LABOR MIGRATION AND THE COST OF LIVING

by

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The determinants of interregional and international migration is a topic which has received considerable attention from economists. Most studies of migration determinants investigate the impact of variables such as income (wage rate) levels, unemployment rates, and distance on the migration decision. One variable which has generally not been explicitly investigated in these studies is the cost of living.[1] Logically, it seems that migration decisions, in order to be rational,[2] must involve cost-of-living considerations if the net benefits of migration[3] are to be appraised meaningfully. Alternatively stated, failure to take interregional (international) living-cost differentials into consideration when making a migration decision is tantamount to "money illusion".

In view of this, the purpose of this paper is to investigate explicitly the impact of cost-of-living considerations on the migration of labor. Section I below postulates the basic theoretical framework of this paper, while Section II empiracally analyzes the impact of living-cost differentials on migration. Specific attention in this regard is given to interregional migration within the United States. Concluding remarks are provided in the final Section.

I. THE MODEL

The basic framework of this paper is one in which the individual chooses to migrate from area i to area j if there are positive net benefits over time form such migration. Appraisal of the net benefits of migration involves appraisal of all the benefits and of all the costs associated with migration. Assuming that all of these various benefits and costs can be expressed in pecuniary terms, this paper maintains that an individual residing in area i will migrate to area j only if the discounted present value of the expected net benefits associated with the migration is positive. This approach is similar to that followed by Sjaastad [9] and Gatons and Cebula [5] and may be expressed in simple mathematical terms as

(1) Mij > 0 only if

$$\frac{B_1-C_1}{(1+r)} + \frac{B_2-C_2}{(1+r)^2} + \ldots + \frac{B_x-C_x}{(1+r)^x} > 0,$$

where Mij denotes migration from area i to area j, B_e, e=1,...,x, represents the value of the benefits associated with migration from area i to area j for year e, C_e, e=1,..., x, represents the value of the costs associated with migration from area i to area j for year e, and r is the appropriate rate of discount for the individual.

II. EMPIRICAL ANALYSIS

To investigate empirically the impact of living-cost considerations on migration, this paper focuses on net migration (in-migration less out-migration) between 1960 and 1970 to those 39 metropolitan areas for which, since 1966, the United States Department of Labor has estimated the annual costs of a four-person family budget.[4,5] Although estimates of the same type of budget data are available for earlier years, these estimates apply for only 20 metropolitan areas. To permit the largest possible number of observations of metropolitan areas in the analysis, these earlier living-cost estimates are ignored, and attention is directed exclusively to the most recent and extensive living-cost information.

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The following model of net migration is postulated:

$$(2)\quad Mi = Mi(Yi, Ui, Li, Ti, Pi),$$

where Mi represents net migration to the ith metropolitan area, Yi is the level of per capita personal income in area i, Ui is the unemployment rate in area i, Li is the cost of living in area i, Ti is the average number of days per year that the temperature in area i falls below 32° Farenheit, and Pi is the number of physicians per 100,000 population in area i.

The variable Mi is the ratio of net migration to area i between 1960 and 1970 to the population in area i in 1960. Migration is measured in this fashion so as to control for variations in population of the 39 metropolitan areas.

Department of Commerce estimates of personal per capita income were used for the year 1968. Ceteris paribus, one would expect net migration to an area to be an increasing function of the area's per capita income level. Thus, the following relationship is postulated:

$$(3)\quad \frac{\partial Mi}{\partial Yi} > 0,$$

For an unemployment rate, the mean total unemployment rate for each metropolitan area for the years 1963, 1966, and 1969 was used. The use of such a mean unemployment rate presumably should reduce problems relating to intertemporal fluctuations in relative rates of unemployment in the 39 metropolitan areas. Since higher unemployment rates, ceteris paribus, imply decreased net benefits from migration, it is postulated that

$$(4)\quad \frac{\partial Mi}{\partial Ui} < 0.$$

As for the cost of living, the mean value for the estimated annual costs of a four-person budget for the years 1966 through 1970 was computed for each of the 39 metropolitan areas. These estimates refer to a moderate standard of living for a family comprising a 38-year-old employed husband, a wife not employed full-time outside the home, an 8-year-old girl, and a 13-year-old boy. The central point of this paper concerns the impact of living-cost considerations on migration. Presumably, the higher the cost of living in a particular area, the less will be the net migration into that area, ceteris paribus. Thus, it is postulated that

$$(5)\quad \frac{\partial Mi}{\partial Li} < 0.$$

The empirical analysis below investigates whether in fact relationship (5) holds and whether Li exercises a statistically significant impact on Mi.

The variable Ti is a measure of the climatic conditions of area i. Presumably, warmer climates are, ceteris paribus, more desirable than colder climates; therefore, it is hypothesized that

$$(6)\quad \frac{\partial Mi}{\partial Ti} < 0.$$

Finally, the issue of health facilities may be considered. Presumably, migrants can be expected to prefer locations where health (medical) facilities are more abundant, ceteris paribus. Thus, it is postulated that

$$(7)\quad \frac{\partial Mi}{\partial Pi} > 0,$$

where Pi represents the number of physicians in area i per 100,000 population in the year 1969.

Given the model as outlined above, the following linear regression equation is to be estimated:

$$(8)\quad \log Mi = a+bYi+cUi+dLi+eTi+fPi+u,$$

where a is a constant term and u is a random error term.

The empirical results are, as follows:

$$\log M_i = -9.62428 + \underset{(1.36)}{1.15703}\, Y_i - \underset{(2.58)}{0.94826}\, U_i - \underset{(1.68)}{0.73155}\, L_i - \underset{(2.05)}{0.10975}\, T_i + \underset{(2.14)}{0.05248}\, D_i$$

$$DF = 33,\ F\text{-Ratio} = 6.577,$$

$$R^2 = .6092$$

where the symbols retain their previous meaning and where the values in the parentheses represent t-values.

The results are quite encouraging. For one thing, the model explained nearly two-thirds of the variation in the rate of net migration for the metropolitan areas studied. In addition, all of the independent variables behaved in the hypothesized direction. Beyond this, all of the independent variables (except income) were statistically significant at the five percent level or better. Thus, the unemployment rate, the cost of living, climate, and medical care consideration all apparently played an important role in determining the migration. Particularly relevant, in terms of the objective of this paper, is the result that the living cost variable not only behaved in the postulated direction but also was statistically significant at the five percent level. In addition, the cost-of-living variable increased the R^2 by 0.09.

III. CONCLUSION

The basic migration model in this paper maintains that the labor migration decision is basically an investment decision in which the individual migrates from one area to another if the discounted present value of the expected future stream of net benefits from such migration is positive. Within this framework, this paper has investigated the impact of cost-of-living considerations on migration. The results indicate that the cost of living apparently is an important determinant of interregional migration. As such, the results would appear to cast grave boubts as to the presence or significance of "money illusion" in labor markets,at least within the United States.

FOOTNOTES

[1]See, for example, Cebula [1], Chapin, Vedder,and Gallaway[2], Gallaway [3], Gallaway and Cebula [4], Greenwood [6] and [7], Sahota [8], and Vedder, Gallaway, and Chapin [11].

[2]That is, consistent with maximizing behavior.

[3]A priori, these "net" benefits obviously may be positive, negative, or zero in value.

[4]The basic data sources are various issues of the Statistical Abstract of the United States [10]. The 1960-1970 migration data were obtained from the Statistical Abstract of the United States: 1972 [10, pp. 830, 850, and 870].

[5]The metropolitan areas studied were Atlanta, Austin, Bakersfield, Baltimore, Baton Rouge, Boston, Buffalo, Cedar Rapids, Champaign-Urbana, Chicago, Cincinnati, Cleveland, Dallas, Dayton, Denver, Detroit, Durham, Green Bay, Hartford, Honolulu, Houston, Indianapolis, Kansas City,Lancaster, Los Angeles, Milwaukee, Minneapolis-St. Paul, Nashville, New York, Orlando, Philadelphia, Pittsburgh, Portland, Maine, St. Louis, San Diego, San Francisco, Seattle-Everett, Washington, and Wichita.

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