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THE IMPACTS OF WELFARE BENEFITS AND TAX BURDENS ON INTERSTATE MIGRATION

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Introduction

The major determinants of migration behavior have been examined extensively. Many major variables have been considered, including state and/or local taxes levied on residents (Tiebout, 1956; Herzog and Schlottmann, 1986; Cebula, 1990), growth of labor employment (Muth, 1971; Nakosteen and Zimmer, 1980; Molho, 1984), personal income (Nakosteen and Zimmer, 1980), educational level (Sandell, 1977; Schlottmann and Herzog, 1981), degree of urbanization (Navratil and Doyle, 1977), climate (Porell, 1982), past mobility (Molho, 1984; Herzog, Hoffer, and Schlottmann, 1985), and others. Greenwood (1975, 1985) summarizes the literature.

The impact of welfare benefits on interstate migration also has received some attention. Cebula (1979) reviews early empirical studies of the relation between migration and welfare benefits. Most studies do not consider all three major welfare benefits: AFDC cash payments, food stamps, and Medicaid. Empirical results are inconclusive; Southwick (1981), Gramlich and Laren (1984), and Blank (1988) maintain that welfare benefits affect migration decisions, whereas DeJong and Donnelly (1973), Long (1974), and Schlottmann and Herzog (1981) indicate that welfare benefits do not impact migration behavior.

Welfare benefits deserve more attention in the study of migration because of public concern about welfare's huge cost and negative impact on work ethics and family unity. An AFDC recipient is automatically eligible for Medicaid and categorically qualified for food stamps. The potential impact of welfare benefits on interstate migration can be understood from the following spatial differences in benefits across states. For example, the average monthly AFDC cash payment per family in 1992 was \$385 for the U.S., but it varied from a low of \$122 in Mississippi to a high of \$750 in Alaska. Annual Medicaid expenditure per

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recipient in 1993 ranged from \$524 in Arizona to \$6,402 in New York, with an average of \$3,042 for the U.S. Annual expenditure on food stamps per person for the U.S. in 1993 was \$815, with variations ranging from \$655 for Wisconsin to \$1,282 for Hawaii.

This paper examines the determinants of interstate immigration rates with an emphasis on the roles of welfare benefits and tax burden. The current study differs from previous work in several aspects. The impact of welfare benefits is examined considering three separate benefits: AFDC cash payments, food stamps, and Medicaid expenditures. The Tiebout hypothesis is tested to determine whether voters and consumers prefer to pay more taxes to enjoy more government services or pay smaller taxes in the hope that government can run more efficiently. Tax burdens are constructed to include both state and local taxes. The weighted least squares (WLS) method is employed to derive more efficient estimates and valid hypothesis tests. Interstate immigration based on 1990 Census data is examined to determine parameter estimates that may be more appropriate for policy analysis and application.

The Model

Based on human capital theory to maximize expected future returns on migration (Becker, 1962) and previous studies, the interstate in-migration rate can be expressed as

$$(1) \text{RATE}_i = f(\text{BEN}_i, \text{TAX}_i, \text{EMP}_i, \text{INC}_i, \text{EDU}_i, \text{MET}_i, \text{TEM}_i)$$

+ ? + + + - +

or

$$(2) \text{RATE}_i = f(\text{AFDC}_i, \text{FDST}_i, \text{MED}_i, \text{TAX}_i, \text{EMP}_i, \text{INC}_i, \text{EDU}_i, \text{MET}_i, \text{TEM}_i)$$

+ + +

where:

- RATE = The interstate immigration rate;
- BEN = Total welfare benefits;
- TAX = Per capita state and local tax burdens;
- EMP = The growth rate of employment;
- INC = Per capita disposable income;
- EDU = The educational level, defined as the percent of persons age 25 and older who have college degrees or higher;
- MET = Percent of metropolitan area population;
- TEM = Mean temperature; and
- I = A state.

Three major welfare benefits (BEN) include:

- AFDC = AFDC cash payments per recipient;
FDST = Food stamp expenditures per recipient; and
MED = Medicaid expenditures per recipient.

The difference between the two equations is that equation (1) treats total welfare benefits as one variable, whereas equation (2) estimates the three major welfare benefits separately. The immigration rate is expected to vary positively with BEN, AFDC, FDST, MED, EMP, INC, EDU, and TEM, but negatively with MET. As welfare benefits in a state rise, residents in neighboring or other states may migrate to the state to enjoy greater benefits if the cost of moving is less than the overall benefit. The sign of tax burdens may be negative or positive. Tiebout (1956) suggests that some voters/consumers would like more government services and are willing to pay higher taxes, whereas others may prefer lower taxes and fewer government services. Employment growth represents the labor market condition. The unemployment rate is not used because previous research has shown that it can not explain migration behavior as well as the employment growth variable does (Greenwood, 1985, p. 532). Per capita disposable personal income may capture potential earnings in a destination state. The expected negative sign of MET tests the hypothesis that recent migrants may prefer nonmetropolitan areas (Greenwood, 1985).

Empirical Results

Data Sources

The sample consists of 1990 Census data for 47 contiguous states. Arizona is not included in the sample due to lack of data for the Medicaid variable. RATE comes from the 1990 *Census of Population: Social and Economic Characteristics*, U.S. Census Bureau. AFDC, FDST, and MED are taken from the *Social Security Bulletin*, U.S. Social Security Administration. TAX is obtained from *Government Finances*, U.S. Bureau of the Census. EMP is from *Employment, Hours, and Earnings*, U.S. Bureau of Labor Statistics. INC is from the *Survey of Current Business*, U.S. Bureau of Economic Analysis. EDU comes from *U.S. Census of Population*, CPH-L-96, U.S. Bureau of the Census. MET is from *Statistical Abstract of the United States*, U.S. Bureau of the Census. TEM is taken from *Climatology of the United States*, U.S. National Oceanic and Atmospheric Administration.

The immigration rate is defined as the ratio of persons who lived in different states between 1985 and 1990 to the population age 5 and over in 1990.¹ In deriving average AFDC cash payments per person, a

¹ The dependent variable is the interstate immigration rate. Thus, we need not separate interstate moves from intrastate moves. According to the *Current Population Reports*, in 1993 to 1994 6.7 million persons

household size of three is assumed (Moffitt and Wolfe, 1992). TEM is a 30 year average ranging from 1961 to 1990.² The mean, minimum, and maximum values for all the variables are compiled below:

	Mean	Minimum	Maximum
RATE	10.9	4.3	
BEN	4824.1	2538.8	8025.2
AFDC	1345.3	460.0	2548.0
FDST	701.1	495.1	824.3
MED	2777.8	1353.3	5400.0
TAX	1928.1	1302.0	3337.0
EMP	12.8	-3.9	39.2
INC	15368.0	11491.0	21604.0
EDU	19.6	12.3	27.2
MET	64.0	20.4	100.0
TEM	54.2	41.6	75.9

As can be seen, interstate immigration rates vary a great deal from 4.3 percent to 29.4 percent. Total welfare benefits per recipient range from \$2,538.8 to \$8,025.2. State and local tax burdens per capita vary from \$1,302 to \$3,337.

Regression Results

Before presenting results, the issue of functional forms (Goss and Chang, 1983; Greenwood, 1985) needs to be discussed. In empirical estimation, we need to determine whether the linear, the double-log, or other form is more appropriate. Based on the Box-Cox transformation of variables and likelihood ratio tests, the log form versus the Box-Cox general form in equation (1) is tested. The value of λ is estimated to be -0.07. The value of the test statistic is 0.066, much smaller than the critical value of 6.635 with one degree of freedom at the 1 percent level. Thus, the log form cannot be rejected. We consider testing the linear form versus the general form in equation (1). λ is estimated to be 0.05. The value of the test statistic is calculated to be 17.334, far greater than the critical value of 6.635. Hence, the linear form can be rejected. For equation (2) likelihood ratio tests show that the double-log form

moved to different states, and 8.2 million persons moved to different counties in the same state.

² EMP is the growth rate between 1985 and 1990. The 1990 data are used for other variables. Because migrants responded to the 1990 Census survey, 1990 data may be more appropriate than data before that year.

Table 1—Estimated Regressions for Interstate Migration Rates

	(A) WLS	(B) OLS	(C) WLS	(D) OLS
AFDC		0.429*** (3.926)	0.064 (0.233)	
FDST		1.620*** (6.215)	0.871 (1.654)	
MED		0.354*** (4.241)	0.088 (0.488)	
BEN	0.399** (2.228)	-0.030 (-0.092)		
TAX	-1.322*** (-5.310)	-1.066*** (-2.503)	-2.003*** (-6.575)	-1.101** (-2.173)
EMP	0.030*** (8.702)	0.027*** (4.568)	0.031*** (7.964)	0.026*** (4.298)
INC	0.728** (2.247)	1.044 (1.638)	1.354*** (3.924)	1.037 (1.621)
EDU	1.260*** (8.972)	1.034*** (3.304)	1.059*** (7.182)	1.106*** (3.514)
MET	-0.306*** (-10.480)	-0.406*** (-2.755)	-0.392*** (-7.648)	-0.474*** (-3.064)
TEM	0.885*** (4.084)	0.119 (0.246)	0.687*** (3.013)	0.276 (0.488)
INT	-4.473 (-2.564)	-1.664 (-0.337)	-16.738 (-5.276)	-8.980 (-1.292)
R ²	0.474	0.458	0.525	0.483

Figures in parentheses are t-ratios

- *** Coefficient is significant at the 1 percent level
- ** Coefficient is significant at the 2.5 percent level
- * Coefficient is significant at the 5 percent level

can not be rejected at the 1 percent level, whereas the linear form can be rejected at the 1 percent level. Thus, the double-log form is chosen.

The absence of heteroscedasticity also is tested. For equation (1) test results are inconclusive. For equation (2), based on the Harvey and the Glejser tests, the values of the test statistic are much greater than the critical value at the 1 percent level. Hence, heteroscedasticity can

not be rejected. Therefore, the weighted least squares method is employed to correct for heteroscedasticity.³

Estimated regressions based on the OLS and WLS methods are presented. In version (A), where total benefits (BEN) are used, all coefficients have the expected signs and are significant at the 1 percent or 2.5 percent level. In version (B), where the OLS method is used, the coefficients of BEN and TEM are insignificant at the 10 percent level, and the coefficient of INC is significant at the 10 percent level only.

Versions (C) and (D) treat welfare benefits separately. In version (C), where three major benefits are separated, all coefficients have the expected signs and are significant at the 1 percent level. In the OLS estimation in version (D) the coefficients of AFDC, MED, and TEM are insignificant at the 10 percent level, and the coefficient of FDST is significant at the 10 percent level.

Based on version (A), greater welfare benefits, higher employment growth and income, higher educational level, and better climate encourage immigration, whereas higher tax burdens and more urbanization reduce immigration.⁴ Specifically, when total welfare benefits rise 1 percent, the immigration rate will increase 0.40 percent. When tax burdens rise 1 percent, the immigration rate will drop 1.32 percent. When three major welfare benefits are separated (version C), each shows its positive impact on immigration rates, although the elasticity varies among AFDC, FDST, and MED. Caution should be made when version (C) is interpreted because the degree of multicollinearity is relatively high and parameter estimates may be imprecise.

In addition to the explanatory variables included in equations (1) and (2), four other independent variables also are considered: crime rate; percent urbanized; average pay per worker; and accessibility to the quality of life as captured by migration patterns, job opportunities, potential earnings, and locational differences among states. Empirical results for the first three variables show either unexpected signs or insignificant coefficients, partly because some migrants may choose jurisdictions with low crime and partly because of the multicollinearity problem among the independent variables. States that are less accessible than others are identified. These include Minnesota, Montana, Idaho, Washington, Maine, Vermont, and North Dakota. A dummy variable with a value of one is assigned to these states. The coefficient is

³ The WLS used in this study assumes that the standard deviation of the error term (h_t) is a linear function of the exogenous variables (Z_t) or $h_t = Z_t'\alpha$, where 1 is the weight.

⁴ The correlation coefficient between income and education is calculated to be 0.707. The use of the log form reduces collinearity to some degree. To test if collinearity is serious, INC and EDU are entered in the regression one at a time. The coefficients do not change much. Thus, collinearity does not pose a serious problem in this case.

insignificant, probably because air travel, interstate highways, and/or state highways have made moving easier and less time-consuming.

It is possible that migration and employment growth are determined simultaneously (Carlino and Mills, 1987). To examine the simultaneity issue, employment growth is specified to be a function of the migration rate, tax burden, income, and the percent of metropolitan areas. The two stage least squares (2SLS) method is used to estimate the migration equation. The value of the adjusted R^2 of the regression for EMP in the first stage is low, suggesting that the predicted EMP is a poor proxy for EMP. Poor results also are found using 2SLS estimates. Thus, 2SLS estimates are not presented here.

Summary and Conclusions

This study examines the impacts of welfare benefits, tax burden, and other variables on interstate immigration rates based on 1990 Census data for 47 contiguous states. Total welfare benefits and separate benefits are employed to test whether greater benefits encourage interstate immigration. Immigration rates vary positively with welfare benefits, employment growth, income, educational attainment, and temperature, but negatively with tax burden and the degree of urbanization. When major benefits are added together, we find that a 1 percent increase in welfare benefits increases immigration rates 0.40 percent, while a 1 percent increase in tax burden reduces immigration 1.32 percent.

There are a number of policy implications of this study. When welfare benefits in a state are greater than in neighboring states, more persons are likely to migrate across states to enjoy greater benefits. This is more possible when residents live in counties by a state border where the moving cost is relatively low. Second, California's passage of Referendum 187 suggests that some states may set more stringent requirements to reduce the welfare cost for illegal aliens. Third, the test of the Tiebout hypothesis clearly shows that voters/consumers prefer to pay lower taxes. Thus, state and local governments need to show fiscal discipline either to keep taxes level or to reduce taxes so that outmigration will not rise and the population base will remain stable or increase, other factors held constant.

This study has some limitations. Welfare recipients also receive other benefits such as housing subsidies, educational aid, training, child care services, energy assistance, etc. These other benefits are not considered due to lack of data. Because state data are used, individual characteristics can not be examined. Valuable information may be lost (Navratil and Doyle, 1977). Quality of life variables except for the crime rate cannot be considered due to lack of data. Because of multicollinearity among three major welfare benefits (AFDC cash payments, food stamps, and Medicaid expenditures), parameter estimates may be imprecise.

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