counties in the rest of the US

	1993-2000		2000-2007		1993-2000		2000-2007	
	ARC	Non-ARC	ARC	Non-ARC	ARC	Non-ARC	ARC	Non-ARC
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Employment growth	-4.7E-3	0.02**	3.8E-03	2.9E-03	2.0E-3	0.04***	1.0E-02	0.02**
	(-0.31)	(2.02)	(0.25)	(0.56)	(0.21)	(3.18)	(0.44)	(2.11)
% College graduates	-6E-03	-2.3E-03	-0.04**	-0.01*				
	(-0.29)	(-0.30)	(-2.11)	(-1.82)				
% Some college	0.03	7.4E-03	1.0E-04	-0.02**				
	(0.98)	(0.76)	4.3E-03	(-2.18)				
% HS graduates	-0.04	-0.02	-0.1***	-0.04***				
	(-1.63)	(-1.51)	(-3.61)	(-3.92)				
% Married	5.0E-03	-0.01	4.1E-03	0.02				
	(0.31)	(-1.22)	(0.16)	(1.40)				
% Foreign born	-0.1***	-0.03***	-0.1***	-0.03***				
	(-2.73)	(-3.76)	(-4.63)	(-7.13)				
Amenity scale	0.17**	0.06***	-0.03	0.03***	0.06	0.04**	-0.10**	0.02*
	(2.19)	(4.03)	(-0.56)	(2.79)	(1.08)	(2.27)	(-2.12)	(1.86)
Metro	-0.15	-0.29***	-0.06	-0.07	0.21	-0.32***	-0.02	-0.09*
	(-0.78)	(-4.96)	(-0.43)	(-1.05)	(1.15)	(-4.44)	(-0.15)	(-1.83)
Constant	2.30	0.34	1.62	0.41	1.86	0.28	2.05	0.40
	(3.09)	(1.47)	(3.10)	(1.67)	(1.79)	(1.18)	(3.59)	(1.46)
State fixed effects†	Y	Y	Y	Y	Y	Y	Y	Y
Age shares††	Y	Y	Y	Y	N	N	N	N
N	481	5,006	677	5,286	481	5,006	677	5,286
R-squared	0.41	0.27	0.40	0.28	0.36	0.19	0.35	0.27
Weak instrument F-test	27.60	155.55	24.94	287.97	56.66	99.39	18.45	103.62

Notes: Robust t-statistics are in parentheses. See the text for further details.
†State fixed effects for both counties *i* and *j*
††Population age shares for cohorts 18-24, 25-54, 55-64, 65-84, and over 85

Table 3. Employment Growth Coefficients for the Intra-ARC Migration and Inter-ARC Migration Models

		1993-2000	2000-2007
(1)	Migration (Intra-ARC)†	8.47	-34.94*
		(0.34)	(-1.96)
(2)	Migration (Inter-ARC/US)††	2.53	2.16
		(1.02)	(1.21)
(3)	Income (Intra-ARC)	-0.08	-0.09**
		(-0.58)	(-2.20)
(4)	Income (Inter-ARC/US)	8.5E-03	0.03
		(0.59)	(1.27)

Notes: The models are the same as those in Tables 1 and 2. Robust t-statistics are in parentheses. See the text for further details.
†Intra-ARC migration is defined as a migration pair where the migrant originated in an ARC county and migrated to an ARC county.
††Inter-ARC migration is occurs when a migrant originates in a non-ARC county and migrates to an ARC county OR a migrant originates in an ARC county and migrates to a non-ARC county.

Table 4. Employment Growth Coefficients for Models of Other Indicators of Economic Growth

		ARC		US	
		1993-2000	2000-2007	1993-2000	2000-2007
(1)	Employment/population	-8.0E-04***	1.8E-03***	-1.2E-03***	2.1E-03***
		(-6.56)	(14.69)	(-21.72)	(32.56)
(2)	Unemployment	4.4E-03	-0.06***	-0.02***	-0.05***
		(0.75)	(-15.06)	(-7.16)	(-28.68)
(3)	Median household income	-2.2E-03***	3.8E-03***	-3.5E-03***	5.9E-03***
		(-4.96)	(13.62)	(-16.57)	(34.32)
(4)	Poverty	-0.02	-0.07***	2.1E-03	-0.09***
		(-2.42)	(-10.35)	(0.65)	(-24.57)

Notes: The explanatory variables are the same as those in Tables 1 and 2. Robust t-statistics are in parentheses. See the text for further details.

Appendix

Means and Standard Deviations[†]				
	1993-2000		2000-2007	
	ARC	non-ARC	ARC	non-ARC
Migrants	-17.67	10.66	-24.99	1.69
	(848.22)	(683.64)	(587.28)	(647.21)
Migrant adjusted gross income	186	-400	-359	-1,010
	(5,876)	(19,485)	(9,989)	(31,954)
Employment/Population	-0.005	-0.002	0.001	-0.002
	(0.03)	(0.03)	(0.03)	(0.03)
Unemployment change	0.07	0.25	0.06	0.05
	(1.85)	(2.13)	(1.04)	(1.11)
Change in median income	0.01	-0.01	-0.01	-0.01
	(0.09)	(0.10)	(0.09)	(0.10)
Change in poverty rate	-0.20	0.13	0.08	0.29
	(2.66)	(2.76)	(2.36)	(2.66)
Employment growth	0.26	-1.03	-0.70	-0.77
	(21.66)	(18.68)	(16.54)	(16.59)
% College graduates	-0.37	0.10	-1.07	0.07
	(10.37)	(10.15)	(10.41)	(10.70)
% Some college	-0.39	-0.13	-0.64	-0.07
	(4.80)	(4.47)	(5.47)	(5.31)
% HS graduates	-0.23	0.25	1.32	0.56
	(5.71)	(6.46)	(8.03)	(7.49)
% Age 18-24	0.57	0.22	0.06	0.19
	(4.66)	(4.97)	(5.23)	(4.81)
% Age 25-54	-0.07	0.20	-0.18	0.27
	(4.89)	(4.95)	(4.30)	(4.61)
% Age 55-64	-0.17	-0.17	0.11	-0.14
	(1.89)	(1.86)	(1.69)	(1.85)
% Age 65-84	-0.01	-0.01	0.07	-0.51
	(0.05)	(0.05)	(4.10)	(4.45)
% Over age 84	0.00	0.00	0.00	-0.06
	(0.01)	(0.01)	(0.67)	(0.72)
% Married	0.14	0.28	0.45	-0.05
	(9.19)	(9.43)	(5.44)	(5.57)
% Foreign born	0.00	-1.23	-1.27	-1.75
	(5.32)	(7.82)	(8.17)	(10.23)
Amenity scale	-0.11	-0.98	-0.23	-1.06
	(2.25)	(3.24)	(2.21)	(3.23)
Metro	-0.08	0.01	-0.06	0.01
	(0.65)	(0.54)	(0.60)	(0.49)
N	970	10,470	1,472	11,251

†Descriptive statistics are based on the difference between county pairs. A county pair is categorized as ARC if one of the counties of the pair is in the ARC region. See the text for further details.
Standard deviations are in parenthesis.