

Depressing Federalism

Re-Assessing Theory and Evidence on the “Race to the Bottom”

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Abstract

While a great deal of research exists on the “race to the bottom” (RTB) in welfare, this paper argues that very little work has directly tested the core predictions of RTB theory. Part of the problem is theoretical ambiguity, something this paper addresses with a formal model of state welfare policymaking that incorporates individual and state level decisions. The model predicts first that while there will not necessarily be “racing” among states, the potential for welfare-seeking in-migration will place downward pressure on state welfare benefits. The model provides specific guidance for the form of this downward pressure. This predicted relationship is different than what is conventionally tested. We test the hypothesis on panel data on AFDC and TANF from 1985 to 1998. Results are consistent with welfare benefits being depressed in the manner predicted theoretically.

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Do states “race to the bottom”? That is, do states limit spending on redistributive programs in order to encourage poor people to leave and to discourage poor people from entering (Peterson 1995; Peterson and Rom 1990)? The question is one of the most important in the study of federalism, cutting to the heart of both very practical policy debates and more theoretical normative controversies over the fairness and responsiveness federal systems.

Not surprisingly, the issue has attracted substantial scholarly attention. Surprisingly - or, perhaps not, given one’s view of academia - the answers conflict. Some scholars including Allard and Danzinger (2000) conclude a RTB is not occurring because welfare benefits play a small role in the moving decisions of poor families. Schram and Soss (1998) argue that the debate is moot because real differences in welfare benefits are small. Others including Rom, Peterson and Scheve (1998) argue there is a RTB because states seems to respond to the policies of neighboring states when setting welfare policy.

This paper argues that uncertainty about RTB is well-placed. This is not because of conflicting results, but because most empirical tests of RTB ask the wrong questions. Efforts to look at migration of poor families look at the wrong level of analysis, for RTB theory is about state behavior. Efforts to look at the effect of policies in neighboring states on state welfare policies fail to recognize that migration is often dominated by flows between non-contiguous states. Such efforts also cannot determine whether state to state policy interdependence is due to informational reasons or more troubling RTB dynamics.

This paper seeks to focus the debate with a formal model of state policymaking. The model incorporates decision-making at both individual and state levels. The model predicts a variant of RTB competition in which the threat of welfare migration causes states to spend less than they would absent the threat, but does not cause a freefall in spending. (Hence,

the title refers to “depressing federalism” instead of “race to the bottom.”) The model also tightens the link between theory and testing by providing specific guidance about how to assess whether states spend less out of fear of welfare in-migration.

This paper proceeds as follows. Part 1 discusses the literature, raising a series of questions about standard approaches to testing the theory. Part 2 presents a formal model of interstate competition that addresses these and other questions. Part 3 subjects the model to empirical testing. Part 4 concludes.

1 Racing to Conclusions?

This section looks at three major approaches in the RTB literature. All shed light on welfare policy; none, however, directly test whether potential welfare migration reduces state spending on welfare.

1.1 Welfare Migration

One line of inquiry addresses whether low-income families move in response to benefit differentials (see the extended discussion in Brueckner 1998). If they do not, the conventional reasoning goes, then a necessary pre-condition for RTB theory does not hold and the theory cannot be valid. Recent work indicates that welfare benefits exert a small or even negligible effect on migration (Schram, Nitz and Krueger 1998). For example, Allard and Danzinger (2000) demonstrate that factors such as family, age and education exert much larger effects on decisions to move than do welfare benefits. They also find that migration is equally common from high benefit states as from low benefit states.

Such analyses tell us much about migration, but are not tests of RTB theory. RTB theory

holds not that welfare recipients move, but that states compete. That is, the theory holds that state spending on redistribution is lower than it would be if there were no *threat* of in-migration of welfare recipients or out-migration of taxpayers. For example, suppose that a simple version of RTB holds such that if state A has lower benefit than state B, all the poor will leave state A for state B. State B would presumably cut its benefits to avoid this outcome. Would there be welfare induced welfare migration? And yet, interstate competition would drive policy.

In addition, we have to keep in mind that it is completely consistent with RTB theory that factors such as family and jobs dominate migration decisions. The important effect is the marginal effect of welfare; welfare generosity need only be one of many factors behind moving decisions. As long as benefits exert a marginal effect on migration, a state can reduce the inflow and increase the outflow of poor by cutting benefits. In turn, this implies states do not have to have higher benefits in order for migration concerns to play a role in policymaking. Florida could have very low benefits, but still seek to have even lower benefits in order to cut in-migration *at the margin*.

1.2 Benefit Differentials

Another line of inquiry explores whether differences in welfare benefits across states are sufficient to induce welfare migration. Schram and Soss (1998) show that real differences in welfare benefits – differences that take into account housing costs – are low across states. Specifically, they show that migrating welfare recipients would see almost 70 percent of any welfare increases eaten up by higher housing costs.

In light of the above discussion, though, we see that Schram and Soss's findings are extremely ambiguous for RTB theory. On the one hand, it could be that a lack in real benefit

differentials means that no one has an incentive to move. On the other hand, homogeneity of real benefit levels across diverse states could be evidence *for* RTB theory if states work to equalize real benefit levels in order not to be subject to welfare migration.

1.3 Neighborhood Effects

The third major approach, and the one most directly relevant for our purposes, investigates whether welfare benefits are influenced by benefit levels in neighboring states. For example, Rom, Peterson and Scheve (1998) investigate whether state benefit levels are influenced by average neighbor benefit levels. After controlling for various political, economic and social factors, the authors find a statistically significant relationship and that a RTB is at work. Others conduct similar tests: Volden (2002) looks for the affect of changes in neighboring states on probability of changing maximum benefits. Berry, Fording and Hanson (2000) look at the effect of the ratio between state benefits and neighbor benefits on policy while Figlio, Koplin and Reid (1999) look at the effect of changes in neighboring states on changes in state policies. The general consensus in this literature is that states are affected by their neighbors (Figlio, Kolpin and Reid 1999; Peterson and Rom 1990; Rom, Peterson and Scheve 1998; Saavedra 1998; Smith 1991; Tweedie 1994; Wheaton 1999; Volden 2002).¹

This rich literature has taught us much about how inter-state policy interdependence. However, there are several grounds for caution in interpreting the results in terms of RTB theory. First, the focus on contiguous neighbors is problematic. Tables 1 and 2 list the top sources of in-migration to California and New Hampshire in 1998. Clearly, contiguity is but part of the migration story: Texas, Washington, New York, Illinois and Florida all produce more in-migrants to California than does its neighbor to the north, Oregon. In flows to New

¹ Not everyone agrees completely: Berry, Fording and Hanson (2000) find the neighbor benefit levels exert a statistically significant effect, but argue that the effect is substantively inconsequential.

Hampshire come more from neighbors, but here again we see the weakness of contiguity. First, not all contiguity is equal: Massachusetts provides a massive share of in-migrants, compared to the other contiguous states, Vermont and Maine. Second, non-contiguous states such as Florida, New York and Connecticut produce relatively large numbers of in-migrants. Similar patterns are common. For example, Florida's contiguous neighbors provided less than 10 percent of its in-migration; New York and New Jersey alone provided almost 20 percent of in-migration. While there is some evidence that poor people may be less likely to move (see Brueckner (1998) Peterson and Rom (1990) for discussions), assuming that only contiguous states matter is untenable.²

Table 1. In-Migration to California, 1998

Origin	Number of in-migrants
1. TEXAS	32,309
2. ARIZONA	26,248
3. WASHINGTON	25,142
4. NEW YORK	19,098
5. NEVADA	19,231
6. ILLINOIS	18,100
7. FLORIDA	17,790
8. OREGON	17,107

Source: IRS Statistics of Income Division.

Table 2. In-Migration to New Hampshire, 1998

Origin	Number of In-Migrants
1. MASSACHUSETTS	14,970
2. MAINE	3,319
3. FLORIDA	2,502
4. NEW YORK	2,476
5. VERMONT	2,383
6. CONNECTICUT	1,603
7. CALIFORNIA	1,381
8. PENNSYLVANIA	946

Source: IRS Statistics of Income Division.

A second concern is that policies are not directly relevant in RTB theory. In the theory,

²Figlio, Koplin and Reid (1999) also estimate models based on one-way migration. They use a different set-up which does not address several of the issues discussed below.

states care about neighbors' policies because these policies may cause people to migrate. Hence, neighbors' policies matter only to the extent that there are potential inflows and outflows. Hence policies must be interacted with poor populations in some manner. If we fail to do so, we would be assuming that California is just as concerned about its neighbors as Nevada is about its neighbors. This is quite an assumption! Nevada would be overwhelmed by the in-migration of five percent of California's poor while California could absorb five percent of Arizona, Nevada and Oregon's poor with relatively little difficulty.³

But cannot one argue that policies provide a reasonable proxy for the inter-state dynamics implied by state competition theory? Not quite, for finding that states respond to policies in neighboring states is also consistent with "yardstick theory." In yardstick theory voters have very little information about the quality of state leaders, but do have some information about the cost and effectiveness of state policies relative to neighbors (Besley and Case 1995). States are sensitive to neighbor state policies because voters may use outcomes in neighboring to gauge what is feasible or desirable.

While yardstick theory is similar to RTB theory in some respects - both predict states affect each other - its essence is markedly different. In yardstick theory, states may move upward or downward together, as a contagion effect pushes politicians to keep up with popular and effective policies and to stamp out unpopular and ineffective policies. The inherent downward pressure on state policies at the heart of RTB theory is missing, though.

In summary, the above discussion presents reasons to be agnostic about the empirical validity of RTB theory. It also identifies several key elements that are necessary in tests of RTB theory. The analysis must focus on state policies, not individual movement. It must recognize the marginal, not absolute, effect of welfare benefits. It also needs to carefully

³Wheaton (1999) argues small states will have lower benefits for these kind of reasons.

specify the manner in which other state policies matter, allowing for realistic migration patterns and for policies and number of poor to interact in some manner. Finally, the analysis needs to distinguish from similar, yet conceptually distinct information based perspectives. The goal of the next section is to develop a model that addresses these issues.

2 A Model of RTB

The model is a two period game. In the first period all states simultaneously make policy. In the second period, individuals choose whether or not to migrate. Because decisions by states in the first stage of the game are driven by anticipation of migration choices in the second stage, we consider the migration stage first. We focus on individuals in the “welfare pool.” They are people who may reasonably expect to receive welfare.

Each individual has some utility from living in each of the fifty states. This utility depends on B_s , the level of welfare benefits in state s , v_s , non-welfare utility from being in state s (a variable we label state attractiveness), c_{js} is the cost of moving from state j to state s and ϵ_{ijs} is a random shock. By definition, the cost of staying put, c_{ss} , is 0.⁴ Formally,

$$U_{ijs} = B_s + v_s - c_{js} + \epsilon_{ijs}. \quad (1)$$

The state attractiveness variable covers factors such as economic conditions and quality of life. The random shock captures idiosyncratic attraction (or repulsion) from individual states. We assume the errors are independent and identically distributed Weibull errors.

An individual selects the state that offers the highest utility. Assuming i.i.d. Weibull errors, the probability that a person living in state j chooses state s (McFadden 1973)

$$\text{Prob}(U_{js} > U_{jk} \quad \forall k \neq s) = \frac{e^{B_s + v_s - c_{js}}}{\sum_{k=1}^{50} e^{B_k + v_k - c_{jk}}} \quad (2)$$

⁴We disregard moves within states as these do not affect inter-state dynamics.

$$\equiv P_{js} \tag{3}$$

The total number of poor in a state after migration is

$$N_s^P = \sum_{j=1}^{50} N_j^P P_{js}. \tag{4}$$

This quantity includes those who stay and those who in-migrate.

States in the model have utility over welfare policy and the number of poor. States balance their ideal levels of welfare benefits (due to altruistic, insurance or social stability reasons) against their “welfare burden”, the ratio of welfare recipients to employed taxpayers. State utility is

$$U_s = -\frac{1}{2}(\bar{B}_s - B_s)^2 - \alpha_s \frac{N_s^P}{N_s^e} \tag{5}$$

where \bar{B}_s is the state’s optimal level of spending per poor person and α_s is the weight states place on poor population versus ideal benefits. High α_s means that states suffer relatively substantial utility losses from having poor in the state.

The equilibrium reaction function for state s is an implicit function that defines the optimal policy for state s given other state policies, attractiveness, costs of moving and poor populations. It is

$$B_s = \bar{B}_s - \alpha_s \sum_{j=1}^{50} \frac{N_j^P}{N_s^e} P_{js} (1 - P_{js}). \tag{6}$$

Note that P_{js} is determined by the benefits, attractiveness and costs of moving for all states. The appendix provides calculations and discusses conditions for this to be an equilibrium.

The first implication of this equilibrium is that welfare spending in a federal system in which poor are considered undesirable will be less than ideal spending levels. That is, if $\alpha_s > 0$, $B_s < \bar{B}_s$ (because all elements in the summation are greater than zero). This is the essence of RTB theory: potential inflows necessarily depress state welfare spending.

This claim (and most other RTB claims) does not, however, say anything about whether federal control of welfare policy will increase spending. There is no model of federal versus state political processes so there is no way to directly compare the two modes of policymaking. Instead, the claim is that states would set higher welfare benefits if migration were not possible.

The result also leads us to temper the hyperbole of the phrase “race to the bottom.” States are affected by potential inflows, but they balance them against their desired policies. Only for very high values of α_s would states be predicted to literally race to the zero spending (see also Rom 1998b). Instead of a headlong rush to the bottom, we see that inter-state mobility acts as extra ballast, holding down welfare spending from what it would otherwise be. Substantial variation in welfare programs can continue to exist. Hence, a better term is “depressing federalism,” a term that captures the downward pressure and loss of autonomy that states incur due to the factors typically associated with RTB theory. (We do not wish to be too semantically doctrinaire, so use RTB and “depressing federalism” interchangeably as RTB is an accepted shorthand for downward pressure on redistributive spending.)

The model also specifies the nature of downward pressure on spending. Two features are important. First, welfare benefits cannot be considered in isolation from other factors. That is, states face downward pressure in proportion to the number of poor people in other states multiplied by the probability people in-migrate from that state. Hence, having high state “attractiveness” can put as much downward pressure on spending as can having high welfare benefits. This means that looking at states that have relatively high benefits or spend more than the national average and so on is not directly useful. Second, the effects of inter-state competition need not be the same across states. Small states (with smaller N_s^e) will face

higher risks. Others will vary on the manner in which they trade-off inflows versus optimal policy. RTB factors will have a relatively large effect on states with high α_s , for example.

Our main interest is testing whether welfare has been held back by “depressing federalism.” To do so, we use the Implicit Function Theorem to calculate the marginal effect of exogenous variables and other state policies on B_s . The marginal effect of poor population on state benefits is $\frac{\partial B_s}{\partial N_z} = \frac{-\alpha_s}{N_s^e} P_{zs}(1 - P_{zs})$. This is uniformly negative, implying that an increase in in-state or out of state poor puts downward pressure on benefits. The magnitude of the effect is proportional to the flow from one state to another. We label this as the THREAT effect as it captures the downward pressure due potential inflow of poor that might occur due to higher benefits.

The effect of benefits in state z on benefits in state s is

$$\frac{\partial B_s}{\partial B_z} \propto \alpha_s \sum_{j=1}^{50} \frac{N_j^p}{N_s^e} P_{js} P_{jz} (1 - 2P_{js}) \quad (7)$$

Before discussing this equation, we should note a relevant empirical regularity. The proportion who do not leave a state (P_{ss}) is usually above 95 percent and always above 85 percent. Conversely, the proportion who move from state j to s is always very low and usually well below 1 percent.

With these facts in mind, we can decompose the effect of B_z on B_s into two components. For all $j \neq s$ the elements in the sum are positive because $P_{js} < 0.5$ implying $(1 - 2P_{js}) > 0$. This means that higher benefits in state z imply higher benefits in state s. The magnitude of the relationship is increasing in the the number of poor in other states multiplied by the proportion of people who migrate to s and z. We call this the INFLOW COVER effect of higher benefits or quality of life in other states. This refers to the cover that higher benefits and quality of life in other states provide a state, making it easier to raise benefits without

fearing an inflow of welfare population.

For $j = s$, however, $(1 - 2P_{ss}) < 0$, implying a negative, countervailing effect. The reason is that when B_z is higher, state s also has an easier time pushing out its own welfare population. The magnitude of this effect is proportional to own-state poor (N_s^p) and the probability of staying or migrating to state z (P_{ss} and P_{sz} , respectively). We call this the OUTFLOW INCENTIVE effect. This refers to the offsetting effect higher benefits in other states can have state benefits.

3 Empirical Analysis

Our strategy is to estimate a series of econometric specifications based on the above model that will test whether interstate competition dampens welfare spending. The basic equation we estimate is a linear approximation based on the above comparative static results. It is

$$\begin{aligned}
B_{st} &= \bar{B}_{st} + \gamma_1 \sum_z \frac{N_{zt}^p}{N_{st}^e} P_{zst} (1 - P_{zst}) + \gamma_2 \sum_{z \neq s} \frac{N_{zt}^p}{N_{st}^e} P_{zst} P_{zzt} (1 - 2P_{zst}) B_{zt} \\
&\quad + \gamma_3 \sum_{z \neq s} \frac{N_{st}^p}{N_{st}^e} P_{sst} P_{szt} (1 - 2P_{sst}) B_{zt} + \epsilon_{st} \tag{8}
\end{aligned}$$

$$= \bar{B}_s + \gamma_1 \text{THREAT}_{st} + \gamma_2 \text{COVER}_{st} + \gamma_3 \text{OUTFLOW}_{st} + \epsilon_{st} \tag{9}$$

where t subscripts have been added to capture variation across time. We expect $\gamma_1 < 0$, $\gamma_2 > 0$ and $\gamma_3 < 0$ for the reasons discussed above. In this specification, we look only at the direct effects (where $j=z$ in Equation 7). We will consider indirect effects later.

The model also implies that not all states will respond in the same manner to potential inflows. Therefore we allow $\alpha_s = \alpha_{st} = \gamma X_{st}$. This can vary not only over states, but also over time as political and economic factors change. We also allow the optimal policy

of states to vary over time as political and economic conditions change; specifically, we let $\bar{B}_{st} = \gamma_0 X_{st}$. The reaction function becomes

$$\begin{aligned}
 B_{st} = & \gamma_0 X_{st} + \gamma_1 \text{THREAT}_{st} + \gamma_2 \text{COVER}_{st} + \gamma_3 \text{OUTFLOW}_{st} \\
 & + \gamma_4 X_{st} \text{THREAT}_{st} + \gamma_5 X_{st} \text{COVER}_{st} + \gamma_6 X_{st} \text{OUTFLOW}_{st} + \epsilon_{st} \quad (10)
 \end{aligned}$$

We address the panel structure of the data in two ways. First, we use a variety of panel methods, including panel corrected standard errors (Beck and Katz 1995) and fixed effect and random effects approaches (Baltagi 1995). Second, budget data is almost certainly subject to serious autocorrelation, so we assume a AR(1) process and correct for it. We do not use a dynamic model for the reasons discussed in Achen (2000).

3.1 Data

The conceptual dependent variable is welfare benefits. In reality, it is difficult to measure welfare benefits as provision of benefits is subject to a myriad of rules and implementation. Many scholars use maximum AFDC benefit levels for a family of four. A limitation of this measure is that it does not capture variation in eligibility and implementation. This variation includes eligibility standards (e.g. income level at which benefits are cut off or reduced), the amount of assets a recipient is allowed to hold, how old a child can be and still receive benefits and so on (see Peterson and Rom 1990, 9). (In addition, coding changes that take place mid-year or are phased in is difficult.)

Our preferred dependent variable is AFDC spending per poor person. This variable taps both generosity to families and ease of access. This measure is also available for a longer time period, including several years in which TANF has been in place. It is correlated with maximum benefit levels at 0.77. We also report models based on the maximum benefit levels,

however, as a robustness check.

The AFDC and TANF spending data come from the *Social Security Bulletin Annual Statistical Supplement*. The maximum welfare benefit levels come from *Characteristics of State Plans* and has been generously provided by Mark Rom and Berry, Fording and Hanson. Poor populations are available in U.S. Census *Current Population Reports*. Migration data is available from the IRS based on the entire sample of taxpayers.

We also control for political and state capacity. Political variables include institutional factors such as Democratic strength in the state legislative (from the *Book of the States*) and party of the governor (from the *Almanac of American Politics*). We also control for state ideology using Erikson, Wright and McIver’s poll-based measure. We include factors that may affect the popularity of welfare spending. As children may be viewed as a relatively deserving constituency, the more children, the higher benefits may be. As racism and stereotyping may undermine support for welfare spending, we include a measure of the percent of recipients who are African American. We also include a indicator variable for south to make sure that the race variable is not simply tapping regional factors. To measure state capacity, we include a measures of state median income (from the Census Bureau), state unemployment (from the Bureau of Labor Statistics) and the proportion of AFDC payments paid for by the federal government (from the *Social Security Bulletin*). We convert all economic data to real state-level terms using Berry, Fording and Hanson (2000).

3.2 Results

Results for the basic model are reported in Table 1. In these specifications, benefit expenditures for AFDC and TANF per person in poverty was the dependent variable. The independent variables are divided into the inter-state competition variables developed here,

		Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Inter-state competition	Threat	-729.48	-4.66	-956.08	-5.36	-753.05	-5.54
	Cover	7.31	3.60	11.64	5.44	7.94	4.59
	Outflow	-6.03	-1.19	-21.32	-3.46	-11.86	-2.42
Political factors	State Ideology	1.78	6.00			2.01	4.33
	Democrats in Legislature	14.08	2.41	11.64	2.05	14.09	3.06
	Democratic Governor	0.18	0.11	1.16	0.77	1.80	1.30
	Children	184.99	3.37	182.60	1.08	144.98	1.53
	PCT of AFDC African American	-0.28	-4.12	-0.74	-3.81	-0.38	-3.95
	South	-8.78	-2.15			-4.29	-0.57
	Constant	1.76	0.08	-3.32	-0.15	24.41	0.80
State capacity	Median Income	0.00	3.22	0.00	1.38	0.00	2.56
	Retail Wages	0.00	-1.79	0.00	-0.49	0.00	-1.54
	State Unemployment	0.42	0.57	0.56	0.97	0.49	0.94
	Federal Share of Payments	-0.17	-1.18	0.09	0.41	-0.07	-0.40
	Constant	1.76	0.08	-3.32	-0.15	24.41	0.80
	Rho (autocorrelation)	0.74		0.58		0.58	
	R ² ("within" for fixed effects)	0.46		0.13		0.10	
	Observations	624		576		624	
	Number of states	48		48		48	
	Number of years	13		12		13	
	Specification	AR1 corrected PCSE		AR1 corrected Fixed effects		AR1 corrected Random effects	

Dependent variable: expenditures per person in poverty

Table 1: DETERMINANTS OF WELFARE GENEROSITY

political variables and state capacity variables. The specifications vary depending on panel issues were dealt with via panel-corrected standard errors or fixed or random effects.

The results for the inter-state competition variables are strongly consistent with the theory. The predicted signs of the first three variables are negative, positive, negative. In all three specifications, we see exactly this pattern. All variables are also significant at very high levels except Outflow for the first specification.

The other variables are also consistent with common sense. Liberal ideology is strongly

associated with higher benefits. (Note that it and the south dummy must be removed from the fixed effect model because they do not vary over time for each state.) Democrats in the legislature are too, although Democratic governors are at most weakly associated with higher benefits. Children are associated with higher benefits in some, but not all, specifications.

A disturbing result is that the percent recipients who are African American is negatively associated with benefits. This is true across specifications and is not affected by including a south indicator variable.

Of the state capacity variables, income is most consistently significant. As one would expect, higher income in a state is associated with higher benefits. Retail wages are negatively associated with higher benefits. This is hard to explain from a state capacity standpoint. However, it may be explicable in terms of inter-state competition. Recall from the theoretical discussion that the higher non-welfare utility in a state, the lower benefits would be. Unemployment and federal matching rate do not seem to affect payments.

Table 2 continues the analysis by examining adding year dummy variables to the above specification. The general results are very similar. The signs on the inter-state competition variables are always in the right direction and the coefficients are significant at high levels, with the possible exception of Cover which has t-statistics of 1.93, 2.80 and 1.67. State ideology remains significant, but the partisan variables no longer are. The race variable also remains quite significant, as does income. The other state capacity variables are not significant.

Finally, table 3 presents results for specifications in which maximum benefits for a family of four was the dependent variable. In addition to a change in the dependent variable, there is a change in sample size and years covered due to data availability. This data covers

		Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Inter-state competition	Threat	-509.32	-3.40	-610.64	-3.25	-437.06	-3.05
	Cover	3.73	1.93	6.29	2.80	3.05	1.67
	Outflow	-11.96	-2.15	-30.85	-5.02	-18.35	-3.70
Political factors	State Ideology	1.93	6.31			2.05	4.38
	Democrats in Legislature	7.71	1.19	-1.30	-0.19	4.17	0.82
	Democratic Governor	-1.00	-0.62	0.78	0.52	0.83	0.61
	Children	164.90	3.00	-10.52	-0.06	84.20	0.84
	PCT of AFDC African American	-0.29	-4.00	-0.62	-3.16	-0.39	-4.08
	South	-4.83	-1.16			1.00	0.13
State capacity	Median Income	0.002	3.90	0.001	2.39	0.002	4.00
	Retail Wages	-0.002	-0.91	0.001	0.31	-0.001	-0.60
	State Unemployment	-0.15	-0.21	0.38	0.53	-0.10	-0.17
	Federal Share of Payments	-0.04	-0.27	0.10	0.43	0.02	0.09
	Constant	-16.62	-0.70	31.34	1.31	12.74	0.39
	Rho (autocorrelation)	0.75		0.56		0.56	
	R ² ("within" for fixed effects)	0.49		0.21		0.20	
	Observations	624		576		624	
	Number of states	48		48		48	
	Number of years	13		12		13	
	AR1 corrected			AR1 corrected		AR1 corrected	
	PCSE			Fixed effects		Random effects	
	Year effects included			Year effects included		Year effects included	
	(Not reported)			(Not reported)		(Not reported)	

Dependent variable: expenditures per person in poverty

Table 2: DETERMINANTS OF WELFARE GENEROSITY - CONTINUED

		Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Inter-state competition	Threat	-26880.80	-5.13	-7108.40	-1.32	-20448.51	-3.66
	Cover	3.03	3.92	1.06	1.31	2.48	2.87
	Outflow	0.52	0.17	-2.78	-1.72	-2.15	-1.13
Political factors	State Ideology	53.94	3.98			77.40	3.00
	Democrats in Legislature	360.82	1.89	272.36	2.48	342.21	2.50
	Democratic Governor	72.54	1.52	-6.04	-0.22	67.99	1.89
	Children	10383.92	2.82	-14396.80	-2.75	15237.00	3.61
	PCT of AFDC African American	-26.20	-9.09	0.01	0.00	-14.13	-2.68
State capacity	South	-908.29	-4.47			-1309.98	-2.93
	Median Income	-0.004	-0.21	-0.01	-0.63	-0.02	-1.52
	Retail Wages	0.05	0.46	-0.10	-2.03	0.06	0.88
	State Unemployment	-5.41	-0.17	-8.84	-0.80	10.22	0.73
	Federal Share of Payments	-42.19	-5.21	-4.57	-0.60	-26.01	-3.13
	Constant	6810.69	5.28	9251.18	45.30	4733.51	3.58
	Rho (autocorrelation)		0.86		0.88		0.88
	R ² ("within" for fixed effects)		0.87		0.07		0.26
	Observations		480		432		480
	Number of states		48		48		48
Number of years		10		9		10	
		AR1 corrected PCSE		AR1 corrected Fixed effects		AR1 corrected Random effects	

Dependent variable: maximum benefit levels for a family of four

Table 3: DETERMINANTS OF WELFARE GENEROSITY, MAXIMUM BENEFIT LEVELS

1986-1995 only.

The results for the inter-state competition variables are generally similar. The Threat and Cover variables have the expected signs and are highly significant, except for the fixed effects model in which their t-statistics are -1.32 and 1.31 respectively. The Outflow variable is less significant here, approaching conventional significance levels only for the fixed effect specification.

Several political variables appear to matter. State ideology is highly significant, while the

partisan variables are generally significant in the expected direction. Children is positively associated with support for maximum benefits in all but the fixed effect specification where it is negatively associated with benefits. This is hard to explain, although we should note that it is not beyond the pale that levels of children in a state has a different effect than changes, the latter being what a fixed effect model uses. Race has a similar pattern: it matters a lot in the first and third specification, but has a different effect in the fixed effect model (here, it is no effect). The state capacity variables do not matter here, with the exception of federal share which matters for all but the fixed effect specification.

In summary, the predictions of the model are generally borne out in the data. States which face a large “threat” are, all things equal, less generous in their welfare spending. States which have “cover” in the form generous sources of in-migrants can spend more, all things equal. But these generous states also produce a countervailing effect whereby states can seek to push out in-state low income people.

4 Conclusion

This paper opened with a theoretical case for agnosticism about RTB. In short the argument was that individual level or state-neighbor empirical analyses cannot test RTB theory as conventionally understood.

Given those arguments, one option is to change the theory to bring it closer in line with the empirical tests. Tweedie (1994) and Bailey and Rom (2000) do this by allowing their empirical findings to encompass “yardstick” competition. Soss and Schram (1998) shift to a perceptual model in which unfounded fears of welfare seeking migration lead to policy behavior that is in many ways similar to RTB theory.

However, the intellectual core of RTB remains interesting, yet untested. The model presented here characterizes what a test should look like. State level behavior must be the focus of the test. Migration must matter in the test. And, we must account for the interaction between benefit levels in other states and potential inflow.

The model we developed provided specific guidance for testing RTB theory in a manner that incorporates the above issues. We tested this model on panel data from 1986 to 1998. We found robust evidence consistent with the model. That is, states were pressured in the manner predicted. Knowing that such an effect occurs, the next question of course is whether we can do anything about it or whether it is a reasonable cost of allowing for federalistic policy diversity.

Appendix

Calculations State utility is

$$U_s = -\frac{1}{2}(\bar{B}_s - B_s)^2 - \alpha_s \frac{N_s^p}{N_s^e} \quad (11)$$

$$= -\frac{1}{2}(\bar{B}_s - B_s)^2 - \alpha_s \sum_{j=1}^{50} \frac{N_j^p}{N_s^e} \frac{e^{B_s+v_s-c_{js}}}{\sum_{k=1}^{50} e^{B_k+v_k-c_{jk}}} \quad (12)$$

Solve for the reaction function from

$$\frac{\partial U_s}{\partial B_s} = \bar{B}_s - B_s - \alpha_s \sum_{j=1}^{50} \frac{N_j^p}{N_s^e} \frac{e^{B_s+v_s-c_{js}}}{\sum_{k=1}^{50} e^{B_k+v_k-c_{jk}}} \left(1 - \frac{e^{B_s+v_s-c_{js}}}{\sum_{k=1}^{50} e^{B_k+v_k-c_{jk}}}\right) = 0 \quad (13)$$

$$(14)$$

The effect of B_z on B_s is solved by totally differentiating Equation 7 with respect to B_s and B_z and solving for $\frac{\partial B_s}{\partial B_z}$. It is

$$\frac{\partial B_s}{\partial B_z} \propto -\alpha_s \sum_{j=1}^{50} \frac{N_j^p}{N_s^e} \left[\frac{\partial P_{js}}{\partial B_z} (1 - P_{js}) - P_{js} \frac{\partial P_{js}}{\partial B_z} \right] \quad (15)$$

$$\propto -\alpha_s \sum_{j=1}^{50} \frac{N_j^p}{N_s^e} [-P_{js}P_{jz} + P_{js}^2P_{jz} + P_{js}^2P_{jz}] \quad (16)$$

$$\propto \alpha_s \sum_{j=1}^{50} \frac{N_j^p}{N_s^e} P_{js}P_{jz}(1 - 2P_{js}) \quad (17)$$

where the factor of proportionality is $-\frac{\partial^2 B_s}{\partial B_s^2}$.

Equilibrium To show that Equation 6 is a N-player equilibrium, we need to show that the strategy set is a nonempty, convex and compact subset of some Euclidean space R^M and that $u_s(s_1, s_2, \dots, s_S)$ is continuous in (s_1, \dots, s_S) and quasi-concave in s_i (Mas-Colell, Whinston and Green 1995, 253). The first condition is satisfied by virtue of being a choice of dollars on the real line, bounded by 0 and some finite value. To show quasi-concavity, we need to show that the second derivative of state utility is negative. It is

$$\frac{\partial^2 u_s}{\partial B_s^2} = -1 - \alpha_s \sum \frac{N_j^p}{N_s^e} \frac{\partial P_{js}}{\partial B_s} - 2\alpha_s \sum \frac{N_j^p}{N_s^e} \frac{\partial P_{js}}{\partial B_s} \quad (18)$$

$$= -1 - \alpha_s \sum \frac{N_j^p}{N_s^e} P_{js}(1 - P_{js}) + 2\alpha_2 \sum \frac{N_j^p}{N_s^e} P_{js}^2(1 - P_{js}) \quad (19)$$

$$= -1 - \alpha_s \sum \frac{N_j^p}{N_s^e} P_{js}(1 - P_{js})(1 - 2P_{js}). \quad (20)$$

The terms in the sum is positive for all states except $j = s$ because $P_{js} \ll 0.5$ for these states. For $j = s$, the quantity is negative because $P_{ss} \sim 1$. The entire quantity will be positive only if N_s^p dominates all other states.

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