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An extension of the Tiebout hypothesis of voting with one's feet: the Medicaid magnet hypothesis

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This study empirically extends the Tiebout hypothesis of 'voting with one's feet' in two ways. First, it provides updated estimates using net migration data for the period 2000-2008. Second, in addition to investigating variables reflecting public education outlays, property taxation and income taxation, it investigates whether migrants are attracted to states with higher Medicaid benefits per recipient. The latter hypothesis is referred to as the 'Medicaid magnet hypothesis'. The analysis includes three economic variables, three quality of life variables and three Tiebout-type factors *in addition to* Medicaid benefits. Empirical results indicate that consumer voters were attracted to states with higher per pupil public school spending, lower property and income tax *rates,* and that certain consumer-voters may be attracted to states that offer higher levels of Medicaid benefits.

Keywords: migration; Tiebout hypothesis; Medicaid magnet hypothesis

JEL Classification: D72; D79; H71; H72; R23

I. Introduction

Determinants of U.S. internal migration are a topic of significant research interest as evidenced by Percy *et al.* (1995); Saltz (1998); Milligan (2000); Conway and Houtenville (2001, 2003), Knapp *et al.* (2001); Rhode and Strumpf (2003); Chi and Voss (2005); Cebula and Alexander (2006); Francis (2007); Landry *et al.* (2007), and Kennan and Walker (2010).

One of the migration issues receiving the greatest attention involves the Tiebout (1956) hypothesis, *sometimes* referred to as either the Tiebout-Tullock hypothesis, or simply 'voting with one's feet'. It was hypothesized by Tiebout (1956, p. 418) that 'the consumer-voter may be viewed as picking that community which best satisfies his preferences for public goods … the consumer-voter moves to that community whose local government best satisfies his set of preferences'. Tullock (1971, p. 917) observes that this hypothesis can be extended such that the 'individual deciding where to live will take into account the private effects upon himself of the bundle of government services and taxes'. Thus, Tullock (1971), perhaps more expressly than Tiebout (1956), emphasizes that the consumer-voter evaluates *both* the government goods and services *and* the tax burden at potential end locations of choice.

This study extends the Tiebout hypothesis in two ways. It provides updated estimates using net migration data for the period 2000-2008 and in addition to investigating variables reflecting per pupil public education outlays, effective property tax *rates* and effective income tax *rates,* it investigates whether migrants are

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attracted to states with higher Medicaid benefits per recipient. We refer to this behaviour as the 'Medicaid magnet hypothesis'. States with higher Medicaid benefits *per recipient* attract persons who·either are already receiving Medicaid, who are Medicaid-eligible or expect to become Medicaid-eligible in the foreseeable future. These states act like magnets to the Medicaid constituency and induce an influx of migrants. State governments offering higher Medicaid benefit levels *per recipient* inay also be *preventing out-1nigration* from their own state of residents who are either already receiving Medicaid benefits, are Medicaid-eligible or expect to become Medicaid-eligible.

The Medicaid magnet hypothesis and the empirical investigation thereof are lnotivated in part by the observation noted by Holahan (2007, p. 667) that 'There is great variation among states in Medicaiq _spending per low-income person', a fact documented some time ago by Holahan and Liska (1997). Moreover, this extension of the Tiebout (1956) hypothesis can be regarded as something of a derivative of the debate regarding welfare migration in Sommers and Suits (1973); Paek (1973); Glantz (l974); Southwick (1981); Cebula and Belton (1994); Levine and Zi1mnerman (J999), and Kennan and Walker (2010).

This contemporary study of the Medicaid magnet hypothesis extension adopts state-level data for the United States and deals with net state in-migration rate deternlinants for the period 20002008. The adoption of state-level data, as opposed to city- or county-level data, to investigate the Tiebout hypothesis follows previous studies (Cebula and Belton, 1994; Saltz, 1998; Gale and Heath, 2000; Conway and Houtenville, 2001; Cebula and Alexander, 2006; Kennan and Walker, 2010).

Numerous studies have empiricalJy addressed determinants of U.S. internal migration. A number of these studies emphasize the migration impact not only of economic and fiscal factors but also 'quality of life' factors, as in Saltz (1998); Conway and Houtenville (1998, 2001, 2003), Gale and Heath (2000); Milligan (2000); Knapp *et al.* (2001), and Cebula and Alexander (2006). As demonstrated in these studies, the omission of noneconomic factors froln an empirical inigration analysis constitutes an omitted-variable problem that generally compromises the integrity of that analysis. As a consequencei our current article includes not only fiscal factors and purely economic factors but also a number of quality of life/ a1nenity factors.

II. Framework

The consumer-voter is treated as viewing the migration decision as an investment decision such that the decision to migrate from area i to area j requires that his/her expected net discounted present value of migration from area i to area}, $DPVij$, be both (a) positive *and* (b) the maximum net discounted present value that can be expected from moving fron1 area i to *any other* known and plausible alternative area $U)$. Because of the fact that this study uses *net* state in-migration, issues such as distance and moving costs are obviously 0hitted froln the computation of the $DPVij$.

Accordingly, following the models in Tiebout (1956); Tullock (1971); Riew (1973); Renas (1983); Vedder *et al.* (1986), and Cebula and Alexander (2006), among others, $DPVij$ consists in this study of three broad sets of considerations, namely

(1) Economic conditions in those areas
(2) Fiscal factors in those areas
(3) Quality oflife factors in those areas

Logically, migration will flow from area ito area$j$ only if

$$DPVij > 0; \; and \; DPVij = \text{MAX forj, where} \} = 1i2i \ldots, z \quad (!)$$

where z represents all of the plausible known alternative locations to area i. Given the focus in this study on state migration, areas i and} are states i and).

This study empirically investigates not only the standard Tiebout (1956) hypothesis of voting with one's feet but also an extension of that hypothesis, namely, what is herein referred to as the 'Medicaid magnet hypothesis'. We argue that states providing *higher* levels of Medicaid benefits *per recipient* potentially attract migrants from other states, where *lower* levels *of'* Medicaid benefits *per recipient* are being provided. These migrants consist of those who either are already receiving Medicaid benefits, who are Medicaid-eligible or expect to become Medicaid-eligible in the foreseeable future. Thus, states offering higher levels of Medicaid benefits per recipient *can induce a positive flow of· in-niigration.* Furthermore, those states offering the higher/highest Medicaid benefit levels *per recipient* may also be *preventing out-migration* of residents of the attracted cohort. Thus, *net state in-migration* is an increasing function of the level of Medicaid benefits per recipient

To measure the migration rate, $M!Gj$, the *net* number of in-migrants to state$j$ over the period July 2000-July 2008 expressed as a *percent* of the year 2000 population in state j, is adopted. A positive (negative) net in-migration indicates that more (fewer) migrants entered the state than left the state during the time frame studied. Since this study provides an estimate in semi-log form as well as estimates in linear form, the dependent variable (net in-migration) is, in the semi-log estimate, expressed as follows: first, the net number of in-migrants to each state over the period July 2000-July 2008 is divided by tbe population in each state for the year 2000; second, that figure, which is a decimal with a value between -LO and +1.0, depending upon the state, is added to +1 .0 in order to guarantee a positive value for the net in-migration rate for each of the states; finally, the resulting figure is converted to a percent and tben into natural log fonn.

To ineasure economic conditions in state), three variables are adopted, altbough, technically, the first variable listed below integrates two typically separated economic variables;

(1) *EMFINCJ* is the year 2000 nominal median family income in state), *MFJNCj,* multiplied by *(l-UNj),* where *UNj* is the unemployment rate of the civilian labour force in the year 2000 in state*j,* expressed as a decimal; thus, *(1-UNj)* is tile *employment rate* of the civilian labour force in state *j* (expressed as a decimal) and the product of *MFINCj* and *(1-UNj), EMFINCj,* is treated as a measure of *expected* family income/wage prospects in state *j* insofar as it includes not only a measure of income in each state but also the probability of obtaining a job in each state (Saltz, 1998); in any case, net in-migration is expected to be an increasing function of *EMFINCj.*

(2) *COSI]* measures the overall cost of living in state *j* for tl1e average four-person family in the year 2000; *COSI]* is expressed as an index, with *COSI]* 1 00.00 being the mean value of *COSI].* Net in-migration is expected to be a decreasing function of *COSI].*

(3) *EMPGRj* is the percentage growth rate of employment in nonfarm establishments in state *j* over the period paralleling the migration flow from 2000 to 2008. Given the contemporaneous nature of the net migration and employment growtb variables, two-stage least squares (2SLS) is the estimation technique adopted in this study. The inclusion of a variable such as *EMPLGRj* is based on Vedder *et al.* (1986) and Cebula and Alexander (2006), where net in-n1igration is found to be an increasing function of *EMPGRj.*

To measure fiscal factors, four variables are adopted, one of which reflects the Medicaid magnet extension to the Tiebout hypothesis:

(1) *EFSINCTXRATEJ* is the year 2000 *average effective percentage state inconJ.e tax rate* in state *j,* which over the years has often been overlooked, although it has been taken into consideration more recently by Cebula (1990); Gale and Heath (2000), and Conway and Houtenville (1998, 2001, 2003). Conventional wisdom (Riew, 1973) would argue that a higher level of *EFSINCTXRATEj* would be expected to discourage net in-migration.

(2) *EFPROPTXRATE j,* the average effective *property tax rate* in statej, i.e., the average effective city *plus* county *property tax rate* in state/ in the year 2000. Some measure of property taxes has previously been considered by Liu (1977); Gale and Heath (2000); Conway and Houtenville (2001); Rhode and Strumpf (2003), and Cebula and Alexander (2006) in tbc migration studies of a Tiebout-type framework, altbough usually in tbe form of per capita property taxes. Based on the conventional wisdom (Riew, 1973), a higher property tax rate *(EFPROPTXRATEj)* is expected to dissuade net in-migration.

(3) The variable *PPUP!Lj* is tbe nominal outlay in *state j* per pupil on primary and secondary *public* education in the year 2000. *PPUP!Lj* replaces tbe more commonly adopted variable *per capita public* education outlays examined by Pack (1973); Cebula (1979); Renas (1980); Conway and Houtenville (1998, 2001), Gale and Heatb (2000), and Rhode and Stnnnpf (2003); a higher level of *PPUP!Lj* is expected to encourage net in-migration.

(4) *MEDICAIDPR)* is the nominal *average* Medicaid outlay *per Medicaid recipient* in *state j* in the year 2000, In accordance with the Medicaid magnet hypothesis, net in-n1igration is expected to be an increasing function of *MEDICAIDPRj.*

Finally, to measure quality of life conditions, tbe focus is on tbe following three variables:

(1) *JANTEMPJ* is the mean January temperature in state *j* (l971-2000), as a measure of warmer climatic conditions in state *j.* As in so many migration studies, including Clark and Hunter (1992); Conway and Houtenville (1998, 2001); Gale and Heath (2000), and Cebula and Alexander (2006), tbis variable or a close substitute for the san1e, such as heating degree days, is adopted as a quality of life control variable for climate. It is expected tbat a warmer climate is likely to increase the net inflow of migrants.

(2) *COASI]* is a dununy variable to reflect whetber state *j* directly borders on eitber tbe Atlantic Ocean, the Gulf of Mexico or the Pacific Ocean. *COASI]* 1 if state *j* borders on one or more of tbese bodies of water and *COASTj* = 0 otherwise. The expected in1pact of this variable on net in-1nigration is positive (Cebula and Alexander, 2006).

(3) *DENSITY}* is the population density in state*j,* measured as the nu1nber of persons per square 1nile in state *j* in tbe year 2000. To tbe extent that greater

population density implies greater crowding and **congestion, it is expected that net in-1nigration is a** decreasing function of *DENSITY;'* (Cebula and Alexander, 2006).

Ill. The Migration Model

Based upon the eclectic model developed in the preceding **section, the reduced-fonn equations to be estimated *initi-*** *ally* are given by Equations 2 and 3:

$$MIGj = ao + a_1 EMFINCj + a_2 COSTj + a_3 EMPLGRj + a_4 EFSINCTXRATEj + a_5 EFPROPTXRATEj + a_6 PPUPILj + a_7 MEDICAIDPRj + a_8 HDDj + a_9 COASTj + a_{10} DENSITYJ + u \quad (2)$$

$$lnMJGj = b_0 + b_1 EMFINCj + b_2 COSTj + b_3 EMPLGRj + b_4 EFSJNCTXRATEj + b_5 EFPROPTXRATEj + b_6 PPUPILj + b_7 MEDICAIDPRj + b_8 HDDj + b_9 COASTj + b_{10} DENSITYj + u' \quad (3)$$

where *lnM!Gj* *the* natural log of *MJGj;* a_0, b_0 constant **te1n1s; *u, u'* = stochastic error te1ms.**

The study includes all 50 states. The expression of the **exp1ar1atory variables (other than *EMPLG.Rj*) in year 2000** levels is based on Greenwood (1978), who argues that use of beginning-of-period values for right-hand-side variables helps to avoid simultaneity bias. The data sources for all of the variables in the analysis are provided in Table 1. Table 2 provides descriptive statistics. Table 3 provides a correla**tion matrix for the explanatory variables, where serious** multicollinearity problems are not evident.

Based on the arguments in the previous section, the fOllowing coefficient signs *(ceteris paribus)* are hypothesized:

$$a_1 > 0, a_2 < 0, a_3 > 0, a_4 < 0, a_5 < 0, a_6 > 0, a_7 > 0, a_8 < 0, a_9 > 0, a_{10} < 0 \quad (4A)$$

$$b_1 > 0, b_2 < 0, b_3 > 0, b_4 < 0, b_5 < 0, b_6 > 0, b_7 > 0, b_8 < 0, b_9 > 0, b_{10} < 0 \quad (4B)$$

Given that the net migration variable *M!Gj* and the explanatory variable *EMPLGRj* are contemporaneous in this specification, the possibility of simultaneity bias (two-way causality) clearly exists (Liu, 1977; Greenwood, l 978; Partridge and Rickman, 2006). Accordingly, the model is to be estimated by 2SLS. The instrument for the *EMPLGRj* variable (which refers to the period 2000-2008) is the previous-period (1996-2000) percentage growth rate of employment in nonfarm establishments in state *j, PREVEMPLGPRj.* The choice of instrument is based on the findings that it is highly correlated with the explanatory variable, *EMPLGPRj,* while being uncorrelated with the error terms in the system.

IV. Initial Estimations

The 2SLS estimations of Equations 2 and 3 are provided in columns (a) and (b), respectively, of Table 4. In column (a), all ten of the estimated coefficients exhibit the expected signs, with five statistically significant at the 1% level, two statistically significant at the 2.5% level, and three statistically significant at the 5% level. In

Table l. Data sources

Variable	Source
MIG	U.S. Census Bureau (2010, Tables 12, 15)
EMF/NC	U.S. Census Bureau (2001, Table 606; 2002, Table 656)
COST	ACCRA (2001)
EMPLGR	U.S. Census Bureau (2010, Table 604)
EFSINCTXRATE	U.S. Census Bureau (2005, Table 455, 2002, Table 656)
EFPROPTXRATE	U.S. Census Bureau (2003, Table 446, 2005, Table 955)
PPUPIL	U.S. Census Bureau (2001, Table 242)
MEDICAIDPR, MAX MEDICAIDPR	U.S. Census Bureau (2010, Table 145)
COAST	**binary (0, 1) dummy variable**
DENSITY	U.S. Census Bureau (2005, Table 13)
JANTEMP	U.S. Census Bureau (2002, Table 363)
ECONFREE	Ruger and Sorens (2009, p. 47)
POLL UT	**American Lung Association (2011)**
PCPROPTX	U.S. Census Bureau (2003, Table 455, 2005, Table 17)
PCSINCTX	U.S. Census Bureau (2003, Table 455, 2005, Table 17)
PREVEMPLGPRj	U.S. Census Bureau (2002, Tables 644, 17); and U.S. Census Bureau (2010, Table 604)

Table 2. Descriptive statistics

Va1iable	Mean	SD
MIG	10.957	50.57
EMFJNC	38 836	5761
COST	100.00	10.404
EMPLGR	1.323	2.391
EFS!NCTXRATE	2.8977	1.9619
EFPROPTXRATE	2.5877	2.9421
PPUPIL	7111	1591
MEDICAJDPR	4292	1233
JANTEMP	32.71	12.65
COAST	0.40	0.49
DEN51TY	254	344
ECONFREEDOM	0.04	0.22
POLL UT	55.92	23.74
PCSJNCTX	623.92	373.02
PCPROPTX	458.91	570.66

addition, the F-statistic is significant at the 2.5% level, an indication of the overall strength of the model.

In estimate (b), all ten of the estimated coefficients once again exhibit the hypothesized signs, with four statistically significant at the I% level, two statistically significant at the 2.5% level, three statistically significant at the 5% level and one statistically significant at beyond the I0% level. The F-statistic is significant at the 2.5% level in this esti1nate, once again reflecting the strength of the model.

The estimated coefficient on the incon1e variable *(EAIFllVC)* is positive and statistically significant at beyond the 2.5% level in both estimates (a) and (b). In addition, the estimated coefficient on the cost of living variable *(COSI)* is negative and statistically significant at the l% level in both estimates (a) and (b). Combined, these results iinply that the net state in-migration rate was an increasing function of no1ninaJ expected median family income and a decreasing function of the overall cost of living. These results conform to the 'conventional wis-don1' and imply that migrants (consumer-voters) prefer higher income locations and manifest an aversion to states having higher living-cost levels. Jn addition, the coefficient on the *EMPLGR* variable is positive and statistically significant at the I% level in both estimates (a) and (b), leading to the inference that migrants prefer to move to states with higher employment growth rates.

In tbe quality of life variables, the coefficient on *.JANTEMP* is positive and statistically significant at the 1% level in both estimate (a) and estimate (b). This suggests that environ1nents having wanner clitnates are more attractive to migrants. Next, the estiinated coefficients on the *COAST* dummy variable are both positive, with that in estimation (a) being statistically significant at the 5% level and that in estimation (b) being statistically significant at 6o/o level. These results imply that consumer-voters appear to prefer living in states v\1ith greater closeness/access to either the Atlantic or Pacific Oceans or the Gulf of Mexico. The estimated coefficients on the *DENSITY* variable in estimates (a) and (b) are both negative and statistically significant at the 5o/o level. Thus, consumer-voters may have an aversion to states having a higher population density.

Lastly\ we consider the results for the variables reflecting our expanded interpretation of the Tiebout (1956) hypothesis. The coefficient on the variable *EFSJNCTXRATE)* is negative in both estimates and statistically significant at the 1% level in estimate (a) and at the 2.5o/o level in esti1nate (b). Thusi consumer-voters appear to have an aversion to higher *state* personal income tax *rate* levels. In addition, the estiinated coefficient on the variable *PPUPJLj* is positjve and statistically significant at the 5%o level in both estimates. Hence\ consumer-voters appear to prefer locating in states committing greater financial resources *per pupil* to prin1ary and secondary *public* education. This 'appreciation' for public education prioritization could reflect expected direct benefits (for parents with school-age children) and/or an awareness of the positive externalities of education. Next\ the coefficient on the property tax variable, *EFPROPTXRATE),* is negative and statistically significant at the 1 % level in both estimates, implying that consun1er-voters prefer residence in states with lower

Table 3. Correlation matrix

	EMFINC	*COST*	*EMPLGR*	*EFSINCTX-RATE*	*EFPROPTX-RATE*	*PPUPJL*	*MEDICAiD-PR*	*JANTEMP*	*COAST*	*DENS!TY*
EMFJNC	1.0									
COST	0.579	1.0								
EMPLGR	0.092	0.157	1.0							
EFSJNCTXRATE	0.345	0.235	0.106	1.0						
EFPROPTXRATE	0.067	-0.006	0.375	0.324	1.0					
?PUPIL	0.431	0.543	-0.092	o.400	0.475	1.0				
MEDICAJDPR	0.384	0.259	-0.289	0.245	0.357	0.505	1.0			
JANTEMP	-0.235	0.104	0.339	-0.235	0.129	-0.253	-0.407	1.0		
COAST	-0.230	-0.283	0.283	-0.104	0.241	-0.268	0.284	-0.422	1.0	
DENSITY	-0.153	0.123	0.123	0.419	0.408	0.389	0.358	-0.043	0.129	1.0

Table 4. 2SLS estimates, Equations 2 and 3

	(a) Dependent variable: *MIG)*	(b) Dependent variable: *In MIG}*
Constant	85.94	4.01
EMFINC	0.00006** (2.35)	0.0000005** (2.34)
COST	-6.38**' (-3.25)	-0.036*** (-2.70)
EMPLGR	31.04*** (2.69)	0.354*** (3.13)
EFSINCTXRATE	-24.07*** (-3.10)	-0.56** (-2.46)
EFPROPTXRATE	-20.16*** (-3.07)	-0.15*" (-4.05)
PPUPIL	0.023* (2.09)	0.0002* (2.05)
MED!CAIDPR	0.034** (2.41)	0.0022* (2.06)
JANTEMP	3.74*** (2.68)	0.028*** (2.82)
COAST	66.72* (2.18)	0.44* (1.97)
DENSITY	-0.081 * (-2.28)	-0.00034* (2.02)
F	5.65**	5.35**

Notes: Terms in parentheses are t-values. ***, ** and * statistically significant at the I %, 2.5% and 6'o/t1 levels, respectively; #statistically significant at the 10% level.

effective property tax *rates.* All of these 'updated' results are generally consistent \Vith most of the other prior/earlier related studies of the Tiebout (1956) framework. Finally, there is the case of the variable *MEDICAJDPR.* In estimation (a), the coefficient on 1his variable is positive and statistically significant at the 2.5% level, whereas it is positive and statistically significant at just beyond the 5170 level in estirnation (b). These results imply that some portion of consumer-voters, presumably higher 'at-risk' persons (health-wise), prefer to move to states where Medicaid benefits per recipient are higher. Thus, there appears to be strong support for 1he Medicaid magnet extension of the Tiebout (1956) hypothesis.

V. Robustness Tests

To test the robustness of the basic model in Table 4, two additional variables are included in the model in *tvvo* new estilnates. The first is an index of 'economic freedon1', *ECONFREE,* as developed by Ruger and Sorens (2009); Ruger and Sorens (2009, p. I) predicate their study ultimately on the definition of *individualfreedom* as 'the ability to dispose of one's own life, liberty, and justly acquired property however one sees fit, so long as one does not coercively infringe on another's ability to do the same'. They then proceed to develop a number of freedon1 indices, including an elaborate index of *overall economicfreedo1n, ECONFREE.* They also contend that the role of *ECONFREEj per se* in an empirical migration analysis appears to be largely m lstudied and argue that domestic in-migration *should* be an *increasing* function of econo1nic freedom.

The second new variable is a quality of life variable, *POLLUT],* a measnre of the amount of airborne toxic particulate matter in state *j.* The index runs from 1.00 to 100.00. Presumably, the greater 1he level of airborne toxic releases in state *j*, the less appealing move1nent to state *j* becomes.

Given these new variables, the following equations, each of which constitutes an extension/re-specification of Equation 2, is to be estimated by 2SLS:

$$\begin{aligned} MIG_j = {} & a_0 + a_1 EMFINC_j + a_2 COST_j + a_3 EMPLGR_j \\ & + a_4 EFSINCTXRATE_j + a_5 EFPROPTXRATE_j \\ & + a_6 PPUPIL_j + a_7 MEDICAIDPR_j \\ & + a_8 JANTEMP_j + a_9 COAST_j + a_{10} DENSITY_j \\ & + a_{11} ECONFREE_j + u \end{aligned} \quad (5)$$

$$\begin{aligned} MIG_j = {} & a_0 + a_1 EMFINC_j + a_2 COST_j + a_3 EMPLGR_j \\ & + a_4 EFSINCTXRATE_j + a_5 EFPROPTXRATE_j \\ & + a_6 PPUPIL_j + a_7 MEDICAIDPR_j \\ & + a_8 JANTEMP_j + a_9 COAST_j + a_{10} DENSITY_j \\ & + a_{11} ECONFREE_j + a_{12} POLLUT_j + u \end{aligned} \quad (6)$$

The 2SLS estimates of Equations 5 and 6 are provided in colunms (a) and (b), respectively, of Table 5. Overall. 1hese two 2SLS estimates yield 23 coefficients. All of the esthnated coefficients exhibit the expected signs, with 15 statistically significant at the I % level, two at the 2.5% level and five at the 5% level. Only one of the estimated coefficients *(POLLUT])* fails to be statistically significant at the 10% level.

Table 5. 2SLS estimates, Equations 5 and 6

	(a)	(b)
Constant	--47.59	--41.09
EMFINC	0.000039* (2.01)	0.00004* (2.03)
COST	-5.0*** (--3.00)	-5.08*** (-3.03)
EMPLGR	30.05*** (2.97)	30.07*** (2.94)
EFSINCTXRATE	-21.86*** (-3.26)	-22.25*** (-3.30)
EFPROPTXRATE	-20.44*** (-3.45)	-20.63*** (-3.47)
PPUPIL	0.035*** (2.86)	0.035*** (2.87)
MEDICAIDPR	0.032* (2.26)	0.032** (2.42)
JANTEMP	3.9**' (3.07)	3.94*** (3.07)
COAST	61.77* (2.30)	62.32* (2.31)
DENSITY	-0.092*** (-2.76)	-0.093*** (-2.77)
ECONFREE	1.57** (2.59)	1.6*** (2.63)
POLL UT		-0.166 (-0.46)
F	3.43**	3.37**

Notes: Terms in parentheses are t-values. ***, ** and * statistically significant at the 1o/o, 2.5%o and 5%o levels, respectively.

Aside from the two new variables introduced into the basic model *(POLLUTi* and *ECONFREEi),* the results in columns (a) and (b) of Table 5 are comparable to those in column (a) of Table 4. The coefficient on the variable *POLLU J]* fails to be statistically significant at even the l 0% level. However, the coefficients on the *ECONFREEj* variable are positive and statistically significant at the 2.5% level in one case [column (a)] and at the 1% level in the other case [column (b)]. Thus, there is evidence that higher levels of econo1nic freedo1n do induce higher net in-1nigration,

As for the remaining variables in Table 5, they are extremely close in both n1agnitude *and* statistical significance to their counterparts in Table 4. Thus, the results from the estimation of Equation 2 in column (a) appear to be robust. In particular, based on the findings in Tables 4 and 5, there is compelling evidence that the net state in-migration rate over the study period is an incfeasing function of the variables *EMPLGR, ?PUPIL, COAST, JANTEMP, EMF/NC* and *MED!CAIDPR,* while being a decreasing function of the variables *COST, EFSINCTXRATE, EFPROPTXRATE* and *DENSITY.*

Of greatest relevance to this study, the findings in Table 5 imply that the Tiebout (1956) hypothesis of voting with one's feet and the Medicaid magnet extension thereof is strongly supported, with consumer-voters expressing their preferences for higher levels of outlays per pupil in public primary and secondary education, lower state income tax rates, lo\•,rer property taxation and, finally, higher levels of Medicaid outlays. The results shown in Tables 4 and 5 provide a consistent pattern of support for the Medicaid magnet hypothesis.

VI. Conclusions

This study has investigated determinants of net in-1nigration rates in the United States over the period 2000-2008, with the intentions of using contemporaly migration data to investigate the Tiebout (1956) hypothesis of voting with one's feet and the 'Medicaid 1nagnet hypothesis' extension of that hypothesis. The extension argues that states with higher Medicaid benefits *per recipient* attract nligrants who are either actually receiving Medicaid benefits, or are already Medicaid-eligible or who expect to become Medicaid-eligible. Thus, states that offer higher *per recipient* Medicaid benefits can in effect act like a inagnet to such people. Fu1ihennore, those states with the highest Medicaid benefits would logically tend to retain their current residents who are already Medicaid recipients, or who are soon-to-be eligible Medicaid recipients, with the end result being that net state in-lnigration is an increasing function of Medicaid benefits per recipient. If this hypothesis is valid, the potential policy implications may be considerable, e.g., in the year 2000, there were some 42 887 000 Medicaid recipients (57 757 000 by 2006) and an approximate aggregate Medicaid outlay in the year 2000 of $168.443 billion ($269.868 billion by 2006) across the United States as a whole (U. S. Census Bureau, 2010, Tables 144, 145).

Using 2SLS estimation, initially a linear model is estimated and then a corresponding semi-log model is estimated (see Table 4). Both the linear and semi-log specifications allow for purely economic factors (including an index of the average overall cost of living ln each state), quality of life variables and Tiebout (1956)-type fiscal factors, one of which expressly reflects average Medicaid benefits *per recipient.* Subsequently, as robustness tests, additional estimates are provided.

Finally, this analysis provides a re-esti1nation of the basic model in Equation 2, in which the variable *MEDICAIDPR* is replaced by the *maximum* Medicaid benefit per recipient in state *j, MAXMEDICAIDPRj.* As illustrated by the results shown in Table 6, the overall findings are essentially identical to those in column (a) of Table 4, with the estimated coefficient on this new maximu1n Medicaid benefit variable being both positive and statistically significant at beyond the 5% level. This re-specification of the *Medicaid* variable yields further results supportive of the Medicaid magnet hypothesis.

The results demonstrate that as conswner-voters 1nake migration decisions, they tend to move to states with higher per pupil outlays on public primary and secondary' education, with lower effective incolne tax rates and lower effective property tax rates. In addition, some portion of consulner-voters apparently is attracted to states with higher Medicaid benefits. Regarding the latter empirical findings involving the Medicaid magnet hypothesis and the case of the variables *MEDJCAIDPR* and *MAXMEDICAJDPRj,* in all of the 2SLS estimates, the estimated coefficient on this variable is positive and statistically significant. Thus, there

Table 6. 2SLS estimate, revised Equation 2

Constant	44.84
EMFINC	0.00006*" (2.35)
COST	-6.38"* (-3.25)
EMPLGR	31.04*** (2.69)
EFSINCTXRATE	-24.07"* (-3.10)
EFPROPTXRATE	-20.16"* (-3.07)
?PUPIL	0.023* (2.09)
MAXMEDICAIDPR	O.o3*' (2.34)
JANTEMP	3.74*** (2.68)
COAST	66.72* (2.18)
DENSITY	-0.081* (-2.28)
F	3.35*

Notes: Tem1s in parentheses are t-values. ***, ** and * statistically significant at the 1%, 2.5% and 5o/o levels, respectively.

appears to be strong empirical support for the Medicaid magnet hypothesis.

Holahan (2007, p. 667) contends that the interstate *variation in Medicaid* spending *per lovv-incon1e person* 'has many determinants, including state discretion and differences in prices and amounts of services used'. He further observes that various 'Incentives in Medicaid to have low-income states spend more have generally not worked ', yielding 'outcomes that belie a presumed national interest in equity'. Thus, a 'federal solution... would be necessary to eliminate state variations' in Medicaid spending per recipient. The authors of the present study of the Medicaid magnet hypothesis concede potential benefits to a 'federal solution', presumably in the form of unifonn Medicaid benefits per low-income person nationally. However, it would be argued here that such a 'uniform' system *might* very welt_ require interstate Medicaid benefits to be adjusted to reflect either interstate cost-of-living differentials or interstate medical care price differentials in order to establish the equity in which Holahan (2007) is interested and in the elimination of the Medicaid magnet phenomenon with which the present study is concerned. Inother words, *real* Medicaid benefits potentially *may* have to be made approximately equal across the states in order to successfully address these concerns.

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