

The Effect of Wage Differentials and Regional Job Growth on Migration: A Case of West Virginia

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Abstract: Empirical investigation into the strength of the effect of wages, taxes, and job growth on migration has mirrored theoretical developments. In the early empirical literature, the primary explanatory variables were average wage and unemployment rates while in recent literature these variables have been replaced by more individual-specific variables. Unfortunately, and maybe inescapably, empirical research on the effects of wages, taxes and job growth on migration is confounded by the interconnectedness of these variables. This paper broadens the existing evidence regarding migration by focussing on wage and job growth differences on county level. The results reveal a persistent asymmetry pattern whereby destination economic conditions exhibit the hypothesized effects more than do origin conditions. The implications of these findings are that: (a) conditions at destination influence decisions to relocate more than conditions at origin, (b) workers are found to respond to improved earnings opportunities.

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Introduction

In classical economics, differentials in wages are regarded as the primary factor influencing migration. This view is neatly summed up by Hicks (1932) in his statement, “differences in net economic advantages, chiefly differences in wages, are the main causes of migration” (pp. 76). In this traditional view, which is reflected in the literature on migration as “investment in human capital” (Sjaastad, 1962), an individual chooses to migrate only if the present value of the difference between the earning stream in the place of origin and destination minus the present value of the difference between the net costs associated with living in the two regions is greater than zero. The general consensus in the literature is that differential economic and amenity characteristics of sending and receiving regions provide incentives for migration. However, migration observations directly contradict the central implications of common theoretical frame works (Hendricks, 1999). For example, in Heckscher-Ohlin models workers migrate towards locations where their type of labor is scarce and spread out geographically and across firms. Moreover, if migration is driven by regional wage differences, migration flows should initially be large and shrink over time as factor price converge, but the data commonly show the opposite pattern: migration flow start out small but gradually increase over time (Carrington et al. 1996).

As an investment in “human capital,” the theory of migration assumes labor to migrate from areas with lower wages to areas with higher wages. In West Virginia performance was less clear in terms of wage and job growth between 1985 and 1990, with several predominantly rural counties recording strong job growth rates (Cushing, 1997). The objective of this paper is to examine how the differences in wages and regional job growth may have influenced migration rates between West Virginia counties. The paper focuses on fifteen counties: Putnam, Cabell,

Lincoln, Boone, Fayette, Nicholas, Clay, Braxton, Calhoun, Roane, Jackson, Wirt, Wood, Mason and Kanawha counties over the period 1985 to 1990.

Previous Work

Recent empirical work on migration and economic conditions has focused a great deal of effort into deciphering the strength of the migration response to employment shocks. This area of research is of particular concern to local and regional governments contemplating regional development programs. Empirical research into the effect of regional job growth on migration reaches the general consensus that, within six to ten years, migration will bring regional wage levels and employment rates back to their long-run levels (Bartik, 1991; Blanchard, 1992). However, like the literature on wages, estimates of migration elasticities with respect to job growth are highly sensitive to model assumptions.

Empirical results concerning the impact of net wages on migration are particularly problematic (Bartik et al., 1991). Wages go up in response to increased demand for labor and fall in response to decreased demand for labor. It is very difficult to differentiate between a change in wages or a change in job availability. Attempts to estimate migration elasticities on net wage, separate from job availability, are very dependent on the causality assumptions inherent in the model. The same is true for estimates of migration elasticities with respect to income taxation (Greenwood, 1975).

Most empirical work indicates that money-wage differentials do not have a large impact on migration patterns (Barro and Sala-i-Martin, 1991, Bartik, et al., forthcoming; Venti and Wise, 1984). There may also be institutional reasons such as differences in labor contracts (Wojan, 1998; Schaeffer, in progress). Barro and Sala-i-Martin (1991) used a neoclassical production function incorporating migration to investigate the effect of per-capita income on

migration. They find that a ten percent differential in income per-capita raises net in-migration only by enough to raise that area's population growth by 0.26 percent per year. In an effort to separate the effect of money wage from job prospects, Venti and Wise (1984) and Bartik et al. (forthcoming) examine the effect of money transfers on migration decisions.

In two different studies using information on household moving behavior from the Demand Experiment of the Experimental Housing Allowance Program, Venti and Wise (1984) and Bartik et al. (forthcoming) conclude that income differentials provide very weak incentives in the migration decisions of low-income renter households. Venti and Wise (1984) estimate that "stayer" households in the Demand Experiment were willing to forego gains from moving to a new house equivalent to 14 percent of household income. Bartik et al. (forthcoming) estimate that a 50 percent increase in rent would be needed to increase the probability of moving of the median income household.

In support of the theory that income taxation influences the wage rate offered by employers, Gyourko and Tracy (1989) find that a one percent rise in the local average tax rate leads to a one percent rise in the local average wage. Feldstein and Vaillant (1994) indicates that a one percent increase in the net-of-tax share for the individual (a decrease in taxes) leads to a one percent fall in wages for that individual. Vaillant (1994) builds on the assumptions concerning income taxation and net wage to develop a model examining the impact of income taxation on wages and employment for different wage groups. She estimates a general elasticity of wages with respect to own-net-of-tax share of -2.03 (a one percent fall in net-of-tax share is associated with a 2.03 percent increase in wages for that wage group) and a general elasticity of employment with respect to own-net-of-tax share of 2.39 percent. Her employment elasticity results hinge on the fact that workers are highly mobile in her model.

In one of the few studies that directly investigates the link between migration and taxation, Schachter and Althaus (1989) find that average per-capita state and local taxes have an adverse effect on migrants. Specifically, in an equilibrium model of gross migration for Caucasians, they calculate an elasticity of in-migration and out-migration of approximately -2.0 and 0.9, respectively, in response to a tax cut. A primary observation that arises from the empirical literature on net wages and migration is that the results of the various studies are extremely difficult to decipher in a consistent manner due to the different assumptions embedded in the studies. Empirical testing of the relationship between unemployment and migration is subject to the same difficulties.

Early research into the effects of unemployment yielded unanticipated signs or insignificant coefficients on an unemployment rate variable (Greenwood, 1975, Pissarides and Wadsworth, 1989). One possible explanation for these results is the observation that many of these studies are subject to simultaneous-equation bias due to the use of an end-of-period employment rate to explain migration over the period. Another possible explanation lies in the observation that unemployment tends to be highest in the least mobile groups in the labor force (Lansing and Mueller, 1967). Another possibility (Greenwood, 1975) is that higher unemployment rates are of the most concern to the unemployed and might not even enter as a factor in the job-to-job migration decision, particularly because the unemployed are a relatively small percentage of the labor force and an even smaller percentage of the population. In other words, the average employment rate might simply be a poor proxy for the probability that the average educated, high-income migrant will find a job in the region of destination.

As a result of the poor results of early empirical work using average unemployment rates, most recent studies have focused on measures of individual-specific employment opportunities

or deviations from regional average unemployment rates. A notable exception is Gabriel et al. (1995), who find a very high correlation between unemployment and net migration in California for the 1982–1995 period. Though they recognize that the statement that “a high unemployment rate in the destination state relative to the origin state decreases migration” applies in terms of deviations from state-specific mean unemployment rates, they use the gross unemployment rate and find that “changes over time in unemployment rate differentials have dominated the fit of the model for California net in-migration over the sample period and, in particular, explain a large portion of the decline in net migration after 1987” (p.39).

All of the empirical estimates discussed above are confounded by the interconnectedness of wages and job availability. In order to avoid the difficulties inherent in trying to estimate separate elasticities for wages and job opportunity, it may be preferable to define a single “economic conditions” variable. Treyz et al. (1993) present a model of internal U.S. migration that specifies migration as a function of expected income which is in turn a function of the relative probability of employment in a region (per industry), and the relative values of the outcome as measured the relative real wage rate independent of industry mix, and the index of relative wage mix.

Treyz et al. (1993) also includes variables reflecting amenity levels, moving costs, and expected regional growth rates. They find that a one percent exogenous increase in employment, real wage differentials, and an index of relative industrial wage mix increases the population of the area by 1.96 percent in the long run (here, taken to be 20 years) if migration induced by this increase is not allowed to affect these variables. If dynamic feedback is considered (i.e., the possibility that induced migration may reduce relative employment opportunities to the levels they were before the one percent increase), then population rises by

only 0.835 percent in the long run. Furthermore, they find that the effects of expected employment opportunity have a greater migratory pull than those of relative wage differentials.

Materials and Methods

The regression model used is linear in the logarithms of the variables. The most convincing rationale for log-log estimation is the recognition that the migration decision is inherently a choice between a finite number of mutually exclusive discrete alternatives. As such, it is amenable to analysis by the polytomous logistic model first applied to the migration decision by Fields (1979). The logistic model holds that an individual's decision to locate or relocate in place j given that the person now lives in place i depends on a linear combination Z_{ij} of origin and destination conditions in the following specific way:

$$P_{ij} = \frac{e^{Z_{ij}}}{\sum_j e^{Z_{ij}}} \quad (1a)$$

where

$$\sum_j P_{ij} = 1 \quad \text{for all } i \quad (1b)$$

Z_{ij} is a linear function in the *logarithms* of the origin and destination conditions x_i and x_j and the distance D between i and j :

$$Z_{ij} = a + \sum_m \beta_m \ln x_{mi} + \sum_m \gamma_m \ln x_{mj} + \delta \ln D_{ij} \quad (2)$$

Combining (1) and (2), we obtain the general form;

$$\ln(P_{ij} / P_{ii}) = \tilde{\alpha} + \sum_m \tilde{\beta}_m \ln x_{mi} + \sum_m \tilde{\gamma}_m \ln x_{mj} + \tilde{\delta} \ln D \quad (3)$$

the tildes (~) indicating transformations of the respective coefficients of (1) and (2).

Since the variations in P_{ij} are much greater than the variation in P_{ii} , roughly P_{ii} can be regarded as constant across labor markets. Under this assumption, equation (3) provides a rigorous justification for logarithmic estimation of equation (4) under the maintained assumption that (2) is a suitable representation for the way in which conditions of origin and destination are evaluated.

Model Specification

(Eq. 4)

$$\ln M_{ij} = a - \ln W_i + \ln W_j + \ln UE_i - \ln UE_j - \ln AF_i + \ln AF_j - \ln UI_i + UI_j + \ln R_i - \ln R_j - \ln D_{ij} + \ln AD_{ij}$$

Where W represents real wage, UE represents unemployment rate, AF represents welfare (AFDC), UI represents unemployment insurance benefit, R represents housing rent, D represents actual distance, AD represents average distance, i represents origin place and j represents all possible destination.

The principal independent variables in the specified migration function are those that pertain to labor market opportunities. On the benefit side, the study considers the wage that the migrate might expect to receive under various circumstances. The study also takes account of the differences among alternative labor markets in the event that a job is not found and the migrate is thereby forced to rely on unemployment insurance benefit or welfare payment (AFDC). On the cost side, distance between origin and destination is used as a proxy, although

distance captures other effects too. To examine the role of living expenses, the study uses housing rent cost as a proxy. Employment opportunity is introduced in the human investment model of migration by including the unemployment rate as a separate independent variable.

The migration data starting from 1985 to 1990 used were aggregate data collected from the 1990 US Bureau of Census. The economic data by county is obtained from West Virginia Bureau of Economic Research and it is provided by the Bureau of Labor Statistics. In order to minimize the risk of simultaneous equation bias owing to the fact that migration influences contemporaneous economic conditions as well as being influenced by them, all independent variables are dated 1985, the base year of the migration flow.

Results and Analysis

The general finding is the appearance of a systematic asymmetry between origin and destination conditions. The coefficient on each origin variable is markedly smaller in absolute value than the coefficient of the corresponding destination variable. The only economic variables exhibiting statistically significant effects in the hypothesized direction are those measuring destination conditions and distance. In light of previous research, however, the observed patterns of asymmetry are not entirely surprising.

The results in Table 1 (see page 14) are mixed, as expected, the study finds that destinations with higher wages attract migrants at a higher rate than places where wages are lower. However, contrary to the hypothesized effect, higher rates of migration is observed into high unemployment areas. This reflects the argument advanced in the literature that migrants are more concerned with the probabilities of acquiring and retaining employment than with the average employment rate among all workers in a given market.

The role of welfare payment in determining migration flow was examined by taking the amount of Aid to Families with Dependent Children (AFDC). The AFDC variable has the expected significant positive effect at destination. These results support the view that higher welfare benefits attract migrants. Accordingly, there is evidence to conclude that low-income workers migrate to locations where benefits are higher and easier to obtain. In contrast to the other economic variable, the income maintenance variable is not very strong. Represented by the unemployment insurance benefit amount, the variable exhibits a statistically significant positive effect, as hypothesized, at destination but not the expected negative effect at origin. It may be argued therefore, that unemployment insurance benefit amounts may have some effect on migration but the results raise as many questions as answers. To examine the role of living expenses on migration, the study included housing rent as an explanatory variable in the migration function. The variable exhibits a statistically significant positive effect, as hypothesized, at origin but not the expected negative effect at destination. These results do not show any effect of living expenses on migration.

Finally, the results on actual distance variable between origin and destination (DIJ) is negatively related to the migration flow between them. The most important observation is on the average distance variable (ADIJ)¹. The results show a positive effect as expected and are consistent with the view that the deterrent effect of distance is in part a reflection of the number of intervening opportunities and alternative destinations, possibly weighted by proximity. On this view, the farther are other relevant opportunities, the more migration between two places a given distance apart, other things being equal.

¹ ADIJ is the average distance between origin i and the other destinations excluding the particular destination j .

Conclusion

The analytical approach adopted in this paper regards migration as an investment in human investment. The results confirm the usefulness of the human investment approach but they show that the economic factors used as explanatory variables must be carefully specified and measured. The regression explains more than half of the variance in inter-county migration rates. The economic variables included in the model and are found to be systematically related to migration rates are real wage, welfare payment (AFDC), and actual and average distance. A persistent asymmetry in the effects of these factors is found whereby destination economic conditions exhibit the hypothesized effects more than do origin conditions. The implications of these findings are that: (a) conditions at destination influence decisions to relocate more than conditions at origin, (b) workers are found to respond to improved earnings opportunities. Of these factors determining migration behavior, this research suggests higher wages (well paying jobs). There is reason to believe that the availability of additional well paying jobs will result in a larger supply of workers in areas where those jobs are created. The most important facet of migration research for labor market policy is the demonstrated importance of labor market conditions in influencing the allocation of the labor force among alternative geographic areas.

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Table 1
Regression Results: Place-to-Place Migration for West Virginia Counties

Variable	Coefficient
Constant	3.126
Wage	<i>REALWI</i> 1.279** (0.194)
	<i>REALWJ</i> 3.337** (0.316)
Unemployment	<i>UEI</i> -0.189 (0.595)
	<i>UEJ</i> 12.471** (1.012)
Welfare	<i>AFDCI</i> -0.348** (0.042)
	<i>AFDCJ</i> 0.508** (0.069)
Unemployment Insurance Benefit	<i>UI</i> 0.962** (0.263)
	<i>UJ</i> 6.073** (0.290)
Living Expenses	<i>RENTI</i> 1.009 (0.766)
	<i>RENTJ</i> 3.214** (0.981)
Actual and Average Distance	<i>DIJ</i> -0.162 (0.437)
	<i>ADIJ</i> 0.328** (0.160)
R^2	0.446

Suffix *I* denotes origin and *J* denotes destination. Standard errors are in parentheses.
 ** denotes significance at 5% and n = 15.