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Parametric Properties of Tax Effort Revenue Sharing

Michael J. Stutzer

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Some Revenue Sharing programs, including the Federal government's General Revenue Sharing program, reward higher tax effort with larger aid payments. A natural, game-theoretic generalization of the standard consumer demand based theory of grants-in-aid is used to examine the impacts such tax effort provisions have on the recipient government's tax effort, spending levels, and welfare. Nonlinear simulation is used to provide rough quantitative estimates of the impacts General Revenue Sharing had in 1972.

The author is an Economist at the Federal Reserve Bank of Minneapolis.

Parametric Properties of Tax Effort Revenue Sharing

The tax effort incentive of General Revenue Sharing, first viewed correctly by Goetz[1], has been analyzed in a game theoretic model by Johnson[2],[3], Fisher[4], and Stutzer[5]. This paper explores the parametric sensitivity of this model, with applications to the 1972 impact a simplified General Revenue Sharing system would have had on state and local tax levels and welfare.

The game theoretic model starts by positing a fixed revenue sharing fund Q, which is distributed to N recipient governments in fractional shares $I_1, \ldots, I_N$. These shares are functions of such factors as the population, income, and tax effort of all the recipient governments. For example, Johnson[6] has shown that the "Senate" three-factor formula of General Revenue Sharing to the states can be represented as:

$$(1) \qquad I_i(T_i; w_1, \ldots, w_n, T_{j\neq i}) = \frac{w_i T_i}{w_i T_i + \sum_{j\neq i} w_j T_j}, \quad i = 1, \ldots, 51$$

where: $w_k = \left(\frac{POP_k}{M_k}\right)^2$, POP_k = population of state k and M_k = personal income of state k.

T_k is state and local tax effort in state k, and

$T_{j\neq i} = (T_1, \ldots, T_{j-1}, T_{j+1}, \ldots, T_N)$.

Ignoring any possible distributional constraints, a simple revenue sharing system is constructed by setting the intergovernmental revenue R_i of recipient government i, i = 1, ..., N, to be:

(2) $R_i = I_i Q$.

Then, the economic theory of intergovernmental grants used by Thurow[7] and Wilde[8],[9] to analyze matching grants is adapted to handle revenue sharing. This model assumes that each recipient government i apportions its residents' income by maximizing a utility $U^i(C_i, G_i)$ where C_i is private spending by its residents and G_i is its level of public spending. It chooses a tax level T_i to do this, thus solving the problem:

$$(3) \qquad \max_{0 \le T_i \le M_i} U^i(C_i, G_i)$$

$$\text{s.t.} \quad C_i = M_i - T_i$$

$$G_i = T_i + I_i(T_i; w_1, \ldots, w_N, T_{j \neq i})Q \ .$$

Here, M_i is personal income left after any sponsoring government taxes used to fund the revenue sharing fund Q is taken out. In choosing T_i, recipient government i treats the tax levels chosen by other recipient governments $T_{j \neq i}$ parametrically. Consistency requires that the optimal T_i^* chosen by recipient i is the level treated parametrically by all other recipients $j \neq i$. In other words, we seek a Nash equilibrium $T_1^*, \ldots, T_N^*$ simultaneously solving (3) for i = 1, ..., N. Upon substituting the constraints in (3) into U^i, and assuming that $\partial^2 I_i / \partial T_i^2 < 0$ (a condition satisfied by (1)), the usual conditions on U^i then imply that a Nash equilibrium $T_1^*, \ldots, T_N^*$ is found by solving:[1]

$$(4) \qquad U^i_{T_i}(M_i - T_i^*, T_i^* + I_i(T_i^*; w_1, \ldots, w_N, T_{j \neq i}^*)Q) = 0 \ , \ i = 1, \ldots, N \ ,$$

where $U^i_{T_i}$ denotes the partial derivative of U^i with respect to T_i.

The simultaneity of system (4) makes it difficult to analyze the sensitivity of the Nash equilibrium $T_1^*, \ldots, T_N^*$ to changes in the revenue sharing parameters $w_1, \ldots, w_N$, Q, and the utility parameters of U^i. Except under very restrictive assumptions,[2] the usual qualitative comparative statics technique of totally differentiating (4) and attempting to sign the resulting derivatives yields no results. Nonlinear simulation is thus resorted to here. Furthermore, this vexing simultaneity is present whether or not sponsoring government taxes to finance the fund Q are levied upon the recipients' residents. This is not the case with matching grants, however, which, in the absence of taxes, are modelled by replacing I_i in (3) with $r_i T_i$, where r_i is the matching rate for recipient i.[3]

A graphical comparison between revenue sharing and an equal utility matching grant for a typical recipient is shown in Figure 1. There, the budget line M - M represents the status quo without any aid distribution. The curve M - M+R(M) represents the revenue sharing budget constraints in (3) with all other recipients' tax levels $T_{j\neq i}$ equal to their Nash equilibrium values $T^*_{j\neq i}$. Its concavity follows from the assumption that $\partial^2 I_i/\partial T_i^2 < 0$. The utility maximizing solution to (3) for the ith recipient is at point RS, with private spending C_i = CRS, taxes T_i = M - CRS, and total recipient public spending $T_i + I_i Q = T_i + R_i$ = GRS. On the same diagram, a matching rate r_i has been computed so that, at the optimal MG, a matching grant of cost R will provide the same utility to this recipient i. Finally, an equal utility "lump sum" (i.e., not dependent on tax effort) grant of EV is depicted.

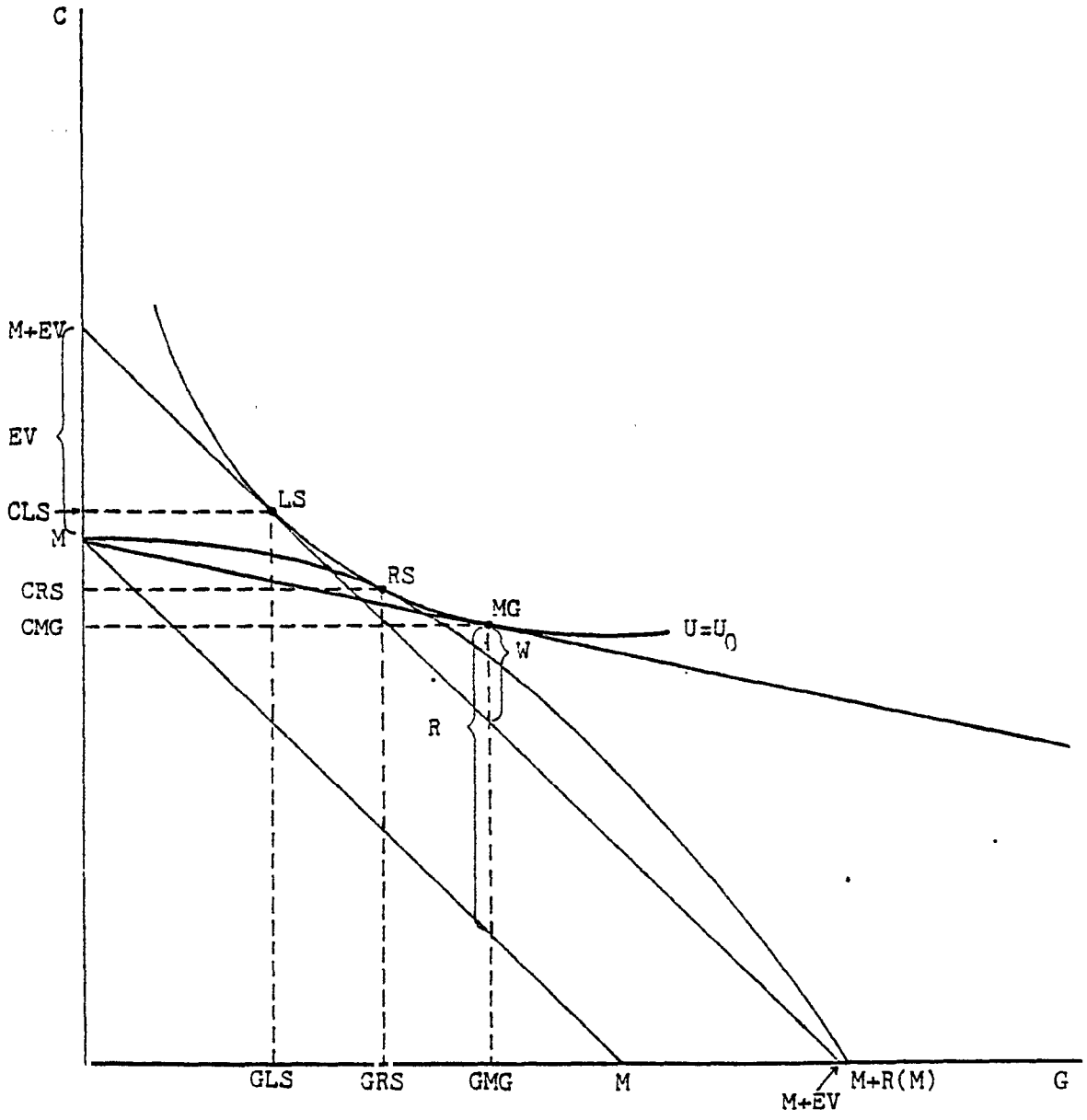

Figure 1: Equal Utility Programs

In this diagram, at least, it is true that matching grants stimulate more public spending and taxes than does an equal utility producing amount of shared revenue, and the latter is more stimulative than equal utility lump sum aid. One might also conjecture, as Johnson[6] showed graphically, that this same ordering would hold for equal cost, rather than equal utility, programs. Stutzer[5] has rigorously proven both of the above assertions when both C and G are normal goods (i.e., have positive income elasticities) and $\partial^2 I_i / \partial T_i^2 < 0$, as it is in (1).

Also in Figure 1, the distance W = R - EV measures the amount of aid the recipient government would be willing to forego in order to obtain a lump sum grant rather than an equal utility matching grant. As such, it represents a deadweight loss, or opportunity cost, of matching grants. The sponsoring government ostensibly believes that this loss is offset by some form of benefit attributable to higher recipient spending.[4] A smaller, but positive, deadweight loss occurs for tax effort revenue sharing. In the simulations presented below, this deadweight loss is summed across recipients, producing a number which is the total amount recipients would be willing to forego if tax effort revenue sharing were replaced by a system of equal utility lump sum grants. Marginal deadweight loss formulae with respect to revenue sharing parameters are presented in Stutzer[5]. Here, nonlinear simulation is used to obtain numerical estimates of the parametric sensitivity of this loss.

Simulation Procedures

The properties a "Senate" type three-factor formula (1) would

have had in 1972 are now examined. We assume each state $i = 1, \ldots, 51$[5] in 1972 acted as if it maximized a CES utility function

$$(5) \qquad U^i(C_i, G_i) = (\alpha_i C_i^{\rho} + (1-\alpha_i)G_i^{\rho})^{1/\rho}$$

$$\text{s.t.} \quad C_i + G_i = M_i$$

where α_i and ρ are parameters of the utility. As is well known[11], the elasticity of substitution $\sigma = \frac{1}{1+\rho}$. Assuming that all states have the same elasticity of substitution σ (i.e., same ρ) the α_i are identified by solving the first-order condition of (5) for α_i, obtaining:

$$(6) \qquad \alpha_i = \frac{G_i^{\rho-1}}{G_i^{\rho-1} + C_i^{\rho-1}} \; ; \; \rho = \frac{1-\sigma}{\sigma}$$

where C_i is 1972 disposable income after Federal taxes in state i and G_i is 1972 total state and local taxes in state i.[6]

We hypothesize that the advent of General Revenue Sharing was not anticipated prior to budgeting in 1972. If it had been anticipated, state i would have solved:

$$(7) \qquad \max U^i(C_i, G_i) \;, \quad i = 1, \ldots, 51$$

$$\text{s.t.} \quad C_i = M_i - T_i$$

$$G_i = T_i + \frac{w_i T_i}{w_i T_i + \sum_{j \neq i} w_j T_j} Q$$

with the same CES utility and the 1972 "Senate" formula weights $w_1, \ldots, w_{51}$ developed by Johnson[6] and $Q = 5.3$ billion dollars. The differences between the Nash equilibrium $T_1^*, \ldots, T_{51}^*$ obtained by solving (7) and the actual 1972 tax data provides an estimate of the

tax effort incentive of General Revenue Sharing. A range of estimates is provided by varying the common elasticity of substitution σ, thus providing upper and lower bounds to the likely impacts.[7]

In each case, the deadweight loss estimates are also computed numerically, by calculating the equivalent variation for each recipient, summing and subtracting from the revenue sharing fund size Q to obtain an estimate of the total deadweight loss, denoted WRS, dependent on σ, $w_1, \ldots, w_{51}$ and Q.

The following notation is used in the printouts presented below. Unless otherwise noted, vectors have 51 components, i = 1, ..., 51.

ALPHA(i): the distribution parameter of the ith recipient's utility function,

C(i): the level of consumption (private spending) in recipient i in the absence of revenue sharing,

FT(i): Federal income taxes paid by taxpayers in recipient i,

FISC(i): the net fiscal gain (or loss) of recipient i resulting from revenue sharing after its contribution to the fund is subtracted from its revenue sharing allocation,

GRS(i): the level of total recipient i spending (recipient taxes plus revenue sharing) in the presence of revenue sharing,

IPRIMEQ(i): $\partial I_i/\partial T_i \cdot Q$ in the Nash equilibrium; it serves as a measure of the tax effort incentive effect,

M(i): personal disposable income of the taxpayers in

recipient i, net of their Federal tax payments,

RS(i): the revenue sharing allocation to recipient i,

S(i): the share of total Federal income tax collections paid by recipient i,

T(i): the level of recipient i taxes in the absence of revenue sharing,

TRS(i): the level of recipient i taxes in the presence of revenue sharing,

WRS(i): the deadweight loss recipient i suffers due to revenue sharing, i.e., WRS(i) = RS(i) - EV(i),

W(i): the weight recipient i has, w_i, in the 1972 "Senate" FGRS formula, as computed by Johnson[6].

Initialization

Table 1 below shows the 1972 data used to calibrate the model, and the vector of distribution parameters α_i produced by the calibration, when the elasticity of substitution $\sigma = 1$, i.e., when all recipients have homogeneous Cobb-Douglas utilities. All dollar variables are in units of one million dollars.

The Computation of the Nash Equilibrium

The first-order conditions form 51 equations in 51 unknowns, $T_1, \ldots, T_{51}$. To solve them, a Newton-like method for solving nonlinear equation systems was tried, and rejected after countless attempts failed to improve its performance. Instead, a tatônnement-like method was used. It consisted of iterating the implicit reaction functions of the separate recipients, $T_i^{t+1} = f_i^t(T_j;\ j \neq i)$; $i = 1, \ldots, 51$ until a

vector $T_i^{t+1} = T_i^t$, for all $i = 1, \ldots, 51$ was found. Of course, this vector then satisfies all the reaction functions simultaneously, and so is a Nash equilibrium. While it may sound like a crude procedure, it worked excellently. Nash equilibria were computed quickly, inexpensively, and with great precision.

Results for Positive Issues

The Nash equilibria for different values of the elasticity of substitution σ are shown in Table 2 below. All dollar variables are in units of one million dollars. We see in Table 2 that when the elasticity of substitution $\sigma \leq 1$, all the recipient governments reduce taxes, permitting increased aggregate private consumption in an amount equal to the aggregate tax reduction. When σ is somewhat greater than one, the reverse happens. Revenue sharing stimulates higher recipient taxes and lower private consumption.

Regardless of the impact on recipient tax levels, the simulation shows revenue sharing does lead to higher recipient spending (taxes plus revenue sharing), as proven earlier. This is shown in Table 3 below.

The comparative statics of the Nash equilibrium were explored by changing the fund size Q or a weight w_i, and then recomputing the Nash equilibrium. In Table 4 below, the impact of a revenue sharing fund twice the size of the actual (i.e., 10.6 billion) is contrasted to the actual fund's impact. When $\sigma = .67$, a doubling of Q reduced the tax levels of all recipients. When $\sigma = 2$, however, the opposite happens. We see that a doubling of Q increases the tax level of each recipient in our example.

In Table 5, the actual impacts on recipient tax levels are contrasted with what would have happened had Minnesota's weight w_{24} been doubled. Contrasts between the actual impacts and what would have happened had California's weight been doubled are also shown. When $\sigma = .67$, we see that a state whose own weight is increased will decrease its own tax level, while all other states will increase their respective tax levels. Also, when $\sigma = 2$, the opposite behavior occurs.

Revenue sharing designers often concentrate their analytical efforts on estimating the distribution of shared revenue. In Table 6 below, the predicted distribution for various values of σ is shown. The distribution's dependence on σ can be best explained by examining the distribution of the marginal incentive effect $\partial I_i/\partial T_i \cdot Q$, denoted IPRIMEQ.

Jointly examining Tables 6 and 7, we see that states with high marginal incentive effects, such as Alabama, Arkansas, Mississippi, and South Carolina, gain in shared revenue had σ attained higher values. Those with low marginal incentive effects, such as Connecticut, Illinois, California and New Jersey, lose when σ increases. The reason for this is that states with high marginal incentives have a greater propensity to increase taxes in order to obtain more shared revenue than those with low marginal incentives. Table 2 demonstrates that the effect is then exacerbated by larger elasticities of substitution. The reader may have also noticed that the marginal incentive effect for each state declines when σ increases. This is due to the concavity of the indices I_i in T_i, for as σ increases T_i increases, and $\partial I_i/\partial T_i$ then declines, because $\partial^2 I_i/\partial T_i^2 < 0$ dominates any positive changes in $\partial I_i/\partial T_i$ caused by increases in $T_{j\neq i}$, $\partial^2 I_i/\partial T_i \partial T_j > 0$.

The comparative statics of the distribution of shared revenue with respect to changes in formula parameters are illustrated in Tables 8 and 9 below. Table 8 shows the impacts of a doubling of the fund size Q from 5.3 billion to 10.6 billion. It appears that the aid to each state is also roughly doubled, give or take a few million dollars. Aid to states with high marginal incentive effects is more than doubled when σ exceeds one by enough, because these states raise taxes relatively more than do other states in this event. When σ is sufficiently less than one, though, aid to these states is less than doubled. This is because these states cut taxes relatively more than other states do when σ is less than one, a claim that is supported in Table 2. The change in the distribution of shared revenue when California's weight w(5) is doubled is shown in Table 9. California's aid increased by 80 percent when $\sigma = .67$ and increased 85 percent when $\sigma = 2$. All other states' aid levels fell, regardless of the elasticity of substitution. Then, when $\sigma < 1$, even though all states raise taxes in response to California's weight increase, they still lose shared revenue to California. Also, just to show that these results have nothing to do with California per se, a simulation of the impacts of a doubling of Minnesota's weight w(24) is summarized in Table 10. The results there corroborate the above results.

Results for Normative Issues

The deadweight loss index WRS was computed numerically by summing WRS(i), which is the deadweight loss for state i. The detailed results are shown in Table 11. As one would expect, the total deadweight loss increases as the elasticity of substitution does. Regardless of the

elasticity of substitution, the deadweight loss is small as a fraction of the fund size Q. This fraction ranges from 1.0 percent of Q when $\sigma = .4$, to 8.2 percent of Q when $\sigma = 4$. This is not surprising, for Table 7 shows that the marginal incentive effects of GRS are fairly small, never exceeding .14 for any state.

The comparative statics of the deadweight loss with respect to changes in the fund size Q are shown in Table 12. A doubling of the fund size Q produced an almost fourfold increase in the deadweight loss when $\sigma = .67$, and a 366 percent increase when $\sigma = 2$. Thus, it appears that deadweight loss is a convex, increasing function of Q nearby the actual fund size Q = 5300.

The comparative statics of the deadweight loss with respect to changes in weights w_i are shown in Tables 13 and 14. Table 13 shows the results for a doubling of California's weight w(5). California's deadweight loss increases substantially, but the deadweight loss of all other states declines. This is not surprising, because doubling California's weight increases its own marginal incentive effect substantially, from $\partial I_5/\partial T_5 \cdot Q = .0390$ to .0649 (when $\sigma = .67$), because $\partial^2 I_i/\partial I_i \partial w_i > 0$. All other states' marginal incentive effects $\partial I_i/\partial T_j \cdot Q$ are lowered, though, because $\partial^2 I_i/\partial T_j \partial w_i < 0$. Of course, this phenomenon is also illustrated in Table 14, which shows the impact of a doubling of Mississippi's weight, w(25). One interesting difference between Table 13 and Table 14 is that doubling California's weight lowered the total deadweight loss WRS, while doubling Mississippi's weight increased it. This is because California has a relatively small marginal incentive effect to begin with, so that increasing its weight causes a

relatively small change in its tax level compared to the large number of other states with higher weights. Because of this, the sum of the declines in the other states' deadweight losses outweighs the increase in California's deadweight loss. The opposite is true of an increase in Mississippi's weight, because Mississippi has the largest marginal incentive effect. By this reasoning, a doubling of Minnesota's weight w(24), a state whose marginal incentive effect is about average (.05 when $\sigma = .67$), should have little effect on WRS. A glance at Table 15 shows that this is indeed the case. The deadweight loss increases, but only by a tiny amount.

Do a Majority of States Benefit from Revenue Sharing?

Due to equal representation of states in the U.S. Senate, one would not expect a revenue sharing system to persist unless it helps more states than it hurts. In this section, simulation is used to discover whether or not a majority of states do benefit from revenue sharing.

In accomplishing this, one must examine the utility a state receives from revenue sharing, rather than the amount of shared revenue it receives. This is because it is possible that a state could be a net fiscal gainer, i.e., they contribute less to the fund Q than they receive from tax effort revenue sharing, and still prefer the status quo, due to the deadweight loss the state incurs under revenue sharing.

To figure this, one must also compute the size of the contribution each state's residents make to the fund Q. This was done by imputing a contribution from a state proportional to its taxpayers' share of total Federal income tax liabilities. With S_i denoting that share for the ith

state, and CT_i its contribution, the contribution from state i is:

(8) $\quad CT_i = S_i Q$

so that after tax income $(1 - t_i)M_i$ used in the revenue sharing simulation is:

(9) $\quad (1 - t_i)M_i = M_i - t_i M_i = M_i - S_i Q$.

Thus, $t_i = S_i Q / M_i$.

In Table 16, the net fiscal and utility changes between revenue sharing and the status quo are shown for various elasticities of substitution σ. Minus signs indicate losses in either fiscal terms (FISC) or utility terms (DIFFU). When $\sigma = .67$, by counting the number of plus signed states in the DIFFU column, we see that only 22 states were better off under revenue sharing. Counting the number of plus signed states in the FISC column, however, there are 29 states which receive more from the revenue sharing fund than they contribute. Thus, when $\sigma = .67$, seven states (Arizona, Georgia, Kansas, Oregon, Rhode Island, Texas, and Wyoming) were net fiscal gainers whose deadweight losses were severe enough to make them worse off. If $\sigma = 2$, the results are only slightly different. In that case, there are still 29 net fiscal gainers, but there are now 24 states which are better off. Georgia and Wyoming, which were worse off if $\sigma = .67$, are better off if $\sigma = 2$. If $\sigma = 4$, an additional state (Arizona) is better off, bringing the total number of states better off to 25.

Senators and other public officials have traditionally paid more attention to the distributive (i.e., fiscal) aspects of intergovernmental

aid programs than to their efficiency (i.e., deadweight loss) aspects. This may explain how a revenue sharing system which results in a majority of net fiscal gainers, but a minority of net utility gainers, could persist. A more likely explanation, however, lies in the benefits some officials attach to higher levels of state and local taxation caused by the tax effort factor.

Table 1: Data for Initialization

STATE	M	T	C	ALPHA	W
*****	**********	**********	**********	*****	********
AL	9824.9250	959.2000	8865.7250	.9024	151.4890
AK	1361.1600	146.0000	1215.1600	.8927	58.6420
AZ	6548.2610	855.1000	5693.1610	.8694	95.0810
AR	5520.6380	522.9000	4997.7380	.9053	167.2710
CA	85365.1920	12199.0000	73166.1920	.8571	62.2780
CO	8509.1260	1021.6000	7487.5260	.8799	84.5920
CT	13520.5280	1642.8000	11877.7280	.8785	52.9090
DE	2300.4170	278.7000	2021.7170	.8788	70.7010
DC	4020.8880	434.2000	3586.6880	.8920	48.1910
FL	24650.6780	2637.8000	22012.8780	.8930	89.7640
GA	15225.4440	1548.7000	13676.7440	.8983	113.6140
HI	3311.6870	484.2000	2827.4870	.8538	65.0590
ID	2292.0450	291.9000	2000.1450	.8726	117.3850
IL	47669.9340	5749.0000	41920.9340	.8794	63.5690
IN	18984.4610	2118.6000	16865.8610	.8884	86.1960
IA	10145.4050	1285.6000	8859.8050	.8733	94.1970
KS	8652.1230	940.1000	7712.0230	.8913	89.2580
KY	9875.1160	1038.1000	8837.0160	.8949	134.2790
LA	10944.0300	1396.5000	9547.5300	.8724	140.5320
ME	3134.9610	412.3000	2722.6610	.8685	120.7210
MD	16069.8520	2032.7000	14037.1520	.8735	66.7770
MA	23560.3510	3158.5000	20401.8510	.8659	67.2840
MI	35750.1310	4420.6000	31329.5310	.8763	73.4290
MN	14196.9380	1931.6000	12265.3380	.8639	86.2810
MS	5837.0860	701.6000	5135.4860	.8798	201.7400
MO	16737.9480	1712.5000	15025.4480	.8977	91.6290
MT	2369.9140	299.3000	2070.6140	.8737	110.0650
NE	5570.2550	652.8000	4917.4550	.8828	95.6460
NV	2179.2470	293.8000	1885.4470	.8652	61.8130
NH	2516.9150	285.9000	2231.0150	.8864	93.4470
NJ	31208.5160	3639.5000	27569.0160	.8834	59.1960
NM	3155.3290	402.9000	2752.4290	.8723	131.1830
NY	82375.6510	12664.2000	69711.4510	.8463	58.0930
NC	16075.7030	1730.5000	14345.2030	.8924	125.9990
ND	2074.1010	262.2000	1811.9010	.8736	135.4590
OH	40203.5930	3921.8000	36281.7930	.9025	78.8390
OK	8334.4810	843.0000	7491.4810	.8989	112.4830
OR	7638.3830	898.0000	6740.3830	.8824	85.8550
PA	44377.3460	5278.7000	39098.6460	.8810	83.1820
RI	3587.8630	447.3000	3140.5630	.8753	82.1140
SC	7561.6990	781.6000	6780.0990	.8966	147.9950
SD	2168.0800	291.7000	1876.3800	.8655	132.3650
TN	11850.9130	1204.8000	10646.1130	.8983	131.5970
TX	38371.3490	3926.9000	34444.4490	.8977	101.5350
UT	3438.7880	425.9000	3012.8880	.8761	116.0510
VT	1512.0820	226.8000	1285.2820	.8500	104.3540
VA	16414.8910	1755.0000	14659.8910	.8931	92.3060
WA	12838.4190	1679.3000	11159.1190	.8692	74.3990
WV	5218.5730	585.1000	4633.4730	.8879	141.2760
WI	15844.9810	2394.2000	13450.7810	.8489	88.8510
WY	1195.2040	164.2000	1031.0040	.8626	97.7150

Table 2: 1972 Nash Equilibria for Various σ

	Without Revenue Sharing	With Revenue Sharing				
		σ = .4	σ = .67	σ = 1	σ = 2	σ = 4
STATE	T	TRS	TRS	TRS	TRS	TRS
*****	**********	**********	**********	**********	**********	**********
AL	959.2000	907.3016	929.7761	957.6881	1040.3067	1201.1563
AK	146.0000	142.8664	144.2733	145.9945	150.9322	159.9709
AZ	855.1000	826.4430	839.0843	854.6271	899.6848	983.8688
AR	522.9000	491.9405	505.4841	522.3555	572.6089	671.6658
CA	12199.0000	11915.4714	12024.3449	12157.5147	12539.4668	13238.2934
CO	1021.6000	990.6118	1004.2761	1021.0555	1069.5732	1159.7770
CT	1642.8000	1611.1871	1625.1632	1642.2386	1691.0969	1780.0653
DE	278.7000	271.6335	274.7962	278.6715	289.8264	310.3811
DC	434.2000	426.4993	429.9515	434.1669	446.2153	468.1081
FL	2637.8000	2550.8464	2588.0005	2633.6697	2765.9977	3013.0756
GA	1548.7000	1484.7990	1512.3890	1546.4401	1645.9344	1834.8028
HI	484.2000	473.1760	478.1023	484.1289	501.4189	533.0646
ID	291.9000	279.9543	285.2641	291.8169	310.9584	347.2588
IL	5749.0000	5613.5895	5670.0492	5739.1456	5937.5478	6301.3811
IN	2118.6000	2052.0420	2080.8099	2116.1493	2218.4163	2408.8756
IA	1285.6000	1242.5758	1261.4012	1284.5457	1351.6315	1476.9454
KS	940.1000	909.7098	923.1090	939.5816	987.3260	1076.5230
KY	1038.1000	988.3131	1009.9345	1036.7051	1115.4440	1266.8377
LA	1396.5000	1327.9856	1357.4066	1393.8162	1500.7802	1705.8380
ME	412.3000	395.0330	402.6828	412.1258	439.7244	492.1101
MD	2032.7000	1983.7465	2005.1489	2031.3513	2106.6444	2244.9100
MA	3158.5000	3082.0415	3114.9463	3155.2247	3270.9294	3483.2667
MI	4420.6000	4301.7355	4351.6880	4412.9025	4589.1593	4914.1477
MN	1931.6000	1872.5564	1898.1722	1929.6149	2020.4530	2189.0252
MS	701.6000	653.4113	674.2299	700.2439	778.1922	933.3634
MO	1712.5000	1655.0080	1679.9728	1710.6779	1799.7603	1966.5177
MT	299.3000	287.7627	292.8954	299.2227	317.6644	352.4874
NE	652.8000	630.5056	640.3748	652.5169	687.7638	753.8047
NV	293.8000	287.3588	290.2454	293.7760	303.9010	322.4189
NH	285.9000	276.3403	280.6036	285.8479	301.0673	329.5693
NJ	3639.5000	3560.1210	3594.2741	3636.0477	3755.8564	3975.0536
NM	402.9000	384.5739	392.6800	402.7040	432.1079	488.3211
NY	12664.2000	12392.9400	12497.6645	12625.6704	12992.2765	13661.0400
NC	1730.5000	1652.0364	1685.5983	1727.0809	1848.6544	2080.7564
ND	262.2000	249.9096	255.3628	262.1116	281.9408	319.9719
OH	3921.8000	3805.7729	3854.6473	3914.6341	4087.9221	4409.5817
OK	843.0000	806.7442	823.7815	842.3424	896.5900	999.6239
OR	898.0000	870.3166	882.5451	897.5658	941.0252	1021.9263
PA	5278.7000	5116.3971	5182.9581	5264.6397	5500.5113	5937.9458
RI	447.3000	434.2338	440.0560	447.2020	467.8443	506.1453
SC	781.6000	740.5589	758.4462	780.6456	846.2577	973.6146
SD	291.7000	278.4351	284.3199	291.5963	312.9345	353.6993
TN	1204.8000	1147.8042	1172.4637	1202.9857	1292.6991	1464.9841
TX	3926.9000	3778.7292	3839.9099	3915.2300	4134.1808	4545.6358
UT	425.9000	406.5702	416.2498	425.7262	453.4028	505.8743
VT	226.8000	218.7118	222.3206	226.7610	239.6529	263.8015
VA	1755.0000	1695.9357	1721.5577	1753.0688	1844.4759	2015.5238
WA	1679.3000	1634.6671	1654.2134	1678.1686	1747.1536	1874.3731
WV	585.1000	556.0240	568.7915	584.6152	631.2504	721.2548
WI	2394.2000	2319.9244	2351.8492	2391.0280	2504.1628	2713.8837
WY	164.2000	158.6242	161.1165	164.1817	173.0727	189.7006

Table 3: Recipient Spending for Various σ

STATE	Without Revenue Sharing	With Revenue Sharing				
		σ = .4	σ = .67	σ = 1	σ = 2	σ = 4
*****	T	GRS	GRS	GRS	GRS	GRS
AL	959.2000	1003.9911	1027.4587	1056.5805	1142.6366	1309.6381
AK	146.0000	148.7600	150.1408	151.8303	156.6793	165.5636
AZ	855.1000	881.7210	894.4138	910.0166	953.2297	1039.6397
AR	522.9000	549.8273	564.1230	581.9141	634.8016	738.6466
CA	12199.0000	12437.4974	12543.6872	12673.6185	13046.5438	13729.6152
CO	1021.6000	1049.5611	1063.1931	1079.9313	1128.3221	1218.2666
CT	1642.8000	1671.1555	1684.7959	1701.4661	1749.1945	1836.2143
DE	276.7000	285.1435	288.2701	292.1015	303.1316	323.4038
DC	434.2000	440.9581	444.3210	448.4288	460.1781	481.5571
FL	2637.8000	2711.9231	2749.1111	2794.8163	2927.2159	3174.3214
GA	1548.7000	1603.4703	1631.5552	1666.2030	1767.3584	1959.0817
HI	484.2000	494.8319	499.6741	505.5986	522.6010	553.7405
ID	291.9000	303.0721	308.4870	315.1665	334.6598	371.5609
IL	5749.0000	5864.6233	5920.0203	5987.8309	6182.5305	6540.1937
IN	2118.6000	2176.4704	2205.1975	2240.4837	2342.5787	2532.6634
IA	1285.6000	1324.9149	1343.8051	1367.0249	1434.3029	1559.8820
KS	940.1000	966.8309	980.2513	996.7478	1044.5487	1133.8088
KY	1036.1000	1061.6705	1103.9846	1131.5952	1212.6999	1368.2534
LA	1396.5000	1459.2705	1489.7015	1527.3338	1637.7272	1848.7567
ME	412.3000	428.5806	436.3963	446.0391	474.1930	527.5279
MD	2032.7000	2076.9344	2098.0095	2123.8146	2197.9880	2334.2820
MA	3158.5000	3227.9218	3260.2980	3299.9351	3413.8330	3622.9918
MI	4420.6000	4523.9424	4573.2947	4633.7790	4807.9661	5129.2732
MN	1931.6000	1986.2135	2011.7539	2043.1012	2133.6472	2301.6262
MS	701.6000	746.1423	768.5616	796.5378	880.1309	1043.6218
MO	1712.5000	1761.6871	1786.7290	1817.5241	1906.8401	2073.9431
MT	299.3000	310.0435	315.2527	321.6719	340.3672	375.6170
NE	652.8000	672.9267	682.8523	695.0587	730.4774	796.7682
NV	293.2000	299.8542	302.6878	306.1541	316.0985	334.3006
NH	285.9000	294.5062	298.7887	304.0557	319.3352	347.9299
NJ	3639.5000	3708.3740	3741.8315	3782.7643	3900.2212	4115.3380
NM	402.9000	420.0637	428.4051	438.7138	468.9149	520.5119
NY	12664.2000	12899.3991	13001.1771	13125.6310	13482.3591	14134.1735
NC	1730.5000	1798.4674	1832.8902	1875.4137	1999.9000	2237.0584
ND	262.2000	273.7238	279.3524	286.3136	306.7394	345.6121
OH	3921.8000	4016.6447	4065.4050	4125.0070	4297.1906	4616.8413
OK	843.0000	872.7389	888.0438	906.9276	962.0749	1066.6566
OR	898.0000	922.8807	935.0936	950.0936	993.4850	1074.2334
PA	5278.7000	5415.7889	5481.9536	5563.1475	5797.6044	6232.4165
RI	447.3000	459.3173	465.1161	472.2330	492.7890	530.9235
SC	781.6000	817.0586	836.2910	859.3971	927.5800	1059.5180
SD	291.7000	304.3616	310.4198	317.9058	339.6305	381.6194
TN	1204.8000	1254.0618	1279.4684	1310.8963	1403.1588	1579.9199
TX	3920.9000	4046.0323	4110.3023	4186.2059	4406.7428	4820.7966
UT	425.9000	441.9253	449.7510	459.4034	487.5088	540.8742
VT	226.8000	234.7674	238.4102	242.8911	255.8916	280.2136
VA	1755.0000	1806.0006	1831.7646	1863.3716	1955.0270	2126.4398
WA	1679.3000	1720.2215	1739.5659	1763.2746	1831.5567	1957.5111
WV	585.1000	611.2837	624.5202	640.9136	689.1573	782.0030
WI	2394.2000	2464.9292	2496.7696	2535.8400	2648.6352	2857.0404
WY	164.2000	169.5280	172.0349	175.1174	184.0539	200.7517

Table 4: Comparative Impacts When Q is Doubled to 10.6 Billion

	Without Revenue Sharing	With Revenue Sharing $\sigma = .67$		With Revenue Sharing $\sigma = 2$	
		Q = 5,300	Q = 10,600	Q = 5,300	Q = 10,600
STATE	T	TRS	TRS	TRS	TRS
*****	**********	**********	**********	**********	**********
AL	959.2000	929.7761	902.9183	1040.3067	1113.4809
AK	146.0000	144.2733	142.5703	150.9322	155.4360
AZ	855.1000	839.0843	823.7515	899.6848	940.0961
AR	522.9000	505.4841	489.7487	572.6089	617.4104
CA	12199.0000	12024.3449	11853.5474	12539.4668	12852.6454
CO	1021.6000	1004.2761	987.5587	1069.5732	1113.1826
CT	1642.8000	1625.1632	1607.6886	1691.0969	1735.2272
DE	278.7000	274.7962	270.9825	289.8264	299.9585
DC	434.2000	429.9515	425.7246	446.2153	457.2035
FL	2637.8000	2588.0005	2540.2929	2765.9977	2882.6606
GA	1548.7000	1512.3890	1478.2556	1645.9344	1734.1052
HI	484.2000	478.1023	472.1143	501.4189	517.0830
ID	291.9000	285.2641	279.0157	310.9584	328.1745
IL	5749.0000	5670.0492	5592.7368	5937.5478	6110.0302
IN	2118.6000	2080.8099	2044.4587	2218.4163	2309.2441
IA	1285.6000	1261.4012	1238.2384	1351.6315	1411.5241
KS	940.1000	923.1090	906.7817	987.3260	1030.2745
KY	1038.1000	1009.9345	983.8624	1115.4440	1185.3249
LA	1396.5000	1357.4066	1321.4019	1500.7802	1594.5486
ME	412.3000	402.6828	393.6518	439.7244	464.4686
MD	2032.7000	2005.1489	1978.1780	2106.6444	2174.0540
MA	3158.5000	3114.9463	3072.3527	3270.9294	3373.4275
MI	4420.6000	4351.6880	4284.7647	4589.1593	4742.9245
MN	1931.6000	1898.1722	1865.9792	2020.4530	2101.1052
MS	701.6000	674.2299	650.1179	778.1922	846.4406
MO	1712.5000	1679.9728	1648.8249	1799.7603	1879.1570
MT	299.3000	292.8954	286.8309	317.6644	334.2758
NE	652.8000	640.3748	628.4874	687.7638	719.4982
NV	293.8000	290.2454	286.7462	303.9010	313.1022
NH	285.9000	280.6036	275.5249	301.0673	314.8431
NJ	3639.5000	3594.2741	3549.7581	3755.8564	3862.2355
NM	402.9000	392.6800	383.1619	432.1079	458.4300
NY	12664.2000	12497.6645	12334.0374	12992.2765	13294.1375
NC	1730.5000	1685.5983	1643.8394	1848.6544	1955.4823
ND	262.2000	255.3628	249.0130	281.9408	299.7239
OH	3921.8000	3854.6473	3789.7975	4087.9221	4239.5939
OK	843.0000	823.7815	805.6659	896.5900	945.2031
OR	898.0000	882.5451	867.6457	941.0252	980.1370
PA	5278.7000	5182.9581	5090.9406	5500.5113	5702.7257
RI	447.3000	440.0560	433.0448	467.8443	486.5147
SC	781.6000	758.4462	737.2273	846.2577	904.5805
SD	291.7000	284.3199	277.4475	312.9345	332.0479
TN	1204.8000	1172.4637	1142.4893	1292.6991	1372.1833
TX	3926.9000	3839.9099	3757.6714	4134.1808	4322.6239
UT	425.9000	416.2498	407.1588	453.4028	478.2639
VT	226.8000	222.3206	218.0547	239.6529	251.2548
VA	1755.0000	1721.5577	1689.5479	1844.4759	1925.8419
WA	1679.3000	1654.2134	1629.8048	1747.1536	1808.8973
WV	585.1000	568.7915	553.7456	631.2504	672.8711
WI	2394.2000	2351.8492	2311.1532	2504.1628	2603.8066
WY	164.2000	161.1165	158.1662	173.0727	181.1036

Table 5: Impact of Changed Weights on Recipient Taxes

	With Actual Weights		With Revenue Sharing: CA W(5) doubled		With Revenue Sharing: MN W(24) doubled	
	σ = .67	σ = 2	σ = .67	σ = 2	σ = .67	σ = 2
STATE	TRS	TRS	TRS	TRS	TRS	TRS
*****	**********	**********	**********	**********	**********	**********
AL	929.7761	1040.3067	932.2984	1033.6283	930.3659	1038.6435
AK	144.2733	150.9322	144.4224	150.5084	144.3082	150.8263
AZ	839.0843	899.6848	840.4704	895.9377	839.4087	896.7501
AR	505.4841	572.6089	506.9514	568.4529	505.8268	571.5727
CA	12024.3449	12539.4668	11848.8354	12696.3283	12028.4085	12533.4657
CO	1004.2761	1069.5732	1005.7829	1065.5406	1004.6289	1068.5673
CT	1625.1632	1691.0969	1626.7165	1687.0261	1625.5272	1690.0813
DE	274.7962	289.8264	275.1327	288.8743	274.8749	289.5886
DC	429.9515	446.2153	430.3209	445.1853	430.0379	445.9580
FL	2588.0005	2765.9977	2592.4531	2755.6550	2589.0448	2763.4259
GA	1512.3890	1645.9344	1513.5670	1637.9708	1513.1333	1643.9520
HI	478.1023	501.4189	478.6305	499.9504	478.2259	501.0522
ID	285.2641	310.9584	285.8280	309.3400	285.3959	310.5544
IL	5670.0492	5937.5478	5677.3577	5922.8680	5671.7675	5933.9076
IN	2080.8099	2218.4163	2084.1588	2210.2371	2081.5949	2216.3800
IA	1261.4012	1351.6315	1263.5134	1346.1380	1261.8956	1350.2622
KS	923.1090	987.3260	924.5830	983.3531	923.4540	986.3350
KY	1009.9345	1115.4440	1012.3628	1109.0582	1010.5026	1113.8534
LA	1357.4066	1500.7802	1360.8030	1492.3284	1358.2029	1498.6779
ME	402.6823	439.7244	403.5017	437.4061	402.8742	439.1459
MD	2005.1489	2106.6444	2007.5871	2100.4989	2005.7204	2105.1128
MA	3114.9463	3270.9294	3118.8601	3261.7804	3115.8646	3268.6529
MI	4351.6880	4589.1593	4357.9947	4575.8903	4353.1696	4585.8661
MN	1898.1722	2020.4530	1901.1265	2013.1481	1899.0824	2009.4675
MS	674.2299	778.1922	675.5328	771.9222	674.7677	776.8514
MO	1679.9728	1799.7603	1682.8340	1792.5601	1680.6432	1797.9668
MT	292.8954	317.6644	293.4409	316.1034	293.0229	317.2747
NE	640.3748	687.7638	641.4454	684.8089	640.6253	687.0264
NV	290.2454	303.9010	290.5527	303.0361	290.3173	303.6850
NH	280.6036	301.0673	281.0568	299.7734	280.7095	300.7442
NJ	3594.2741	3755.8564	3598.3529	3746.3808	3595.2314	3753.4985
NM	392.6800	432.1079	393.5474	429.6425	392.8827	431.4928
NY	12497.6645	12992.2765	12514.0586	12969.9779	12501.5343	12989.8105
NC	1685.5983	1848.6544	1689.5409	1839.1105	1686.5218	1846.2811
ND	255.3628	281.9408	255.9400	280.2674	255.4976	281.5231
OH	3854.6473	4087.9221	3860.7589	4074.7818	3856.0825	4084.6598
OK	823.7815	896.5900	825.4373	892.1013	824.1688	895.4707
OR	882.5451	941.0252	883.8659	937.3998	882.8589	940.1207
PA	5182.9581	5500.5113	5191.8576	5483.7053	5185.0507	5496.3532
RI	440.0560	467.8443	440.8800	466.0955	440.2020	467.4076
SC	758.4462	846.2577	760.4226	840.8897	758.9083	844.9200
SD	284.3199	312.9345	284.9443	311.1366	284.4658	312.4858
TN	1172.4637	1292.6991	1175.2645	1285.4774	1173.1192	1290.9009
TX	3839.9099	4134.1808	3847.8753	4118.3009	3841.7809	4130.2484
UT	416.2498	453.4028	417.0728	451.0756	416.4422	452.8221
VT	222.3206	239.6529	222.7023	238.5589	222.4098	239.3798
VA	1721.5577	1844.4759	1724.5018	1837.1052	1722.2475	1842.6402
WA	1654.2134	1747.1536	1654.4220	1741.5037	1654.7309	1745.7453
WV	568.7915	631.2504	570.1763	627.3844	569.1156	630.2863
WI	2351.8492	2504.1628	2355.6234	2495.2461	2352.7343	2501.9446
WY	161.1165	173.0727	161.3795	172.3150	161.1780	172.8855

Table 6: Distribution of Revenue Sharing for Various σ

	σ = .4	σ = .67	σ = 1	σ = 2	σ = 4
STATE	RS	RS	RS	RS	RS
*****	********	********	********	********	********
AL	96.6894	97.6826	98.8924	102.3299	108.4818
AK	5.8937	5.8675	5.8358	5.7471	5.5928
AZ	55.2781	55.3295	55.3896	55.5449	55.7708
AR	57.8868	58.6389	59.5586	62.1926	66.9808
CA	522.0260	519.3423	516.1038	507.0770	491.5218
CO	58.9494	58.9169	58.8757	58.7489	58.4898
CT	59.9683	59.6327	59.2275	58.0976	56.1489
DE	13.5100	13.4739	13.4300	13.3053	13.0827
DC	14.4587	14.3695	14.2620	13.9627	13.4489
FL	161.0767	161.1106	161.1466	161.2182	161.2458
GA	118.6713	119.1662	119.7630	121.4240	124.2789
HI	21.6559	21.5718	21.4697	21.1821	20.6759
ID	23.1178	23.2229	23.3497	23.7015	24.3020
IL	251.0338	249.9711	248.6853	245.0827	238.8126
IN	124.4284	124.3876	124.3343	124.1625	123.7877
IA	82.3391	82.4039	82.4792	82.6714	82.9426
KS	57.1211	57.1423	57.1662	57.2226	57.2657
KY	93.3574	94.0500	94.8901	97.2559	101.4157
LA	131.2849	132.2948	133.5175	136.9470	142.9187
ME	33.5477	33.7135	33.9133	34.4686	35.4178
MD	93.1879	92.8605	92.4633	91.3436	89.3721
MA	145.8803	145.3517	144.7104	142.9036	139.7252
MI	222.2069	221.6068	220.8765	218.8068	215.1255
MN	113.6570	113.5817	113.4863	113.1942	112.6010
MS	92.7310	94.3317	96.2939	101.9387	112.2584
MO	106.6791	106.7561	106.8461	107.0799	107.4254
MT	22.2808	22.3573	22.4492	22.7027	23.1296
NE	42.4231	42.4775	42.5418	42.7136	42.9835
NV	12.4954	12.4424	12.3781	12.1975	11.8816
NH	18.1659	18.1851	18.2078	18.2679	18.3607
NJ	148.2530	147.5575	146.7167	144.3649	140.2851
NM	35.4898	35.7251	36.0098	36.8070	38.1908
NY	506.4591	503.5126	499.9607	490.0825	473.1335
NC	146.4310	147.2919	148.3329	151.2457	156.3020
ND	23.8143	23.9896	24.2020	24.7985	25.8402
OH	211.0718	210.7577	210.3729	209.2685	207.2596
OK	63.9947	64.2623	64.5852	65.4849	67.0347
OR	52.5641	52.5485	52.5278	52.4598	52.3072
PA	299.3918	298.9955	298.5077	297.0931	294.4704
RI	25.0834	25.0601	25.0310	24.9447	24.7781
SC	77.0997	77.8448	78.7515	81.3223	85.9034
SD	25.9265	26.0999	26.3095	26.8959	27.9115
TN	106.2576	107.0047	107.9106	110.4596	114.9357
TX	269.9031	270.3924	270.9759	272.5620	275.1608
UT	33.3551	33.5012	33.6773	34.1659	35.0000
VT	16.0556	16.0896	16.1300	16.2387	16.4120
VA	110.1249	110.2070	110.3028	110.5511	110.9159
WA	85.5545	85.3525	85.1060	84.4031	83.1379
WV	55.2597	55.7287	56.2984	57.9069	60.7482
WI	145.0046	144.9204	144.8120	144.4724	143.7572
WY	10.9038	10.9184	10.9356	10.9812	11.0511

Table 7: Distribution of Marginal Incentive Effect

$$\delta I_i / \delta T_i \cdot Q$$

STATE	$\sigma = .4$	$\sigma = .67$	$\sigma = 1$	$\sigma = 2$	$\sigma = 4$
*****	*****	*****	*****	*****	*****
AL	.1046	.1031	.1013	.0965	.0885
AK	.0412	.0406	.0399	.0380	.0349
AZ	.0662	.0653	.0641	.0611	.0561
AR	.1164	.1147	.1127	.1073	.0985
CA	.0395	.0390	.0383	.0366	.0337
CO	.0588	.0580	.0570	.0543	.0499
CT	.0368	.0363	.0357	.0340	.0312
DE	.0496	.0489	.0481	.0458	.0420
DC	.0338	.0333	.0328	.0312	.0287
FL	.0612	.0604	.0593	.0565	.0519
GA	.0761	.0770	.0757	.0721	.0661
HI	.0456	.0449	.0442	.0421	.0386
ID	.0822	.0811	.0797	.0759	.0697
IL	.0426	.0420	.0413	.0394	.0362
IN	.0592	.0584	.0574	.0547	.0502
IA	.0652	.0643	.0632	.0602	.0553
KS	.0621	.0612	.0602	.0573	.0526
KY	.0928	.0915	.0899	.0856	.0785
LA	.0964	.0950	.0934	.0889	.0815
ME	.0844	.0832	.0818	.0779	.0715
MD	.0461	.0455	.0447	.0426	.0391
MA	.0460	.0454	.0446	.0425	.0391
MI	.0495	.0488	.0480	.0457	.0420
MN	.0594	.0586	.0576	.0548	.0503
MS	.1394	.1374	.1350	.1285	.1177
MO	.0632	.0623	.0612	.0583	.0535
MT	.0771	.0760	.0747	.0712	.0653
NE	.0667	.0658	.0647	.0616	.0566
NV	.0434	.0428	.0420	.0400	.0368
NH	.0655	.0646	.0635	.0605	.0555
NJ	.0405	.0399	.0392	.0374	.0344
NM	.0917	.0904	.0888	.0846	.0776
NY	.0370	.0365	.0359	.0342	.0313
NC	.0862	.0850	.0835	.0795	.0729
ND	.0949	.0935	.0919	.0875	.0804
OH	.0533	.0525	.0516	.0492	.0452
OK	.0782	.0771	.0757	.0721	.0662
OR	.0598	.0590	.0579	.0552	.0507
PA	.0552	.0544	.0535	.0510	.0468
RI	.0575	.0567	.0557	.0531	.0487
SC	.1026	.1011	.0994	.0946	.0868
SD	.0927	.0913	.0898	.0855	.0785
TN	.0907	.0894	.0879	.0837	.0768
TX	.0678	.0668	.0657	.0625	.0574
UT	.0811	.0800	.0786	.0749	.0687
VT	.0732	.0722	.0709	.0676	.0620
VA	.0636	.0627	.0616	.0587	.0539
WA	.0515	.0508	.0499	.0475	.0437
WV	.0983	.0969	.0953	.0907	.0833
WI	.0608	.0599	.0589	.0561	.0515
WY	.0686	.0676	.0665	.0633	.0581

Table 8: Changes in Shared Revenue Distribution When Q is Doubled

	σ = .67		σ = 2	
STATE	Q = 5,300 RS	Q = 10,600 RS	Q = 5,300 RS	Q = 10,600 RS
*****	********	*********	********	********
AL	97.6826	193.2549	102.3299	210.3208
AK	5.8675	11.8124	5.7471	11.3652
AZ	55.3295	110.6601	55.5449	111.4511
AR	58.6389	115.7431	62.1926	128.7695
CA	519.3423	1042.9994	507.0770	998.0345
CO	58.9169	118.0302	58.7489	117.4124
CT	59.6327	120.1801	58.0976	114.4733
DE	13.4739	27.0687	13.3053	26.4427
DC	14.3695	28.9865	13.9627	27.4722
FL	161.1106	322.1714	161.2182	322.6369
GA	119.1662	237.2916	121.4240	245.6550
HI	21.5718	43.3966	21.1821	41.9456
ID	23.2229	46.2746	23.7015	48.0326
IL	249.9711	502.3088	245.0827	484.2916
IN	124.3876	248.9812	124.1625	248.1849
IA	82.4039	164.7944	82.6714	165.7944
KS	57.1423	114.3539	57.2226	114.6617
KY	94.0500	186.6567	97.2559	198.4558
LA	132.2948	262.3682	136.9470	279.4032
ME	33.7135	67.1423	34.4686	69.9129
MD	92.8605	186.6351	91.3436	181.0154
MA	145.3517	292.0680	142.9036	283.0099
MI	221.6068	444.5244	218.8068	434.2424
MN	113.5817	227.4694	113.1942	225.8579
MS	94.3317	185.3042	101.9387	212.9135
MO	106.7561	213.4561	107.0799	214.6913
MT	22.3573	44.6042	22.7027	45.9746
NE	42.4775	84.9307	42.7136	85.8055
NV	12.4424	25.0425	12.1975	24.1315
NH	18.1851	36.3770	18.2679	36.6841
NJ	147.5575	296.6877	144.3649	285.0687
NM	35.7251	71.0168	36.8070	74.9841
NY	503.5126	1012.3487	490.0825	966.9469
NC	147.2919	292.6358	151.2457	307.2128
ND	23.9896	47.6575	24.7985	50.6250
OH	210.7577	422.1416	209.2685	416.7578
OK	64.2623	128.0392	65.4849	132.5555
OR	52.5485	105.2468	52.4598	104.9230
PA	298.9955	598.3130	297.0931	591.4966
RI	25.0601	50.2402	24.9447	49.8117
SC	77.8448	154.1321	81.3223	166.9216
SD	26.0999	51.8866	26.8959	54.8015
TN	107.0047	212.4218	110.4596	225.1524
TX	270.3924	539.0582	272.5620	547.2447
UT	33.5012	66.7596	34.1659	69.2046
VT	16.0896	32.1496	16.2387	32.6920
VA	110.2070	220.3441	110.5511	221.6506
WA	85.3525	171.3183	84.4031	167.8029
WV	55.7287	110.5299	57.9069	118.5274
WI	144.9204	290.1297	144.4724	288.4825
WY	10.9184	21.8361	10.9812	22.0651

Table 9: Changes in Shared Revenue Distribution When California's Weight [W(5)] is Doubled

	σ = .67		σ = 2	
	W(5)	W(5)*2	W(5)	W(5)*2
STATE	RS	RS	RS	RS
*****	********	********	********	********
AL	97.6826	89.3102	102.3299	92.8868
AK	5.8675	5.5556	5.7471	5.2357
AZ	55.3295	50.5337	55.5449	50.5336
AR	58.6389	53.6231	62.1926	56.4058
CA	519.3423	933.2659	507.0770	938.1052
CO	58.9169	53.8020	58.7489	53.4697
CT	59.6327	54.4260	58.0976	52.9493
DE	13.4739	12.3008	13.3053	12.1156
DC	14.3695	13.1136	13.9627	12.7267
FL	161.1106	147.1561	161.2182	146.7357
GA	119.1662	108.8860	121.4240	110.3943
HI	21.5718	19.6912	21.1821	19.2949
ID	23.2229	21.2169	23.7015	21.5406
IL	249.9711	228.2216	245.0827	223.3501
IN	124.3876	113.6012	124.1625	113.0146
IA	82.4039	75.2641	82.6714	75.2204
KS	57.1423	52.1865	57.2226	52.0673
KY	94.0500	85.9626	97.2559	88.3428
LA	132.2948	120.9309	136.9470	124.4080
ME	33.7135	30.8030	34.4686	31.3239
MD	92.8605	84.7747	91.3436	83.2067
MA	145.3517	132.7006	142.9036	130.1893
MI	221.6068	202.3575	218.8068	199.3205
MN	113.5817	103.7269	113.1942	103.0385
MS	94.3317	86.3070	101.9387	92.3792
MO	106.7561	97.5078	107.0799	97.4351
MT	22.3573	20.4237	22.7027	20.6389
NE	42.4775	38.7964	42.7136	38.8548
NV	12.4424	11.3572	12.1975	11.1118
NH	18.1851	16.6083	18.2679	16.6176
NJ	147.5575	134.8980	144.3649	131.5567
NM	35.7251	32.6467	36.8070	33.4344
NY	503.5126	459.7133	490.0825	446.9632
NC	147.2919	134.6173	151.2457	137.4623
ND	23.9896	21.9236	24.7985	22.5211
OH	210.7577	192.4770	209.2685	190.5699
OK	64.2623	58.7132	65.4849	59.5264
OR	52.5485	47.9874	52.4598	47.7418
PA	298.9955	273.0972	297.0931	270.5903
RI	25.0601	22.8826	24.9447	22.7039
SC	77.8448	71.1651	81.3223	73.8235
SD	26.0999	23.8505	26.8959	24.4305
TN	107.0047	97.8013	110.4596	100.3504
TX	270.3924	247.0597	272.5620	248.0519
UT	33.5012	30.6074	34.1659	31.0532
VT	16.0896	14.6960	16.2387	14.7677
VA	110.2070	100.6604	110.5511	100.5941
WA	85.3525	77.9297	84.4031	76.8600
WV	55.7287	50.9585	57.9069	52.5788
WI	144.9204	132.3528	144.4724	131.5178
WY	10.9184	9.9718	10.9812	9.9863

Table 10: Changes in Shared Revenue Distribution When Minnesota's Weight [W(24)] is Doubled

	σ = .67		σ = 2	
	W(24)	W(24)*2	W(24)	W(24)*2
STATE	RS	RS	RS	RS
*****	********	********	********	********
AL	97.6826	95.7245	102.3299	99.9596
AK	5.6075	5.7476	5.7471	5.6190
AZ	55.3295	54.2070	55.5449	54.2887
AR	58.6389	57.4660	62.1926	60.7392
CA	519.3423	508.7813	507.0770	495.9029
CO	58.9169	57.7190	58.7489	57.4259
CT	59.6327	58.4134	58.0976	56.8086
DE	13.4739	13.1992	13.3053	13.0072
DC	14.3695	14.0754	13.9627	13.6533
FL	161.1106	157.8447	161.2182	157.5894
GA	119.1662	116.7609	121.4240	118.6583
HI	21.5718	21.1314	21.1821	20.7094
ID	23.2229	22.7535	23.7015	23.1594
IL	249.9711	244.8793	245.0827	239.6421
IN	124.3876	121.8629	124.1625	121.3692
IA	82.4039	80.7326	82.6714	80.8039
KS	57.1423	55.9823	57.2226	55.9305
KY	94.0500	92.1582	97.2559	95.0196
LA	132.2948	129.6368	136.9470	133.8014
ME	33.7135	33.0324	34.4680	33.6797
MD	92.8605	90.9674	91.3436	89.3057
MA	145.3517	142.3897	142.9036	139.7197
MI	221.6068	217.1008	218.8068	213.9272
MN	113.5817	218.7072	113.1942	229.6319
MS	94.3317	92.4559	101.9387	99.5369
MO	106.7561	104.5916	107.0799	104.6626
MT	22.3573	21.9046	22.7027	22.1851
NE	42.4775	41.6159	42.7136	41.7462
NV	12.4424	12.1882	12.1975	11.9256
NH	18.1851	17.8160	18.2679	17.8542
NJ	147.5575	144.5465	144.3649	141.1580
NM	35.7251	35.0049	36.8070	35.9607
NY	503.5126	493.2595	490.0825	479.2954
NC	147.2919	144.3269	151.2457	147.7889
ND	23.9896	23.5062	24.7985	24.2270
OH	210.7577	206.4789	209.2685	204.5851
OK	64.2623	62.9639	65.4849	63.9905
OR	52.5485	51.4808	52.4598	51.2774
PA	298.9955	292.9340	297.0931	290.4564
RI	25.0601	24.5503	24.9447	24.3832
SC	77.8448	76.2825	81.3223	79.4401
SD	26.0999	25.5736	26.8959	26.2773
TN	107.0047	104.8519	110.4596	107.9235
TX	270.3924	264.9334	272.5620	266.4213
UT	33.5012	32.8240	34.1659	33.3852
VT	16.0896	15.7655	16.2387	15.8699
VA	110.2070	107.9727	110.5511	108.0556
WA	85.3525	83.6147	84.4031	82.5135
WV	55.7287	54.6081	57.9069	56.5696
WI	144.9204	141.9788	144.4724	141.2268
WY	10.9184	10.6968	10.9812	10.7323

Table 11: Deadweight Losses by State

	$\sigma = .4$	$\sigma = .67$	$\sigma = 1$	$\sigma = 2$	$\sigma = 4$
STATE	WRS	WRS	WRS	WRS	WRS
*****	******	******	******	*******	*******
AL	1.7217	2.8314	4.1787	7.9809	14.6971
AK	.0426	.0694	.1014	.1878	.3283
AZ	.6140	1.0037	1.4706	2.7529	4.8966
AR	1.1527	1.8993	2.8094	5.3997	10.0531
CA	3.1510	5.1372	7.5028	13.9177	24.3762
CO	.5902	.9641	1.4114	2.6354	4.6683
CT	.3779	.6155	.8978	1.6594	2.8885
DE	.1152	.1880	.2748	.5108	.8979
DC	.0858	.1397	.2037	.3760	.6531
FL	1.6694	2.7286	3.9973	7.4791	13.2965
GA	1.5807	2.5899	3.8051	7.1769	12.9368
HI	.1650	.2689	.3926	.7274	1.2714
ID	.3200	.5243	.7703	1.4527	2.6171
IL	1.7653	2.8783	4.2040	7.8002	13.8680
IN	1.2501	2.0426	2.9911	5.5897	9.9162
IA	.9012	1.4731	2.1584	4.0397	7.1842
KS	.6107	.9983	1.4626	2.7374	4.8690
KY	1.4701	2.4132	3.5537	6.7458	12.2924
LA	2.0794	3.4124	5.0228	9.5218	17.3010
ME	.4732	.7754	1.1394	2.1498	3.8757
MD	.7254	1.1829	1.7279	3.2072	5.6227
MA	1.1122	1.8135	2.6489	4.9155	8.6145
MI	1.8146	2.9609	4.3284	8.0510	14.1675
MN	1.1168	1.8240	2.6694	4.9802	8.6079
MS	2.1227	3.5038	5.1935	10.0366	18.8308
MO	1.1569	1.8917	2.7724	5.1938	9.2537
MT	.2902	.4751	.6974	1.3125	2.3558
NE	.4832	.7903	1.1585	2.1716	3.8721
NV	.0920	.1500	.2189	.4054	.7091
NH	.2049	.3351	.4911	.9203	1.6404
NJ	1.0152	1.6546	2.4155	4.4758	7.8246
NM	.5444	.8930	1.3139	2.4880	4.5130
NY	2.8362	4.6222	6.7475	12.5005	21.8434
NC	2.1210	3.4780	5.1150	9.6744	17.5188
ND	.3789	.6218	.9155	1.7364	3.1585
OH	1.9101	3.1194	4.5652	8.5178	15.0718
OK	.8617	1.4120	2.0747	3.9147	7.0612
OR	.5367	.8768	1.2839	2.3988	4.2537
PA	2.6971	4.4043	6.4448	12.0207	21.2545
RI	.2457	.4013	.5872	1.0954	1.9370
SC	1.3437	2.2089	3.2584	6.2147	11.4173
SD	.3995	.6553	.9641	1.8251	3.3086
TN	1.6393	2.6905	3.9611	7.5140	13.6773
TX	3.0438	4.9794	7.3024	13.7036	24.4879
UT	.4567	.7482	1.0992	2.0725	3.7328
VT	.1938	.3169	.4646	.8709	1.5525
VA	1.1954	1.9545	2.8644	5.3652	9.5560
WA	.7391	1.2059	1.7628	3.2788	5.7685
WV	.9195	1.5104	2.2258	4.2340	7.7418
WI	1.4248	2.3267	3.4046	6.3488	11.2178
WY	.1254	.2051	.3006	.5630	1.0022
TOTAL LOSS W^{rs}	53.8827	88.1654	129.3252	242.8478	434.4598

Table 12: Change in Deadweight Loss When Q is Doubled

	σ = .67		σ = 2	
	Q = 5,300	Q = 10,600	Q = 5,300	Q = 10,600
STATE	WRS	WRS	WRS	WRS
*****	******	*******	*******	*******
AL	2.8314	10.8837	7.9809	29.1515
AK	.0694	.2790	.1878	.6899
AZ	1.0037	3.9652	2.7529	10.0775
AR	1.8993	7.2425	5.3997	19.7139
CA	5.1372	20.6839	13.9177	51.2709
CO	.9641	3.6265	2.6354	9.6607
CT	.6155	2.4822	1.6594	6.0981
DE	.1880	.7511	.5108	1.8740
DC	.1397	.5644	.3760	1.3822
FL	2.7286	10.8069	7.4791	27.4299
GA	2.5899	10.1354	7.1769	26.2776
HI	.2689	1.0734	.7274	2.6675
ID	.5243	2.0484	1.4527	5.3093
IL	2.8783	11.5561	7.8002	28.6768
IN	2.0426	8.1027	5.5897	20.5000
IA	1.4731	5.8229	4.0397	14.7932
KS	.9983	3.9510	2.7374	10.0368
KY	2.4132	9.3526	6.7458	24.6572
LA	3.4124	13.2154	9.5218	34.7245
ME	.7754	3.0258	2.1498	7.8528
MD	1.1829	4.7384	3.2072	11.7727
MA	1.8135	7.2669	4.9155	18.0436
MI	2.9609	11.8316	8.0510	29.5601
MN	1.8240	7.2418	4.9802	18.2435
MS	3.5038	13.2039	10.0366	36.4457
MO	1.8917	7.4799	5.1938	19.0477
MT	.4751	1.8625	1.3125	4.8000
NE	.7903	3.1190	2.1710	7.9547
NV	.1500	.6021	.4054	1.4877
NH	.3351	1.3232	.9203	3.3724
NJ	1.6546	6.6526	4.4758	16.4516
NM	.8930	3.4675	2.4880	9.0833
NY	4.6222	18.0463	12.5005	46.0577
NC	3.4780	13.5436	9.6744	35.3727
ND	.6218	2.4091	1.7364	6.3379
OH	3.1194	12.4202	8.5178	31.2873
OK	1.4120	5.5244	3.9147	14.3361
OR	.8768	3.4774	2.3988	8.7935
PA	4.4043	17.5291	12.0207	44.1180
RI	.4013	1.5944	1.0954	4.0151
SC	2.2089	8.5043	6.2147	22.6984
SD	.6553	2.5438	1.8251	6.6592
TN	2.6905	10.4401	7.5140	27.4759
TX	4.9794	19.6344	13.7036	50.2308
UT	.7482	2.9249	2.0725	7.5773
VT	.3169	1.2471	.8709	3.1820
VA	1.9545	7.7276	5.3652	19.6707
WA	1.2059	4.8131	3.2788	12.0250
WV	1.5104	5.8338	4.2340	15.4627
WI	2.3267	9.2355	6.3488	23.2376
WY	.2051	.8091	.5630	2.0595
TOTAL LOSS W^{rs}	88.1654	347.4215	242.8478	889.7049

Table 13: Change in Deadweight Loss When California's Weight [W(5)] is Doubled

	σ = .67		σ = 2	
STATE	W(5) WRS	W(5)*2 WRS	W(5) WRS	W(5)*2 WRS
*****	******	*******	*******	*******
AL	2.8314	2.3775	7.9809	6.6904
AK	.0694	.0579	.1878	.1568
AZ	1.0037	.8396	2.7529	2.3036
AR	1.8993	1.5940	5.3997	4.5206
CA	5.1372	13.9980	13.9177	38.4005
CO	.9641	.8062	2.6354	2.2052
CT	.6155	.5140	1.6594	1.3882
DE	.1880	.1569	.5108	.4267
DC	.1397	.1165	.3760	.3140
FL	2.7286	2.2899	7.4791	6.2805
GA	2.5899	2.1728	7.1769	6.0191
HI	.2689	.2244	.7274	.6079
ID	.5243	.4385	1.4527	1.2144
IL	2.8783	2.4202	7.8002	6.5688
IN	2.0426	1.7119	5.5897	4.6877
IA	1.4731	1.2333	4.0397	3.3834
KS	.9983	.8349	2.7374	2.2904
KY	2.4132	2.0246	6.7458	5.6537
LA	3.4124	2.8087	9.5218	7.9930
ME	.7754	.6468	2.1498	1.7980
MD	1.1829	.9895	3.2072	2.6864
MA	1.8135	1.5196	4.9155	4.1248
MI	2.9609	2.4881	8.0510	6.7742
MN	1.8240	1.5280	4.9802	4.1754
MS	3.5038	2.9471	10.0366	8.4181
MO	1.8917	1.5849	5.1938	4.3531
MT	.4751	.3973	1.3125	1.0971
NE	.7903	.6609	2.1716	1.8162
NV	.1500	.1251	.4054	.3387
NH	.3351	.2799	.9203	.7691
NJ	1.6546	1.3861	4.4758	3.7555
NM	.8930	.7477	2.4880	2.0812
NY	4.6222	3.9217	12.5005	10.6246
NC	3.4780	2.9218	9.6744	8.1233
ND	.6218	.5205	1.7364	1.4518
OH	3.1194	2.6212	8.5178	7.1642
OK	1.4120	1.1825	3.9147	3.2767
OR	.8768	.7331	2.3988	2.0068
PA	4.4043	3.7124	12.0207	10.1438
RI	.4013	.3352	1.0954	.9156
SC	2.2089	1.8533	6.2147	5.2061
SD	.6553	.5455	1.8251	1.5262
TN	2.6905	2.2380	7.5140	6.3002
TX	4.9794	4.1963	13.7036	11.5547
UT	.7482	.6260	2.0725	1.7332
VT	.3169	.2648	.8709	.7279
VA	1.9545	1.6377	5.3652	4.4974
WA	1.2059	1.0088	3.2788	2.7459
WV	1.5104	1.2660	4.2340	3.5440
WI	2.3267	1.9512	6.3488	5.3291
WY	.2051	.1713	.5630	.4704
TOTAL LOSS W^{rs}	88.1654	83.7112	242.8478	230.6351

Table 14: Change in Deadweight Loss When Mississippi's Weight [W(25)] is Doubled

	σ = .67		σ = 2	
	W(25)	W(25)*2	W(25)	W(25)*2
STATE	WRS	WRS	WRS	WRS
*****	******	*******	*******	*******
AL	2.8314	2.7435	7.9809	7.6554
AK	.0694	.0672	.1878	.1800
AZ	1.0037	.9718	2.7529	2.6394
AR	1.8993	1.8401	5.3997	5.1778
CA	5.1372	4.9881	13.9177	13.3976
CO	.9641	.9334	2.6354	2.5267
CT	.6155	.5958	1.6594	1.5909
DE	.1880	.1819	.5108	.4895
DC	.1397	.1352	.3760	.3603
FL	2.7286	2.6436	7.4791	7.1770
GA	2.5899	2.5090	7.1769	6.8849
HI	.2689	.2602	.7274	.6972
ID	.5243	.5076	1.4527	1.3925
IL	2.8783	2.7896	7.8002	7.4904
IN	2.0426	1.9785	5.5897	5.3622
IA	1.4731	1.4266	4.0397	3.8741
KS	.9983	.9665	2.7374	2.6245
KY	2.4132	2.3379	6.7458	6.4703
LA	3.4124	3.3066	9.5218	9.1365
ME	.7754	.7508	2.1498	2.0609
MD	1.1829	1.1453	3.2072	3.0757
MA	1.8135	1.7565	4.9155	4.7162
MI	2.9609	2.8693	8.0510	7.7296
MN	1.8240	1.7665	4.9802	4.7772
MS	3.5038	12.0181	10.0366	36.3232
MO	1.8917	1.8321	5.1936	4.9817
MT	.4751	.4600	1.3125	1.2581
NE	.7903	.7652	2.1716	2.0818
NV	.1500	.1451	.4054	.3885
NH	.3351	.3243	.9203	.8821
NJ	1.6546	1.6025	4.4758	4.2942
NM	.8930	.8648	2.4880	2.3853
NY	4.6222	4.4874	12.5005	12.0313
NC	3.4780	3.3703	9.6744	9.2835
ND	.6218	.6022	1.7364	1.6645
OH	3.1194	3.0229	8.5178	8.1770
OK	1.4120	1.3674	3.9147	3.7536
OR	.8768	.8489	2.3988	2.2998
PA	4.4043	4.2705	12.0207	11.5491
RI	.4013	.3884	1.0954	1.0500
SC	2.2089	2.1399	6.2147	5.9602
SD	.6553	.6345	1.8251	1.7496
TN	2.6905	2.6067	7.5140	7.2079
TX	4.9794	4.8280	13.7036	13.1634
UT	.7482	.7245	2.0725	1.9868
VT	.3169	.3068	.8709	.8348
VA	1.9545	1.8930	5.3652	5.1463
WA	1.2059	1.1676	3.2768	3.1443
WV	1.5104	1.4630	4.2340	4.0598
WI	2.3267	2.2539	6.3488	6.0918
WY	.2051	.1985	.5630	.5396
TOTAL LOSS W^{rs}	88.1654	94.0583	242.8478	259.7751

Table 15: Change in Deadweight Loss When Minnesota's Weight [W(24)] is Doubled

	σ = .67		σ = 2	
STATE	W(24) WRS	W(24)*2 WRS	W(24) WRS	W(24)*2 WRS
*****	******	******	*******	*******
AL	2.8314	2.7219	7.9809	7.6483
AK	.0694	.0666	.1878	.1798
AZ	1.0037	.9640	2.7529	2.6369
AR	1.8993	1.8256	5.3997	5.1729
CA	5.1372	4.9515	13.9177	13.3862
CO	.9641	.9259	2.6354	2.5244
CT	.6155	.5909	1.6594	1.5894
DE	.1880	.1805	.5108	.4891
DC	.1397	.1341	.3760	.3600
FL	2.7286	2.6227	7.4791	7.1704
GA	2.5899	2.4892	7.1769	6.8785
HI	.2689	.2581	.7274	.6965
ID	.5243	.5035	1.4527	1.3912
IL	2.8783	2.7679	7.8002	7.4637
IN	2.0426	1.9628	5.5897	5.3572
IA	1.4731	1.4152	4.0397	3.8705
KS	.9983	.9588	2.7374	2.6221
KY	2.4132	2.3194	6.7458	6.4643
LA	3.4124	3.2807	9.5218	9.1280
ME	.7754	.7448	2.1498	2.0590
MD	1.1829	1.1361	3.2072	3.0729
MA	1.8135	1.7425	4.9155	4.7118
MI	2.9609	2.8469	8.0510	7.7226
MN	1.8240	6.4594	4.9802	18.1077
MS	3.5038	3.3696	10.0366	9.6195
MO	1.8917	1.8176	5.1938	4.9771
MT	.4751	.4563	1.3125	1.2569
NE	.7903	.7590	2.1716	2.0798
NV	.1500	.1439	.4054	.3882
NH	.3351	.3217	.9203	.8813
NJ	1.6546	1.5897	4.4758	4.2902
NM	.8930	.8579	2.4880	2.3830
NY	4.6222	4.4543	12.5005	12.0210
NC	3.4780	3.3436	9.6744	9.2750
ND	.6218	.5973	1.7364	1.6629
OH	3.1194	2.9993	8.5178	8.1696
OK	1.4120	1.3565	3.9147	3.7501
OR	.8768	.8421	2.3988	2.2976
PA	4.4043	4.2377	12.0207	11.5388
RI	.4013	.3853	1.0954	1.0490
SC	2.2089	2.1230	6.2147	5.9547
SD	.6553	.6295	1.8251	1.7479
TN	2.6905	2.5861	7.5140	7.2012
TX	4.9794	4.7909	13.7036	13.1516
UT	.7482	.7187	2.0725	1.9850
VT	.3169	.3043	.8709	.8340
VA	1.9545	1.8780	5.3652	5.1415
WA	1.2059	1.1582	3.2788	3.1413
WV	1.5104	1.4513	4.2340	4.0560
WI	2.3267	2.2360	6.3488	6.0862
WY	.2051	.1969	.5630	.5391
TOTAL LOSS W^{rs}	88.1654	89.4738	242.8478	246.2015

Table 16: The Majority of States are Net Fiscal Gainers

	σ= .67		σ = 2		σ = 4	
STATE	FISC	DIFFU	FISC	DIFFU	FISC	DIFFU
*****	*********	*********	*********	*********	*********	*********
AL	39.0191	18.7127	43.6650	16.2403	49.8150	16.5710
AK	-4.3567	-5.2059	-4.4770	-3.9437	-4.6312	-3.3411
AZ	9.2299	-2.8486	9.4445	-.7312	9.6693	.1584
AR	28.4132	16.0576	31.9662	13.5805	36.7533	13.4424
CA	-26.8627	-132.1295	-39.1211	-86.4255	-54.6679	-71.0725
CO	-.2336	-11.8816	-.4017	-7.9541	-.6609	-6.1601
CT	-52.7654	-60.9554	-54.3197	-45.4278	-56.2675	-38.8041
DE	-5.8451	-8.1221	-6.0138	-5.9396	-6.2364	-4.9935
DC	-10.4117	-12.4829	-10.8161	-9.4806	-11.3313	-8.0723
FL	-23.6232	-52.7066	-23.5156	-38.3874	-23.4883	-30.8016
GA	21.7823	-1.6263	24.0399	.3309	26.8946	2.4438
HI	-2.2859	-6.6314	-2.6756	-4.3966	-3.1816	-3.6634
ID	9.5595	4.0776	10.0376	3.7421	10.6376	3.6831
IL	-107.6046	-149.3714	-112.4903	-109.7210	-118.7569	-92.6826
IN	-8.8772	-32.2104	-9.1021	-22.8606	-9.4763	-18.1303
IA	23.5828	5.1865	23.8504	5.8387	24.1217	6.1708
KS	6.7279	-4.4940	6.8088	-2.7402	6.8729	-1.6565
KY	34.4624	14.4843	37.6671	12.9343	41.8255	13.2728
LA	65.7756	33.4052	70.4236	29.6598	76.3596	28.9619
ME	16.1758	7.9066	16.9304	7.0168	17.8788	6.7515
MD	-35.0132	-51.1408	-36.5300	-36.9964	-38.5013	-31.1632
MA	-24.6757	-52.4851	-27.1232	-36.4003	-30.3009	-30.3569
MI	-34.2389	-75.8806	-37.0377	-53.5382	-40.7175	-44.1153
MN	28.2725	2.4971	27.6849	4.8818	27.2917	5.5931
MS	67.1300	42.7183	74.7337	36.3640	85.0483	35.1987
MO	-8.6310	-27.9334	-8.3068	-20.4446	-7.9605	-16.0925
MT	9.5593	4.3042	9.9046	3.9422	10.3314	3.7075
NE	10.8548	1.8019	11.0911	2.1484	11.3614	2.4354
NV	-5.0776	-7.2337	-5.3224	-5.1876	-5.6365	-4.4050
NH	-.5412	-4.0518	-.4585	-2.7575	-.3600	-2.1421
NJ	-98.1552	-120.4400	-101.3459	-89.8444	-105.4235	-76.2324
NM	17.4617	8.7609	18.5427	7.7436	19.9254	7.5051
NY	-80.9786	-180.0080	-94.4045	-120.4078	-111.3488	-102.1184
NC	48.3645	17.1960	52.3108	15.9960	57.3713	16.8507
ND	14.7602	8.7286	15.5690	7.3555	16.6106	6.9175
OH	-78.1334	-112.0691	-79.6198	-85.4609	-81.6249	-70.7893
OK	13.9952	1.2903	15.2178	1.7956	16.7674	2.6712
OR	.6526	-9.7070	.5642	-6.4895	.4116	-4.9572
PA	-11.2520	-69.1291	-13.1537	-47.3677	-15.7752	-37.3832
RI	2.0247	-3.1439	1.9094	-1.6629	1.7429	-1.3485
SC	33.3951	16.6047	36.8714	14.4002	41.4508	14.4142
SD	10.5572	9.7369	17.3531	8.2490	18.3685	7.7429
TN	23.8766	2.3576	27.3314	3.0567	31.8046	3.3826
TX	7.0340	-42.8812	9.8039	-29.8604	12.4035	-21.3926
UT	12.9574	5.2266	13.6216	4.8387	14.4551	4.8119
VT	7.4831	3.3200	7.6320	3.0776	7.8049	2.9432
VA	-13.6703	-33.7590	-13.3266	-24.4523	-12.9642	-19.4533
WA	-.9253	-18.2138	-1.8744	-11.9136	-3.1391	-9.4999
WV	20.1326	7.8182	22.3089	7.3706	25.1476	7.7320
WI	41.8918	6.9157	41.4419	10.1040	40.7240	10.6525
WY	2.4443	-.0464	2.5069	.2874	2.5765	.4124

FOOTNOTES

The views expressed herein are solely those of the author and do not necessarily represent the views of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

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[1]For a rigorous existence proof, see Stutzer(5), Chapter 4.

[2]See Stutzer(5), Chapter 4.

[3]See Teeples(10) for a game theoretic analysis of matching grants with recipient financing.

[4]Personal communication with David Wildasin has convinced me that it may not be possible to separate the measurement of such benefits from the measurement of deadweight loss.

[5]Puerto Rico is treated as a state.

[6]While not accurate as a behavioral hypothesis, the lumping together of state and local taxes into one utility maximizing decision is done to simplify the problem as well as to provide upper bound estimates of the tax effort incentive.

[7]Crude econometric estimation of σ could have been attempted, but doubts about its accuracy would have led us to the sensitivity analysis conducted herein anyway.

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