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Cebula, Richard and Kohn, Robert and Vedder, Richard

Jacksonville University, Ohio University, Ohio University

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RICHARD J. CEBULA, ROBERT M. KOHN, RICHARD K. VEDDER*
Ohio University

The issue of the determinants of migration has long been of interest to economists.[1] The theory of labor mobility generally is regarded as an extension of the theory of resource allocation. Most economists assume that individuals seek to maximize their "differential economic advantage" (Hicks [10]), subject to the constraints imposed upon them by costs associated with movement. Accordingly, it is generally hypothesized that migration from some region i to some region j will be greater, *ceteris paribus*, the greater the excess of region j's income level over region i's income level and the smaller the distance between regions i and j (distance being regarded as a proxy for the magnitude of moving costs).

The purpose of this paper is to investigate the determinants of black interstate migration in the United States for the period 1965-1970. To do this, we wish to estimate a model which includes not only the two variables mentioned above but two other basic variables as well. The first of these is the proportion of the total population in a state that is black. In this case, the number of migrants to a state is hypothesized to be an increasing function of the proportion of that state's population which is black. There are at least two possible reasons for this. First, blacks may view the likelihood of acceptance greater in those areas where the black population is a relatively greater portion of the area's total population (a "friends and relatives" phenomenon). Second, the presence of these so-called "friends and relatives" may well reduce the costs of labor market information.

The second variable we have added to the model refers to differential levels of welfare benefits between states. A relatively large proportion of blacks are eligible for welfare benefits since, on average, the per capita income level of blacks is considerably below that of the general population. Consequently, it seems pertinent to investigate the possible impact that welfare benefits may have on black migration. Presumably, the migration of blacks will be greater, *ceteris paribus*, to those states offering higher levels of welfare benefits.

Section I below presents our basic migration model and describes the

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1. For some recent developments, see, for example, Cebula [2], Chapin, Vedder, and Gallaway [3], Gallaway, Gilbert, and Smith [5], Greenwood [9], Vanderkamp [15], and Vedder, Gallaway, and Chapin [16].

data and estimation techniques used in the paper. The empirical results are presented and discussed in Section II.

I. THE MIGRATION MODEL

To investigate black migration the following gross migration model is postulated:

$$M_{ij} = M_{ij}(D_{ij}, W_{ij}, B_j, Y_{ij}) \tag{1}$$

where M_{ij} denotes the rate of migration of blacks from state i to state j between 1965 and 1970,[2] D_{ij} represents the distance in statute miles from state i to state j, W_{ij} is a measure of the differential welfare benefits paid per capita between state i and state j, B_j denotes the ratio of blacks in state j to the total population in state j, and Y_{ij} is a measure of differentials in per capita black income between states i and j.

The variable D_{ij} was computed by measuring the distance from the geographic center of state i to the geographic center of state j. The relationship between migration and distance is postulated by $\partial M_{ij}/\partial D_{ij} < 0$. As mentioned above, this sign follows from the fact that a higher value for D_{ij} presumably has the effect of imposing greater moving costs upon would-be migrants, *ceteris paribus*.[3] In addition, it may be argued that information costs regarding job opportunities, etc., increase as distance increases, *ceteris paribus*.

To measure interstate differences in the level of welfare benefits (W_{ij}), data on state monthly payments in the year 1967 to welfare recipients in the form of aid to dependent children (ADC) by state were obtained from the *Statistical Abstract of the United States, 1968*.[4] The variable W_{ij} was calculated by dividing the per capita level of ADC in state j by the per capita level of ADC in state i. The level of per capita welfare benefits depends upon the magnitude of payments to recipients and/or the number of persons receiving payments. It is fairly obvious that potential receivers of welfare income would prefer to move, *ceteris paribus*, to states where payments per recipient were high. It is less obvious that these migrants would also prefer to move to states where the number of recipients is relatively great. We would argue, however, that the probability of receiv-

2. The migration data for blacks was obtained from the U.S. Bureau of the Census [12, Table 5]. By the "rate of migration," we mean the number of persons living in state j in 1970 residing in state i in 1965, divided by the black population in i in 1965. In fact, dividing the number of migrants from i to j by the i-th black population is an unnecessary (although not unsound) procedure, as it involves dividing each observation by a constant term. We nonetheless do so, following the convention of some earlier studies.

3. Regarding moving costs, see Gallaway [4] or Sjaastad [11].

4. U.S. Bureau of the Census [14, p. 299].

ing benefits is likely to be perceived to be greater in states with relatively large numbers of recipients. On this point, Brehm and Saving [1] have demonstrated that "the ease of meeting the qualifications to get on the General Assistance Payments rolls ... is positively related to the number of recipients."[5] Accordingly, we would expect, *ceteris paribus*, migration to be greater to those states paying the higher per capita welfare (ADC) benefits. Thus, we postulate $\partial M_{ij}/\partial W_{ij} > 0$.

The variable B_j was computed by dividing the number of blacks in state j in 1960 by the total population in state j in 1960.[6] Given our earlier discussion, the following relationship is to be expected: $\partial M_{ij}/\partial B_j > 0$. This is analogous to the observed settlement patterns of various immigrant groups into the United States, where immigrants tended largely to gravitate to areas where people with similar ethnic backgrounds were concentrated.

To measure interstate differences in black income (Y_{ij}), data on the per-capita income level of blacks by state in 1969 were obtained from the 1970 Census of Population.[7] The variable Y_{ij} was calculated by dividing the per capita income level of blacks in state j by the per capita income level of blacks in state i. The relationship between black interstate migration and interstate income differentials for blacks presumably is $\partial M_{ij}/\partial Y_{ij} > 0$. Clearly, this sign follows from orthodox economic theory, as applied above.

Given the above, what is proposed is the estimation of log-linear regression equations of the following form:

$$(2) \qquad \log M_{ij} = \log a + b \log D_{ij} + c \log W_{ij} + d \log B_j + e \log Y_{ij} + v$$

(where v is an error term with zero mean and variance greater than zero) for 34 sets of migration data. For 16 states with a 1965 black population of less than 25,000, out-migration data were unavailable. These states are included in the analysis only to the extent they were recipients of migrants from the other 34 states.

II. EMPIRICAL FINDINGS

The empirical results of this paper are presented in Table 1. These results are, overall, quite encouraging. The average value for the R^2 in the 34 equations was nearly 0.65. Of the 136 coefficients obtained, only six were of the wrong sign. At no time did the coefficient associated with the distance variable or the racial composition variable not behave as hypothe-

5. See Brehm and Saving [1, p. 1018].
6. See U.S. Bureau of the Census [14, p. 27].
7. See U.S. Bureau of the Census [13, Table 10].

Table 1—Elasticity of Interstate Migration of Blacks, 1965-1970, with Respect to Selected Variables†

State of Origin (*i*-th state)	Distance	Welfare	Racial Composition	Income	R^2
Alabama	-0.49941	+0.56681*	+1.00192***	+1.44756**	.77
Arizona	-1.92276***	+0.39121	+0.80094***	+1.06948*	.55
Arkansas	-1.35378***	+0.73503*	+0.49585***	+0.27963	.45
California	-0.91569***	+1.43392***	+0.75592***	+0.12677	.68
Colorado	-1.90391***	+1.04063**	+1.08385***	+2.14588**	.58
Connecticut	-1.16282***	-0.15093	+0.80776***	-0.27012	.70
Delaware	-0.70464**	-0.50437	+0.71395***	+1.57057*	.54
Florida	-0.95485**	+0.61797*	+0.72472***	+1.07765*	.66
Georgia	-0.76038*	+0.74295*	+0.96504***	+1.71844**	.69
Illinois	-1.32247***	+1.03643***	+0.72418***	+0.10120	.73
Indiana	-1.11684***	+1.15650**	+0.80460***	+0.53292	.67
Kansas	-1.72674***	+0.90855**	+0.71086***	+0.25517	.52
Kentucky	-1.02371***	+0.55330	+0.82057***	+0.86152	.67
Louisiana	-0.83993*	+1.17255***	+0.64323***	+0.02930	.60
Maryland	-0.36490*	+0.34349	+1.02784***	+1.66947**	.70
Massachusetts	-0.92841***	+0.33701	+0.95053***	+0.63469	.67
Michigan	-1.25090***	+1.24339***	+1.15051***	-0.00130	.80
Minnesota	-2.43142***	+0.51445	+0.99028***	+0.67143	.58
Mississippi	-0.17514	+0.45188	+0.96502***	+0.01633	.60
Missouri	-1.76844***	+1.31972***	+0.61539***	+0.00805	.57
Nebraska	-1.46995***	+0.90917**	+0.86472***	+1.23047*	.59
New Jersey	-0.36450*	+0.18695	+1.20725***	+2.21591***	.73
New York	-0.60398***	+0.07637	+1.04324***	+1.02308*	.76
North Carolina	-0.98832***	+0.73610**	+0.89789***	+1.92085***	.80
Ohio	-0.59390**	+0.62017*	+0.79869***	+0.36543	.69
Oklahoma	-1.09982**	+0.78348*	+0.72774***	+1.62206*	.59
Pennsylvania	-0.86625***	+0.14810	+0.95327***	+1.51647*	.65
South Carolina	-0.93496**	+1.18033***	+0.99162***	+2.23788***	.72
Tennessee	-1.06262***	+0.74471**	+0.77019***	+0.71276	.68
Texas	-1.09097***	+1.06319***	+0.79711***	+0.50592	.72
Virginia	-0.75375***	+0.90829***	+0.78383***	+2.16833***	.89
Washington	-1.91778***	+0.77852**	+0.91961***	+1.04916*	.58
West Virginia	-0.50577*	-0.29856	+0.42672***	+2.32514***	.39
Wisconsin	-1.69150***	+0.87787**	+0.79234***	-1.06709	.59

* denotes significant at the ten percent level.
** denotes significant at the five percent level.
*** denotes significant at the one percent level.
† For 34 states of migrant origin (*i*-th states), the number of moves to the 47 other states in the contiguous United States (*j*-th states) is recorded in the 1970 Census. Data were unavailable on migration from 16 *i*-th states with a black population of less than 25,000.

sized, while three incorrect signs for both the welfare and income variables were observed. In no case where the incorrect sign was obtained was the result statistically significant at the ten percent level or better. As regards statistical significance generally, 62.5 percent of the results were significant at the five percent level or better, while 75.5 percent of the results were significant at the ten percent level or better.

Apparently, as the results imply, considerations of distance play an important role in the migration decision of blacks, with the distance variable being statistically significant at the five percent level or better in 80 percent of the cases. The racial composition variable was statistically significant at the one percent level or better in 97 percent of the cases. This would seem to imply, as hypothesized in Section II above, that black migrants tend to move to those areas where the ratio of blacks to the total population is higher, *ceteris paribus*. The income variable was statistically significant at the five percent level or better in only 25 percent of the cases and at the ten percent level or better in only 49 percent of the cases. This apparent insensitivity of migration to the income variable has been found in other studies,[8] and has been shown to be entirely compatible with the conventional wage rate analysis.[9] Finally, we turn to the welfare variable, W_{ij}. This is a variable generally ignored in migration studies, but as the results in Table 1 indicate, this may be an important oversight. In particular, Table 1 shows that the welfare variable was statistically significant at the five percent level or better in 48 percent of the cases. Thus, one can conclude that welfare—as one specific form of income—may be a very important determinant of black migration and perhaps may be more important than even per capita personal black income in influencing the migration decision of blacks.

8. See, for example, Cebula [2], Chapin, Vedder, and Gallaway [3], Gallaway and Vedder [6], and Vedder, Gallaway, and Chapin [16].

9. See Gatons and Cebula [7].

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