



The Role of Unemployment  
in Triggering  
Internal Labor Migration\*

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## Abstract

Migration of labor in response to structural changes in the U.S. economy is explored. An empirical study of the migration decision and wage determination is used to evaluate: 1) whether unemployment plays a larger role in motivating the decision to migrate than spatial wage differences and 2) whether the population can be characterized as homogeneous regarding migration and wage determination. The results are used to evaluate other studies involving the effects of migration on wages. The effects of the differential mobility of capital and labor is discussed. Policy is suggested regarding improving labor mobility and impeding capital flight.

Plant closings in New England and the upper Midwest have become a serious problem. Over the past 10 years [1975-85] over 10 million jobs have been lost, substantial amounts of physical capital abandoned, and large resources of immaterial community capital and local infrastructure left useless. While some fraction of these plant closings are due to the normal ebb and flow of competitive markets sifting out the less efficient producers, the larger part of this movement is motivated by a desire on the part of management to 1) shift the locus of their operations to areas where labor commands a smaller share of the return and governments are willing to provide a subsidy to the firm in the form of services and reduced tax burdens, and 2) create a situation where the threat of plant closing can be used to force concessions from labor and local government.<sup>1</sup>

## 1. Introduction

This paper analyzes the migration decision in order to assess the effects of internal labor migration in the U.S. associated with structural change. Of particular interest is the role played by local unemployment in motivating migration and whether homogeneity exists in the population with regard to migration propensities. The main conclusions drawn are 1) unemployment plays a larger role in motivating the migration decision than spatial wage differences and, 2) heterogeneity with regard to migration exists within the population.

In the movement from industrial to managerial capitalism, the mobility of capital has been enhanced. Smaller investments in fixed capital allows movements of relatively large businesses without great loss of capital. This allows capital to take advantage of local labor surpluses or move away from more powerfully organized and more expensive labor markets. The lack of

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<sup>1</sup> Sheehan (1985) pg. 423.

mobility of labor with regard to capital means a loss of bargaining power for labor. Higher capital mobility means greater competition in labor markets as local markets become global in nature and capital moves to take advantage of wage disparities.

Labor follows jobs and the movement of capital and restructuring of the economy will result in higher levels of labor migration if the capital stays in the U.S. How labor adjusts to changing markets is addressed in this paper. Unravelling the migration process can inform policy related to both labor and capital movements.

Implicit in most studies of the migration of labor is the view that locational decisions are voluntary. At the micro-level, the human capital model suggested by Sjastaad (1961) dominates the literature in many guises. In this model, migration is treated as an investment decision in which the location with the best wage trajectory is chosen. At the macro-level, labor movements are assumed to be dictated by regional characteristics. Again, the migration decision is cast as voluntary as labor chooses among various regions in order to enjoy the benefits of local residence.

Part two discusses the costs and benefits of migration both for the individual and the areas affected. In part three, the role of interregional migration in closing twentieth century racial wage gaps is discussed. In part four, various theories of migration are sketched.

The role of unemployment in motivating and informing the

migration decision is assessed in part five. Of interest is whether migration can be viewed as an investment decision or a decision coerced by the threat of unemployment. A wage/migration model is estimated to determine the impact of unemployment on the migration decision. The data reveal that unemployment plays a larger role in motivating the migration decision than wage differences associated with moving. Further, measured heterogeneity within the population with regard to wage determination and migration calls into question research which has ignored this fact. Policy implications and conclusions are considered in part six.

## **2. The Social Costs and Benefits of Migration**

In the transition from capitalism to managerialism, those relegated to the surplus population will find their physical and cultural existence threatened. To the extent that blacks are viewed as the social problem (to the extent that the National Research Council will mobilize resources to study 'the Negro'), blacks will be the objects of social management, rather than the social system as a whole being viewed as *the* social problem. Not only will the question 'Who needs the Negro?' be voiced with greater frequency, but the question 'Who is needed and who is not?' will be applied broadly across the entire population. The answers are likely to be as chilling as the question. <sup>2</sup>

Where jobs exist labor gravitates towards them. When capital shuts down, jobs go with it. Whether the movement of labor can be considered voluntary in this regard is debatable. In a location in which structural change from manufacture to services occurs, labor is given the choice of adapting skills,

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<sup>2</sup> Darity (1990) pg. 250.

which they might not possess, to a different line of lower paying work or leaving the market. For workers in manufacture whose educations and skills are not sufficient to move to service work, the "choice" is the latter. If manufacture moves abroad, choices for industrial labor become limited.

Studies have established that structural change and capital flight are associated with displacing high paid workers not accustomed to unemployment and untrained for other work. For most of these workers, the only response to this dislocation would be to seek employment elsewhere. Jacobson (1987), in a study of the change in the employment structure of Pittsburgh since the 1950s, shows that "leaving manufacturing was the most costly feature of structural change. It was costly because most displaced workers did not have enough schooling to qualify for service sector jobs with comparable pay."<sup>3</sup> Jacobson also notes that "structural change reduced employment in industries where attrition was low... a higher percentage of leavers had to be displaced."<sup>4</sup> In the period 1977-1982, Jacobson shows that "in general, the employment declines were greatest in industries where earnings were the highest in 1977."<sup>5</sup>

Labor has historically shown an ability to move for jobs. However, migration involves costs incurred both by individuals and society as a whole. Individuals incur both monetary and

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<sup>3</sup> Jacobson (1987) pg. 439.

<sup>4</sup> *ibid.* pg. 444.

<sup>5</sup> *ibid.* pg. 440.

psychic costs associated with migration. On the societal level, increased in-migration and out-migration are associated with eroding social integration and diminishing the quality of life. In-migration is often associated with economic benefits such as job creation and increased real estate prices; out-migration is associated with economic decline.

South (1987) shows that rapid population turnover is correlated with increased deviant behavior in SMSAs. Using data collected between 1975 and 1980 in the U.S., South shows statistically significant positive impacts of in-migration on suicide, violent crime, property crime and divorce rates. Out-migration is shown to have statistically significant positive effects on both violent and property crime rates and the divorce rate, but was unrelated to the suicide rate.

the most commonly suggested explanation is that migration disrupts social relationships and consequently reduces the degree of social integration. This lack of integration weakens constraints on deviant behavior, reduces social support and control, and diminishes the probability that concerned others will intervene to deter deviant behavior.. Perhaps the most striking aspect of these finding is the remarkable consistency of the effects of in-migration across quite different social problems.<sup>6</sup>

South also notes that the unemployment rate has a statistically significant positive effect on violent crime, but is unrelated to the other social problems.

Migration involves a transfer of human capital. Individuals educated and trained in one region migrating to another bring with them productive assets and leave behind the social cost of

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<sup>6</sup> South (1987) pg. 15.

their education and upbringing. So long as the receiving area can maintain demand for incoming labor, in-migration represents a net gain. If labor demand slips, the demand for social services might mitigate these gains.

Kahley (1989) measures the net gains of recent migration to the South both in terms of human capital flows and the reduction of poverty. Since a disproportionate number of migrants to the South had relatively high levels of education and incomes, average education levels increased and poverty levels decreased between 1970 and 1985.

In-migration also increases the demand for local services. Greenwood, *et al* (1986) measure a "migration multiplier" of around 1.4 jobs created for each employed net migrant. Greenwood (1985) also showed that migration led to both job growth and overall economic growth in the South.

Redistributions of population associated with migration involve social costs external to markets. That these costs are understood by corporations is displayed in corporations' attempts to hold local government and labor hostage to threats of shutdown in order to gain wage and tax concessions.<sup>7</sup> Viewing migration as a voluntary process engaged in by labor ignores these social costs imposed by easy mobility of capital. While structural shifts that involve internal capital mobility might be viewed as zero-sum reallocations from a national perspective, this view ignores the social costs of the disruption associated with large

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<sup>7</sup> Sheehan (1985) pp. 423-24



population movements. A more troubling prospect is the cost of industrial capital flight and the problems associated with dislocated workers with no jobs to which to migrate.

### **3. Theories of Migration and Migration Studies**

The study of migration affords a unique opportunity to view behavior in disequilibrium. In this way, we can consider the mobility of labor a measure of the speed with which the economy adjusts to close spatial/ wage and employment gaps. Theoretically, occupations or areas which pay better will attract those from lower paying areas or occupations. Schultz (1975) considers the ability of labor to adjust behavior in disequilibrium a measure of entrepreneurial ability. Those with a better ability to adapt to changing market conditions can capitalize on short-term dislocations in the market. A more vital economy, then, might be considered one in which labor is most malleable. An economy of this sort would be characterized by individuals with large amounts of general skills. Provincial populations with a highly specialized work force would be considered less vital.

The literature on migration is split between the study of aggregate migration and the study of the individual level migration decision. The aggregate studies concentrate on the flows of people among well-defined areas. These studies typically explain migration based on characteristics of the areas in question, and some general demographic characteristics of the migrating and

non-migrating populations. The individual-level data focuses more on the motivations of movers and stayers and the study of individual characteristics which condition the decision to migrate.

In economics, the study of the individual migration decision is traced to the work of Sjaastad (1962). Sjaastad proposed a cost-benefit approach to the study. Benefits were measured as the difference between the discounted value of the stream of future earnings at the initial location and those of alternate locations. Costs were measured in opportunity costs, distance of migration, etc. Sjaastad's model can be represented by the index equation:

$$I_j = (PDE_j - PDE_i) - C_{ij}$$

where:

$PDE_{i,j}$  = present discounted value of earnings in  
location i(origin), j (potential destination)  
 $C_{ij}$  = cost of moving between areas i and j

An index  $I_j$  greater than zero would trigger the decision to migrate. Where more than two alternative destinations are considered, the destination with the highest index would presumably be chosen.'

This model has been adopted numerous times to analyze migrations. What distinguishes one model from another is the choice of how costs are defined and the proxy chosen for the present

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<sup>8</sup> Sjaastad (1962) pp. 80-93

discounted value of earnings. In cross-sectional data, it is impossible to determine the earnings trajectory of an individual. Typically, current wages are chosen as the best available proxy for present discounted earnings streams. Alternate earnings streams are never observed, although indirect methods for estimating them exist.

Using good longitudinal data, it is theoretically possible to distinguish earnings streams for different individuals. It is still difficult to determine alternative earnings paths for a given individual since data are only available for wages at locations at which people actually worked. One can observe earnings for individuals prior to migration and following migration, so more information on wages is available.

It is possible to indirectly estimate an individual's earnings for different migration choices if data are available for individuals in various locations. This is done using a technique developed by Willis and Rosen (1979). To model the selection of different education levels by individuals, Willis and Rosen estimated different wage regressions for each level. By applying the estimated parameters of the level not chosen to the measured characteristics of the individuals, indirect estimates were obtained for each individual. The estimated value of the chosen level was used as a proxy for expected wage in that group. The estimation involved a correction for self-selection developed by Heckman (1976).

This technique was first applied to migration studies by

Robinson and Tomes (1982) to analyze interprovincial migration in Canada. Using census data, they estimated separate wage regressions for each province. They hypothesized that different talents or skills were compensated differently in different provinces. Individuals would presumably select the province that had the best match for their characteristics and move there, provided that the costs of migration did not supersede the move.

Their proxy for lifetime earnings paths was a single observation of wages. Least squares wage regressions were estimated for each province. In their estimation, they corrected for self-selection using the Heckman method. The regressions yielded parameters that were used to predict individuals' expected wages in each province. Finally, they used these wage estimates to re-estimate the index function originally estimated to correct the wage regressions.

They found that selection bias was present in the initial wage regressions, as the coefficient on the correction factor was significant in many of the regressions and its presence in the equations had large impacts on the other estimated coefficients. They also determined that different individual characteristics showed significance in explaining the probability of selecting different provinces for residence. The findings led them to question the results of the aggregated migration studies which assume homogeneity of individuals, at least in labor market characteristics.

In the study of migration in developing countries, Harris

and Todaro (1970) proposed a model that attempted to explain rural-urban migration in the presence of high urban unemployment. Their's was an attempt to maintain an equilibrium model, with wages sticky-downward, that would explain individual-level behavior and market activity simultaneously. Sticky wages explained the failure of the urban economy to lower wages in the presence of unemployment. Individual perceptions of the probability of gaining employment after migration was the basis for "equilibrating" migration to occur.

Equilibrium in the Harris-Todaro framework meant zero net migration and rural wages equal to the conditional urban wage. This conditional urban wage was based on the average wage and the probability of receiving employment in the industrial sector. The individual perceived this probability based on the number of jobs available in the industrial sector and the number of people queued for the jobs, in other words, the unemployment rate.

Stark (1984) adopts a different view of migration in LDCs. She hypothesizes that migration is often undertaken to improve relative standing in a community. In Stark's view, the relative deprivation of an individual, or their perception of their standing in local hierarchies motivates migration. Migration propensities might be positively correlated with income. However, if there is a high correlation between relative deprivation and low income, the income/migration nexus might be capturing this relationship. The empirical content of Stark's theory is that independent of income levels, one would expect to see a

higher propensity to migrate from regions or communities with more unequal distributions of earnings or opportunities. This is borne out empirically.

In a study of internal migration in the U.S., Akin, et al (1979) employ a relative deprivation approach. "We are also implicitly assuming that the worse the conditions within your present local governmental jurisdiction are, the more likely you are not only to move but also to move outside the jurisdiction."<sup>9</sup> They estimate a random coefficient Probit model of the migration decision. Their estimation involves the standard cost-benefit type of analysis. The random coefficient estimation, however, allows them to account for the possibility that actual earnings after migration might differ from the earnings expected by the family when it chose to move. They find that the random coefficient model performs better in the estimation of their migration model than a fixed coefficient model.

Bartel (1979) decomposed the migration decision to incorporate different factors linked to labor market activities. Of particular interest for Bartel was the relationship between job mobility and physical mobility. She claimed that migration defined as the movement over county borders, provincial borders, or census regions was arbitrary. For her, the link between job-related movements and the decision to change residences was preeminent. She claimed that the probability of moving is really the sum of the probabilities of quitting a job and moving, being

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<sup>9</sup> Akin, Guilkey, and Sickles, (1979) pp. 239-240.

laid off and moving, and moving with no job separation.<sup>10</sup> The conclusions Bartel draws which are of particular relevance for this work are:

Economic theory predicts that *ceteris paribus*, the wage should have a negative effect on the decision to migrate. This article shows that the wage has a significant negative effect only in the case of the joint probability of migrating and quitting. Moreover, this negative coefficient is entirely due to the negative effect of the wage on the job separation itself...

The wage gains from migration are also seen to depend on the nature of the move and the age of the migrant. Of the three types of moves, transfers in general lead to the largest wage gains; this effect is significant, however, only for the two younger cohorts. A quit related move is also found to lead to larger payoffs than a layoff related move for all three samples.<sup>11</sup>

These studies point to two general observations about migration. First, jobs rather than wages seem to play a larger role in motivating the migration decision. In terms of wage determination, this means that people are less likely to migrate to close wage gaps than they are to close employment gaps. Second, local conditions as perceived by the individual, both in the region of origin and potential destination, play a major role in the migration decision. A related issue addressed later in this paper is whether we can consider migrants and non-migrants as homogeneous in the labor market.

Migration is rarely included in wage regressions. However, in the literature on secular changes in twentieth century racial earnings gaps migration plays a central role. Migration of

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<sup>10</sup> Bartel (1980) pg. 777.

<sup>11</sup> Bartel (1979) pp. 785-786.

blacks from the South between the world wars and following World War II, along with alleged changes in both the quantity and quality of education received by blacks, have been viewed as the major causes of measured closure in earnings gaps. Migration has typically been treated as an exogenous effect in the determination of earnings and the changes in earnings, clearly a misspecification if we believe wages are in some part determined by choice of residence.

#### **4. Closure of Wage Gaps: The Historical Role of Migration**

One of the most striking results of the analysis of 1960 Census data is the finding that black returns to education are erratic and much lower than for whites even when some correction is made for their region of birth. These discouraging results leave migration as the only systematic means of improving the relative income position of blacks, and furthermore the quick gains from migration are never likely to be as great as during the 1940's and 1950's.<sup>12</sup>

Migration was an important source of the long run closing of the racial wage gap. Southern black migration to the Northern cities increased black-white male wage ratios by 11 to 19 percent between 1940 and 1980...The income gains from migration, however, have diminished steadily over time and, by 1970 were exhausted.<sup>13</sup>

Numerous descriptive studies have shown that the quantity of education attained statistically "explains" a significant part of the variation of wages across individuals. Other studies have "explained" some part of the alleged closing of racial earnings gaps by migration and the closing of racial gaps in the quantity and quality of education received. Most notable in this line of

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<sup>12</sup> Weiss and Williamson (1972) p. 372.

<sup>13</sup> Smith and Welch (1986) pp. xiii-xiv.



research is the work of James Smith and Finis Welch. They have attempted to show that market forces have indeed worked to close wage gaps. They claim, further, that market forces have had a larger impact on closing wage gaps than extra-market forces such as desegregation of schools and civil-rights legislation.

According to Smith and Welch (1989), the main market forces working to close wage gaps are the closure of educational quantity gaps and migration. They have also extended conjectures about closure in racial educational quality gaps. The changes in educational quantity and quality have served to upgrade the quality of the human capital blacks have brought to the labor market. Migration has mobilized these resources and moved them to the area of their best allocation. The most significant historical migrations in terms of labor market outcomes are the South-North and the rural-urban migration of blacks. The average wages of blacks rose as they chose to reside in and earn the higher wages of urban and Northern areas.<sup>14</sup>

Migration and education are not unrelated. Robert Margo (1988), among others, has noted the relationship between schooling and migration from the South. Margo claims that "a rising rate of black out-migration was inevitable, driven by the steady increase over time in southern black schooling." The assertion that more education is associated with a higher propensity for migration, especially among blacks, is particularly relevant to

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<sup>14</sup> **see**, for instance, Smith and Welch (1986) and Smith and Welch (1989).

the convergence literature <sup>15</sup>

In the returns to education literature there is great interest in determining whether black migrants from the South achieved better or worse labor market outcomes than their Northern counterparts. In this literature, migrants are treated as equivalent to nonmigrants except with regard to the variables included in the regressions. Whether migrants and nonmigrants vary with regard to unobserved qualities that influence labor market outcomes is not treated explicitly although it is often mentioned in passing.<sup>16</sup>

Attempting to explain the racial variation in wages, Weiss and Williamson (1972) asserted that substantial differences existed in the quality of education received by blacks in the North and South of the U.S. Without directly measuring the quality of education in different regions, Weiss and Williamson sought to infer differences in relative quality by accounting for the area of educational origin in a wage regression. Controlling for years of schooling, they compared coefficients on the region of educational origin in wage regressions for individuals living in various areas of the country. They used these estimates to determine which region's educational experience had a significant impact on the wages of blacks. They found, contrary to the view espoused in the Coleman Report, that blacks educated in the rural South did not suffer relative to blacks educated in either

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<sup>15</sup> See Fein (1965) and Margo (1988).

<sup>16</sup> see Weiss and Williamson (1972).

Southern urban areas or the North.<sup>17</sup>

This line of research was further extended by Adams and Nestel (1976). They sought to explain urban poverty in the non-South using information on the quantity and site of education for blacks and whites in various regions. In particular, they wanted to assess Masters' (1972) finding that migrants from the South living in Northern metropolitan areas actually earned higher wages than those who were educated and remained in the urban North.<sup>18</sup> They found that the negative impact on wages of the area of origin of education for those whose education occurred in the urban non-South was considerably larger for men aged 14-24 (young males) than for those aged 45-59 (mature males). They also found limited sensitivity of the wages of whites to the area of their educational origin.<sup>19</sup>

McCarthy and Darity (1988) extended this analysis to more recent data. The impact of the region of educational origin on wages was estimated for data gathered on two cohorts in the 1970's and 1980's. Some of the same data sets used by Adams and

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<sup>17</sup> This result was obtained once area of current residence and age were accounted for. Area of residence at age 16 was used as a proxy for site of educational origin. Weiss and Williamson based their findings on data from the 1967 Survey of Economic Opportunity and the Current Population Survey. They only looked at the wages of blacks in their work.

<sup>18</sup> Masters' finding directly contradicted the claim made in the Coleman Report that mass migration of poorly educated Southern blacks accounted in part for the low educational levels and returns to education for Northern blacks.

<sup>19</sup> Adams and Nestel used data from the National Longitudinal Survey from 1966. They controlled for differences in current residence and quantity of education.

Nestel were used, as well as wage data for more recent years". This work supported the claim that migration from Southern rural areas to urban and Northern areas increased the wages of blacks. Further, these results suggested that the relative returns to migration have diminished over time. However, they did not indicate that returns to migration for blacks had ceased in the 1970's. While there is a definite decline in the returns to migration for the two samples studied, the returns for the younger cohorts remained positive and statistically significant.

Implicit in all these studies is the assumption that migrants and nonmigrants are homogeneous. This homogeneity allows one to infer that differences between movers and stayers are based on attributes of the areas and not the individuals. If variation in wages between movers and stayers is a consequence of different unobserved personal characteristics, then inferring that the site of education captures unobserved school-quality characteristics is a misspecification.

Further, if migrants exhibit 'better' labor market characteristics than nonmigrants, for instance a higher degree of entrepreneurship as Schultz hypothesized, they would be expected

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<sup>20</sup> The data sets employed for both the mature male (MM) sample and the young male (YM) sample are based on the original samples gathered in 1966 by the NLS. Since the samples were pared down, first, according to whether a person earns income and, second, according to whether they were enrolled in school, the composition of the samples might differ between years. This is particularly true for the YM cohort. Given that a large portion of the sample aged 14-24 in 1966 were enrolled in school, the estimates run on the same cohort from 1967-1981 contained a different number of wage earners than the Adams/Nestel sample.

to earn higher wages than nonmigrants in either their destinations or their areas of origin. In this case, the Smith and Welch estimation of the contribution of migration to closure of wage gaps would overestimate the impact of migration on wage gaps. Inferring school quality differences based on site of education would also be confounded.

### **5.1 A Model of Migration**

In the human capital and equilibrium-based analyses, the dominant view of the economic actor is that of an autonomous agent acting within constraints to maximize lifetime utility. In this view, the migration decision is cast as an investment decision much like the education-level decision. Little attention is paid to external forces which condition behavior. The formation of wage expectations might include some calculation of the probability that the wages meet the expectation. The decision to migrate may also be influenced by layoffs or potential layoffs in the area of residence. Certainly an agent who can determine the present value of various streams of earnings in his decision calculus will factor in the probability of finding and maintaining employment.

In their estimation, Robinson and Tomes chose to ignore the characteristics of regions as factors in the individual migration decision. While macro models may be misspecified due to the implicit assumption of homogeneity in the population, it is

possible that the micro decision may still be conditioned on economic and other characteristics of the areas of residence and destinations.

In the economic world of Robinson and Tomes, a potential migrant forms his decision to migrate based on some knowledge of how regional markets value certain individual characteristics. Never do the agents consider the possibility that their talents will not be put to use if they migrate, by failing to find employment. Conversely, the decision to leave may be influenced by a push factor, namely the inability to find work due to capital flight. In either case, the point made by Akin, et al that randomness affects the ability of an individual to bring income expectations to fruition is well taken.

Rather than modelling wage realizations as a random effect, a proxy could be used instead to capture another dimension of wage expectations. In the spirit of both the Harris-Todaro and Stark models, the unemployment rates in the labor markets of origin and destination are employed. It is hypothesized that an individual will form an expectation of wages if he moves or stays based on his perception of the economic viability of the area, or his relative standing in the community if unemployed. The probability of moving will be higher if higher unemployment exists or is expected in the local market.

Individuals are expected to choose to migrate to an area of better economic opportunity once the decision to move is made. These would be areas with lower unemployment measures. The model

also includes the number of weeks unemployed in the year of the migration decision as an indicator of an individual's employment expectations.

The unemployment rate of the destination labor market is expected to exert a negative impact on the probability of migration.<sup>21</sup> Likewise, a high unemployment rate for the market of origin is expected to exert a positive impact on migration propensity. Weeks unemployed is also expected to have a positive effect on migration.

To capture differences in migration behavior based on race, two race dummy variables are included. The first designates blacks and the second those listed as "other" in the race variable in the data. Akin, et al estimate a positive but insignificant effect for whites in both the standard and random coefficient Probit estimations. Goss and Paul (1987) show a positive and statistically significant effect for whites' propensity to migrate relative to blacks. A negative effect is expected for both blacks and 'others' in the estimation.

The rest of the specification is similar to the human capital model of migration suggested by Sjaastad. Costs include measures of the education level, work experience, number of dependents, a dummy variable indicating whether an individual had ever migrated previously, marital status, and a dummy variable indicating whether health problems limited the kind of work an

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<sup>21</sup> The destination labor market is the market of origin for those who do not move.

individual could perform.

It is hypothesized that an individual who has migrated previously will be more likely to migrate again. This is consistent with the idea that the population is heterogeneous with regard to migration. A "migrant class" might be more willing to move around for a variety of reasons relative to a "provincial class" within the labor force. The unobserved variables that influence a current migration decision likely will be captured in past migrations.

From the investment perspective, the cost of migration is hypothesized to be lower for a person who has migrated before, in both psychic and real terms. In the model estimated by Akin, et al, the number of different states in which an individual had lived displayed a statistically significant positive effect in explaining probability of migrating. Here, it is hypothesized to have a positive effect, as well.

The effect of education on the propensity to migrate is an issue of concern. If we consider education to be transferable general training, higher education levels would be expected to give individuals better abilities to respond to disequilibria as Schultz suggests. Margo measured a positive association between education and migration in historical studies. Akin, et al, show a positive but insignificant effect of education on migration. Robinson and Tomes show a positive and often statistically significant effect of education on migration from most provinces.

In the cost-benefit framework, education generally raises



the cost of migration by raising the opportunity cost in lost wages. It also raises the benefits by increasing the value of lifetime earnings. A rational individual would probably migrate to the destination that puts the highest premium on education if his education level is high. Since costs are borne once for a migration but benefits last a lifetime, a positive effect of education on migration is expected.

As family size increases, costs of moving increase, hence a negative impact of the number of dependents on migration is expected. Health problems may hinder migration, however, migration to places in which certain climates favor certain disabilities (desert climate for asthmatics, for instance) may promote migration. In this case, health problems that hinder migration by raising costs are expected to dominate.

A high wage enjoyed in a potential destination is expected to have a positive effect on migration. Given that wage differences in excess of costs are expected to trigger migration, higher wages should be linked to those who migrate. Higher wages paid in the area of origin are expected to have a negative effect on migration. As one increases wages it is less likely that he will find alternative employment with higher wages elsewhere.

Work experience is expected to have a negative effect on migration probability. As one accumulates both specific training and seniority with work experience, both often not transferable, the cost of migration increases.

For the estimation of the model, the same technique used by

Robinson and Tomes is adopted. It is a three-stage technique which first estimates the probability of migrating based on human capital and cost of migration variables. The estimated probabilities from the first stage are used to create correction factors, the inverse of the Mills ratio calculated from the estimated probabilities of the Probit estimation. These are included as regressors in wage regressions estimated separately for migrants and nonmigrants. The results of the initial Probit estimation appear in Table 2. The wage regression estimates appear in Table 3.

Finally, the original Probit estimation is repeated, using the coefficients from the wage equations to proxy the wage benefits of migration. Two "permanent wage" rates for migrants and nonmigrants are calculated. The WAGE DIFF variable is the ratio of the migrant to nonmigrant wage estimates for each individual. The results of the reestimated index function appear in Table 4a. The index function is also estimated with dummy variables indicating regions of origin. These results appear in Table 4b.

Given that the model hinges on the estimation of wage benefits, different specifications of the estimated wage benefits were made. First, arithmetic differences between the wage estimates of migrants and nonmigrants, rather than the ratios of wage estimates were tried. Since the estimates were linear combinations of some of the variables included in the model, some of these were left out of the model estimated. These results

appear in Table 4c.

As a further extension of the model, separate wage regressions were estimated for migrants and nonmigrants in each area of destination. The results of the wage regressions appear in Table 5. The coefficients were used to estimate eight potential wages for each individual, a migrant and nonmigrant wage for each region. These were then used to construct conditional wage estimates for each individual based on the area of origin and the migrant wages for the other destinations. These estimates were used to reestimate the index function using the highest alternate wage as the measure of the potential benefits of migrating. The results of this estimation appear in Table 4d.

## **5.2 THE DATA**

The data used for this study were collected as part of the National Longitudinal Survey of the Labor Market Experience of Youth (NLSY). The original participants were between the ages of 14-22 in 1979. They were interviewed yearly. The data used here span the years 1979-1987.

The sample contains only males not currently enrolled in school or college. Zero-earners are included in the wage regression, which diverges from the standard practice of using the log-wage specification as the dependent variable. The hourly wage variable is created by dividing yearly wages by the number of hours worked in a year. Wages were then deflated by yearly

regional price indices.'\* Rather than estimate separate equations for blacks and whites, dummy variables were created to identify blacks and those classified as 'other' in the variable denoting race.

Yearly data about the region of residence were used to determine whether an individual moved between regions. Information about lifetime residence was used to determine whether an individual had ever migrated. Local labor market conditions were available directly from the data, as were the number of weeks unemployed. Other variables included in the regressions were: marital status, valued 1 for married, 0 otherwise; health problems, valued 1 if health problems limited the kind of work an individual could perform, 0 otherwise; work experience, computed as AGE-HIGHEST GRADE COMPLETED-6; the number of dependents, valued as the actual number.

Since those enrolled in schools were dropped from the sample, different numbers of yearly observations were available for different individuals. The complexity of longitudinal estimation is increased when incomplete series for individuals abound. It was decided to negate the time effect by deflating the wage estimates using yearly regional price indices. It was also decided to treat each year as a separate, independent, migration decision. In this way, the data could be pooled over individuals and years to estimate essentially a large cross-

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<sup>22</sup> These were obtained from the Statistical Abstract of the United States 1990.

section.

The sample differs from a cross-section in one important way. Data for different years allows for information on wages on both sides of the migration decision. This is not possible in true cross sections and should improve the predictive power of the model.

Treating each observation as an independent observation, however, has some theoretical problems. First, unobserved variables which influence both wage and migration determination for individuals is likely to influence the same individuals in the same ways from year to year. This will build in some correlation between the errors for the same individual across years. This correlation was not accounted for. The unobserved variables are assumed to be uncorrelated with variables included in the model so the estimations will lose some efficiency, but should not be biased.

### **5.3 RESULTS**

Table 1. presents the means for the variables used based on migration status. Those who migrate have a higher than average value for ever migrating. Blacks, and "others", have a slightly higher representation in the non-migrant group. Migrants have higher than average education levels, lower than average unemployment rates in the markets of their destinations and origins, higher than average number of weeks unemployed in the year

previous to migration, lower than average number of dependents, health problems, current hourly wage, lagged hourly wage, percent married, and work experience.

The coefficients estimated in the first Probit equation, reported in Table 2., are unsurprising. Ever migrating shows a positive and highly statistically significant effect on the propensity to migrate. Being of the black or 'other' races has a negative effect. The effect is statistically significant for 'others' while it is not for blacks. Education level exerts a positive effect on migration as does the lagged unemployment rate and number of weeks unemployed. These effects are all statistically significant at at least the .05 level. The unemployment rate in the destination market, the past wage, whether an individual is married, and work experience all show statistically significant negative effects. Number of dependents, health problems and current wage show negative but insignificant effects.

The effect of the wage received in the region of origin has a significant negative influence on the probability of migrating. This stands in contrast to the insignificant coefficient on destination wage, the wage after migration has occurred. Better information is available about wages before the migration decision is made than wages afterwards. This supports the hypothesis of Akin et al that expected wages may not always correspond to actual wages after migration. As we shall see, wages do not in general perform well in aiding the estimation of the probability

of migration.

The fact that the local unemployment rates prior to and following the migration decision play a significant role in predicting the probability of migration supports the hypothesis that job security and local economic health play an important role in determining whether to migrate. The significant coefficient on weeks unemployed in the year previous to migration provides additional support.

In the wage regressions for migrants and nonmigrants reported in Table 3., there is at least one striking result. The fit of the model for the nonmigrants appears much better than the fit for migrants. All of the estimated parameters in the nonmigrant regression are statistically significant at the .05 level. Few of the parameters in the migrant equation are.

The return to education is slightly higher for nonmigrants. The coefficient is positive and statistically significant for both migrants and nonmigrants. Work experience gives a slightly higher return for the migrants. The average wages for blacks is lower relative to whites. This difference is statistically significant for nonmigrants but not so for migrants. The coefficient is quite a bit larger in absolute value for nonmigrants, as well. This may indicate that migration selects between heterogeneous subpopulations of blacks or that entering the migrant class puts blacks at an equal advantage (disadvantage) to whites. The coefficients for the 'other' category show the same results.

Number of dependents, health and marital status, bear little

influence in predicting the wages of migrants. For nonmigrants, however, all of these estimated parameters are statistically significant. The signs on the coefficients estimated on the Mills ratio differ in sign, with the parameter from the nonmigrant equation of statistical significance. The negative coefficient in the nonmigrant indicates that negative selection occurred for this group. This means that on average those who migrated made more, *ceteris paribus*, than the nonmigrants would have had they moved. The positive coefficient in the estimation for migrants indicates that positive selection occurs, meaning that migrants would have made more than nonmigrants had they chosen to stay. This effect is not statistically significant, however.

That the fits of these two models differ indicates that a different structure of wage determination for migrants and nonmigrants might exist, evidence of heterogeneity between the two groups. In order to determine whether the differences are statistically significant, a Chow test was performed on the regression equations. The test for homogeneity of the wage equations failed the significance test at the .01 level.<sup>23</sup>

The reestimation of the Probit for the propensity to migrate using the estimated wages from the wage regressions shows strikingly similar coefficients to the original probit. The results are reported in Table 4a. The WAGE DIFF. variable was obtained

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<sup>23</sup> In order to perform the test a pooled regression was run. Comparison of the sum of squared errors from the pooled and the two separate regressions yielded the F-statistic:  $F = 18.67$ . The critical value for F with 8 numerator and infinite denominator degrees of freedom is 4.86 at the .01 level.



by dividing the estimated migrant wage by the estimated non-migrant wage. It is statistically insignificant, indicating that wage differences have little influence on the migration decision. The other variables have the same interpretation as in the original probit estimation.

An alternative specification, including dummy variables denoting regions of origin was also estimated. The results are reported in Table 4b. The West dummy was omitted for estimation purposes. The only region of origin which showed a significant probability of outmigration was the North Central. Given that the data spans the years 1979-1987, this is probably a result of the decline of the auto and steel industries in the central region. The interpretation of the other coefficients remains the same as in the previous estimations.

Defining WAGE DIFF as the arithmetic difference between estimated wages of migrants and nonmigrants showed no better performance in the estimation. The results are reported in Table 4c. The coefficient on wage remains insignificant while the other coefficients have values similar to the previous estimation.

Defining WAGE DIFF as the ratio of the highest alternative migrant wage for an individual living in a particular region to the nonmigrant wage of that region yields similar results. These results appear in Table 4c. Again, the other estimated coefficients remain stable and the coefficient on WAGE DIFF is not statistically significant.

The wage regressions reported in Table 5. again show negative selection bias for all the stayers equations. This indicates that stayers would make less on average than movers if they had moved. However, no conclusion can be drawn about the movers, given that none of the estimated coefficients are significant. This is further evidence of heterogeneity in the population between migrants and non-migrants.

Wages play a smaller role in the migration decision than theorized. That unemployment variables play a larger role in influencing the migration decision is striking. It calls into question the migration-as-investment slant of the analysis and casts migration as a process in which individuals are compelled to engage rather than one in which they choose to engage.

## **6.1 Conclusions**

That labor follows jobs is unsurprising. That labor doesn't necessarily move to improve wages is. The idea that labor and capital can be considered similar in that they mobilize in order to get the best returns must be questioned. It appears that the costs of migration for labor outweigh most of the benefits from moving except when moving means finding employment.

The origin of regional wage differences reflects the lack of mobility of labor. That capital takes advantage of these wage differences is obvious. Migration, when viewed as a voluntary transaction, can be considered the manifestation of labor's ability to follow capital around. How market circumstances

change is of concern here.

Why did General Motors, owners of underutilized capital all over the North Central U.S., decide to build its new Saturn plant in Tennessee? Or why do financial services choose to put main offices in South Dakota or Ireland? Why do companies like Morrell or Champion International or Sears threaten to close or move their operations unless local governments and labor grant them concessions in the form of tax breaks, lower wage demands or variances in environmental protection regulations? Capital certainly understands the costs to communities of job loss and out-migration.

Industrial capital has moved south to capitalize on pools of cheap, unorganized labor and to benefit from favorable tax incentives. Financial services, far more mobile with the advent of worldwide information technology advances, can locate wherever local labor and government fiscal policies benefit them the most. The recently coined "managerial age" in the U.S. involves the shift of industrial production abroad and production in the U.S. being devoted more to service related work.

While perfect mobility of resources may seem a desirable attribute in terms of economic efficiency, the spatial mobility of labor in the wake of capital mobility has external costs. Dissolution of families and communities accelerates with increased labor movements. Difficult to quantify quality of life measures deteriorate with increased mobility. And the threat of capital flight gives leverage to companies asking for tax or

other concessions from local governments. Further, the inability of labor to follow capital abroad could spell disaster for certain segments of the work force. So long as the threat of unemployment or the cessation of local growth rates exist, capital can set the terms of trade between it, labor, and local government.

In this paper, I showed that unemployment in origin and destination labor markets plays a larger role in explaining migration than wage differences between markets. This is consistent with two models of migration suggested for developing countries. In the model of Harris and Todaro, urban unemployment equilibrates expected wage differences between urban and rural areas and limits migration to the cities. In the relative deprivation approach of Stark, local unemployment proxies relative deprivation of those out of work and motivates their decision to migrate.

That unemployment plays such a large role in motivating the migration decision contradicts the human capital view of migration as a voluntary investment decision. Akin to the decision of labor to work or starve, migration involves the decision to move or adapt to a lower standard of living. To treat this as a voluntary decision is ludicrous.

Further, the results of this work indicate that inferring school quality differences based on data about regions of schooling is a misspecification. That selection bias occurs in migration and is reflected in wages of migrants and nonmigrants is

undeniable. The assumption of homogeneity between migrants and nonmigrants is clearly incorrect. Whether the variation in individual wages can be decomposed into individual and regional factors remains to be seen.

The estimation of the effects of migration in the closing of racial wage gaps must be questioned, as well. If selection bias occurs, higher wages of migrants may not indicate a general improvement if they would have made higher than average wages staying put. The estimates of the impact on migration on closing wage gaps will consequently be overestimated. It is obvious that the migration issue must be more fully explored before using migration as a basis for indirect inference.

## **6.2 Policy Suggestions**

The lack of mobility of labor relative to capital presents a problem. Public policy can take two directions. First, it can attempt to enhance the mobility of labor and minimize the social costs of higher mobility of the work force. Second, it can impede the mobility of capital and weaken its bargaining position relative to labor and local government.

Labor mobility can be enhanced by increasing general skills, particularly those that are transferable to varieties of occupations. This can be achieved with increases in both education levels and general training of the work force. Further, retraining of displaced labor will improve its mobility. This increase in labor mobility between segments of the work force diminishes

migration. The social costs of increased migration will be obviated as labor in the transition from industrial production to service might not have to move in order to maintain employment.

Given that capital has little stake beyond pecuniary interests locally, increased mobility of capital is perceived to be a threat to localities as well as countries. Policy implications seem clear. Efforts should be made to limit the mobility of capital and to improve the ability of communities to influence its movements. Constraints might be legislated for capital movements at the national level. These might include ample warning periods before large layoffs and size limits placed on the export of capital.

On the local level, the bargaining ability of local governments and labor might be enhanced by enabling localities to procure abandoned capital. While the means for communities to take control of abandoned plants exists, they are seldom used. Sheehan (1985) points out that there are many reasons to believe that community-owned plants might be profitable when private enterprise finds it unprofitable.

Unprofitability of the plant might be a misperception, intentionally or unintentionally promoted by the corporation. This is based on the "unwillingness of the corporation to write down [the plant's] capital value reflecting its real earning capacity," because it reduces a corporation's reported earnings. Further, if the corporation is using flight as a bargaining ploy, potentially cost-effective plants might be misrepresented as

unprofitable. Cost effective plants might be closed by corporations in order to limit production and raise prices.<sup>24</sup>

Many of the benefits of maintaining a plant in a community might accrue to the community and not the corporation. Tax revenues and the demand for local services would decline with a plant closing, both benefits enjoyed by the community but not the corporation. Administration of the plant might be cost effective for the community because much of it can be done by the existing government administration.<sup>25</sup>

Production might be enhanced by a more cooperative disposition of labor towards the local management of the firm. Investment through municipal bond sales provides a cheaper means of borrowing than that available to firms, further enhancing productive potential. Net income is tax free, and more easily reinvested.<sup>26</sup>

Procurement of abandoned capital can either occur through the purchase of plants from corporations or through condemnation and eminent domain measures. While the resistance of corporations is expected, it is incumbent on local governments to protect the interests of its citizenry.<sup>27</sup> General cynicism about government's inability to manage production efficiently will be dispelled with a few successes.

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<sup>24</sup> Sheehan (1985) pp. 426-27

<sup>25</sup> *ibid* pp. 427-28

<sup>26</sup> *ibid*.pp.427-428

<sup>27</sup> *ibid*. pp. 429-31

Local control of abandoned capital will alleviate the flight of labor in search of jobs and decrease the social costs of migration. Larger scale use of abandoned capital by the federal government might be considered in the longer run. Essential to any legislation regarding limiting the mobility of capital is a commitment on the part of the national and local governments to resist the transition from industrial to managerial capitalism.



**TABLE 1.**  
Means for Variables by Migration Status

VARIABLE	NON - MIGRANT	MIGRANT	ALL
EVER MIGRATE	.586	.839	.594
BLACK	.256	.212	.254
OTHER	.053	.027	.052
HI GRADE COMP	<b>11.841</b>	<b>12.609</b>	<b>11.867</b>
UE RATE (DEST)	3.397	3.190	3.390
UE RATE (ORIG)	<b>3.403</b>	<b>3.329</b>	<b>3.400</b>
WEEKS UNEMPLOYED	<b>6.286</b>	<b>6.967</b>	<b>6.309</b>
NUM. DEPENDENTS	.424	.322	.421
HEALTH	.039	.029	.031
WAGE (DEST)	5.836	5.811	5.835
WAGE (ORIGIN)	4.858	4.494	4.846
MARRIED	.296	.241	.294
WORK EXPERIENCE	5.224	4.401	5.196
NONMIG 24987	MIG 870		

**TABLE 2.**  
**BINOMIAL PROBIT ESTIMATION OF PROPENSITY TO MIGRATE**

VARIABLE	COEFFICIENT	STANDARD ERROR	T-STAT
INTERCEPT	-2.5100	.1399	17.94
EVER MIGRATE	.5674	.0384	14.76
BLACK	-.0689	.0392	1.758
OTHER	-.2895	.0872	3.319
HI GRADE	.5048	.0088	6.227
UERATE (DEST)	-.1047	.0188	5.561
UE RATE (ORIG)	.0485	.0182	2.669
WEEKS UE	.0052	.0014	3.818
DEPENDENTS	-.0097	.0217	.447
HEALTH	-.0333	.0921	.361
WAGE (DEST)	-.0017	.0028	.622
WAGE (ORIGIN)	-.0082	.0040	3.082
MARRIED	-.1021	.0398	2.563
EXPERIENCE	-.0269	.0071	3.797
MIGRANTS 870	NONMIGRANTS 24987	-2 LOG LIKELIHOOD 453.22	df = 13 P-VAL = .000

TABLE 3.  
Wage Regressions for Migrants and Nonmigrants  
Using Tobit Estimation

VARIABLE	MIGRANT	T-STAT	NON-MIGRANT	T-STAT
INTERCEPT	5.204	9.97	-11.02	30.82
HI GRADE COMP	-.004	0.45	1.22	45.49
EXPERIENCE	.113	1.27	,567	29.80
BLACK	-2.605	5.18	-1.733	15.61
OTHER	-3.168	2.75	-.640	3.04
DEPENDENTS	-.140	0.46	.303	5.24
HEALTH	0.013	1.32	-1.541	5.72
MARRIED	.734	1.41	1.004	8.83
MILLS RATIO	.009	19.50	-14.169	12.12
sigma	9.276	48.37	7.119	206.48
Log Liklihd	-5371	p=.000	-77189	p=.000

**TABLE 4a.**  
Binomial Probit Est. of Propensity to Migrate  
Using Wage Estimates from Table 3.  
**WAGE DIFF define as ratio of migrant to nonmigrant wage**

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT
INTERCEPT	-2.451	.128	19.12
EVER MIGRATE	.569	.037	15.38
BLACK	-.067	.038	1.77
OTHER	-.275	.082	3.33
HI GRADE COMP.	.045	.007	5.81
UE RATE (DEST)	-.100	.018	5.49
UE RATE (ORIGIN)	.048	.017	2.70
WEEKS UNEMPLOYED	.006	.001	4.45
DEPENDENTS	-.017	.021	.803
HEALTH	-.050	.089	.551
WAGE DIFF	.001	.005	.314
MARRIED	-.115	.039	2.96
WORK EXPERIENCE	-.026	.006	4.21
<b>-2 LOG LIKELIHOOD</b>	457.59	df - 12	p-val= .000

**TABLE 4b.**  
Binomial Probit Est. of Propensity to Migrate  
Using Wage Estimates from Table 3.

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT
INTERCEPT	-2.448	.133	18.37
EVER MIGRATE	.574	.037	15.44
BLACK	-.059	.038	1.54
OTHER	-.251	.084	3.00
HI GRADE COMP.	.044	.008	5.67
UE RATE (DEST)	-.105	.018	5.72
UE RATE (ORIGIN)	.039	.018	2.17
WEEKS UNEMPLOYED	.006	.001	4.26
DEPENDENTS	-.018	.021	.837
HEALTH	-.051	.089	.565
WAGE DIFF.	.001	.005	.099
MARRIED	-.119	.039	3.05
WORK EXPERIENCE	-.026	.006	4.14
SOUTH	.019	.044	.438
NORTHEAST	-.001	.049	.029
NORTH CENTRAL	.155	.045	3.45
-2 LOG LIKELIHOOD	475.78	df - 15	p-val= .000

**TABLE 4c.**

Binomial Probit Est. of Propensity to Migrate  
Using Wage Estimates from Table 3.

**Wage diff. defined as difference of Migrant wage and Nonmigrant**

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT
INTERCEPT	-2.364	.137	17.28
EVER MIGRATE	.566	.037	15.32
BLACK	-.073	.090	1.65
OTHER	-.277	.825	3.36
HI GRADE COMP.	.043	.008	5.50
UE RATE (DEST)	-.101	.018	5.56
UE RATE (ORIGIN)	.048	.018	2.72
WEEKS UNEMPLOYED	.006	.001	4.59
WAGE DIFF.	.022	.023	.961
WORK EXPERIENCE	-.034	.006	5.66
-2 LOG LIKELIHOOD	458.05	df - 12	p-val= .000

**TABLE 4d.**  
Binomial Probit Est. of Propensity to Migrate  
Using Wage Estimates from Table 3.  
**Wage Diff. defined as ratio of highest alternative wage**  
**and nonmigrant WAGE**

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT
INTERCEPT	-2.451	.128	19.12
EVER MIGRATE	.569	.037	15.38
BLACK	-.067	.038	1.77
OTHER	-.275	.082	3.33
HI GRADE COMP.	.045	.007	5.81
UE RATE (DEST)	-.100	.018	5.49
UE RATE (ORIGIN)	.048	.017	2.70
WEEKS UNEMPLOYED	.006	.001	4.45
DEPENDENTS	-.017	.021	.803
HEALTH	-.050	.089	.551
WAGE DIFF.	.001	.005	.314
MARRIED	-.115	.039	2.96
WORK EXPERIENCE	-.026	.006	4.21
-2 LOG LIKELIHOOD	457.59	df - 12	p-val= .000

**TABLE 5.**  
Wage regressions Estimated for Separate Regions  
Correcting for Selection Effect of Migration

	REG1	NE	REG2	NC	REG3	SOUTH	REG4	WEST
VARIABLE	NMIG	MIG	NMIG	MIG	NMIG	MIG	NMIG	MIG
INTERCEP	-10.2**	-17.5**	-7.79**	-9.27**	-6.94**	-6.87	-8.5*	-11.9
BLACK	-1.07**	-.601	-1.27**	-1.17	-1.40**	1.03	-.89**	-3.49*
OTHER	-1.81**	-1.47	.499	-.204	-.499	2.42	-.551	-1.79
HIGRADE	1.20**	1.18**	.993**	.887**	.956**	1.01**	1.12**	.910**
EXPER.	.627**	.755**	.486**	.506**	.443**	.441*	.518**	.729**
DEPEND	.485**	.232	.078	.171	.206**	.040	.168	1.84**
HEALTH.	-.285	-.213	-.860*	-.146	-1.14**	4.37*	-1.68**	-3.96
MARRIED	1.01**	-.393	.646**	.080	.865**	.501	1.08**	-.363
MILLSRAT	-13.5**	2.61	-12.6**	.896	-13.4**	-1.21	-14.8**	1.39
NUMBER	4652	156	6243	263	9148	279	4944	172
ADJ R <sup>2</sup>	.132	.204	.098	.047	.101	.073	.094	.189

\*\* significant at .01 level or less.  
\* significant at .05 level.



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