

- GERARD-VARET L.A., KOLM S.C., and YTHIER-MERCIER J., eds., "The Economics of Reciprocity, Giving and Altruism", *International Economic Association Conference*, 2000, 130, New York: St. Martin's Press; London: Macmillan Press.
- GUETH W., "On Ultimatum Bargaining Experiments - A Personal Review", *Journal of Economic Behavior and Organization*, 1995, 27, pp. 329-44.
- and HUCK S., "From Ultimatum Bargaining to Dictatorship - An Experimental Study of Four Games Varying in Veto-power", Working Paper, Humboldt University, 1994.
- , MARCHAND N., and RULLIERE J.L., "On the Reliability of Reciprocal Fairness - An Experimental Study", Note de recherche, GATE, Université de Lyon-Lumière II, 1997.
- , SCHMITTBERGER R., and SCHWARZ B., "An Experimental Analysis of Ultimatum Bargaining", *Journal of Economic Behavior and Organization*, 1982, 3, pp. 367-88.
- and TIETZ R., "Ultimatum Bargaining Behavior: A Survey and Comparison of Experimental Results", *Journal of Economic Psychology*, 1990, 11, pp. 417-49.
- KAHNEMAN D., KNETSCH J.L., and THALER R.H., "Fairness and the Assumption of Economics", *Journal of Business*, 1986, 59, pp. S285-S300.
- MUNIER B. and ZAHARIA C., "High Stakes Do Change Acceptance Behavior in Ultimatum Bargaining Games: Experimental Evidence from France and Romania", Note de recherche 98-02, GRID, ENS-Cachan. Submitted for publication.
- PRASNIKAR V. and ROTH A.E., "Considerations of Fairness and Strategy: Experimental Data from Sequential Games", *Quarterly Journal of Economics*, August 1992, pp. 865-88.
- RABIN M., "Incorporating Fairness into Game Theory and Economics", *American Economic Review*, 1993, 83, pp. 1281-1302.
- ROTH A.E., "Bargaining Experiments", in J.H. Kagel and A.E. Roth, eds., *The Handbook of Experimental Economics*, Princeton: Princeton University Press, 1995.
- , PRASNIKAR V., OKUNO-FUJIWARA M., and ZAMIR S., "Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study", *American Economic Review*, 1991, 81, pp. 1068-95.

ABSTRACT

We propose a measuring method which combines common hypotheses explaining nontrivial offers made by proposer in the standard ultimatum game (SUG). We applied it to analyze experimental data we collected in Romania and found that: (i) sympathetic considerations seem to be the main reason for which the proposer makes nontrivial offers; (ii) strategic considerations play a non-negligible role in explaining subjects' behavior.

JEL classification: C78, C90, C92

Keywords: ultimatum, sympathy, strategic considerations

AN EMPIRICAL NOTE ON STATE INCOME TAX POLICIES AND GEOGRAPHIC LABOR FORCE MOBILITY IN THE U.S.

by
RICHARD J. CEBULA*, MICHAEL TOMA*, and YASSAMAN SAADATMAND*

1. Introduction

Some years ago, Tiebout (1956, p. 418) hypothesized that "...the consumer-voter may be viewed as picking that community which best satisfies his preference pattern for public goods...the consumer-voter moves to that community whose local government best satisfies his set of preferences...". Tiebout hypothesizes that differentials among local governments in the combinations and quantities of public goods provided would influence geographic mobility decisions. Subsequently, Tullock (1971, p. 917), hypothesized that "The individual deciding where to live will take into account the private effects upon him of the bundle of government services and taxes...". Thus, Tullock's perspective explicitly introduces and emphasizes the notion that differences in taxation may also affect migration decisions.

The objective of this study is to investigate empirically whether the existence of a state-level income tax influenced the geographic mobility of the U.S. population between the ages of 20 and 40 years over the period from 1975 through 1979. Whereas the migration-impact of the existence of a state income tax has been investigated for the elderly for the 1985 to 1989 period by Cebula (1990), such a potential impact has not been examined for the working-force age group of 20-40 years for the 1975-1980 period.

* Department of Economics, Armstrong Atlantic State University, Savannah, GA (U.S.A.).
E-mail: rcebulari@mail.armstrong.edu

A simple model is provided in Section 2, and the empirical findings are found in Section 3. The conclusion is found in Section 4.

2. The Model

The reduced-form equation initially to be estimated is:

$$(1) \quad M_j = \alpha_0 + \alpha_1 EXPRI_j + \alpha_2 TAX_j + \alpha_3 WEST_j + \alpha_4 AGE_j + u$$

where:

- M_j = the net in-migration rate to state j between 1975 and 1979 of persons between the ages of 20 and 40, expressed as a percentage of state j 's 1975 population
- α_0 = constant
- $EXPRI_j$ = the expected real median family income in state j , 1975
- TAX_j = a dummy variable to indicate whether state j has a state income tax system in place; $TAX_j = 1$ if state j does have a state income tax and $TAX_j = 0$ otherwise
- $WEST_j$ = a dummy variable to indicate whether state j is a western state; $WEST_j = 1$ if state j is a western state and $WEST_j = 0$ otherwise
- AGE_j = the proportion of state j 's 1975 population that was under the age of 55
- u = stochastic error term

The variables M_j and AGE_j were obtained from the 1980 *Census of the Population*. The data for the nominal median family income, the unemployment rate, and for determining TAX_j were obtained from the *Statistical Abstract of the United States, 1977*. The state cost of living data were obtained from McMahon (1991). The data for $WEST_j$ are found in the studies by Galloway and Cebula (1973) and Cebula (1979, Chapter 2).

Following the procedure in Saltz (1998), which is based on Riew (1973) and Cebula (1979, Chapter 4), the expected real income variable is defined as:

$$EXPRI_j = (1 - U_j) \times (MFI_j / COL_j)$$

where:

U_j = State j 's 1975 average unemployment rate

MFI_j = state j 's 1975 nominal median family income
 COL_j = state j 's 1975 cost of living, expressed as an index (100.00 = average)

Treating U_j as a reasonable measure for the average expected probability of unemployment in state j , the magnitude $(1 - U_j)$ represents the average expected probability of employment in the state. The ratio MFI_j / COL_j is taken to be state j 's real median family income. The product of $(1 - U_j)$ times (MFI_j / COL_j) is then taken to represent the average expected real median family income in state j . The use of real rather than nominal income is suggested in the studies by Cebula (1979), Rabianski (1971), Renas (1980), Renas and Kumar (1978, 1983), and Riew (1973). According to the conventional wisdom, it is expected, *ceteris paribus*, that $\alpha_1 > 0$.

A direct comparison of interstate income tax policy differentials is extremely difficult and technically not even possible. This is largely because of the extreme diversity of income tax systems found in the states. For instance, the vast majority of the states having their own income tax systems have more than one marginal tax income rate; only a very few have a single income tax rate. In addition, the levels of taxable income at which the various higher marginal tax rates apply vary dramatically from one state to the next. There are also enormous interstate variations in the size of personal exemptions and standard deductions. Some states permit the same itemized deductions as found on the federal income tax return, whereas others deviate from the federal income tax format. Finally, a few states simply impose a state income tax rate that is a percentage of the federal-adjusted gross income. Consequently, to simplify the analysis, we follow Cebula (1990) and adopt a binary dummy (0,1) variable to measure state income tax policy. According to Tullock (1971), Cebula (1979), Renas (1980), and Riew (1973), consumers prefer areas without state income taxes over those with state income taxes, *ceteris paribus*. Therefore, it is expected here that $\alpha_2 < 0$.

As in Galloway and Cebula (1973) and Cebula (1979, Chapter 2), a western-state dummy variable is used to reflect the general attractiveness of western locations to migrants within the U.S. Based on the empirical results in Galloway and Cebula (1973) and Cebula (1979, Chapter 2), we expect, *ceteris paribus*, that $\alpha_3 > 0$. Here, as in Galloway and Cebula (1973) and Cebula (1979), the "western" states are Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, Arizona, Colorado and California.

As in Cebula and Vedder (1973), Vedder (1976), and Saltz (1998), to reflect the so-called "friends and neighbors" phenomenon, in which migrants tend to prefer areas with people who are similar to themselves, the variable

AGE_j is adopted. In this case, it is argued that young migrants prefer to locate in areas where other young people are more concentrated. Thus, it is expected, *ceteris paribus*, that $a_4 > 0$.

3. Findings

The OLS estimation of equation (1), adopting the White (1980) procedure to correct for heteroskedasticity, is given by:

$$(2) M_j = 16.67 + 30.16 EXPRI_j - 28.7 TAX_j + 46.43 WEST_j + 2.86 AGE_j$$

(+4.19) (-3.02) (+4.36) (+2.28)

$$df = 43, R^2 = 0.77, \text{adj. } R^2 = 0.74$$

where terms in parentheses beneath coefficients are t -values.

In equation (2), all of the estimated coefficients exhibit the expected signs and are statistically significant at beyond the three percent level. In addition, the coefficient of determination (R^2) indicates that the model explains nearly four-fifths of the variation in the dependent variable. Thus, geographic migration of persons between the ages of 20 and 40 years is apparently an increasing function of expected real median family income, western location, and the proportion of the population that is under age 55. Furthermore, as shown in equation (2), the coefficient on TAX_j is negative and significant at the one percent level. This finding implies that the existence of a state-level income tax system apparently has acted as a significant deterrent to in-migration of persons between the ages of 20 and 40 years over the study period. This finding is consistent with the arguments by Tullock (1971), Cebula (1979), Renas (1980), and Riew (1973), as well as the empirical results for 1985-89 found in Saltz (1998).

Very similar findings can be generated here by other model specifications. Consider, for instance, the following reduced-form equation, which parallels Saltz (1998, p. 600):

$$(3) M_j = b_0 + b_1 EXPRI_j + b_2 TAX_j + b_3 WEST_j + b_4 AGE_j + b_5 DD_j + u$$

where DD_j = the average number of annual heating degree days in state j .

Based on Cebula (1979) and other studies, we expect that $b_5 < 0$.

Estimating equation (3) by OLS, adopting the White (1980) procedure to correct for heteroskedasticity, we have:

$$(4) M_j = 169.21 + 30.16 EXPRI_j - 28.71 TAX_j + 46.42 WEST_j + 2.86 AGE_j$$

(+4.23) (-3.01) (+4.35) (+2.27)

$$- 0.0008 DD_j$$

(-0.56)

$$df = 42, R^2 = 0.78, \text{adj. } R^2 = 0.74.$$

The results in equation (4) are largely consistent with those in equation (2). Thus, the net in-migration rate of those between the ages of 20 and 40 years is an increasing function of expected real income, western location, and the percentage of the population under the age of 55 years. The heating degree-days variable exercises no significant impact. However, the tax variable is once again negative and significant at the one percent level. Thus, it appears that the existence in a state of a state-level income tax system acts as a deterrent to the in-migration of persons between 20 and 40 years of age.

4. Conclusion

Clearly, the findings in this study for the 1975-79 period are entirely consistent with those in Cebula (1990) and Saltz (1998) for the 1985-89 period. This consistency of the findings over both time periods makes the findings even more compelling. Moreover, these findings appear to have an important policy implication for any state seeking additional revenues and considering the introduction of an income tax system as a potential new revenue source. Namely, the introduction of such a tax system is likely to diminish the long term net inflow of migrants into the state and thereby to at least some degree diminish the long term economic growth and development of the state as well as the growth in state income tax revenues. Indeed, there potentially appears to be something of a "Laffer Curve" phenomenon that could be experienced in this context: namely, as the income tax would be increased — from zero to a positive value in this instance — total tax revenues in the state over the long run could potentially be lower than without such an increase because of less in-migration and more out-migration over time.

REFERENCES

- CEBULA Richard J., *The Determinants of Human Migration*, Lexington, MA: Lexington Books, 1979.
- , "A Brief Empirical Note on the Tiebout Hypothesis and State Income Tax Policies", *Public Choice*, 1990, 67, pp. 101-105.

258 RICHARD J. CEBULA, MICHAEL TOMA, AND YASSAMAN SAADATMAND

- and VIEDER Richard K., "Determinants of Black Interstate Migration, 1965-1970", *Western Economic Journal*, 1973, 11, pp. 500-505.
- GALLAWAY Lowell E. and CEBULA Richard J., "Differentials and Indeterminacy in Wage Rate Analysis: An Empirical Note", *Industrial and Labor Relations Review*, 1973, 26, pp. 91-95.
- MCMAHON Walter, "Geographic Cost of Living Estimates: An Update", *Real Estate and Urban Economics Association Journal*, 1991, 20, pp. 324-32.
- RABIANSKI Joseph S., "Real Earnings and Human Migration", *Journal of Human Resources*, 1971, 6, pp. 195-102.
- RENAS Stephen M., "More on the Tiebout-Tullock Hypothesis", *Quarterly Journal of Economics*, 1980, 94, pp. 619-23.
- and KUMAR Rishi, "The Cost of Living, Labor Market Opportunities, and the Migration Decision", *Annals of Regional Science*, 1978, 12, pp. 95-104.
- and —, "The Cost of Living, Labor Market Opportunities, and the Migration Decision: More on the Problems of Misspecification and Aggregation Bias", *Annals of Regional Science*, 1983, 17, pp. 98-110.
- RIEW John, "Migration and Public Policy", *Journal of Regional Science*, 1973, 13, pp. 65-76.
- SALTZ Ira S., "State Income Tax Policy and Geographic Labour Mobility in the United States", *Applied Economics Letters*, 1998, 5, pp. 599-601.
- TIEBOUT Charles M., "A Pure Theory of Local Expenditures", *Journal of Political Economy*, 1956, 64, pp. 418-24.
- TULLOCK Gordon, "Public Decisions as Public Goods", *Journal of Political Economy*, 1971, 79, pp. 913-18.
- VIEDER Richard K., *The American Economy in Historical Perspective*, Belmont, CA: Wadsworth Publishing Company, 1976.
- WHITE Halbert, "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity", *Econometrica*, 1980, 48, pp. 817-38.

ABSTRACT

This study empirically finds that net interstate in-migration over the 1975-79 period of the U.S. population between the ages of 20 and 40 was an increasing function of expected real income, western location, and age factors, while being discouraged by the presence of a state income tax system. It affirms the hypothesis by Tiebout (1956) and Tullock (1971) that people vote with their feet and prefer to avoid state income taxation.

JEL classification: R23

Keywords: income tax, expected income, migration

CORPORATE SECTOR PERFORMANCE IN SOUTHEAST ASIA: A STOCHASTIC FRONTIER APPROACH TO THE CRISIS AND RESTRUCTURING IN MALAYSIA

by
JENIFER PIESSE* and YOUNGESH KHATRI**

1. Introduction

Corporate sector vulnerabilities and governance issues have frequently been noted as contributors to the Asian crisis. Recent theoretical work and empirical literature have gone so far as to place these at the centre of the crisis. While the debate as to the origins of the crisis will no doubt continue, it is clearly important to be able to identify the major weaknesses and ensure that sufficient reforms are undertaken to develop a robust system of governance that will make the corporate sector better able to withstand future financial crises, whatever the cause.

There are a number of alternative hypotheses relating the corporate sector to the crisis including: the explanation of poor corporate performance in response to external shocks such as falls in aggregate demand and increases in interest rates; the view that corporate performance began to decline before the onset of the crisis and thus left firms vulnerable; and a recent theoretical

* Birkbeck College, University of London (UK), and University of Stellenbosch (RSA). E-mail: j.piesse@bbk.ac.uk

** International Monetary Fund, Washington DC (USA)

The views expressed in this paper are those of the authors and do not necessarily reflect those of the International Monetary Fund. The authors would like to thank, without implication, the Kuala Lumpur Stock Exchange, L. Leruth and S. Claessens and C. Zu for their help in providing the data, and S. Claessens for valuable comments.