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Out-of-State vs. In-State Migration in the United States

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Blanchard and Katz, in their paper "Regional Evolutions" (1992), suggest that out-of-state migration is the primary adjustment mechanism by which states recover from employment shocks. Additionally, they acknowledge that there may be externalities associated with out-of-state migration, although they do not investigate that conjecture. In response to their findings, this paper examines the economic and demographic characteristics of out-of-state migrants and concludes that the level of education is significantly associated with the choice to move out-of-state, even when controlling for a number of other demographic and economic variables. These findings imply that there may be negative externalities associated with out-of-state migration in the form of decreased human capital, which can diminish the speed of convergence of growth rates across states (Barro and Sala-i-Martin 1995) and may result in decreased social returns to education (Moretti 1998). While state policymakers must be made aware of the potential for out-of-state migration to adjust for employment shocks, they must also design policies that protect the state against concurrent loss of human capital during periods that follow employment shocks.

Introduction

The 1992 paper "Regional Evolutions" by Olivier Blanchard and Lawrence Katz contends that out-migration, as opposed to job creation, is the

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primary mechanism by which states adjust to negative employment shocks. However, Blanchard and Katz acknowledge that their results do not examine the evidence about the individual characteristics of those who leave the state and those who stay. This paper responds to their findings, by exploring the economic environment and demographic characteristics of individuals who choose to move out-of-state, instead of staying in the state. Individual characteristics may be of consequence because of potential negative externalities associated with out-migration, such as the phenomenon known as brain drain, which may occur when people with relatively high human capital are more likely to migrate (Barro and Sala-i-Martin 1995). In particular, I find that the odds of moving out-of-state, as opposed to staying in the state, are strongly influenced by the level of education, when controlling for housing status, age, race, marital status, average hourly wage, unemployment status, state unemployment, and region.

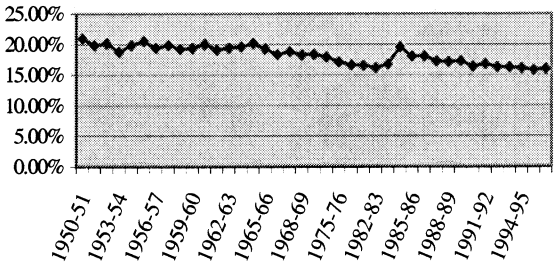
The paper begins by presenting some current statistics that give a broad idea of internal migration trends in the United States over the past five decades, particularly with respect to out-of-state migration. Following the survey of U.S. trends, I review relevant literature about the determinants and consequences of internal migration, as well as the externalities associated with interregional migration.

In the subsequent three sections, I develop a multinomial logit model that demonstrates some of the differences between individuals who move out-of-state, individuals who move within the state, and individuals who do not move. The model is based upon the basic logit models developed by Pissarides and Wadsworth (1989) and DaVanzo (1978) that demonstrate the relationship between unemployment and the inter-regional mobility of labor. In the final sections of the paper, I explore some potential extensions of the model and conclude with various implications of my findings for state and regional government policy.

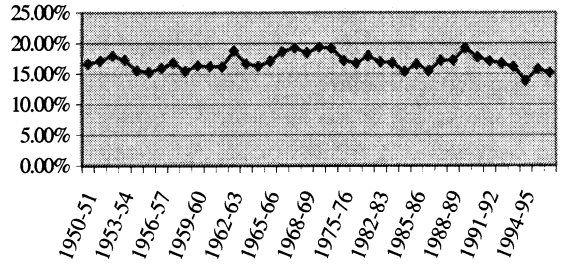
Interstate Migration in the United States

Moving rates in general declined from around 20% during the 1950's and 1960's to a low of 16.6% in 1983, then rose to 20.2% in 1984-85 and fell again by the mid-1990's. Out-of-state moves dipped in the 1970's, peaked in 1989-90, and dropped dramatically in the early 1990's. (Geographic Mobility/Migration Page, United States Census Bureau 2000) Movers, as a percentage of all Americans, and out-of-state movers, as a percentage of movers, are shown in the following graphs:

All Movers, as Percent of All Americans, 1950–97



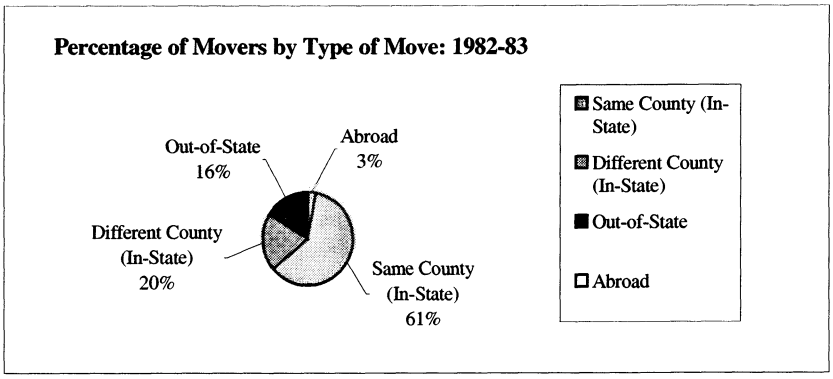
Out-of-State Movers, as Percent of All Movers 1950–97



Source: Geographic Mobility /Migration Page, United States Census Bureau, 2000

During 1982-1983, 16.13% of Americans moved to a new dwelling in the United States. Only 16.93% of these movers moved to a different state, so approximately 2.73% of all Americans moved out-of-state in 1982-83. During 1990-91, 16.4% of all Americans moved to a new dwelling in the United States. Of these movers, 15.36% moved to a different state, resulting in 2.91% of all Americans moving out-of-state in 1990-91 (Geographic Mobility/Migration Page, United States Census Bureau 2000).

The following graph indicates the percentage of movers within the United States by Type of Move for 1982-83:



The data for 1990-91 are very similar: 15% of movers moved to a different state, 3% moved abroad, and 62% moved within the same county (Geographic Mobility/Migration Page, United States Bureau of the Census 2000).

The graphs above give an overview of the status of migration in the United States, confirming the widely held belief that Americans do have high levels of geographic mobility. The statistics also demonstrate that long-distance moves are much less prevalent than short-distance moves, comprising between 2% to 3% of all Americans. While the absolute numbers are relatively small, Blanchard and Katz (1992) assert that the forces of out-migration play the primary role in state adjustment to employment shocks, thus compelling deeper examination of the qualities of out-of-state movers.

Background Literature

Determinants of Internal Migration

Most of the early literature on the economics of migration is devoted to examining the factors that influence migration, both in the United States and abroad, as opposed to examining the consequences of migration. Models of migration are generally formulated on the human capital model, attributing interregional movement to differences in net economic advantages, and distinguishing between gross migration and net migration (Greenwood 1975). While several of the demographic determinants of migration are widely accepted, the economic determinants of migration are more highly debated due to discrepancies in the results across studies. Models of gross migration, which refer to a single flow from one origin to a destination, have consistently found that distance is one of the most

important determinants of migration. This may be due to low benefits of migration relative to transportation costs, high psychic costs, and high uncertainty associated with migration. Economic determinants of migration have remained a source of debate, both with regard to gross and net migration. As early as 1932, J.R. Hicks speculated that wage differentials are the primary cause of migration (Greenwood 1975). Some later analyses support this hypothesis (Bartel 1979), while others find evidence for employment opportunities as the primary cause (DaVanzo 1978). In addition, gross migration models find that personal characteristics such as age, education, race, and housing tenure are important determinants of the decision to migrate (Pissarides and Wadsworth 1989; Jackman and Savouri 1992). DaVanzo finds that repeat moves, either to new locations or back to original locations, are influenced by many of the same factors (DaVanzo 1983).

Net migration models refer to the sum of migration flows, such that, by definition, net migration within the United States sums to zero nationally, although regional or state net migration can be either positive or negative (Treyz et al. 1993). Recent analyses of migration are devoted to the examination of the more dynamic net migration models. Most net migration models treat migration as an investment, in which net migration is a dynamic response of the population to the current and expected value of moving to the destination location (Treyz et al. 1993; Gallin 1999). Existing literature generally finds that migration is positively related to changes in relative economic opportunities and amenity differentials, although the significance of the specific variables is debated.
Several authors observe that employment opportunities have greater impact than wage rates on net migration (Treyz et al. 1993, Pissarides and Wadsworth 1989). Still others find that regional amenity differentials must be included as determinants of net migration, given empirical evidence that discounts the accuracy of regional wages as proxies for such differentials (Greenwood et al. 1991). Most recently, authors have begun to explore the varied effects of temporary versus permanent labor market shocks (Gallin 1999; Blanchard and Katz 1992), sometimes including wages, unemployment and amenity differentials in the model of net migration, as well as the expected values of those variables (Gallin 1999).

Consequences of Internal Migration

Early evidence regarding the consequences of internal migration is less abundant, partly due to the complexity and potential endogeneity of the migration dynamic (Gallin 1999). In addition, data specific to the

migration question are rather limited (Greenwood 1975). However, economists recently have creatively worked around these issues by addressing the ability of the market to redistribute labor resources, particularly in response to labor demand shocks (Blanchard and Katz 1992; Topel 1986). Using data from the Current Population Surveys of 1977-79, Topel (1986) finds that a positive relative shock to labor demand increases relative wages, but that current migration induced by expected future demand in fact reduces current wages, thus implying that migration between local labor markets arbitrages wage differentials. Topel does not explicitly use migration data in the econometric analysis, instead referring to independent data on migration flows as supportive evidence for his conclusions.

Gallin (1999) supports Topel's conclusions, and specifies that the dramatic response of wages and employment rates to perceived temporary labor demand shocks dissipates within five years. Permanent labor demand shocks, on the other hand, appear to have a smaller effect on wages and employment rates because of out-migration, in the case of negative shocks (in-migration, in the case of positive shocks). However, the temporary effects of permanent shocks last longer with regard to wages and employment rates, dissipating in ten to twelve years.

The evidence and conclusions presented by Blanchard and Katz (1992), which are intrinsic to this paper, also rely upon aggregate economic data to demonstrate that migration is an equilibrating force in response to labor demand shocks. Specifically, they contend that out-migration, rather than job creation, is the primary adjustment mechanism in response to state-level negative labor demand shocks. They estimate that an initial demand shock results in a permanent decrease in employment of one percent, while the effects on the unemployment rate and the labor participation rate are temporary, dissipating after four to six years due to the out-migration of workers. For example, they assert that an initial shock may result in a decrease in employment of 100 workers. This decrease in employment may be associated with an increase in unemployment of 30 workers and a decrease in labor force participation of five workers, which implies an increase in net out-migration of 65 workers (Blanchard and Katz 1992).

In a recent unpublished paper, Oswald (1999) suggests that high unemployment in Europe is a direct result of low labor mobility, which is itself associated with high levels of home-ownership. He asserts that the strong growth in home ownership in Europe in recent decades has impeded the ability of migration to function appropriately as an equilibrating force, resulting in high levels of unemployment.

On the contrary, while most authors view migration as a primary equili brating force, Jackman and Savouri (1992) explore the evidence that migration is the result of a successful job search instead of the result of differential economic opportunities. Empirical evidence from Great Britain indicates that net migration falls when regional unemployment rate differentials are high during recession, and that net migration rises when they are low. When overall vacancies decrease in a recession, migration rates must likewise decrease, thus explaining the apparently incongruous findings in Great Britain. While these conclusions explicitly refer to the determinants of migration, they imply that migration is not necessarily successful as an equilibrating force in response to labor demand shocks.

Externalities of Interregional Migration

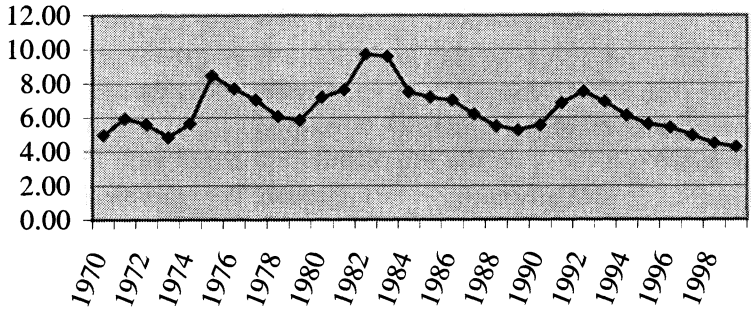
Several authors point to the selectivity of migration as a primary cause of the externalities associated with migration, referring to the possibility that private costs and benefits of migration may not reflect the social costs and benefits (Blanchard and Katz 1992; Greenwood 1975). The remainder of this paper will focus on the externalities associated with interregional migration, particularly out-of-state migration. For example, the propensity for residents with higher levels of education to migrate may constitute a loss of human capital to the state. This loss is similar to the loss of human capital experienced by developing countries from which highly educated citizens emigrate. The loss of human capital can affect the convergence of growth rates across countries, or across states in this case (Barro and Sala-i-Martin 1995). Moretti (1998) provides further evidence that there are positive social returns to education above and beyond the private returns to education, asserting that a rise (fall) in the relative numbers of highly educated workers has a positive (negative) effect on the wages of less educated workers. Given this evidence, states may not prefer migration as an adjustment mechanism when the social costs and benefits are not reflected in private costs and benefits (Blanchard and Katz 1992).

Data

The research for this paper is based primarily on the University of Michigan's Panel Study of Income Dynamics (PSID), a longitudinal study of a representative sample of U.S. households and individuals that began in 1968 with 5,000 US households. Individuals from the original sample are interviewed annually, regardless of whether they remain in the same family units (Panel Study of Income Dynamics Page, University of Michigan 2000). I chose the PSID because it contains data on the

characteristics of families that move (as well as those that do not move) immediately prior to the move itself. However, I did not take explicit advantage of the panel data by following households over a number of years, which may bias my results since DaVanzo (1983) showed that most moves are repeat moves. Instead, I chose data from 1982-1983 and 1990-1991, in order to capture the effects that might result from periods of low and high aggregate U.S. unemployment, as the following graph demonstrates:

Aggregate U.S. Unemployment Rate



Source: Selective Access Page, US Bureau of Labor Statistics, 2000

The 1982-83 data include only households that were available for interview in both 1982 and 1983, which amount to 6,810 observations. The 1990-91 data similarly include households that were available for interviews in both years and total 9,323 observations. The number of households grew considerably in the intervening period due to low attrition rates and strong re-contact efforts by the Survey Research Center at the University of Michigan (Panel Study of Income Dynamics Page, University of Michigan 2000).

PSID household data include information about economic and geographic factors of the family, as well as demographic information about the head of household (HOH) and the "wife" of the head of household. Approximately 70% of heads of household in both samples are male, which may be a function of the wording of the survey, since the survey poses questions to the "Head of Household" and "Wife", regardless of whether the HOH is actually male. Economic variables for the head of

household and spouse include such factors as average hourly wages and employment status, as well as family taxable income. Demographic variables for the head of household and spouse include such factors as education level, age, race and marital status. Detailed descriptions of selected variables can be found in Appendix 2.

The US Bureau of Labor Statistics (BLS) was the source for aggregate economic variables including aggregate U.S. unemployment rates and seasonally adjusted unemployment rates by state for 1981, 1982, 1989, and 1990 (Selective Access Page, Bureau of Labor Statistics 2000).

METHOD

In the interest of examining the factors that affect out-of-state migration, as opposed to in-state migration or no migration, I analyze the data using two multinomial logit models, one for 1982-83 and one for 1990-91. The model is formulated in the spirit of earlier logit analysis of British data by Pissarides and Wadsworth (1989) and multiple OLS regressions of U.S. data by DaVanzo (1978). The multinomial logit model enables us to assign more than two response categories to the dependent variable by assigning a separate equation for each response. It assumes that the response categories are mutually exclusive and exhaustive (out-of-state migrants, in-state migrants, and non-migrants) and assumes that the log-odds of each categorical response follow a linear model. In addition, the multinomial logit model gives us the freedom to examine the data with respect to any relevant base category, either in-state migrants or non-migrants.

Out-of-state movers are defined as households that reported a move to a new house outside of the 1982 origin state between the time of the 1982 (1990) survey and the 1983 (1991) survey. In-state movers are defined as households that reported a move to a new house within the 1982 (1990) origin state between the time of the 1982 (1991) survey and the 1983 (1991) survey. Non-movers are those households that reported that they did not move. All other demographic and economic characteristics are derived from the 1982 and 1990 surveys, prior to moving.

The primary shortcoming of the multinomial logit is the inability to include attributes of the choice to the model. In order to include variables, such as the destination state current and expected unemployment rate, average wages and migration rates, we would need to use a conditional logit model (see the Extensions section of this paper). While it is possible to combine conditional and multinomial logit models, the number of interactions between individual/origin state characteristics and the 50

possible destination state characteristics would run the risk of over-identification. As such, this analysis is limited to characteristics of the individuals and their origin state.

The PSID data set includes variables that refer to individual characteristics of either the head of household (HOH), or the "wife" of the head of household, although the HOH is not constrained to be male. I find that the spouses' demographic variables are generally highly correlated, therefore I choose to drop the "wife" demographic variables in order to avoid problems of multicollinearity. As such, the significant variables refer to characteristics of the head of household in the following section that describes my results.

The model is loosely based on the determinants of migration, mentioned earlier in this paper, with special attention paid to the variables included in the model by Pissarides and Wadsworth (1989). The University of Michigan PSID enables an improvement upon their model with the inclusion of the head of household's wage and family income data. The following section details the empirical results of my analyses. Detailed statistics and descriptions of the selected variables can be found in Appendices 1 and 2, respectively.

Discussion of Empirical Results

I find somewhat different results for the 1982-83 and 1990-91 data sets as shown in Tables 1, 2, 3 and 4. Tables 1 and 2 present the results using in-state movers as the base category, whereas tables 3 and 4 present the results with non-movers as the base category, since the results also vary according to base category. Each Table presents the results from three regressions, the first of which includes housing status, education status, age, race, marital status, and average hourly wage. The second regression builds upon the first, adding HOH unemployment status and unemployment for the origin state in 1981 and 1982. The third regression builds upon the second, controlling for regional variables in addition to all of the variables from the second regression. I present all three regressions to demonstrate the robustness of my results, but I will generally refer to the results of the third equation, unless otherwise noted. Joint significance of each variable within the regressions is indicated in the tables by asterisks and demonstrates the appropriateness of including the variable in the model. The individual significance of each variable, which indicates whether the variable is significant within each response equation, is noted in the discussion below.

I will present the results together, placing the 1990-91 results in parentheses, and noting any discrepancies between the results for the two

periods. Then I will compare each period's results with regard to aggregate U.S. unemployment. I find that education and average hourly wages are consistently significant variables with respect to the odds of moving out-of-state as opposed to moving in-state, for both periods. The model also controls for housing status, race, age, marital status, unemployment status, and state unemployment levels, and region. In addition, I find that housing status, education, age, and race are consistently significant variables with respect to the odds of moving out-of-state as opposed to not moving, for both periods.

Housing Status

One of the most significant factors when non-movers are the base category, jointly and individually significant at the 1% level for both periods, is housing status. As shown in Table 3 (4), the odds of moving out-of-state, as opposed to not moving, are (exp{coefficient}-1)x100 =72% (72% for 1990-91) lower, given that the family owns a house (as opposed to renting, which is the base category for non-movers). However, as seen in Table 3 (4), housing status also affects the odds of moving within the state, lowering them by 79% (77%) when the family owns a house. These statistics indicate that housing status strongly affects the probability of moving.

The housing status variable is also jointly significant at the 5% level with regard to the probability of moving out-of-state as opposed to moving in-state, indicating that the variable should be included in the model. However, Table 1 (2) indicates that the housing variable is not individually significant when in-state movers are used as the base category, even though the positive coefficient indicates that the odds of moving out-of-state versus moving in-state are 30% (21%) higher for families that own their house. We are specifically interested in those families that choose to move out-of-state instead of moving within the state. Therefore, the individual insignificance of the housing variable discounts the role of housing status as a factor for out-of-state migration vs. in-state migration, although housing status affects the choice to move quite significantly.

Education

In general, higher levels of education raise the odds of moving out-of-state, both when compared with the non-movers base category and when compared with the in-state movers base category, although the significance and magnitude depend on the specific level of education attained. In 1982-83, all three levels of education are jointly significant at the 5%

level, whereas in 1990-91 only a B.A. and Advanced Degree are jointly significant.

A B.A. is individually significant at the 10% (1%) level and an advanced degree is significant at the 1% (1%) level, when compared with in-state-movers (with high school dropouts as the base category of non-movers). The odds of moving out-of-state, versus moving in-state, are 72% (95%) higher given that the head of household has a B.A. The odds of moving out-of-state, versus moving in-state, are fully 261% (171%) higher given that the head of household has an advanced degree. While the level of education has significant effects on the decision to move versus not move, it also has strong and significant effects on the decision to move out-of-state versus moving within the state.

Age

Age categories were assigned according to the age brackets assigned by Pissarides and Wadsworth (1989). The age brackets assigned are generally intended to capture movements by young, middle-aged, and old people, and are jointly significant in all three regressions. The base category of non-movers includes young people (age<35) such that the variables compare the odds of moving for the given variable versus the odds of moving for a head of household under the age of 35.

The results indicate that the odds of moving out-of-state versus not moving decrease significantly (5% level) with age, which corresponds with results of the background literature. In contrast, the odds of moving out-of-state versus moving in-state are 164% higher, individually significant at the 5% level, for individuals over the age of 55 only in 1982-83. The odds are higher but not individually significant for the other age groups in both 1982-83 and 1990-91. Given that individuals older than age 55 have significantly lower odds of moving out-of-state than not moving at all, the unexpected sign of age>55 in only 1982-83 may be the result of retirement, accompanied by out-of-state movements. While there is no conclusive evidence, one might posit that in the 1982-83 period of relatively high unemployment, severance packages intended to encourage early retirement may have affected the probability of out-of-state migration for the older age group.

Race

Race is another variable that is jointly significant at the 1% level. When compared to in-state movers as the base category in 1982-83, race is not an individually significant variable, although it is individually significant

at the 5% level for 1990-91. In that period, the odds of moving out-of-state, as opposed to moving within the state, are lowered by 30% given that the head of household is not white. The odds of moving out-of-state, versus not moving, are 45% (33%) lower given that the head of the household is not white (as opposed to white heads of household as the base category of non-movers). Similar to housing status, not being white also lowers the odds of moving within the state, versus not moving, although the magnitude is much smaller.

Marital Status

The marital status variable is jointly significant at the 1% (5%) level, and generally indicates that married heads of household are less likely to move out-of-state than move in-state, although they are more likely to move either in-state or out-state, than not move at all. However, the variables that indicate likelihood of moving out-of-state are not individually significant and the magnitude is quite small, with married heads of household 4% (.8%) less likely to move out-of-state than move in-state, when compared with the base category of unmarried heads of household.

Marital status is also not individually significant with respect to the odds of moving out-of-state versus not moving and the magnitude of the effect is similarly small, with married heads of household 3% (6%) less likely to move out-of-state than not move at all.

Wage

I intended to introduce a number of wage variables into the model, including average hourly wage, family taxable income, welfare transfers, industry wage, wage relative to industry wage, change in relative wages, and hourly wage relative to industry hourly wages. However, while individual industry information is available, 19% of the respondents reported Don't Know/Not Applicable, making it impossible to test wage relative to industry wage without dropping those individuals. In addition, family taxable income and welfare transfer did not prove to be significant variables (results not shown in tables). As such, I include only the average hourly wage for the head of household, which is jointly significant at the 1% (5%) level.

The variable is individually significant at the 1% (5%) level with respect to out-of-state movers versus in-state movers. As a continuous variable, with mean 6.75 (8.73) and standard deviation 6.46 (9.41), the odds of moving out-of-state, as opposed to moving in-state, are 3% (.22%) higher given a one standard-deviation increase in the average hourly wage. This

implies that as individuals' average hourly wages increase, their odds of moving out-of-state also increase. These results indicate that wage differentials do affect the probability of migration, and while the magnitude on the average hourly wage variable is small, I suspect that differentials in relative wages (relative to industry and state variables) would prove to increase the odds by a higher magnitude.

The average hourly wage variable is individually significant with respect to moving out-of-state as opposed to not moving only during the 1990-91 period. In this period, the odds of moving out-of-state versus not moving are 1% higher given a one standard-deviation increase in the average hourly wage.

Unemployment

Given the ambiguous results in previous literature, I am not surprised to find that the results are also ambiguous in my three models, given that only the third model yields joint significance for the unemployment variables and only at the 10% level. The sign on the unemployment status variable is positive for out-of-state migration, as compared with in-state migration in 1982-83 but individually insignificant. The same variable is individually significant at the 5% level for the 1990-91 model, but the coefficient is negative, indicating that the odds of moving out-of-state versus moving in-state are 46% lower given that the head of household is unemployed instead of employed. The results are similarly confounding with respect to moving out-of-state versus not moving. While these results may be due to mis-specification of the model, insignificance of the unemployment variable, and even unexpected signs, has also been speculated to indicate the difficulty of unemployed individuals to gather the capital that is necessary to move (Pissarides and Wadsworth 1989).

As such, I introduced other unemployment variables into the model, including state unemployment variables and variables of the change in state unemployment immediately prior to the move. The state unemployment variables for both 1981 and 1989 are jointly significant at the 10% level, while the state unemployment variables for 1982 and 1991 are not jointly significant. Even the 1981 and 1982 variables, however, are fairly ambiguous and difficult to interpret. The state unemployment variables are continuous variables with mean 7.82 (5.38) and standard deviation 1.71 (1.15) for the origin state in 1981 (1989) and mean 9.93 (5.68) and standard deviation 2.13 (.90) for the origin state in 1982 (1990). The results indicate that in 1982-83 the odds of moving out-of-state, versus moving in-state, are 31% lower given a one standard-deviation increase in

state unemployment for 1981, but are 28% higher given a one standard-deviation increase in state unemployment for 1982. The results also indicate that in 1982-83 the odds of moving out-of-state, versus not moving, are 26% lower given a one standard-deviation increase in state unemployment for 1981, but are 21% higher given a one standard-deviation increase in state unemployment for 1982.

These results could imply that higher state unemployment in the state of origin during the year prior to the move lowers the odds of moving out-of-state, whereas higher state unemployment in the state origin during the year of the move raises the odds of moving out-of-state. However, the use of 1981 state unemployment data may not yield accurate results since it is based on the assumption that the household was living in that state in 1981. The data set only includes location information for 1982 and 1983 since the move occurred between those years, therefore the results would be biased if the individuals were not actually living in the 1982 reported state during 1981.

The 1982 state unemployment variables, however, echo the theoretical results that higher unemployment in the state of origin is associated with higher odds of moving out-of-state. The fact that the state unemployment variables for 1989 and 1990 are insignificant and display different patterns may be associated with the relatively low levels of aggregate unemployment in those years. I discuss later in the paper the exclusion of unemployment variables for the destination state.

Results for out-of-state moving versus not moving are similarly confounding with respect to HOH unemployment and state unemployment levels.

Region

Even after controlling for other regional and industry factors, such as wages and unemployment, I still find that some regional factors are significant. In all models, I find that the North Central, South, and West Regions are jointly significant at the 5% level. Specifically, in 1982-83, the odds of moving out-of-state, versus moving in-state, are 52% lower given that the family resided in the West in 1982, and individually significant at the 5% level. In 1990-91, none of the regional variables are individually significant with regard to the out-of-state vs. in-state equation.

Other Variables

Pissarides and Wadsworth (1989) also find other variables to be significant, including female head of household, employment status of wife (i.e. unemployed), dependent children and industry. The introduction of

these variables into the model result in insignificant results, which I then omit in order to avoid biasing the results of my model. The results are not included in this paper. In addition, they include a variable for the cost of unemployment, which I do not include in my model.

Comparison Between 1982-83 and 1990-91

Any comparison between the two periods is only a first glance at the effect of aggregate unemployment trends on the probability of out-of-state moves. However, as I note above, it appears that the level of unemployment in the state of origin immediately prior to a move has the expected positive effect on out-of-state moves when the level of aggregate unemployment is high. When the level of aggregate unemployment is low, the results are more ambiguous and not significant, indicating that state levels of unemployment may not be a primary determinant of out-of-state moves when aggregate unemployment is low. This speculation, however, requires further examination that takes into account the unemployment and wage differentials between origin and destination states.

PREDICTIONS

The predicted probability of moving out-of-state, for both periods using the third regression, is shown below:

Year	Equation	Predicted Probability
1982-83	Non-Mover	75.98%
	In-State Move	20.90%
	Out-of-State Move	3.13%
1990-91	Non-Mover	77.82%
	In-State Move	19.21%
	Out-of-State Move	2.97%

In the PSID sample, 4% of the respondents in both 1982 and 1990 had advanced degrees. The variable indicating that the head of household has an advanced degree was consistently significant and has a strong effect on the odds of moving out-of-state versus moving in-state. As an additional exercise, I calculate the predicted probabilities given that all heads of household do not have advanced degrees and given that all head of household do have advanced degrees in order to examine the effect of advanced education on the probability of migration. The predicted probabilities are as follows:

Year	Move Status	Predicted Probability
1982-83,		
HOH does not have advanced degree		
	Non-Mover	75.85%
	In-State Move	21.15%
	Out-of-State Move	2.99%
1982-83,		
HOH has advanced degree		
	Non-Mover	79.20%
	In-State Move	13.87%
	Out-of-State Move	6.93%
1990-91,		
HOH does not have advanced degree		
	Non-Mover	77.92%
	In-State Move	19.25%
	Out-of-State Move	2.84%
1990-91,		
HOH has advanced degree		
	Non-Mover	74.88%
	In-State Move	17.98%
	Out-of-State Move	7.13%

The table above demonstrates the effect that an advanced degree can have on the predicted probability of moving out-of-state. In both periods, an advanced degree can increase the probability from .03 to .07.

EXTENSIONS

There are a number of extensions that might result in an improved model. The most obvious extension would be to use a conditional logit model that allows for multinomial logit interpretation. This would result in a model that includes variables that refer explicitly to the choice of destination state. In particular, unemployment levels, changes in unemployment, average wages for the individual's industry, and amenity differentials are all variables that have been noted in previous literature to affect migrants' move status. However, these variables cannot be included in a multinomial logit, which merely predicts movement according to migrant-specific variables. Using a conditional logit model would probably result in a better specification, particularly regarding the economic variables for which I have obtained insignificant results. However, I do not suspect that it would change the significance of the variables that I note in the multino-

mial model, especially housing tenure, education, and race.

Another extension might assume that the decision to move is a hierarchical decision. Specifically, there might be reason to believe that people make the choice to move first, then decide whether to move in-state or out-of-state. Again, while this might result in a slightly better specification, I do not believe that it would necessarily change the significance of some of the most prominent variables.

One final extension would take advantage of the findings by DaVanzo (1983) about repeat moves. In particular, a time series analysis of interstate movement might take better advantage of the panel data than my model, which merely examines the data at two different points in time according to levels of aggregate U.S. unemployment.

There are some data-specific issues, which, if resolved, would result in a more appropriate model. While the data sets are not small (6,810 and 9323 observations), the number of individuals who move out-of-state is quite small, although the proportion (3%) is similar to U.S. out-of-state migration. As a result, there is some reason to believe that the results may be biased by the size of the data that pertain to out-of-state movers. The size of the data set may influence any attempt at comparison with the results by Pissarides and Wadsworth (1989), who used a data set that totals over 30,000 observations.

CONCLUSION

Neoclassical economics views migration as an equilibrating force in response to economic and amenity differentials (Greenwood 1975). Blanchard and Katz (1992) further conclude that interstate migration is the primary equilibrating force in response to labor demand shocks. However, they do not specify the composition of the labor force that migrates out-of-state in response to labor demand shocks. In this paper, I examine the probability of out-of-state migration according to a number of demographic and economic characteristics, and reach the following conclusions:

- Owning a house affects the probability of moving in-state or out-of-state, as opposed to not moving at all. However, home ownership has no individually significant effect on the probability of moving out-of-state versus moving in-state.
- Higher education (both B.A. and advanced degree) significantly raises the odds of moving out-of-state, when compared with both in-state movers and non-movers.
- Older HOHs have lower odds of moving out-of-state than not

moving. The odds of moving out-of-state versus moving in-state are significantly higher for HOHs older than 55 in 1982-83, which may reflect retirement moves.

• Nonwhite heads of households have lower odds of moving, either in-state or out-of-state, when compared with not moving. However, the only period in which race is significant for moving out-of-state versus moving in-state is 1990-91, in which the odds of moving are lower when the HOH is not white.

• Marital status, while jointly significant, and intrinsic to the model, does not affect the odds of moving out-of-state as opposed to moving in-state due to the individual insignificance of the variable in the out-of-state response equation.

• Higher average hourly wages significantly increase the odds of moving out-of-state, as opposed to moving in-state, although the magnitude of the increase in odds is small.

• Higher levels of state unemployment increase the odds of moving out-of-state, versus moving in-state, only in 1982-83 (a year of high U.S. aggregate unemployment).

One of the most striking aspects of the above results is the higher odds of moving for the most desired members of the labor force, specifically the individuals with higher levels of human capital in the form of education. The migration of these workers out of the state, as implied by Blanchard and Katz (1992), may lead to economic adjustment in the face of labor shocks, but it may also result in a decline in the level of human capital available in the state.

Policy Implications

While Blanchard and Katz (1992) suggest that out-of-state migration functions as an economic adjustment mechanism, they also acknowledge that there may be externalities associated with out-of-state migration. This analysis is intended to investigate previously unexamined state-level data in order to provide information about potential externalities associated with out-of-state migration to state policymakers.

While the departure of human capital from one state to another may not have a significant impact on the aggregate U.S. economy, it has the potential to affect the convergence of growth rates across states (Barro and Sala-i-Martin 1995). In addition, Moretti (1998) has demonstrated that there are social returns to human capital above and beyond the private returns, in the form of higher wages for workers with relatively low education. As such, migration of human capital is a matter of concern for

state and local governments in the United States, as well as for governments abroad that are developing policies in reaction to relaxed federal and regional borders. In fact, various states have developed programs in reaction to a perceived mass exodus by university graduates upon, or shortly after, graduation. States such as North Carolina and Wisconsin are pursuing economic development programs that encourage young graduates to remain in the state, citing high-skill jobs that remain unfilled due to a low supply (Swint 1999; Romell 1999).

Bartik (1991) contradicts this hypothesis at the level of the metropolitan area, stating that the out-migration of educated workers may result in the employment of formerly unemployed workers that allows them to accumulate human capital. He asserts that this, in turn, results in higher levels of human capital and employment for the area in the long run. However, this assumes that formerly unemployed workers can substitute for the out-migrants in the local labor market, which may not be an appropriate assumption, particularly for workers with advanced degrees.

State policy makers should not discourage migration, in recognition of the potential for migration to serve as an adjustment mechanism. The costs of moving may be higher for workers with lower levels of human capital, and the benefits of moving may be smaller or more uncertain, resulting in a higher probability for workers with high human capital to leave the state. However, states should examine more closely the composition of out-migrants, and when necessary, design incentives that will prevent the loss of human capital and build upon existing human capital.

TABLE 1

Multinomial Logit Regressions for the Probability of Migration 1982–83
Base Category: In-State-Movers

Move	Independent Variable	(1) Coeff.	(1) S.E.	(2) Coeff.	(2) S.E.	(3) Coeff.	(3) S.E.
Out-of-State	Constant	**-2.4507**	*0.2424*	**-2.0738**	*0.4256*	**-1.9481**	*0.4650*
	Own house	**0.2988***	*0.1821*	**0.3067***	*0.1831*	**0.2614***	*0.1847*
	HOH H.S. degree	**0.4433***	*0.1897*	**0.4467***	*0.1905*	**0.4885***	*0.1918*
	HOH B.A.	**0.5379***	*0.2926*	**0.5423***	*0.2940*	**0.5416***	*0.2951*
	HOH Advanced Degree	**1.2237***	*0.3626*	**1.2573***	*0.3648*	**1.2848***	*0.3661*
	HOH Age 35-54	**0.0384***	*0.1866*	**0.0471***	*0.1870*	**0.0570***	*0.1874*
	HOH Age >55	**0.5402***	*0.2458*	**0.5702***	*0.2489*	**0.6039***	*0.2499*
	HOH Non-white	**-0.2016***	*0.1687*	**-0.2125***	*0.1695*	**-0.2449***	*0.1763*
	HOH Marital Status	**-0.0373***	*0.0610*	**-0.0390***	*0.0610*	**-0.0364***	*0.0611*
	HOH Average Hourly Wage	**0.0291***	*0.0110*	**0.0286***	*0.0109*	**0.0323***	*0.0109*
	HOH Unemployed			**0.2392****	*0.2456*	**0.2279****	*0.2464*
	State Unemployment 1981			**-0.2042**	*0.1404*	**-0.3732****	*0.1552*
	State Unemployment 1982			**0.1190**	*0.1138*	**0.2434**	*0.1279*
	North Central Region					**0.1611***	*0.2627*
	South Region					**0.0033***	*0.2416*
	West Region					**-0.7259***	*0.3037*
	Alaska & Hawaii Region					**0.3809**	*1.1432*
Non-Movers	Constant	**0.1239**	*0.1051*	**0.2040**	*0.1856*	**0.5495**	*0.2100*
	Own house	**1.5327***	*0.0811*	**1.5330***	*0.0815*	**1.5423***	*0.0822*
	HOH H.S. degree	**0.2082***	*0.0760*	**0.1970***	*0.0765*	**0.2142***	*0.0771*
	HOH B.A.	**0.3427***	*0.1352*	**0.3275***	*0.1356*	**0.3103***	*0.1362*
	HOH Advanced Degree	**0.5373***	*0.2136*	**0.5151***	*0.2138*	**0.5102***	*0.2140*
	HOH Age 35-54	**0.4486***	*0.0799*	**0.4339***	*0.0803*	**0.4286***	*0.0806*
	HOH Age >55	**1.4051***	*0.1082*	**1.3713***	*0.1098*	**1.3709***	*0.1102*
	HOH Non-white	**0.3224***	*0.0712*	**0.3324***	*0.0715*	**0.3617***	*0.0747*
	HOH Marital Status	**-0.0739***	*0.0258*	**-0.0722***	*0.0258*	**-0.0694***	*0.0259*
	HOH Average Hourly Wage	**0.0008***	*0.0069*	**-0.0001***	*0.0068*	**0.0010***	*0.0069*
	HOH Unemployed			**-0.1766****	*0.1086*	**-0.1872****	*0.1091*
	State Unemployment 1981			**0.0563**	*0.0629*	**-0.0716****	*0.0671*
	State Unemployment 1982			**-0.0492**	*0.0506*	**0.0532**	*0.0550*
	North Central Region					**-0.3617***	*0.1202*
	South Region					**-0.4132***	*0.1060*
	West Region					**-0.7118***	*0.1255*
	Alaska & Hawaii Region					**-0.9684**	*0.6741*
Diagnostics							
Sample			6810		6810		6810
Log L			-3869.85		-3864.97		-3842.65
Pseudo R^2			.1180		.1191		.1242

* *indicates **joint** significance at 5% level*

** *indicates **joint** significance at 10% level*

TABLE 2

Multinomial Logit Regressions for the Probability of Migration 1990–91
Base Category: In-State-Movers

Move	Independent Variable	(1) Coeff.	(1) S.E.	(2) Coeff.	(2) S.E.	(3) Coeff.	(3) S.E.
Out-of-State	Constant	**-1.9464**	*0.1813*	**-1.3282**	*0.4631*	**-1.4555**	*0.4895*
	Own house	**0.1905***	*0.1589*	**0.1760***	*0.1592*	**0.1915***	*0.1599*
	HOH H.S. degree	**-0.0648**	*0.1554*	**-0.0806**	*0.1557*	**-0.0696**	*0.1560*
	HOH B.A.	**0.6669***	*0.2046*	**0.6386***	*0.2048*	**0.6668***	*0.2050*
	HOH Advanced Degree	**0.9870***	*0.2994*	**0.9654***	*0.2998*	**0.9969***	*0.3003*
	HOH Age 35-54	**0.1214***	*0.1432*	**0.0993***	*0.1435*	**0.1030***	*0.1439*
	HOH Age >55	**0.1897***	*0.2530*	**0.1806***	*0.2532*	**0.1903***	*0.2538*
	HOH Non-white	**-0.4069***	*0.1455*	**-0.3704***	*0.1461*	**-0.3628***	*0.1493*
	HOH Marital Status	**-0.0135***	*0.0522*	**-0.0124***	*0.0521*	**-0.0083***	*0.0520*
	HOH Average Hourly Wage	**0.0046**	*0.0072*	**0.0030***	*0.0072*	**0.0022***	*0.0072*
	HOH Unemployed			**-0.6348***	*0.3098*	**-0.6089***	*0.3102*
	State Unemployment 1989			**0.0101***	*0.1089*	**-0.0048****	*0.1203*
	State Unemployment 1990			**-0.1073***	*0.1387*	**-0.0776**	*0.1463*
	North Central Region					**-0.1831***	*0.2444*
	South Region					**0.0094***	*0.2257*
	West Region					**0.2026***	*0.2326*
	Alaska & Hawaii Region					**1.1330**	*0.8925*
Non-Movers	Constant	**0.5920**	*0.0797*	**0.9807**	*0.2006*	**1.2021**	*0.2096*
	Own house	**1.4335***	*0.0684*	**1.4417***	*0.0688*	**1.4673***	*0.0692*
	HOH H.S. degree	**-0.0324**	*0.0627*	**-0.0405**	*0.0630*	**-0.0323**	*0.0632*
	HOH B.A.	**-0.0249***	*0.1081*	**-0.0448***	*0.1083*	**-0.0468***	*0.1085*
	HOH Advanced Degree	**0.0325***	*0.1783*	**0.0165***	*0.1783*	**0.0109***	*0.1785*
	HOH Age 35-54	**0.7114***	*0.0612*	**0.6991***	*0.0615*	**0.6945***	*0.0617*
	HOH Age >55	**0.8177***	*0.1091*	**0.8055***	*0.1094*	**0.7934***	*0.1096*
	HOH Non-white	**-0.0227***	*0.0590*	**0.0144***	*0.0596*	**0.0439***	*0.0611*
	HOH Marital Status	**-0.0657***	*0.0220*	**-0.0677***	*0.0220*	**-0.0679***	*0.0221*
	HOH Average Hourly Wage	**-0.0054**	*0.0037*	**-0.0082***	*0.0037*	**-0.0086***	*0.0037*
	HOH Unemployed			**-0.4141***	*0.1045*	**-0.4017***	*0.1049*
	State Unemployment 1989			**-0.1939***	*0.0479*	**-0.1197****	*0.0529*
	State Unemployment 1990			**0.1248***	*0.0615*	**0.0686**	*0.0647*
	North Central Region					**-0.4411***	*0.1040*
	South Region					**-0.3699***	*0.0978*
	West Region					**-0.3107***	*0.1040*
	Alaska & Hawaii Region					**-0.7589**	*0.6475*
Diagnostics							
Sample			9323		9323		9323
Log L			-5188.997		-5166.9227		-5153.1989
Pseudo R^2			0.0973		0.1011		0.1035

* *indicates joint significance at 5% level*

** *indicates joint significance at 10% level*

TABLE 3

Multinomial Logit Regressions for the Probability of Migration 1982–83
Base Category: Non-Movers

Move	Independent Variable	(1) Coeff.	(1) S.E.	(2) Coeff.	(2) S.E.	(3) Coeff.	(3) S.E.
Out-of-State	Constant	**-2.5746**	*0.2335*	**-2.2778**	*0.4078*	**-2.4976**	*0.4426*
	Own house	**-1.2339***	*0.1712*	**-1.2264***	*0.1722*	**-1.2809***	*0.1738*
	HOH H.S. degree	**0.2352***	*0.1834*	**0.2497***	*0.1842*	**0.2743***	*0.1854*
	HOH B.A.	**0.1952***	*0.2776*	**0.2147***	*0.2790*	**0.2313***	*0.2800*
	HOH Advanced Degree	**0.6864***	*0.3233*	**0.7422***	*0.3254*	**0.7746***	*0.3262*
	HOH Age 35-54	**-0.4102***	*0.1778*	**-0.3867***	*0.1782*	**-0.3716***	*0.1785*
	HOH Age >55	**-0.8649***	*0.2292*	**-0.8011***	*0.2320*	**-0.7670***	*0.2329*
	HOH Non-white	**-0.5240***	*0.1629*	**-0.5449***	*0.1637*	**-0.6065***	*0.1703*
	HOH Marital Status	**0.0366***	*0.0590*	**0.0332***	*0.0591*	**0.0330***	*0.0591*
	HOH Average Hourly Wage	**0.0283**	*0.0095*	**0.0287***	*0.0094*	**0.0313***	*0.0093*
	HOH Unemployed			**0.4158****	*0.2402*	**0.4150****	*0.2409*
	State Unemployment 1981			**-0.2605**	*0.1340*	**-0.3016****	*0.1487*
	State Unemployment 1982			**0.1682**	*0.1087*	**0.1902**	*0.1225*
	North Central Region					**0.5229***	*0.2482*
	South Region					**0.4164***	*0.2296*
	West Region					**-0.0141***	*0.2918*
	Alaska & Hawaii Region					**1.3492**	*1.1021*
In-State	Constant	**-0.1239***	*0.1051*	**-0.2040**	*0.1856*	**-0.5495**	*0.2100*
	Own house	**-1.5327***	*0.0811*	**-1.5330***	*0.0815*	**-1.5423**	*0.0822*
	HOH H.S. degree	**-0.2082***	*0.0760*	**-0.1970***	*0.0765*	**-0.2142**	*0.0771*
	HOH B.A.	**-0.3427***	*0.1352*	**-0.3275***	*0.1356*	**-0.3103**	*0.1362*
	HOH Advanced Degree	**-0.5373***	*0.2136*	**-0.5151***	*0.2138*	**-0.5102**	*0.2140*
	HOH Age 35-54	**-0.4486***	*0.0799*	**-0.4339***	*0.0803*	**-0.4286**	*0.0806*
	HOH Age >55	**-1.4051***	*0.1082*	**-1.3713***	*0.1098*	**-1.3709**	*0.1102*
	HOH Non-white	**-0.3224***	*0.0712*	**-0.3324***	*0.0715*	**-0.3617**	*0.0747*
	HOH Marital Status	**0.0739***	*0.0258*	**0.0722***	*0.0258*	**0.0694**	*0.0259*
	HOH Average Hourly Wage	**-0.0008**	*0.0069*	**0.0001***	*0.0068*	**-0.0010**	*0.0069*
	HOH Unemployed			**0.1766****	*0.1086*	**0.1872**	*0.1091*
	State Unemployment 1981			**-0.0563**	*0.0629*	**0.0716**	*0.0671*
	State Unemployment 1982			**0.0492**	*0.0506*	**-0.0532**	*0.0550*
	North Central Region					**0.3617**	*0.1202*
	South Region					**0.4132**	*0.1060*
	West Region					**0.7118**	*0.1255*
	Alaska & Hawaii Region					**0.9684**	*0.6741*
Diagnostics							
Sample			6810		6810		6810
Log L			-3869.85		-3864.97		-3842.65
Pseudo R^2			.1180		.1191		.1242

* *indicates joint significance at 5% level*

** *indicates joint significance at 10% level*

TABLE 4

Multinomial Logit Regressions for the Probability of Migration 1990–91
Base Category: Non-Movers

Move	Independent Variable	(1) Coeff.	(1) S.E.	(2) Coeff.	(2) S.E.	(3) Coeff.	(3) S.E.
Out-of-State	Constant	**-2.5384**	*0.1735*	**-2.3089**	*0.4410*	**-2.6575**	*0.4671*
	Own house	**-1.2430***	*0.1491*	**-1.2657***	*0.1493*	**-1.2758***	*0.1500*
	HOH H.S. degree	**-0.0324**	*0.1495*	**-0.0400**	*0.1498*	**-0.0373**	*0.1502*
	HOH B.A.	**0.6918***	*0.1896*	**0.6833***	*0.1898*	**0.7137***	*0.1900*
	HOH Advanced Degree	**0.9545***	*0.2637*	**0.9489***	*0.2640*	**0.9860***	*0.2646*
	HOH Age 35-54	**-0.5900***	*0.1367*	**-0.5998***	*0.1369*	**-0.5915***	*0.1374*
	HOH Age >55	**-0.6280***	*0.2375*	**-0.6249***	*0.2376*	**-0.6031***	*0.2381*
	HOH Non-white	**-0.3842***	*0.1403*	**-0.3848***	*0.1407*	**-0.4067***	*0.1437*
	HOH Marital Status	**0.0522***	*0.0501*	**0.0553***	*0.0500*	**0.0596***	*0.0499*
	HOH Average Hourly Wage	**0.0101**	*0.0065*	**0.0112***	*0.0066*	**0.0108***	*0.0066*
	HOH Unemployed			**-0.2207***	*0.3058*	**-0.2072***	*0.3062*
	State Unemployment 1989			**0.2040***	*0.1037*	**0.1150****	*0.1145*
	State Unemployment 1990			**-0.2321***	*0.1317*	**-0.1462**	*0.1390*
	North Central Region					**0.2580***	*0.2325*
	South Region					**0.3793***	*0.2139*
	West Region					**0.5133***	*0.2199*
	Alaska & Hawaii Region					**1.8919**	*0.8302*
In-State	Constant	**-0.5920**	*0.0797*	**-0.9807**	*0.2006*	**-1.2021**	*0.2096*
	Own house	**-1.4335***	*0.0684*	**-1.4417***	*0.0688*	**-1.4673**	*0.0692*
	HOH H.S. degree	**0.0324**	*0.0627*	**0.0405**	*0.0630*	**0.0323**	*0.0632*
	HOH B.A.	**0.0249***	*0.1081*	**0.0448***	*0.1083*	**0.0468**	*0.1085*
	HOH Advanced Degree	**-0.0325***	*0.1783*	**-0.0165***	*0.1783*	**-0.0109**	*0.1785*
	HOH Age 35-54	**-0.7114***	*0.0612*	**-0.6991***	*0.0615*	**-0.6945**	*0.0617*
	HOH Age >55	**-0.8177***	*0.1091*	**-0.8055***	*0.1094*	**-0.7934**	*0.1096*
	HOH Non-white	**0.0227***	*0.0590*	**-0.0144***	*0.0596*	**-0.0439**	*0.0611*
	HOH Marital Status	**0.0657***	*0.0220*	**0.0677***	*0.0220*	**0.0679**	*0.0221*
	HOH Average Hourly Wage	**0.0054**	*0.0037*	**0.0082***	*0.0037*	**0.0086**	*0.0037*
	HOH Unemployed			**0.4141***	*0.1045*	**0.4017**	*0.1049*
	State Unemployment 1989			**0.1939***	*0.0479*	**0.1197**	*0.0529*
	State Unemployment 1990			**-0.1248***	*0.0615*	**-0.0686**	*0.0647*
	North Central Region					**0.4411**	*0.1040*
	South Region					**0.3699**	*0.0978*
	West Region					**0.3107**	*0.1040*
	Alaska & Hawaii Region					**0.7589**	*0.6475*
Diagnostics							
Sample			9323		9323		9323
Log L			-5188.997		-5166.9227		-5153.1989
Pseudo R^2			0.0973		0.1011		0.1035

* *indicates joint significance at 5% level*

** *indicates joint significance at 10% level*

APPENDIX 1

Variable Statistics

Year	Variable	Mean	Std. Dev.	Min	Max
1982-83	Own house	0.5284875	0.4992245	0	1
	HOH H.S. degree	0.5051395	0.5000103	0	1
	HOH B.A.	0.0917768	0.2887318	0	1
	HOH Advanced Degree	0.0396476	0.1951441	0	1
	HOH Age 35-54	0.3057269	0.4607484	0	1
	HOH Age >55	0.2491924	0.4325772	0	1
	HOH Non-white	0.4051395	0.4909551	0	1
	HOH Marital Status	1.931278	1.292103	1	9
	HOH Average Hourly Wage	6.748258	6.463989	0	99.99
	HOH Unemployed	0.0734214	0.2608462	0	1
	State Unemployment 1981	7.817504	1.714083	3.61	12.28
	State Unemployment 1982	9.927355	2.131623	5.44	15.45
	North Central Region	0.2417034	0.4281469	0	1
	South Region	0.4414097	0.4965918	0	1
	West Region	0.1619677	0.3684482	0	1
	Alaska & Hawaii Region	0.001909	0.0436531	0	1
1990-91	Own house	0.5214	0.4996	0	1
	HOH H.S. degree	0.3072	0.4614	0	1
	HOH B.A.	0.0987	0.2982	0	1
	HOH Advanced Degree	0.0405	0.1972	0	1
	HOH Age 35-54	0.5417	0.4983	0	1
	HOH Age >55	0.1183	0.3230	0	1
	HOH Non-white	0.3679	0.4823	0	1
	HOH Marital Status	1.9870	1.3124	1	9
	HOH Average Hourly Wage	8.7321	9.4080	0	99.99
	HOH Unemployed	0.0546	0.2272	0	1
	State Unemployment 1989	5.3820	1.1463	2.48	8.62
	State Unemployment 1990	5.6770	0.9038	2.23	8.41
	North Central Region	0.1974	0.3980	0	1
	South Region	0.4546	0.4980	0	1
	West Region	0.1930	0.3946	0	1
	Alaska & Hawaii Region	0.0017	0.0414	0	1

APPENDIX 2

Variable Descriptions

** indicates base category variable not included in regression to avoid multicollinearity*

Own House

1 = owns or is buying home, 0=pays rent, or neither owns nor rents

HOH H.S. Dropout*

1 = some years of high school (no degree attained) is highest level of education,

0 = some years of high school is not highest level of education

HOH H.S. Degree

1 = high school degree is highest degree attained,

0 = high school degree is not highest degree attained

HOH B.A.

1 = college B.A. is highest degree attained,

0 = college B.A. is not highest degree attained

HOH Advanced Degree

1 = advanced degree is highest degree attained,

0 = advanced degree is not highest degree attained

HOH Age <35*

1 = age<35,

0 = otherwise

HOH Age 35-54

1 = age 35-54,

0 = otherwise

HOH Age >55

1 = age>55,

0 = otherwise

HOH Non-white

1 = non-white,

0 = white

HOH Marital Status

1 = married,

0 = otherwise

HOH Average Hourly Wage

HOH Average Hourly Wage

HOH Unemployed

1 = unemployed HOH,

0 = otherwise

State Unemployment, 1981 (1989)

1981 (1989) unemployment rate of HOH's state of origin

State Unemployment, 1982 (1990)

1982 (1990) unemployment rate of HOH's state of origin

Northeast Region*

1 = Northeast region (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont),

0 = otherwise

North Central Region

1 = North Central region (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin),

0 = otherwise

South Region

1 = South region (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington D.C., West Virginia)

0 = otherwise

West Region

1 = West region (Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming),

0 = otherwise

Alaska & Hawaii Region

1 = (Alaska, Hawaii),

0 = otherwise

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