AN ANALYSIS OF REVENUE SHARING'S PERFORMANCE

IN ACHIEVING ITS FORMULA GOALS

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CHAPTER I

INTRODUCTION

The State and Local Fiscal Assistance Act of 1972, henceforth referred to as the revenue sharing act, distributed $30.2 billion to more than 38,000 state and local governments between 1972 and 1976, using a complicated distribution formula. It is reasonable to assume that Congress and the groups that lobbied for the program expected it to have an impact, to advance selected goals of the Congress and/or the groups that supported it in the Congress. The purpose of this study is to determine whether the actual workings of the program are consistent with : (1) the goals the Congress appears to have collectively set for it; (2) the expectations of the various interest groups that supported it.

What Is Revenue Sharing Supposed to Do?

Other studies have answered the question of what revenue sharing is supposed to do by selecting goals designated as desirable by those involved in the debate

leading to the enactment of a revenue sharing program, or by those who criticize the current distribution formula.[1] While these studies do provide information on alternatives to the current formula, they do not indicate whether the current program is performing as expected by the political forces responsible for its passage. This study uses a much weaker assumption: it simply assumes that because the distribution formula and the data set used by the formula determine the distribution of benefits, the goals that Congress intended to further should be inherent in the distribution formula. In examining the distribution formula (the variables and the way they are used in the formula),[2] this study and the way they are used in the formula) this study uses what might be called a revealed preference technique to derive the formula goals.

At this point it is probably not clear why this method of choosing goals might be preferred to simply selecting

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[1]The exception to this is the work on the incentive effects created by the distribution formula. For example, Robert Reishauer discusses the specific mechanisms in the formula which induce changes in the behavior of state and local governments and their citizens. Robert D. Reischaur, "General Revenue Sharing -- The Program's Incentives," in Financing the New Federalism, ed. by Wallace E. Oates (Washington:Resources for the Future, Inc., 1975)

[2]Throughout this study, a variable will be a vector of parameters (state per capita income, state and local taxes, etc.) with an observation from each state. Also, the District of Columbia will be included as a state, making 51 recipient governments.

goals proposed in the legislative discussion. First, political arguments should not be taken at face value. Much of the political rhetoric used to persuade disinterested voters to accept one position over another is deliberately misleading if not technically fraudulent.[3]

Secondly, there seems to have been more than a little confusion over just what revenue sharing would acutally entail and what its objectives would be. A review of the revenue sharing literature, especially the literature that appeared before the bill was passed, reveals a wide variety of proposed (or supposed) program goals. A sample of the more popular objectives for revenue sharing includes: to divert money to the cities in order to solve their special urban problems; to reorganize or modernize state and local governments; to redress the "fiscal imbalance" by increasing the spending power of the state and local governments relative to the federal government; to redistribute resources to governments representing lower income citizens; to provide tax relief; to provide incentives to increase taxes (especially the state income tax); to increase citizen

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[3]A theory of information manipulation for representative democracy is found in Gordon Tullock *Toward A Mathematics of Politics*, (Ann Arbor: University of Michigan Press, 1967). Chapters 7, 8, and 9, explain rational "Political Ignorance" on the part of voters, the elements of effective "Political Persuasion" given a population of mostly disinterested voters, and an "Economic Theory of Lying".

participation in state and local government (the "new" revenue sharing money would be up for grabs); and to generally allocate money on a basis of need. Many of these goals are inconsistent with each other.

Why was there such confusion over what revenue sharing should do? One reason for the confusion was that there had been no recent experience with revenue sharing. Further, starting in the late 1960s, over 100 bills were submitted to the Congress designed to create general purpose grants from the federal government to lower-level governments. All were referred to as revenue or tax sharing. As a result, "...the general public discussion of revenue sharing has often been a case of calling different animals the same name."[*] In fact, it could be argued that the concept of revenue sharing, which enjoyed wide support from disparate groups with conflicting objectives,[5] was so vague and maleable that it became a panacea for many of the supposed defects in the federal system.

The confusion that characterizes public debate tends to disappear when a program starts to make its way through the Congressional obstacle course. A bill is written, rewritten, or amended to attract a majority of a committee,

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[*]Charles J. Goetz, What Is Revenue Sharing?, (Washington, D.C.: The Urban Institute, 1972), pp. 5-6.
[5]Paul R. Dommel, The Politics of Revenue Sharing, (Bloomington: Indiana University Press, 1974), pp. 131-35.

subcommittee, or house of Congress. During this coalition-building process, interest groups try to influence the members of Congress who are writing the bill. The members of Congress and the interest groups, both those for and those against the program, become engrossed in the expected distributional effects of the proposed program and attempt to influence its form to their benefit.[6]

The moral is that when politicians turn from the rhetoric to designing a program, they have to translate goals (nebulous phrases and illusions) into a specific distribution formula. Both the choice of variables and the ways they are used in the formula reveal de facto choices of goals. Using the formula for analysis makes it possible to proceed without having to untangle the confused revenue sharing propaganda. In addition, the different bills reported out of the House Ways and Means Committee and the Senate Finance Committee indicate that the members of these committees were sensitive to the distributional effects of the alternative formulas.

What, then, judging from the structure of the interstate distribution formula, are the most conspicuous objectives of the revenue sharing program that was passed? The goals implied by the formula are to reward states that,

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[6]Ibid., p. 137.

relative to the other states, (1) have a low per-capita income, (2) have high per-capita taxes, (3) have high per-capita income taxes, (3) are highly urbanized; the formula also provides incentives for states (5) to increase their taxes, and, especially, (6) to increase their state income taxes. The goals are simply listed here; the interstate formula and the proceedure for extracting the goals are described in another section.

At this point several caveats are in order. First, this list of goals is not exhaustive. The questions of whether the funds were allocated on a basis of need, and whether revenue sharing helps redress a "fiscal imbalance," are not examined in this paper. Secondly, it is possible to second-guess the framers of the legislation by constructing more elaborate goals that seem to justify the collection of goals or the balance among the simple goals listed above. Although this type of reasoning does have value, it opens up a Pandora's box, since there is a very large number of subtle or less subtle goals that the program could advance or that could have been in the minds of the program's framers. If for no other reason than to make the study manageable, there is justification for restricting the number of proposed goals and consequently restricting the number of effects to be tested.

Are the Goals Being Advanced?

Achieving a goal (such as redistribution in favor of a particular group) is not assured merely by constructing a formula that induces the desired marginal relationships between revenue allocations and the key variables used in the formula. This is evidence of intent, not performance. The final distribution of funds is determined both by the distribution formula and by the values of the state and local variables used in the formula. In addition, intercorrelations among variables can frustrate efforts to achieve more than one goal simultaneously.

The Welfare-Function Approach.

There are several interesting ways to test for desired effects. One method, which stems from a collectivist approach, is to examine the distribution of benefits from the perspective of a "benevolent despot" (Congress), who favors no interest groups over others, except as is prescribed by the goals implied by the distribution formula. The advancing of goals from this collectivist approach would be tested by measuring the effects of individual variables on the distribution of funds while adjusting for the effects of other variables. The model required by this approach explains revenue sharing (really revenue sharing per capita)

in terms of variables associated with each of the formula goals.

The Porkbarrel Approach.

Another approach is to take the perspective of the interest groups that supported the program and lobbied to influence the form of the distribution formula to their benefit. This "porkbarrel" approach will assume that each goal has a constituency in the group of recipients that benefits when the goal is pursued. For example, recipients with relatively low incomes have a common interest in advancing the goal of favoring recipients with relatively low incomes. Similarly, an interest group of the beneficiaries is associated with each of the other goals listed above. Each interest group wants its members to benefit more than nonmembers.

Furthering other goals is of interest to the extent that the recipients belong to other interest groups. For example, if low income is associated with an urban environment, the low-income interest group would have many of the same members as the urban interest groups. It should be obvious that every recipient would be associated either with an advocating interest group or with its opposition. The intensity of a recipient's preference on each issue will

vary with the difference between his value and the average value of the proxy variable associated with that goal.

Because each interest group is only concerned with the benefits received by its members, the correct method of gauging its success is to test for a significant association between revenue sharing benefits and the key variable that defines the interest group. From the porkbarrel approach, the relevant "model" for testing the success of each of the interest groups is to hypothesize that the distribution of benefits is determined only by the variable associated with that group. These models would not control for other effects by introducing other explanatory variables, as in the welfare-function approach.

Recipient Government Approach.

Another issue that cuts across the welfare-function and porkbarrel approaches is the question of who are the recipients, governments or citizens. If governments are the recipients of revenue sharing benefits, then they are the entities that ought to be compared without regard to the number of citizens they represent. This approach assumes that all governments are equal before the revenue sharing formula. Thus, the observation that a populous state's allocation is consistent (or inconsistent) with formula goals carries no more weight than the observation that a

state with a relatively small population has an allocation consistent (or inconsistent) with goals. This would imply that all observations should have an equal weight in the statisical analysis.

Recipient Citizen Approach.

The other side of the issue is that governments may be considered merely to represent their citizens. If the citizens are the ultimate recipients of revenue sharing benefits, then they are the entities that ought to be compared. However, the allocations are made to governments, which serve as intermediaries. In lieu of having observations on citizens, it is then appropriate to weight state observations according to their populations. Under this approach, the consistency of the California or New York observations with formula goals is judged to be more important than the consistency (or inconsistency) of Alaska and Vermont observations with formula goals.

This issue of who are the beneficiaries or recipients of revenue sharing funds cuts across the collectivist and porkbarrel approaches, which means there are four distinct approaches to testing for the effects that were advocated.

Net Benefits of Revenue Sharing

From the welfare-function perspective, the distribution formula was expected to create desirable patterns in the distribution of revenue sharing funds or gross per-capita benefits. In fact, all of the goals derived from the distribution formula are concerened only with the distribution of benefits. There is no reference to the cost of the program in terms of alternative uses for the $30.5 billion. Thus, there is no indication that a particular distribution of net benefits was desired.

However, from the porkbarrel perspective, tests of the program's redistributional impact would be considered using residual benefits. In the revenue sharing coalition, each group is concerned only with the welfare of its members, and would therefore pursue net benefits. To the interest groups, the revenue sharing program, or any program, is merely a vehicle to pursue its goals, regardless of legislative intentions. It would be interesting to measure the size of the transfer, if any, each of the favored groups actually received from revenue sharing.[7]

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[7]This study concentrates on the transfers caused by revenue sharing. There are, however, several efficiency arguments for unconditional block grants, like revenue sharing, that this study does not consider. For example, the argument is made that states and localities provide a less than optimal amount of public goods because of tax competition between governments. See George Break, Intergovernmental Fiscal Relations in the United States,

Unfortunately, it is impossible to determine what the alternative to revenue sharing would have been; it was not chosen.[8] In any event, it will prove interesting to calculate the effects of different financing arrangements on the distribution of net benefits. This study uses three alternative financing assumptions: (1) a federal personal income tax surcharge; (2) a proportional reduction in each state's catagorical grants; and (4) a proportional reduction in federal expenditures in each state. It is more likely

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(Washington: The Brookings Institution, 1967). Revenue sharing is viewed as a means to eliminate the opportunity for Tiebout-type adjustments by individuals and firms and would therefore increase the total tax bill cf citizens and the revenue available for state and local governments to spend on public goods. It is also argued that revenue sharing aid to cities will compensate them for the public goods they provide to surrounding political entities but for which they receive little or no revenue--that is, it internalizes externalities imposed by free riders. Finally, Buchanan and Wagner argue that a revneue sharing-type block grant may be desirable not for equalization in itself, but for the efficiency gains from fiscal equalization. See James M. Buchanan and Richard E. Wagner, "An Efficiency Basis for Federal Fiscal Equalization", in The Analysis of Public Output, ed. by Julius Margolis, (New York: Columbia University Press, 1970), pp. 139-58.
    [8]In a speech on January 26, 1971, Wilbur Mills outlined several alternatives to revenue sharing: consolidation of federal catagorical grants and a federal tax credit on state income taxes. In addition, Mills asked the almost totally ignored question of how would revenue

that the burden of revenue sharing was distributed by some

combination of the above measures and others not considered

by this study.

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sharing be financed.   His answers were (1) increase federal
taxes, (2) reduce federal expenditures, (3) reduce federal
grants, or (3) or some combination of all three measures.
See, U.S. Congress, House, Representative Wilbur Mills, 92nd
Congress, 1st sess., 26 January 71, Congressional Record,
(Daliy Edition), pp. H210-15.   January 26, 1971 (Daily
Edition), pp.   H210-15, and Dommel, Politics of Revenue
Sharing, pp. 115. A probable casualty of the revenue
sharing effort was welfare reform.   The House passed its
version of revenue sharing on June 27, 1971.   As time was
running out for passage of a revenue sharing program by the
92nd Congress, the Senate Finance Committee put aside
cosideration of welfare reform, in effect eliminating any
chance it had for passage, to consider revenue sharing.
See,   Richard P. Nathan,   Monitoring Revenue Sharing,
(Washington: The Brookings Institution, 1975), p. 368.

CHAPTER II

WHAT IS REVENUE SHARING SUPPOSED TO DO?

The purpose of this chapter is to derive goals of revenue sharing from the distribution formula. The proceedure to be followed will be to first present the distribution formula, which is really two formulas. Simple goals are then derived from the structure of the distribution formula. The differences in the goals of the two subformulas and in their sensitivities are discussed. These differences between subformula goals are then explained by their respective orgins in the Congress.

The Interstate Allocation Formula

The State and Local Fiscal Assistance Act of 1972 appropriated $30.2 billion to be allocated to more than 38,000 general purpose governments. The $30.2 billion was to be distributed in seven entitlement periods over five years.[1] Table 2.1 shows the total amounts to be distributed

TABLE 2.1
REVNEUE SHARING FUNDS BY ENTITLEMENT PERIOD
(amounts in billions)

Entitlement Period	Amount
EP1 Jan. 1 _ June 30,1972	$2.650
EP2 July 1 _ Dec. 31. 1972	2.650
EP3 Jan. 1 _ June 30, 1973	2.9875
EP4 July 1, 1973 _ June 30, 1974	6.050
EP5 July 1, 1974 _ June 30, 1975	6.200
EP6 July 1, 1975 _ June 30, 1976	6.350
EP7 July 1, 1976 _ Dec. 31, 1976	3.325

Source: U.S.   Congress,   the state and   Local Fiscal
Assistance Act, Public Law 92-512.   92nd Congress,   2nd
sess.

in each entitlement period.   The amounts increase at about $150 million per year, or roughly 2.5% annually.

The first step in the allocation process for each entitlement period is to allocate a share of the entitlement to each state area and the District of Columbia.   Each state's share   is first determined by   the interstate allocation formula.   Once the interstate allocation is complete, the intrastate allocation formula is then used to distribute each state's total entitlement among the state government itself and the eligible local governments within the state area.   Eligible local governments are general-purpose   governments   such   as   counties,   cities, municipalities, townships, and Indian villages.² Special-purpose governments such as   school districts are not eligible for revenue sharing grants.   The present analysis, which is limited to the interstate distribution, can therefore be viewed as a   first approximation of the program's impact on its formula goals.

Localities benefit both from their own revenue sharing allocation and from allocations made to "higher-level" (state and/or county)   governments.   An analysis of the intrastate distribution would have to impute revenue sharing

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¹U.S. Congress, The State and Local Fiscal Assistance Act, Pub. Law 92-512, 92nd Congress, 2nd sess., 1972, Title I, Subtitle A, sec. 105(b) (1).
²Ibid., sec. 108(d) (1).

benefits (in the form of financial aid or public services/goods provided) to governments at the bottom of the fiscal pyramid from allocations made to "higher-level" governments. This imputation would be difficult even if one knew what the funds were spent on. However, no such data exists, nor is it likely to exist.[3] Therefore this analysis is focused on the state allocations.

The Formula

State entitlements are calculated separately under a three-factor and a five-factor formula, each state then being assigned the larger of the two amounts.[4] However, because each formula distributed the total amount appropriated for the entitlement period, every state's entitlement must be scaled down so that the aggregate amount allocated does not exceed the total to be allocated.[5] The

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[3]Recipient governments did have to publish planned use reports, (Ibid., Subtitle B, sec. 121.) which would have to state that the funds were being spent in the prescribed priority areas (Ibid., Subtitle A, sec. 103.), in a nondiscriminatory manner (Ibid., Subtitle B, sec. 122.), and in the instance of construction projects where revenue sharing funds cover 25 percent or more of the cost, wage rates must be in accordance with the Davis-Bacon Act (Ibid., sec. 123 (a)(6)). There is no binding constraint on the use of the funds. A prudent administrator would therefore allocate Revenue Sharing funds to activities that would minimize the accounting cost of submiting a report, regardless of the actual impact of the funds.
    [4]Ibid., sec. 106 (b)(1).
    [5]There is no explicit mention of the scaling in the law. It is implicit given the fixed budget of the program.

scaling required for the first two entitlement periods was 8.4 percent.[6]

The Three-Factor Formula

The three-factor formula is essentially a per-capita allocation weighted by a tax effort factor and a relative income factor. Both the three-factor and five-factor formulas are stated in mathematical form in table 2.2. Population is consdered as a factor in both formulas.

Tax-Effort Factor

A state's tax-effort factor is the ratio of the sum of of adjusted[7] state and local taxes to the state's aggregate personal income.[8] The tax effort weight is the ratio of the state's tax effort factor to the mean tax effort factor for all the state areas. The tax effort weight increases with the sum of the state's own state and local taxes, everything else being equal, and decreases as the state's personal income increases, everything else being equal.

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[6]The allocations for EP1 were further reduced by 3 percent in order to provide a contingency fund from which to make future adjustments. See Nathan, p. 30. In the more recent entitlement periods 0.5 percent of the allocation has been withheld for adjustment reserves. Nathan, p. 326.

[7]Specificaly excluded from the tally are public contributions to finance social insurance for public employees. Revenue Sharing Act, Title I, sec. 109 (c) (2) (a).

[8]Ibid., sec. 109 (e) (1).Sec. 109 (e) (1).

TABLE 2.2

THE INTERSTATE DISTRIBUTION FORMULA

The Three-Factor Formula

$$G^{(3)}i = St * (PFi * RIIi * TEFi) / \sum_j (PFj * RIFj * TEFj)$$

where $G^{(3)}i$ = three factor grant to state i

St = total amount appropriated for entitlement period

PFi = population factor for state i

$$= Pi / \sum_j (Pj)$$

Pi = population of state i

RIFi = relative income factor for state i

$$= (PMIus/PMIi) / \sum_j (PMIus/PMIj)$$

PMIi = per capita money income for state i

TEFi = tax effort factor for state i

$$= (SLTi/PIi) / \sum_j (SLTj/PIj)$$

SLTi = adjusted state and local taxes for state i

PIi = aggregate personal income for state i

TABLE 2.2-<u>Continued</u>

The Five Factor Formula

$$G(5) = St * (.2201 * Pi / \sum_j(Pj)$$

$$+ .2201 * (Pi * PMIus/PMIi) / \sum_j(Pj * PMIus/PMIj)$$

$$+ .2201 * UPi / \sum_j(UPj)$$

$$+ .1698 * (SLTi/PIi) / \sum_j(SLTj/PIj)$$

$$+ .1698 * AITi / \sum_j(AITj))$$

where   UPi = urban population of state i

   AITi = adjusted state income tax revenue for state i

   = .15 * SITi

   and $(.01 * FITi) \leq AITi \leq (.06 * FITi)$

   SITi = state personal income tax revenue from state i

   FITi = state i's federal personal income tax
          liabilities.

Source: <u>Revenue Sharing Act</u>, Title I, sec. 106.

Relative-Income Factor

A state's relative income factor is the ratio of the average U.S. per-capita income to the state's per-capita income.[9] The calculation of the relative income weight, which modifies the per-capita distribution, is similar to that of the tax effort weight. The relative income weight equals the ratio of the state's relative income factor to the weighted[10] mean relative income factor for all of the state areas. Thus, the relative-income weight is inversely related to the state's per-capita money income, everything else remaining the same.

The Five-Factor Formula

The five-factor formula is more complicated. Instead of computing the state's share of the total entitlement, the fivefactor formula arrives at shares of five separate amounts that are to be distributed according to the state's rating on each of the five factors. Thus, a state's allocation is the sum of five amounts determined by five separate formulas, one for each factor.

According to the revenue sharing act, population, relative income, and urbanization each distribute 22.01 percent of the total entitlement, while the general tax

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[9]Ibid., sec. 109(f)(1).
[10]Weighted by state population.

effort factor and income tax effort factor each distribute 16.98 percent.[11] A state's population amount and urbanization amount are proportional to the state's share of the nation's population and its share of the urban population.[12] A state's relative income amount is the ratio of the U.S. per-capita personal income to the state's, multiplied by its population and divided by the sum of 51 such calculations (one from each state and D.C.). The resulting ratio is then multiplied by 22.01 per cent of the total entitlement, the amount to be allocated on a basis of income.[13]

To determine a state's tax effort amount, square the state's eligible state and local taxes and divide this amount by it aggregate personal income. The ratio of this amount to the sum of 51 such ratios (one from each state and the District of Columbia) determine a state's share of the 16.98 percent of the total entitlement to be distributed according to tax effort.[14]

Finally the state income tax amounts are distributed according to the proportion the state's adjusted income tax revenues bears to the sum of all state's adjusted income tax

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[11]Ibid., sec. 106(b)(3). The 22.01 is rounded from 35/159. The 16.98 is rounded from 27/159.
[12]Ibid., sec. 109(g)(1) and (2).
[13]Ibid., sec 109(g)(3).
[14]Ibid., sec. 109(g)(5).

revenues.[15] The adjusted income tax revenue is generally 15 percent of the state's personal income tax revenue, but not less than 1 percent or more than 6 percent of the federal income tax revenue from the state.[16]

Formula Goals

Much of the revenue sharing literature, especially that appearing before the act was passed, is extraordinarily colored with political rhetoric and emotionally charged phrases ("fiscal imbalance", "state and local fiscal crises", "first aid to sick governments", etc.),[17] which produced a great deal of confusion over what form revenue sharing would take, and what its objectives would be. Goetz cites pervasive ambiguity as a primary reason for writing his monograph, What Is Revenue Sharing? Moreover, nowhere in the revenue sharing literature is the ambiguity more pervasive than in the discussions of goals. Even three years after the passage of the revenue sharing act, program goals were articulated in terms of constituent needs for services and government's responsibility to provide services.[18]

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[15]Ibid., sec. 109(g)(4).
[16]Ibid., sec. 109(b).
[17]C. J. Goetz, What Is Revenue Sharing?, p. 1.
[18]N.S.F.-R.A.N.N., General Revenue Sharing Research Utilization Project, Vol. 3, p. 2.

Congress had to translate its goals from nebulous phrases and illusions into a specific formula. Both the choice of variables and the manner in which they enter the formula reveal de facto choices of objectives, so that it is not necessary to rely totally on the confused revenue sharing propaganda for evidence.

Three-Factor Formula Goals

What, then, judging by the structure of the interstate formula, are the most conspicuous objectives of the formula? The goals implied by the three-factor formula are to reward states[19] that, relative to other states have (1) low per-capita incomes and (2) high taxes relative to their incomes; further, the formula is designed to (3) encourage the state to increase taxes.

The goal of income equalization, or redistribution of resources toward lower income states, is apparant from the

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[19]This list of goals assumes that the states (governments) are the recipients of revenue sharing funds. (See Chapter I, pp. 8-9.) If the citizens who reside in the states are assumed to be the recipients, then the goals implied by the three-factor formula are to reward citizens, who relative to other citizens (1) have low incomes, and (2) high taxes. The formula also encourages citizens to increase taxes. The distinction will be considered again in Chapter 3, when the distribution formula's performance is measured. Until then, goals will be discussed in terms of states, as if states are the only entities that are being compared. This convention will streamline the discussion with no real sacrifice in comprehension.

presence of state income variables in the three-factor formula. As mention above, the three-factor formula is essentially a per-capita allocation weighted by an income factor and a tax-effort factor. Because the numerator is a constant (U.S. per-capita money income) for individual allocation periods, the relative income factors of states increase cross-sectionally as income decreases. Thus, per-capita allocations increase as per-capita income decreases, provided that tax effort factors remain unchanged.

However, tax effort factors do not remain unchanged. Aggregate state income is also in the denominator of the tax effort factor, with the result that a higher income for a state moves the tax effort factor in the same direction as the relative-income factor (everything else remaining unchanged).

The goal of rewarding states with relatively strong tastes for public goods is evident in the structure of the tax effort factor. As states devote larger portions of their incomes to public goods, their tax effort factors increase, which increases their revenue sharing allocations, everything else remaining unchanged. To devote a larger fraction of income to the public sector, both aggregate taxes and per-capita taxes must increase if everything else is unchanged.

The goal of providing incentives to increase taxes is pursued with the tax effort factor. With the state-local taxes in the numerator of the tax effort factor, a state can increase its revenue sharing entitlement by increasing its taxes, if everything else (including the taxes of other states) remains unchanged. However, because all states have an incentive to increase their taxes, everything else is not likely to remain unchanged. If other states are "allowed" to adjust their taxes, states that incerase their taxes at a higher than average rate, will increase their total share of taxes paid and their revenue sharing allocations. In the event that all states raise their taxes at the same rate, each state's share of the total entitlement under the three-factor formula would not change. Further, because the revenue sharing process involves a fixed total disbursement, the game in which states try to increase their entitlements is necessarily a zero-sum game. Each dollar one state gains entails an exactly counterbalancing expense to the remaining states.[20]

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[20]It has been suggested that one of the hopes of the framers of the program was that the annual growth in the total allocation would be sufficient to compensate those governments that chose to respond to the tax incentives without reducing the allocation of governments preferring the status quo. Paul R. Dommel, The Politics of Revenue Sharing, p. 142.

Five-Factor Formula Goals

The goals implied by the five-factor formula include the three goals implied by the three-factor formula, plus two additional goals--to favor states that relative to other states, (1) have a high proportion of their residents living in urban areas, and (2) use the state personal income tax as a major source of revenue. These two additional goals are pursued with the urbanization factor and the state personal income tax factor. It may be helpful to refer back to table 2.2.

In this formula, income taxes are actually counted twice, once in the tax effort factor, as part of state and, local tax revenue, and within certain limits, again in the income-tax-effort-factor.

As was shown with the three-factor formula, the inclusion of policy variables in the allocation formula creates an incentive for recipient governments to modify their behavior in order to increase their entitlements. In the five-factor formula, the two marginal incentive effects are to encourage: (1) higher taxes in general, and (2) a substition of higher personal income taxes for some other revenue sources currently being used. The logic of the first incentive effect should be obvious from the discussion above. The reasoning behind the substitution effect is that because of the double counting of income tax revenue, a

state can increase its share of the revenue sharing pie without increasing its total tax burden if it incEeases its income tax and decreases some other tax or taxes. Of course, the substitution effect is operative only when neither the ceiling nor the floor constraint is binding for the state in the income tax adjustment formula. Of the 19 states which found the five-factor formula more favorable for the first two entitlement periods, three states (Connecticut, Nevada, and New Jersey) were affected by the floor constraint. Minnesota was the only state affected by the ceiling constraint.

Differences In Formula Objectives

There are both similarities and differences between the three- and five-factor formulas. Both formulas seem to emphasize the objective of equalization as the most important formula objective, followed by the rewarding of taxation. The urbanization factor appears to represent a clear difference in formula objectives.

On the other hand, the focus of the five factor formula on the income tax can be interpreted as merely a difference in approach rather than a difference in basic objectives. Providing an incentive to shift state and local revenue effort to the personal income tax can be seen as equalization in another form. If an income tax displaces

traditional state and local taxes, which are supposedly either regressive or proportional, it follows that the tax burden is shifted to higher income citizens. This assumes that the state personal income tax is progressive. However, progressivity is not always present in state income taxes. Of the 44 states using a personal income tax in 1972, 12 states levy a flat-rate duty on taxable income.[21] Furthermore, the degree of progressivity varies across states. At one extreme are six states which apply a flat rate to taxable income over $5,000. At the other extreme are states, like California, Minnesota, and New York, with 10 to 15 tax brackets and tax rates up to 15 percent.[22]

Other Differences.

The sensitivity of the two formulas to changes in the independent variables is another distinguishing characteristic. The variables (and factors) enter the formula multiplicatively in the three-factor formula. By contrast, in the five-factor formula the factors determine five separate and independent amounts which are then summed to determine the state's total entitlement. Because of the different mathematical forms, state entitlements under the

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[21]See Table 679, "State Individual Income Taxes: 1972", U.S., Department of Commerce, Bureau of the Cencus, Statistical Abstract of the United States, 1973, p.429.
        [22]Ibid.

three-factor formula are likely to be more sensitive to changes in the levels of state data elements than entitlements under the five-factor formula. For example, under the three-factor formula an increase in a state's population, with everything else the same, increases the state's share of the aggregate revenue sharing entitlement by approximately the same proportion. However, under the five-factor formula, only the state's share of of the amounts to be allocated on the basis of population and relative income (44.02 percent of the aggregate revenue sharing entitlement) would increase approximately in proportion to the increase in population. The calculation is not as simple for the other variables. However, the first partial derivative of the state entitlement, with respect to any variable common to both formulas, is greater in absolute value for the three-factor formula than for the five factor formula. (In the case of income, the derivatives are negative.)

Goals and Formula Origins: Institutional Considerations

When Congress writes an aid bill that uses a formula to distribute funds, there is always a controversey over the criteria. The choice of variables and the way they enter the formula is important because they have immediate financial consequences for the recipients. The formula

determines who gets what. Groups that are likely to be significantly affected by the choice make their interests known to their representatives and to other representatives whom they hope will be sympathetic to their views. Thus, the formula is both politically and financially significant.

The most visible difference between the two formulas is that the five-factor formula explicitly rewards both urbanization an the use of the income tax (up to a point), while the three factor formula responds to these factors only as they affect state and local taxes and population. This difference in emphasis, if not in basic goals, is predictable when the origins of the two formulas are considered. Table 2.3 shows the first year's allocations under each formula.

Revenue Sharing in the House of Representatives

The basis of representation in the House of Representatives is population. Because of this, the House is dominated by the more urban states; in fact, the nine most populous states have more than a majority of the representatives. Therefore, it is hardly surprising that the urbanization-favorable five-factor formula was the one passed by the House of Representaties.

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TABLE 2.3

STATE ALLOCATIONS UNDER EACH FORMULA

State	3FF	5FF	Per Capita 3FF	5FF
ALABAMA	98852425.	73201074.	28.7003	21.2528
ALASKA	7211933.	6798186.	23.8475	22.4794
ARIZONA	54839529.	46745670.	30.9200	26.3564
ARKANASA	59526153.	38437715.	30.9497	19.9851
CALIFORNIA	517202840.	612928789.	25.9011	30.6950
COLORADO	58496562.	59634548.	26.4747	26.9897
CONNECTICUT	59105026.	73555216.	19.4923	24.2579
DELAWARE	13383143.	17568376.	24.4172	32.0530
D.C.	14328707.	26162931.	18.9405	34.5837
FLORIDA	160101429.	151486161.	23.5758	22.3071
GEORGIA	119544946.	103496164.	26.0564	22.5584
HAWAII	25147515.	25909495.	32.6628	33.6525
IDAHO	23228559.	15831372.	32.5779	22.2034
ILLINOIS	248522140.	299773725.	22.3637	26.9757
INDIANA	124179760.	116051098.	23.9010	22.3365
IOWA	82394994.	66952493.	29.1626	23.6969
KANASA	57235481.	47280816.	25.4449	21.0194
KENTUCKY	94918191.	61711658.	29.4712	19.1609
LOUISIANA	133719091.	85000479.	36.7050	23.3321
MAINE	34914322.	20100527.	35.1349	20.2275
MARYLAND	92187121.	117132231.	23.4976	29.8558
MASSACHUSETTS	144611108.	180614184.	25.4187	31.7470
MICHIGAN	220680938.	245482540.	24.8465	27.6389
MINNESOTA	113131670.	116353917.	29.7238	30.5704
MISSISSIPPI	96524723.	45755015.	43.5386	20.6383
MISSOURI	107110077.	107553069.	22.8984	22.9931
MONTANA	22366902.	16762143.	32.2100	24.1387
NEBRASKA	42419247.	33690201.	28.5587	22.6819
NEVADA	12143309.	12597477.	24.8463	25.7755
NEW HAMPSHIRE	18104766.	13912755.	24.5428	18.8601
NEW JERSEY	146346090.	182423667.	20.4077	25.4387
NEW MEXICO	35984916.	22629835.	35.3815	22.2504
NEW YORK	501693810.	644504818.	27.5028	35.3316
NORTH CAROLINA	148430783.	113445742.	29.1933	22.3125
NORTH DAKOTA	24201630.	12332530.	39.1744	19.9623
OHIO	210074203.	234111523.	19.7156	21.9715
OKLAHOMA	64310989.	52930465.	25.1268	20.6803
OREGON	52292591.	57958164.	25.0020	27.7109
PENNSYLVANIA	298872370.	304006064.	25.3306	25.7657
RHODE ISLAND	24999965.	26438202.	26.3234	27.8378
SOUTH CAROLINA	78697558.	55404772.	30.3754	21.3849

TABLE 2.3-<u>Continued</u>

State	3FF	5FF	Per Capita 3FF	5FF
SOUTH DAKOTA	26323342.	13283650.	39.5093	19.9377
TENNESSEE	107878048.	79544914.	27.4777	20.2610
TEXAS	270577461.	250100978.	24.1642	22.3356
UTAH	33372993.	28859059.	31.5056	27.2442
VERMONT	16050312.	10989766.	36.0899	24.7110
VIRGINIA	110364676.	116288226.	23.7270	25.0004
WASHINGTON	85125834.	77680408.	24.9399	22.7585
WEST VIRGINIA	56693300.	36501692.	32.5032	20.9270
WISCONSIN	145418732.	135871162.	32.9164	30.7552
WYOMING	10879005.	6209728.	32.7271	18.6806

Table 2.4 shows the per-capita allocations under each formula, the percentage gain over the least favorable formula, and the states' rank with respect to per-capita income, the percentage of the population living in urban areas and the state's tax effort. The states are ordered with respect to their advantage from the Senate, three-factor formula. Table 2.4 shows that the eight most urban states are favored by the House, five-factor formula. The least urban state to be favored by the House formula is Virginia, which is the thirty-first most urban state.

Furthermore, the 1972 House Ways and Means Committee, where the factor formula originated, was dominated by the urban states. Table 2.5 lists the members of the House Ways and Means Committee who wrote the five-factor bill, the states they represent, the percentage difference over the three-factor formula and the absolute difference for each state. Seventeen of the twenty-five members represent districts in state areas favored by the five-factor formula.[23]

The committee members were obviously interested in the allocations going to their states. In trying to agree on a

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[23]To my knowledge, there is no data on the distribution of revenue sharing dollars or other government expenditures (transfers) by Congressional district. As a result, the state area's allocation is used as a proxy for the benefits received by the member's district.

TABLE 2.4

STATE'S GAIN OVER THE LEAST FAVORABLE FORMULA
WITH PER CAPITA INCOME, URBANIZATION AND TAX EFFORT RANKINGS

	RS (3)	RS (5)	% GAIN	PI	PU	EFF
MISSISSIPPI	43.54	20.64	110.96	51	47	13
SOUTH DAKOTA	39.51	19.94	98.16	45	46	4
NORTH DAKOTA	39.17	19.96	96.24	41	49	6
WYOMING	32.73	18.68	75.19	29	33	7
MAINE	35.13	20.23	73.70	39	42	10
NEW MEXICO	35.38	22.25	59.02	43	22	16
LOUISIANA	36.71	23.33	57.32	47	26	12
WEST VIRGINIA	32.50	20.93	55.32	46	50	31
ARKANSAS	30.95	19.99	54.86	50	43	44
KENTUCKY	29.47	19.16	53.81	44	41	37
IDAHO	32.58	22.20	46.72	37	39	21
VERMONT	36.09	24.71	46.05	33	51	3
SOUTH CAROLINA	30.38	21.38	42.04	49	45	39
TENNESSEE	27.48	20.26	35.62	42	36	48
ALABAMA	28.70	21.25	35.04	48	35	50
MONTANA	32.21	24.14	33.44	35	40	17
NORTH CAROLINA	29.19	22.31	30.84	40	48	35
NEW HAMPSHIRE	24.54	18.86	30.13	25	38	40
NEBRASKA	28.56	22.68	25.91	31	32	19
IOWA	29.16	23.70	23.07	30	37	18
OKLAHOMA	25.13	20.68	21.50	36	24	49
KANSAS	25.44	21.02	21.05	28	27	32
ARIZONA	30.92	26.36	17.31	27	13	14
UTAH	31.51	27.24	15.64	34	11	24
GEORGIA	26.06	22.56	15.51	38	34	42
WASHINGTON	24.94	22.76	9.58	13	19	29
TEXAS	24.16	22.34	8.19	32	12	46
WISCONSIN	32.92	30.76	7.03	23	28	5
INDIANA	23.90	22.34	7.00	19	30	38
ALASKA	23.85	22.48	6.09	3	44	41
FLORIDA	23.58	22.31	5.69	21	9	43
MISSOURI	22.90	22.99	0.41	26	23	47
PENNSYLVANIA	25.33	25.77	1.72	20	21	30
COLORADO	26.47	26.99	1.95	18	14	25
MINNESOTA	29.72	30.57	2.85	22	29	11
HAWAII	32.66	33.65	3.03	11	8	2
NEVADA	24.85	25.78	3.74	7	10	8
VIRGINIA	23.73	25.00	5.37	24	31	45
RHODE ISLAND	26.32	27.84	5.75	17	4	22
OREGON	25.00	27.71	10.83	16	25	36
MICHIGAN	24.85	27.64	11.24	12	18	26

TABLE 2.4-<u>Continued</u>

	RS(3)	RS(5)	% GAIN	PI	PU	EFF
OHIO	19.72	21.97	11.44	15	17	51
CALIFORNIA	25.90	30.70	18.51	5	2	9
ILLINOIS	22.36	26.98	20.62	9	7	27
CONNECTICUT	19.49	24.26	24.45	1	15	33
NEW JERSEY	20.41	25.44	24.65	4	3	34
MASSACHUSETTS	25.42	31.75	24.90	10	6	15
MARYLAND	23.50	29.86	27.06	8	16	28
NEW YORK	27.50	35.33	28.47	6	5	1
DELAWARE	24.42	32.05	31.27	14	20	20
D.C.	18.94	34.58	82.59	2	1	23

TABLE 2.5

HOUSE WAYS AND MEANS COMMITTEE
92ND CONGRESS (SECOND SESSION)

		RS(5)-RS(3)	Per Cent*
Mills ($)	Arkansas	-25651351	-35.43
Ullman ($)	Oregon	5665573	10.83
Burke ($)	Massachusetts	36003076	24.90
Griffiths ($)	Michigan	24801602	11.24
Rostenkowski	Illinois	51251585	20.62
Landrum	Georgia	-16048782	-5.38
Vanik	Ohio	24037320	11.44
Fulton	Tennessee	-28333134	-26.26
Burleson	Texas	-20476482	-7.57
Corman	California	95725949	18.51
Green	Pennsylvania	5133693	1.72
Gibbons	Florida	-8615267	-5.38
Carey	New York	142811008	28.47
Waggonner	Louisiana	-48718612	-36.43
Karth	Minnesota	3222247	2.85
Byrnes	Wisconsin	-20191608	-6.57
Betts ($)	Ohio	11380524	11.44
Schneebeli ($)	Pennsylvania	5665573	1.72
Collier	Illinois	51251585	20.62
Broyhill ($)	Virginia	5923551	5.37
Conable	New York	1482811008	28.47
Chamberlain	Michigan	24801602	11.24
Pettis	California	95725949	18.51
Duncan	Tennessee	-28333134	-26.26
Brotzman	Colorado	1137986	1.95

* (RS(5)-RS(3))/RS(3)*100.
$ member of the conference committee

distribution formula, the Treasury would calculate the allocations generated by each new distribution formula. However, agreement on a formula was reached only when the members were forced behind a partial "veil of ignorance". As James C. Corman, a member of the committee who opposed the bill describes it:

> "We finally quit not because we hit on a rational formula but because we were exhausted. And finally we got one that almost none of us could understand at the moment. We were told the statistics were not available to run the print on it. So we adopted it and it is here for you today."[24]

Revenue Sharing in the Senate

When the House revenue sharing bill went to the Senate Finance Committee, the controversy over the distribution formula was resumed. However, then there were significant changes in the political environment. Because each state has equal representation in the Senate, the non-urban, less populous states have greater representation relative to their representation in the House. Citizens in the non-urban states thus have proportionally more representation in the Senate than citizens in the urban states. For example, two California Senators represent about 20 million people, while two Alaskan Senators represent 300,000 people. It

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[24]U.S., Congress, House, Representative Corman, 92nd Cong., 2nd sess., 22 June 1972, Congresional Record 118:22046.

follows that relative to the House, the Senate is expected to be more responsive to pressures from non-urban interest groups, and therefore its three-factor formula would be more likely to favor the less urban states.

The Senate bill eliminated both the urbanization factor and the income tax factor.[25] The elimination of the urbanization factor unambiguously increased the share of the aggregate entitlement allocated to non-urban (non-populous) states. On the other hand, the deletion of the income tax factor did not result in a clear-cut gain for the non-urban states. For example, Oregon and Alaska, the 24th and 43rd most urban states, collected 50.9 percent and 40.9 percent of their tax revenue by way of the individual income tax. It is likely that a contributing factor in the decision to drop the income tax factor from the Senate version of revenue sharing was that neither California nor New York were represented on the Senate Finance Committee. See Table 2.6. New York and California accounted for more than 37 percent of all the state income tax revenue collected in 1972.

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[25]The Senate also deleted the maintence of effort constraint on local governments the state governments were exempt from this provision under the House bill. This string would have tied the receipt of the money to the maintenance of effort in a number of "high priority" expenditure categories.

TABLE 2.6

SENATE FINANCE COMMITTEE
92ND CONGRESS (SECOND SESSION)

		RS(3)-RS(5)	Per Cent*
Long ($)	Louisiana	48718612	57.32
Anderson ($)	New Mexico	13355081	59.02
Talmadge ($)	Georgia	16048782	15.51
Hartke	Indiana	8128662	7.00
Fulbright	Arkansas	21088439	54.86
Ribicoff	Connecticut	-14450191	-19.65
Harris	Oklahoma	11380524	21.50
Byrd	Virginia	-5923551	-5.09
Nelson	Wisconsin	9547570	7.03
Bennett ($)	Utah	4513934	15.64
Curtis ($)	Nebraska	8729046	25.91
Miller	Iowa	15442501	23.07
Jordan	Idaho	7397187	46.72
Fannin	Arizona	8093859	17.31
Hansen	Wyoming	4669277	75.19
Griffin	Michigan	-24801602	-10.10

* (RS(3)-RS(5))/RS(5) * 100.
$ member of the conference committee

One might expect the majority coalition in both the Senate and the House to ask for more than they would settle for, fully expecting to compromise with the majority coalition in the other legeslative body. Dommel recognizes this bargaining phenomenon:

> "The general thrust of the Finance Committee efforts was to bias the bill more toward the south and rural areas. It was anticipated that in any subsequent House-Senate Conference Committee the Senate would then have some differences to compromise with the urban oriented House version."[26]

In fact, in the bill that emerged from the Finance Committee, 13 of the 16 states represented on the committee received larger allocations than they would have under the House Bill. Among all states, 31 were better off with the Senate bill than the House bill.

Revenue Sharing in the Conference Committee

The bill took on its final form in the House-Senate Conference Committee. In the process of resolving the differences between the two bills, several constraints that the House would have imposed on the use of revenue sharing funds were deleted.[27] Also, it was agreed to first calculate state entitlements under each formula, assign each state the

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[26]Dommel, p. 158.
[27]See note 24 above.

larger of the two amounts, and then scale down all entitlements by a uniform percentage to limit the total allocated to the amount appropriated. Because of the scaling factor, 13 states actually received less under the compromise than under either single formula. Of the 12 states represented on the Conference Committee, only Virginia and Pennsylvania received less (2.65 percent and 3.03 percent, respectively) under the compromise than the least favorable of the two original formulas. The benefit to each state from the compromise, compared to the less favorable of the original formulas, is obtained by subtracting 8.4 from the "percent gain" column on table 2.4.

As expected, the bills emerging from the congressional committees have favored the states represented by the majority of the committee members over the alternative bill in the other legislative branch. A similar analysis can be performed on the composition of the House - Senate Conference Committee and the benefits to the states represented on this committee.[28] Table 2.7 shows the transfers implicit in choosing the final compromise over an equally plausible alternative which would have split the

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[28]In the following chapter the cost of revenue sharing to each state is estimated with three alternative assumptions of the opportunity cost of revenue sharing. It may prove interesting to see if this analysis is modified if net rather than gross benefits are considered.

TABLE 2.7

TRANSFERS TO STATES FROM THE CURRENT
COMPROMISE RATHER THAN A SPLIT-THE-DIFFERENCE
COMPROMISE BETWEEN THE TWO FORMULAS

	RS(5)-RS(3)	RS(split)	RS-RS(split)	%
ALABAMA	-25651351.	85988467.	4442240.	5.17
ALASKA	-413747.	7001942.	-281545.	-4.02
ARIZONA	-8093859.	50769996.	-602513.	-1.19
ARKANASA	-21088439.	48960137.	5494694.	11.22
CALIFORNIA	95725949.	564814357.	-4103949.	-0.73
COLORADO	1137986.	59039270.	-4485279.	-7.60
CONNECTICUT	14450191.	66300604.	988086.	1.49
DELAWARE	4185233.	15468873.	602768.	3.90
D.C.	11834223.	20236809.	3697174.	18.27
FLORIDA	-8615267.	155724466.	-9262856.	-5.95
GEORGIA	-16048782.	111470927.	-2110596.	-1.89
HAWAII	761981.	25517145.	-1815005.	-7.11
IDAHO	-7397187.	19521275.	1728331.	8.85
ILLINOIS	51251585.	274025935.	208610.	0.08
INDIANA	-8128662.	120061977.	-6461694.	-5.38
IOWA	-15442501.	74640513.	734851.	0.98
KANSAS	-9954665.	52234894.	124419.	0.24
KENTUCKY	-33206532.	78280074.	8551575.	10.92
LOUISIANA	-48718612.	109311119.	13015793.	11.91
MAINE	-14813794.	27495183.	4444618.	16.17
MARYLAND	24945111.	104613102.	2540066.	2.43
MASSACHUSETTS	36003076.	162540282.	2686502.	1.65
MICHIGAN	24801602.	232978016.	-8409326.	-3.61
MINNESOTA	3222247.	114691732.	-8250571.	-7.19
MISSISSIPPI	-50769709.	71108211.	17193102.	24.18
MISSOURI	442992.	107283810.	-8893709.	-8.29
MONTANA	-5604760.	19555816.	905541.	4.63
NEBRASKA	-8729046.	38037790.	767556.	2.02
NEVADA	454167.	12364888.	-840652.	-6.80
NEW HAMPSHIRE	-4192010.	16001636.	560696.	3.50
NEW JERSEY	36077577.	164311726.	2570382.	1.56
NEW MEXICO	-13355081.	29294334.	3624853.	12.37
NEW YORK	142811008.	572844281.	16752040.	2.92
NORTH CAROLINA	-34985041.	130879994.	4905249.	3.75
NORTH DAKOTA	-11869100.	18258951.	3880825.	21.25
OHIO	24037320.	221994030.	-7827605.	-3.53
OKLAHOMA	-11380524.	58594641.	237383.	0.41
OREGON	5665573.	55100847.	-2080420.	-3.78
PENNSYLVANIA	5133693.	301305075.	-23198765.	-7.70
RHODE ISLAND	1438237.	25707639.	-1521835.	-5.92

TABLE 2.7-<u>Continued</u>

	RS(5)-RS(3)	RS(SPLIT	RS-RS(SPLIT)	%
SOUTH CAROLINA	-23292786.	67021327.	4971604.	7.42
SOUTH DAKOTA	-13039691.	19794683.	4286045.	21.65
TENNESSEE	-28333134.	93669779.	5017614.	5.36
TEXAS	-20476482.	260223367.	-12697715.	-4.88
UTAH	-4513934.	31102179.	-572394.	-1.84
VERMONT	-5060546.	13514022.	1168886.	8.65
VIRGINIA	5923551.	113276020.	-6894953.	-6.09
WASHINGTON	-7445427.	81366896.	-3493345.	-4.29
WEST VIRGINIA	-20191608.	46576760.	5286563.	11.35
WISCONSIN	-9547570.	140582359.	-7552555.	-5.37
WYOMING	-4669277.	8540564.	1411605.	16.53

difference between the three- and five-factor formulas. Of the 12 members of the committee, 5 represented states that benefited from having the final compromise while 7 should have prefered a split-the-difference compromise. The cost in foregone transfers to the states represented by the seven is roughly $39 million for the first year, while about $28 million in transfers is gained by the states represented by the other five.

With the majority of the states represented on the conference committee receiving smaller allocations under the final compromise than under the alternative, why was it chosen? There are several possible reasons, such as the ignorance of the objective benefits (and costs), to logrolling with other programs. However, there is one hypothesis which can be rejected, namely that the split-the-difference compromise was not considered by anyone. It is evident that this alternative did receive some attention. According to Dommel,

"This solution [the actual compromise was first proposed by Cannon, Rockefeller's Special Assistant, who feared that any compromise which split the dollar differences between the House and Senate bills would result in New York losing revenue sharing money."[29]

In fact New York stood to gain 2.92 percent or $16.7 million by convincing the committee to adopt the compromise that it did, instead of a simple split-the-difference compromise.

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[29]Dommel, p. 163. The Politics of Revenue Sharing, p. 163. (emphasis added)

CHAPTER III

EMPIRICAL FINDINGS

It should be stressed at the outset that the empirical analysis is not directed at estimating the allocation formula. What is at issue is whether or not the final distribution of funds is consistent with the formula goals derived in chapter II. As indicated in chapter I, there are four perspectives from which to analize the effects of the revenue sharing program. They are: (1) the welfare function approach that treats governments as the recipients; (2) the welfare function approach that treats citizens as the recipients; (3) the porkbarrel approach that treats governments as the recipients; and (4) the porkbarrel approach that treats citizens as the recipients.

The Welfare Function Approaches

The two welfare function approaches differ according to the assumed recipients, or beneficiaries, of the program. One approach is to assume that governments (states) are the recipients of the revenue sharing funds. Under this

assumption, state observations ought to be used in the statistical analysis, with no extra weight given to states with large populations. Ally states are equall important for the advancement or frustration of the goals of revenue sharing.

The other welfare function approach is to assume that governments are intermediaries and that the citizens represented by governments are the actual recipients of the shared revenue. Under this assumption, the observations that ought to be used in a statistical analysis are effects on citizens, not state observations or per-capita state observations. However, no such data exist. As explained in chapter II, even estimates of the incidence of revenue sharing benefits by local governments have very serious limitations. A further disaggregation to the level of individual citizens would require specific information, or assumptions, about the incidence or benefits to citizens, channeled through the states, counties, municipalities, cities, townships, and Indian villages.

In lieu of such information, each state's per-capita observations are weighted by the state's population. Thus, states with relatively large populations are weighted more heavily than less populous states in determining whether one goal or another is being met. In states with large

populations, more citizens are being treated appropriately or inappropriately than in states with small populations.

In testing for desired effects from any single variable, both welfare function approaches hold everything else constant. What is of interest are the partial derivatives and elasticities of the allocation with respect to the key variables. From the perspective of the "benelovent despot," who might be supposed to have imposed this program to further a set of goals, each goal should be advanced independently of the other goals.

If the allocation formula were unknown, then a statistical analysis using multiple regression techniques would be a reasonable procedure for estimating these parameters. The regression equation in that instance would include all of the variables of interest. The estimated coefficients would then be interpreted as the desired partial derivatives or elasticities (depending on the functional form).

In this study, where the allocation formula is known, regression analysis is used for summary measures of association between shared revenue and the variables associated with the formula goals. Because both the formula and the data used to calculate state allocations are available, relevant slopes (partial derivatives) and elasticities can be calculated directly for each state under

each formula. Using a computer program that simulates the interstate-allocation process, responses to changes in a state's data elements are determined by changing a state data element and then measuring the change in its revenue sharing allocation. For example, to determine the partial derivative with respect to the state's per-capita income, the initial allocation is calculated and then recalculated after increasing that state's per-capita income by 1 percent, and the change in the allocation is converted to a percentage change, which is the elasticity.

Sensitivity Analysis

In the sensitivity analysis that follows, the terms slope, partial derivative, or elasticity will mean a "mutatis mutandis" slope, partial derivative or elasticity. For example, to calculate a standard partial derivative of shared revenue for Virginia with respect to population, one would simply increment Virginia's population by one. If all of the other aggregate values remain unchanged, the per-capita values change. Alternatively, the per-capita values can be maintained by incrementing the aggregate values by their per-capita counterparts. Unless stated otherwise the latter approach will be used, to keep the per capita values constant.

This sensitivity analysis is performed on each of the state variables used in the formula. Table 3.1 Summarizes the results from the partial derivative experiments; Table 3.2 summarizes the results from the elasticity experiments. Complete results are found in the appendix to this chapter. These results show that for the most part the formula goals are advanced from the welfare function perspectives. The derivative of a state's allocation with respect to the addition of a typical citizen (one who has the state's mean income and tax bill) will be a little less than its per-capita allocation. The population elasticities are essentially unity. These marginal effects are interpreted as neutral with respect to furthering any of the formula goals.

Urban Goals

Both the partial derivatives of shared revenue with respect to urbanization and the urbanization elasticities appear to be consistent with the formula goal of favoring governments in urban states over governments in non-urban states. If a citizen of a state migrates to a metropolitan area within that same state, and the state is favored by the five-factor-formula, the state's allocation will increase by $7.75 to $9.06, everything else being equal. The urban elasticities vary from 0.31 (New Jersey) to 0.16 (Minnesota)

TABLE 3.1

SLOPES GENERATED FROM THE SENSITIVITY ANALYSIS

Variable	Formula	Mean Slope	Weighted Mean	Hi	Low
Popu-lation[1]	Comp.	26.55	24.76	38.92 (MS)	19.17 (OH)
	3FF	27.63	25.04	42.75 (MS)	18.89 (DC)
	5FF	24.02	24.66	34.49 (DC)	18.65 (WY)
Urban Popu-lation[2]	Comp.	3.46	5.02	9.06 (NV)	0.0 (WY,AK)
	3FF	0.0	0.0	0.0	0.0
	5FF	9.75	9.45	0.0[3]	0.0
Urban Popu-lation[4]	Comp.	0.175	2.92	11.48 (DE)	-12.96 (MS)
	3FF	-5.89	-6.09	-1.07 (NH)	-14.42 (MS)
	5FF	9.95	9.93	11.84 (MD)	8.36 (MS)
Per Capita Income[5]	Comp.	-0.0494	-0.0359	-0.0918 (AR)	-0.007 (DC)
	3FF	-0.0683	-0.0630	-0.0923 (AK)	-0.0499 (CA)
	5FF	-0.0149	-0.0126	-0.0300 (MS)	-0.0087 (NY)
Per Capita Income[6]	Comp.	-0.021	-0.012	0.0087 (DE)	-0.050 (MS)
	3FF	-0.034	-0.031	-0.024 (CA)	-0.050) MS)
	5FF	0.001	0.001	0.010 (HI)	-0.011 (MS)
State Taxes[7]	Comp.	4.98	3.77	12.26 (MS)	1.35 (OH)
	3FF	6.62	5.75	13.51 (MS)	3.29 (DC)
	5FF	1.81	1.74	2.29 (VT)	1.49 (TX)

[1]The increment is one citizen with an average income and tax bill.

[2]One citizen moves from a nonmetropolitan area to a metropolitan area.

[4]One citizen moves form a nonmetropolitan area to a metropolitan area; income and taxes also increase.

[5]Per capita income is incremented by $1.00.

[6]Per capita income is incremented by $1.00; taxes are assumed to be proportional.

[7]State tax revenues are increased by $100.

TABLE 3.1-<u>Continued</u>

Variable	Formula	Mean Slope	Weighted Mean	Hi	Low
Income	Comp.	1.88	3.18	9.66 (NY)	0.0
Tax	3FF	0.0	0.0	0.0	0.0
Substi-tution[8]	5FF	4.77	5.01	9.93 (NY)	0.0
State	Comp.	6.66	6.43	12.33 (MS)	1.55 (NJ)
Income	3FF	6.62	5.75	13.51 (MS)	3.29 (DC)
Tax[9]	5FF	6.47	6.30	8.34 (VT)	1.49 (TX)

[8]$100.00 of state income taxes are substituted for $100. of non-income taxes.
[9]State income tax revenues are increased by $100.

TABLE 3.2

ELASTICITIES OF SHARED REVENUE
GENERATED FROM THE SENSITIVITY ANALYSIS

Variable	Formula	Mean Elast.	Weighted Mean	Hi	Low
Popu-lation[1]	Comp.	0.977	0.951	1.00	0.87(NY)
	3FF	0.980	0.958	1.00	0.90(NY)
	5FF	0.978	0.951	1.00	0.86(NY)
Urban Popu-lation[2]	Comp.	0.09	0.13	0.31(NJ)	0.0
	3FF	0.0	0.0	0.0	0.0
	5FF	0.17	0.20	0.31(NJ)	0.0
Urban Popu-lation[3]	Comp.	0.054	0.108	0.309(NJ)	-0.185(AZ)
	3FF	-0.092	-0.127	-0.197(VA)	0.0(VT,WY)
	5FF	0.175	0.216	0.285(DC)	0.0(VT,WY)
Per Capita Income[4]	Comp.	-1.32	-0.99	-1.97(AK)	-0.27(DC)
	3FF	-1.93	-1.89	-1.97	-1.78(CA)
	5FF	-0.41	-0.37	-0.60(SC)	-0.27(DC)
Per Capita Income[5]	Comp.	-0.53	-0.31	0.28(DE)	-0.045(OH)
	3FF	-0.97	-0.84	-0.999(AK)	-0.894(CA)
	5FF	0.04	0.06	0.349(HI)	-0.222(TN)
State Taxes[6]	Comp	0.73	0.60	1.00	0.25(OH)
	3FF	0.98	0.96	1.00	0.90(CA)
	5FF	0.33	0.31	0.58(WY)	0.20(AL)

[1]The increment is one per cent of the state's population.

[2]The metropolitan population is incremented by one.

[3]The metropolitan population is incremented by one. Income increases; taxes increase inproportion to income.

[4]Per capita income is incremented by one per cent.

[5]Per capita income is incremented by one per cent; taxes increase inproportion to income.

[6]State non-income taxes are increased by one percent.

TABLE 3.2-<u>Continued</u>

Variable	Formula	Mean Elast.	Weighted Mean	Hi	Low
Income	Comp.	0.06	0.09	0.31(DE)	0.0
Tax	3FF	0.00	0.00	0.00	0.00
Substi-tution[7]	5FF	0.14	0.13	0.31(DE)	0.00
State	Comp.	0.15	0.16	0.41(HI)	0.00
Income	3FF	0.14	0.13	0.32(DE)	0.00
Taxes[8]	5FF	0.18	0.18	0.41(HI)	0.00

[7]State income taxes are increased by one per cent and other taxes are reduced by the same dollar amount.
[8]State income taxes are incremented by one per cent.

among the 20 five-factor states. The 31 states whose allocations are based on the three-factor formula all have elasticities of essentially 0.0.

Not only are the marginal effects and elasticities consistent with the goal of favoring urban states, but the most urban states are the recipients of the greatest part of this bonus. A list of the 20 states receiving a significant subsidy to urbanization includes the 8 most urban states. Virginia, which ranks 31st on the urbanization continuum, is the least urban state of the 20.[30]

An interesting variant of the urban migration experiment can be performed using data on per-capita income in metropolitan areas and rural areas within states. A citizen moving to the city would expect to increase his money income. Across states, the average gain is $603.84. In percentage terms, the gain is 24.76 percent. In this variant a citizen migrates to a metropolitan area, and increases his income by the difference between metropolitan and per-capita rural income for that state. Taxes are assumed to increase proportionately.[31] Table 3.3 lists the expected increases in income with their combined impact on

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[30]See Table 2.5 The last 20 states on the table receive a significant benefit from further ubranization.
[31]This assumption is a least roughly consistent with the Pechman-Okner study, Joseph A. Pechman and Benjamin A. Okner, Who Bears the Tax Burden, (Washington: Brookings Institution, 1974) Ch. I.

each state's revenue sharing allocation. Elasticities of shared revenue with respect to this brand of urban migration are also listed.

A few observation on table 3.3 appear in order. In the previous ubranization experiment there was virtually no effect on the allocation to the states favored by the three-factor-formula.[32] When incomes and taxes are allowed to increase with the migration, the first derivative of shared revenue with respect to urbanization for the the three-factor states varies from virtually 0 to -$12.97, with the average being about -$6.00. For the states favored by the five-factor formula, the mean derivative is essentially the same as for the simple urbanization experiment; however, the range of values in this case is $8.25 to $11.47.

For the five-factor-states, the urban population elasticities are very close in both urbanization experiments. However, the 31 states with urban migration elasticities of zero under the simple experiment range from 0 to -.18 under the more "realistic" experiment.

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[32]The reason the margin is not necessarily zero is that when a three-factor state becomes more urbanized it reduces the proportion of total urban population claimed by all other states. This in turn reduces the preliminary allocations under the five-factor formula for all other states, which increases the urbanizing state's share of the total revenue sharing budget whether it is favored by the five-factor formula or not.

TABLE 3.3

INCREASES IN INCOME, TAXES AND SHARED REVENUE
FROM MOVING TO A METROPOLITAN AREA

		Income	Changes in Taxes	Income Taxes	Shared Revenue
ALABAMA	3	589.	70.794	8.978	-6.374
ALASKA	3	0.	0.000	0.000	0.007
ARIZONA	3	855.	140.354	15.108	-8.033
ARKANSAS	3	544.	69.047	8.588	-7.001
CALIFORNIA	5	898.	151.799	22.566	8.607
COLORADO	5	808.	120.279	20.739	9.763
CONNECTICUT	5	377.	52.574	1.776	8.900
DELAWARE	5	942.	146.704	47.309	11.472
D.C.	5	0.	0.000	0.000	9.019
FLORIDA	3	613.	77.864	0.000	-3.941
GEORGIA	3	1013.	129.526	21.829	-8.689
HAWAII	5	584.	108.888	28.785	10.890
IDAHO	3	587.	90.889	16.860	-6.542
ILLINOIS	5	947.	140.176	20.323	9.161
INDIANA	3	363.	48.215	5.614	-2.349
IOWA	3	399.	62.952	10.332	-3.503
KANSAS	3	779.	111.155	9.908	-6.020
KENTUCKY	3	1028.	136.637	22.442	-11.005
LOUISIANA	3	811.	133.425	9.603	-11.081
MAINE	3	447.	75.012	4.369	-5.540
MARYLAND	5	1020.	150.477	36.651	10.720
MASSACHUSETTS	5	322.	52.455	12.104	9.308
MICHIGAN	5	809.	119.944	22.181	9.476
MINNESOTA	5	1062.	177.408	52.852	8.649
MISSISSIPPI	3	650.	106.858	7.386	-12.967
MISSOURI	5	1025.	127.728	17.147	8.783
MONTANA	3	196.	31.335	6.674	-2.102
NEBRASKA	3	697.	109.521	11.158	-6.380
NEVADA	5	435.	73.553	0.000	9.183
NEW HAMPSHIRE	3	131.	17.009	0.357	-0.959
NEW JERSEY	5	178.	24.589	0.190	8.508
NEW MEXICO	3	613.	99.645	10.375	-8.012
NEW YORK	5	926.	178.462	38.234	9.547
NORTH CAROLINA	3	706.	97.126	20.233	-7.112
NORTH DAKOTA	3	534.	91.793	5.590	-7.666
OHIO	5	715.	82.265	7.018	8.258
OKLAHOMA	3	752.	91.939	8.343	-6.224
OREGON	5	528.	72.013	21.692	9.897
PENNSYLVANIA	5	736.	107.397	17.789	8.861

TABLE 3.3-<u>Continued</u>

		Income	Changes in Income Taxes	Taxes	Shared Revenue
RHODE ISLAND	5	188.	28.370	4.215	9.186
SOUTH CAROLINA	3	455.	59.602	10.199	-5.275
SOUTH DAKOTA	3	413.	75.752	0.000	-6.176
TENNESSEE	3	751.	93.532	1.050	-7.310
TEXAS	3	747.	93.829	0.000	-5.164
UTAH	3	485.	72.304	12.478	-5.092
VERMONT	3	0.	0.000	0.000	0.018
VIRGINIA	5	1174.	147.848	33.723	9.647
WASHINGTON	3	645.	94.530	0.000	-4.179
WEST VIRGINIA	3	648.	93.172	12.928	-8.056
WISCONSIN	3	671.	119.935	30.560	-6.184
WYOMING	3	0.	0.000	0.000	0.012

Income-Redistribution Goals

The impact on a state's allocation of increasing income by $1.00 is very small, in most instances the state's allocation is reduced by less than $.003. If the per-capita incomes are increased by $1.00, Texas receives the largest absolute loss -- $164,503 (under the compromise formula). However, the largest per-capita loser from a $1.00 increase in state per-capita income is Arkansas with $.0918. The per-capita loss is probably a better measure of the impact on the recipient governments. The state least affected is the District of Columbia, which loses $.007 for every $1.00 increase in per-capita income. The reductions for states favored by the three-factor formula are on average five times as large as reductions for states favored by the five-factor formula. The income elasticities vary from -1.83 to -1.97 for states favored by the three-factor formula, and from -.27 to -.42 for states favored by the five-factor formula.

The partial derivatives of shared revenue with respect to state per-capita income appear to be consistent with the goal of favoring governments in states with low per-capita income over governments in states with high per-capita incomes. The derivatives are, in effect, income tax rates for each state. To estimate the parameters of this tax rate structure, equation (3.1) is estimated using OLS.

$$dR_i/dPMI_i = .146 - .122D_i - .027PMI_i + .023D_iPMI_i, \quad (3.1)$$
$$(56.38) \ (-20.75) \quad (-27.9) \quad \quad (12.45)$$

$$R^2 = 0.996 \quad \quad F \text{ value} = 4667.$$
where $D_i = 0$ for three-factor states,

$\quad D_i = 1$ for five-factor states

$\quad PMI_i$ = per capita money income in state i

$\quad \quad$ in thousands of dollars

The changes in tax rates within the groups are small relative to the difference between the two group means. However, the tax rate structure is revealed to be much more regressive when the positive relationship between D_i and PMI_i is considered. The simple correlation coefficient between D_i and PMI_i is 0.70. This means that governments of low income states, which are more likely to be three-factor states, face a much higher penalty as the state's income rises than governments of high income states, which tend to be five-factor-states.

Tax Goals

The tax variables in the distribution formula and the incentives they create for future tax adjustment inspired some of the first empirical work on revenue sharing.[33] The

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[33]Charles J. Goetz, "Federal Block Grants and the Reactivity Problem," Southern Economic Journal, 34 (July 1967) pp. 160-64.

sensitivity analysis indicates that all states have an incentive to increase their taxes, thus the goal of providing incentives to raise taxes is furthered.

There are several interesting ways to use the derivatives with respect to tax revenue (the marginal subsidy to increasing taxes) to make stronger statements relating to the goal of favoring high tax states. First, the hypothesis that the marginal subsidy is inversely related to per-capita income can be tested. Such a pattern in the marginal subsidy would be desirable if the "omniscient planner" whose goals are to be promoted in the social welfare function has a downward-sloping demand schedule for "high state taxes."

To estimate the parameters of the subsidy structure, equation (3.2) is estimated using OLS.

$$dR_i/dT_i = .136 \quad -.126D_i \quad -.164PCT_i \quad +.177D_iPCT_i, \quad (3.2)$$
$$ (12.94) \; (-7.26) \quad (-6.28) \qquad\qquad (4.74)$$

$$R^2 = 0.89 \quad F\ falue = 127.11$$

where D_i = 0 for three factor states,

 D_i = 1 for five-factor-states,

 PMT_i= per-capita taxes in state i,
 in thousands of dollars,

dR_i/dT_i = addtion to state i's allocation
 from a $1.0 change in tax revenue.

The regression results are consistent with the proposed hypothesis. If states are sensitive to this tax

subsidy, per-capita taxes will tend to be more equal than in the absense of revenue sharing.

Finally, an important determinant of the structure of subsidies is the correlation between per-capita tax burdens and being a five-factor state. Are the lower marginal subsidies of states favored by the five-factor formula more frequent at the lower end of the distribution, or are they equally likely to occur over the entire distribution? The correlation coefficient between per-capita taxes and the dummy variable (being favored by the five-factor formula) is 0.58. Thus, low-tax states are expected to face higher marginal subsidies (0.136 - 0.164 PCTi) than higher-tax states (0.01 + 0.005 PCTi). Such a tax-subsidy structure does not favor relatively high-tax states with higher margainl subsidies; higher-tax states are expected to have lower marginal subsidies. This tax-subsidy structure does tend to make per-capita taxes more equal than they would be in the absence of revenue sharing.

Income-Tax Goals

For 16 of the 20 states favored by the five-factor formula, the partial derivatives of shared revenue with respect to substituting income-tax revenue for non-income-tax revenue and their respective elasticities of subsitution appear to be consistent with the goals of favoring such a

tax substitution and of favoring governments of states that were heavy users of the personal income tax when the revenue sharing act was passed. Three states, Nevada, New Jersey and Connecticut, have no incentive for small-scale substitutions because their income tax amounts, as determined by the five-factor formula, are set by the minimum constraint of 1 percent of their state's federal-income-tax liabilities. On the other hand, Minnesota's income tax amount is set by the maximum constraint of 6 percent of its federal income tax liability. For the five-factor states with positive incentives, the subsidy for substituting $1.00 of income-tax revenue for $1.00 of non-income tax revenue ranges from $.0473 (California) to $.0966 for New York. The positive elasticities of substitution vary from 0.13 (Missouri) to 0.31 (Delaware). For the 31 states favored by the three-factor formula, the advantage of income-tax substitution is virtually non-existant.[34]

Does the income-tax substitution subsidy tend to equalize the per-capita income tax burdens across states? This could be accomplished by offering low-income tax states

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[34]The reason the margin is not exactly zero is that when a three-factor state substitutes income tax revenue for non-income tax revenue, it reduces the proportion of total income taxes collected by all the other states. This, in turn, reduces the preliminary allocations under the five-factor formula for all other states.

high subsidies, then gradually reducing the subsidy as the income-tax burden becomes closer to the desired level.

The regression equation (3.3) predicts the subsidies to income-tax substitution as a function of state personal income taxes per capita and a dummy variable to distinguish between three-factor states and five-factor states.

$$dRi/dITSi = .001 + .021\ Di + .004\ ITPCi + .24\ DiITPCi \qquad (3.3)$$
$$\qquad (.28) \quad (2.78) \quad (.00007) \qquad (2.62)$$

$$R^2 = 0.73 \qquad F\ value = 43.$$

where Di = 0 for three-factor states,

Di = 1 for five-factor states,

ITPCi,= Income taxes per capita in state i
in thousands of dollars,

dRi/dITS = the addition to the state's
allocation from $1.00 substituted.

As expected, the predicted subsidy for income tax substitution for the three-factor states is zero. For the five-factor states, the subsidy for income-tax substitution increases significantly with the tax burden.

The correlation between Di and ITPCi is an important factor affecting the overall distribution of subsidies for income-tax substitution. The correlation coefficient of 0.46 indicates that states with relatively high per-capita income-tax burdens are more likely to be favored by the five-factor formula and would therefore face a significant subsidy. These results are not consistent with the

hypothesis that income-tax burdens tend to be equalized under revenue sharing.[35] State with high income taxes have more of an incentive to increase income-tax revenue than states with relatively low income-tax revenue.

Average Benefits to Governments

The above analysis emphasized the way in which the marginal effects from changes in state variables used in the distribution formula furthered or frustrated the supposed goals of revenue sharing. This section uses regression analysis to analyze the average relationships between shared revenue per capita and key state variables associated with goals derived from the distribution fromula.

Equation (3.4) predicts each state's per-capita shared revenue using per-capita income, percentage of state's population living in metropolitan areas, and per-capita tax revenue, state personal income tax revenue per capita. Table C is a correlation matrix of the explanatory variables.

$$RSi = 41.26 + .05PMETi - .013PCYi + .053PCTi + .013ITPCi \quad (3.4)$$
$$ (17.60) \ (.03) \qquad (-9.84) \qquad (8.86) \qquad (1.76)$$

$$R^2 = 0.75 \qquad F \text{ value} = 34.9$$

where   RSi = per-capita revenue sharing,

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[35]Note that a negative correlation coefficient between Di and ITPCi would have supported this hypothesis.

allocation for state i,

PMETi = Percentage of the population,
that is urban for state i,

PCYi = per-capita income for state i,

PCTi = per-capita taxes for state i,

ITPCi = per-capita state income taxes
for state i.

The colinearity between explanatory variables should temper interpretations of the parameter estimates from equation (3.4). The estimates are unbiased but inefficient (the standard errors of the estimates become larger the higher the degree of multicolinearity). Thus, the probability of not rejecting a null hypothesis when it should be rejected increases.

Equation (3.4) indicates that the revenue sharing distribution formula does favor states with low per-capita incomes, high per-capita taxes, or high per-capita income taxes, everything else being equal. However, urbanization does not appear to be favored by the formula. This result may be due to a statistical problem. Urbanization is highly correlated with income and taxes, making any benefits to urbanization difficult to detect.

Average Benefits to Citizens

The technique of weighted least-squares is used to estimate the pattern of benefits among citizens. By

weighting each state's observation by its population, the weighted least-squares algorithm estimates benefits to average citizens rather than the average states. Equation (3.5) is estimated using weighted least-squares.

$$RSi = 39.14 + .121 \text{ PMETi} - 12.56 \text{ PCYi} \qquad (3.5)$$
$$(1.72) \quad (.05) \qquad (-9.42)$$

$$+ 55.42 \text{ PCTi} + 2.40 \text{ ITPCi,}$$
$$(11.06) \qquad (.32)$$

$$R^2 = 0.83 \qquad F \text{ value} = 59.87$$

The estimated pattern of benefits among citizens is similar to the pattern of benefits among governments. The insignificance of the PMETi coefficient in (3.5) indicates that after controlling for other factors, citizens living in metropolitan areas do not expect to receive significantly more shared revenue than citizens living outside of metropolitan areas. Thus, the goal of favoring urban citizens under the welfare function approach is not advanced.

The insignificant coefficient for ITPCi means that citizens who pay higher-than-average taxes or have lower-than-averge incomes, other things being equal, expect to receive higher-than-average revenue sharing allocations. However, the level of income taxes paid is not a good predictor of revenue shared, everything else being equal.

The weighted regression estimates from Equation (3.5) have the same problems due to multicolinearity as their

counterparts from Equation 3.4. The estimates are unbiased but inefficient. Thus, the same caveats with regard to interpreting the coefficients apply. The effects of PCY_i and $PMET_i$ may be confounded.

Porkbarrel Approaches

For the porkbarrel approaches the assumption that everything else is equal is not used. Interest groups, which are defined by each formula goal, are assumed to be interested in a single goal -- increasing the benefits to its members.

Average Benefits to Governments

Equations (3.6) - (3.9) estimate the relationships between per-capita revenue sharing and the variables associated with each goal (and the interest group).

$$RS_i = 33.42 - .50PMET_i, \tag{3.6}$$
$$(12.53)\ (-2.40)$$

$$R^2 = 0.10 \qquad F\ value = 5.8$$

From the porkbarrel perspective of the urban interest group, the relationship between shared revenue per capita and urbanness is perverse. Urban states expect to receive smaller per-capita revenue sharing allocation than non-urban states.

It should be noted that from the narrow statistical objective of estimating the effect of variables on per-capita revenue sharing allocation, the coefficients in Equations (3.5) - (3.8) are biased. Other important variables are not included. However, for the purposes of prediction, if there are stable linear relationships between the included explanatory variable and the excluded explanatory variables, equations with a single explanatory variable may yield accurate predictions of the success of the interest group in obtaining revenue sharing funds.[36]

The failure of urban states to receive above average per-capita allocation is probably due to the positive correlation between urbanness and per capita income (0.67). The mechanism that penalizes high income states more than offsets the mechanism that favors urban states. The average elasticity of shared revenue with respect to per-capita income is -1.32 while the average elasticity with respect to urbanness is merely 0.09.

Urban states also tend to have higher taxes and income taxes, with correlation coefficients of 0.50 and 0.25 respectively. However, these positive factors do not overcome the influence of income. The average elasticities of shared revenue with respect to taxes and income taxes are

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[36]Damodar Gujarati, Basic Econometrics, (New York:Mc Graw Hill, 1978), p. 183.

0.73 and 0.15 respectively. The income redistribution goal dominates the others when there is a conflict.

Equation (3.7) describes the relationship between shared revenue per-capita and per capita income (in thousands of dollars).

$$RSi = 38.62 - 3.89PCYi, \qquad (3.7)$$
$$(10.77) \ (-3.23)$$

$$R^2 = 0.17 \qquad F \text{ value} = 10.47$$

This result is consistent with the goal of favoring states with low per-capita incomes. Low income state did receive higher than average per-capita allocations, in spite of a tendency for them to be less urban and to collect less in taxes per capita.

Equations (3.8) and (3.9) indicate that the per-capita taxes and per-capita income taxes are poor predictors of a state's success with the distribution formula.

$$RSi = 24.78 + 5.3PCTi, \qquad (3.8)$$
$$(8.44) \quad (.82)$$

$$R^2 = 00.01 \qquad F \text{ value} = .69$$

$$RSi = 26.12 + 16.0ITPCi \qquad (3.9)$$
$$(26.17) \quad (1.30)$$

$$R^2 = 0.03 \qquad F \text{ value} = 1.7$$

As with the urban goal, the tax goals are not advanced because they conflict with the goal of redistributing income to low income states. High-tax states tend to have

relatively high income, which nullifies the advantage of having high taxes.

Average Benefits to Citizens

To estimate revenue sharing benefits to citizens it is necessary to weight each state's observation by its population. Equations (3.10) - (3.13) estimate the relationship between expected revenue sharing benefits and variables associated with each goal (and interest group).

The Urban Goal

Equation (3.10) indicates that no significant relationship exists between expected revenue sharing benefits and the likelihood of living in an urban area.

$$RS_i = 26.71 - 1.10 \; PMET_i, \qquad\qquad (3.10)$$
$$(15.51) \quad (-0.39)$$

$$R \text{ square} = 0.003 \qquad F \text{ value} = 0.15$$

Although the goal of favoring urban citizens is not advanced, the relationship is not the perverse relationship that exists among governments.

By shifting the emphasis to citizens rather than states, the estimated benefits from being urban become more consistent with the observations of California and New York, whose observations are consistent with the urban goal.

Because California and New York together represent about 19 percent of the country's population, the two states in essence represent about 19 percent of the observations on citizens.

Income-Redistribution Goal

Equation (3.11) indicates that the expected income of a citizen is a very poor predictor of expected revenue

$$RS_i = 27.29 - 0.389 \ PCY_i, \tag{3.11}$$
$$(6.82) \quad (-0.31)$$

$$R \text{ square} = 0.002 \quad F \text{ value} = 0.09$$

sharing benefits. That is somewhat surprising, given the very significant relationship between per-capita income and per-capita shared revenue when all observations are weighted equally. The reason for this reversal is that states with relatively low incomes and high revenue sharing allocations (Mississippi, Alabama, South Dakota, North Dakota, Wyoming, Maine and Louisiana) become much less important because of their relatively small populations.

While state observations that are consistent with the income redistribution goal become less important, observations that are inconsistent with this goal (California and New York) become more important. Thus, from

the porkbarrel perspective, there is no significant income redistribution among citizens.

Tax Goals

Equation (3.12) shows a significant positive relationship between expected taxes and expected shared

$$RSi = 18.57 + 16.06 \ PCTi, \qquad\qquad (3.12)$$
$$(8.94) \quad (3.73)$$

R square = 0.22 F value = 13.88

revenue. This is consistent with the goal to favor citizens who pay relatively high taxes.

The income-tax goal is also furthered. Equation (3.13) shows a significant positive relationship between expected state income taxes and expected revenue sharing

$$RSi = 22.93 + 46.10 \ ITPCi, \qquad\qquad (3.13)$$
$$(27.72) \ (4.63)$$

R square = 0.30 F value = 21.47

benefits. This means that citizens that expect to pay higher income taxes also expect to receive relatively high revenue sharing benefits.

CHAPTER IV

NET BENEFITS OF REVENUE SHARING

The previous chapter used statistical techniques to determine whether the actual distribution or revenue sharing funds is consistent with the goals derived from the distribution formula in Chapter II. This chapter extends the analysis to determine whether the distribution of net benefits is consistent with formula goals as viewed from the porkbarrel perspectives.

Revenue sharing obviously had a cost. Unfortunately it is not at all obvious what the opportunity cost of revenue sharing was. Likely sources of funds would include: increased taxes, reduced federal grants, reduced federal grants, reduced federal spending, and incrasing federal debt. Obviously, an infinite number of financing plans could be devised using the four sources mentioned. However, in the interest of clarity and simplicity, this study uses three alternative financing assumptions: (1) federal personal income tax surcharge (or foregoing a negative

surcharge); (2) a proportional reduction in each state's categorical grants; and (3) a proportional reduction in federal expenditures in each state. Table 4.1 shows the cost per capita of revenue sharing under each financing assumption. Net benefits per capita under each financing assumption are shown on Table 4.2.

Net Benefits to Governments

Under the porkbarrel approach in which governments are the ultimate recipients of revenue sharing funds, the correct method of testing for any of the desired effects is to regress net benefits on the variable associated with that single goal (and interest group).

However, before discussing ther regression results, it is interesting to note that 30 states receive positive net benefits if revenue sharing is financed with taxes. Because the more populous states contribute more taxes per capita, the unweighted mean per-capita allocation net of tax cost is not zero but $3.08.

If revenue sharing was instituted at the expense of federal grants or federal spending, the number of states receiving positive net benefits is 26 or 30 respectively. However, unlike the tax-financed program, the largest per-capita losses are felt by the less populous recipients (Alaska, Wyoming, and the District of Columbia). These

TABLE 4.1

COST OF REVENUE SHARING TO THE STATES
BASED ON THREE ALTERNATIVE ASSUMPTIONS

	Higher Taxes	Less Grants	Less Spending
ALABAMA	15.83	29.74	25.87
ALASKA	31.29	87.83	72.42
ARIZONA	23.96	23.11	28.09
ARKANSAS	15.67	30.66	19.81
CALIFORNIA	28.06	30.82	35.34
COLORADO	24.55	28.20	28.74
CONNECTICUT	38.25	22.34	34.63
DELAWARE	34.26	26.19	22.81
D.C.	31.90	116.18	119.37
FLORIDA	25.00	17.57	27.68
GEORGIA	20.51	27.43	27.34
HAWAII	30.93	31.12	41.17
IDAHO	17.98	27.73	19.35
ILLINOIS	32.75	24.04	19.60
INDIANA	25.19	15.87	20.25
IOWA	22.61	17.41	18.55
KANSAS	23.11	20.34	25.34
KENTUCKY	18.33	27.89	21.45
LOUISIANA	17.23	30.20	21.74
MAINE	18.75	28.66	22.24
MARYLAND	31.45	20.80	40.27
MASSACHUSETTS	29.92	29.28	28.57
MICHIGAN	28.43	22.65	17.33
MINNESOTA	23.24	25.12	21.42
MISSISSIPPI	12.92	39.29	24.45
MISSOURI	24.50	23.27	27.54
MONTANA	20.06	38.83	25.06
NEBRASKA	22.57	20.65	21.01
NEVADA	34.55	27.73	25.17
NEW HAMPSHIRE	26.10	18.95	24.54
NEW JERSEY	33.91	21.73	23.68
NEW MEXICO	18.51	42.68	29.60
NEW YORK	32.24	36.98	25.84
NORTH CAROLINA	19.07	21.73	20.14
NORTH DAKOTA	16.52	30.97	27.19
OHIO	27.93	17.26	20.15
OKLAHOMA	20.03	29.28	27.31
OREGON	24.15	30.97	20.75

TABLE 4.1-<u>Continued</u>

	---------Sources---------		
	Higher Taxes	Less Grants	Less Spending
PENNSYLVANIA	27.49	20.96	23.04
RHODE ISLAND	24.83	28.35	29.80
SOUTH CAROLINA	15.86	23.57	21.92
SOUTH DAKOTA	15.77	30.05	22.06
TENNESSEE	19.97	26.96	20.53
TEXAS	23.30	21.73	29.49
UTAH	18.54	30.20	29.83
VERMONT	21.46	36.21	24.28
VIRGINIA	25.28	20.18	38.63
WASHINGTON	25.69	28.35	29.31
WEST VIRGINIA	19.51	38.83	21.27
WISCONSIN	23.75	17.87	17.27
WYOMING	24.12	56.86	27.98

TABLE 4.2

NET BENEFITS FROM REVENUE SHARING
USING THREE ALTERNATIVE FINANCING ASSUMPTIONS

| | ---------Sources---------- | | |
	Higher Taxes	Less Grants	Less Spending
ALABAMA	10.47	-3.44	0.43
ALASKA	-9.46	-66.00	-50.59
ARIZONA	4.36	5.21	0.23
ARKANSAS	12.69	-2.30	8.55
CALIFORNIA	-0.01	-2.77	-7.29
COLORADO	0.12	-3.53	-4.07
CONNECTICUT	-16.08	-0.17	-12.46
DELAWARE	-4.95	3.12	6.50
D.C.	-0.30	-84.58	-87.77
FLORIDA	-3.40	4.03	-6.08
GEORGIA	3.37	-3.55	-3.46
HAWAII	-0.14	-0.33	-10.38
IDAHO	11.87	2.12	10.50
ILLINOIS	-8.09	0.62	5.06
INDIANA	-3.30	6.02	1.64
IOWA	4.10	9.30	8.16
KANSAS	0.21	2.98	-2.02
KENTUCKY	8.66	-0.90	5.54
LOUISIANA	16.40	3.43	11.89
MAINE	13.43	3.52	9.94
MARYLAND	-4.15	6.50	-12.97
MASSACHUSETTS	-0.89	-0.25	0.46
MICHIGAN	-3.16	2.62	7.94
MINNESOTA	4.72	2.84	6.54
MISSISSIPPI	26.98	0.61	15.45
MISSOURI	-3.50	-2.27	-6.54
MONTANA	9.44	-9.33	4.44
NEBRASKA	3.59	5.51	5.15
NEVADA	-10.99	-4.17	-1.61
NEW HAMPSHIRE	-3.61	3.54	-2.05
NEW JERSEY	-10.67	1.51	-0.44
NEW MEXICO	13.91	-10.26	2.82
NEW YORK	0.05	-4.69	6.45
NORTH CAROLINA	7.72	5.06	6.65
NORTH DAKOTA	19.34	4.89	8.67
OHIO	-7.85	2.82	-0.07
OKLAHOMA	2.99	-6.26	-4.29
OREGON	1.20	-5.62	4.60

TABLE 4.2-<u>Continued</u>

	Higher Taxes	Sources Less Grants	Less Spending
PENNSYLVANIA	-3.94	2.59	0.51
RHODE ISLAND	0.61	-2.91	-4.36
SOUTH CAROLINA	11.97	4.26	5.91
SOUTH DAKOTA	20.42	6.14	14.13
TENNESSEE	5.21	-1.78	4.65
TEXAS	-1.16	0.41	-7.35
UTAH	10.32	-1.34	-0.97
VERMONT	11.61	-3.14	8.79
VIRGINIA	-2.42	2.68	-15.77
WASHINGTON	-2.84	-5.50	-6.46
WEST VIRGINIA	10.26	-9.06	8.50
WISCONSIN	6.41	12.29	12.89
WYOMING	5.85	-26.89	1.99

outliers with small populations tend to depress the average of net benefits. If the cost of revenue sharing is reduced federal grants, the average net allocation is $3.06. If revenue sharing is financed with reduced federal spending, the average net per-capita allocation is -$1.02.

Urban Goals

Equation (4.1) indicates that a tax-fianced revenue sharing program redistributes resources away from the

$$RSi - TXi = 12.59 - 21.18 \text{ PMETi}, \qquad (4.1)$$
$$(6.24) \quad (-5.39)$$

R square = 0.37   F value = 29.11

coalition of urban states. This result is expected in view of the strong positive relationships between the percent of state population that is metropolitan and the estimated tax cost per capita (r=0.66). Under the tax-financing assumption, the 17 states with a metropolitan proportion above 59 percent expect to receive negative net benefits.

While financing revenue sharing with reduced federal grants or reduced federal spending does not favor the urban states, there is no systematic loss of funds to nonurban states. Equations (4.2) and (4.3) show no significant relationship between percent metropolitan and net benefits to states from shared revenue financed from either reduced grants or reduced spending.

$$RSi - GRi = -2.21 - 1.89 \; PMETi, \qquad (4.2)$$
$$(-0.48) \; (-0.21)$$

$$R \; square = .0008 \quad F \; value = 0.04$$

$$RSi - SPi = -1.02 + 0.0PMETi, \qquad (4.3)$$
$$(-0.37) \; (0.0)$$

$$R \; square = 0.0 \quad F \; value = 0.0$$

Thus, the existing program does not generally favor the urban states. However, faced with the current distribution formula and the necessity of financing the program, the urban states would prefer to sacrifice federal spending or federal grants to tax financing, which systematically discriminates against urban states.

Income-Redistribution Goal

Low-income states are favored under each financing assumption. In equations (4.4) - (4.6) state per capita income is a significant predictor of net benefits under each alternative cost assumption.

$$RSi - TXi = 49.75 - 15.82 \; PCYi, \qquad (4.4)$$
$$(12.05) \; (-11.44)$$

$$R^2 = 0.72 \quad F \; value = 130.98$$

$$RSi - GRi = 29.21 - 10.97 \; PCYi, \qquad (4.5)$$
$$(2.13) \quad (-2.39)$$

$$R^2 = 0.10 \quad F \; value = 5.69$$

$$RSi - SPi = 53.54 - 18.50 \text{ PCYi},$$
$$(4.39) \quad (-4.53)$$

(4.6)

$$R^2 = 0.29 \quad F \text{ value} = 20.50$$

At the margin, reduced federal spending is the most redistributive, followed by tax financing, then financing from reduced federal grants. These results yield a somewhat different perspective if the predicted break-even levels of per-capita income are calculated. Equation (4.4) predicts that states with per-capita income above $3,144 will receive negative net benefits from a tax-financed revenue sharing program. Equations (4.5) and (4.6) predict break-even incomes of $2,670 and 2,894 respectively. Thus, grant-financed revenue sharing becomes the most redistributive, followed by spending-financed and tax-financed revenue sharing.

Tax Goal

Equations (4.7) - (4.9) explain net benefits under the alternative financing assumptions as a function of the state's per-capita taxes.

$$RSi - TXi = 21.07 - 40.97 \text{ PCTi},$$
$$(3.97) \quad (-3.47)$$

(4.7)

$$R^2 = 0.19 \quad F \text{ value} = 12.02$$

$$RSi - GRi = 10.77 - 31.39 \ PCTi, \quad\quad\quad (4.8)$$
$$(1.01) \quad (-1.33)$$

$$R^2 = .03 \quad F \ value = 1.77$$

$$RSi - SPi = 18.15 - 43.49 \ PCTi, \quad\quad\quad (4.9)$$
$$(1.73) \quad (-1.87)$$

$$R^2 = .06 \quad F \ value = 3.48$$

The per-capita tax variable is a significant predictor of net benefits from a tax-financed revenue sharing program. However, the significant negative relationship between per-capita taxes and net benefits is certainly not the one desired by the coalition of high-tax states. Surprisingly, this predicted break even tax level is 0.79 of a standard deviation above the mean per-capita tax burden.

This perverse negative relationship between per-capita taxes and net benefits results from the income-redistribution mechanism dominating the pro-tax mechanism. High taxes are closely related to high incomes $(r = 0.95)$. Also, from equation (4.4) high incomes are negatively related to net benefits. The two effects work against each other and the income-redistribution effect is the stronger.

Per-capita taxes is not a significiannt predictor of net benefits from a grant-financed or spending-financed revenue sharing program. While not advancing the goal of favoring high-tax recipients, these financing procedures do not create significnat burdens for the high-tax states.

Income Tax Goal

States with relatively high per-capita income-tax revenues do not receive significantly higher net benefits under any of the three financing assumptions. Equations (4.10) and (4.11) are not significant.

$$RSi - TXi = 4.75 - 26.14 \ ITPCi, \qquad (4.10)$$
$$(2.36) \quad (-1.04)$$

$$R^2 + 0.02 \quad F \ value = 1.09$$

$$RSi - GRi = 2.30 - 84.38 \ ITPCi, \qquad (4.11)$$
$$(0.64) \quad (-1.89)$$

$$R^2 = 0.06 \quad F \ value = 3.57$$

$$RSi - SPi = 4.98 - 94.21 \ ITPCi, \qquad (4.12)$$
$$(1.39) \quad (-2.12)$$

$$R^2 = 0.08 \quad F \ value = 4.49$$

In equation (4.12) the income taxes per capita variable is barely significant as a predictor of net benefits, if revneue sharing is financed by reduced federal spending. However, the coefficient has the wrong sign indicating a perverse relationship from the perspective of the states collecting relatively high state-income-tax revenues.

Net Benefits to Citizens

The previous section examined the pattern of net benefits among states to determine whether formula goals are actually advanced by the distribution formula. The purpose of this section is to test for the desired patterns of net benefits among citizens. To treat citizens as equals in the statistical analysis, it is desirable to weight each state's observation by its population. In the weighted analysis, the mean net benefits is zero. Every positive transfer gained by one group is at the expense of another group.

The Urban Goal

In equation (4.13) the likelhood of living in a metropolitan area (PMETi) is a significant predictor of the net benefits, assuming revenue sharing is financed with the federal personal-income tax.

$$RS_i - TX_i = 12.93 - 22.37 \ PMET_i, \qquad (4.13)$$
$$(5.59) \ (-5.92)$$
$$R^2 = 0.41 \quad F \ value = 35.05$$

$$RS_i - GR_i = 3.30 - 5.71 \ PMET_i, \qquad (4.14)$$
$$(1.08) \ (-1.14)$$
$$R^2 = 0.02 \quad F \ value = 5.69$$

$$RS_i - SP_i = 8.33 - 14.42 \ PMET_i, \qquad (4.15)$$
$$(2.25) \ (-2.39)$$
$$R^2 = 0.10 \quad F \ value = 5.69$$

However, from the perspective of the urban interest group, the relationship is perverse. Citizens of states with more than 58 percent of the population living in a metropolitan area expect to receive negative net benefits.

In equation (4.14), PMETi is not a significant predictor of net benefits assuming reduced federal grants is the source of shared revenue. Although this method of financing does not produce the positive net benefits that woudl have attracted the urban interest group, there is no significant burden imposed on the average urban citizen.

The likelihood of living in a metropolitan area is a significant predictor of the net benefits generated for a revenue sharing program financed with reduced federal spending. From equation (4.15) citizens of states with a metropolitan proportion above the national proportion (0.58) expect to contribute more to finance the program than they receive from the program.

Income Redistribution to Citizens

If the expected income of a citizen is greater than the national average (because he lives in a high-income state), his expected net benefit from revenue sharing is negative. In equations (4.16) - (4.18) net benefits under the three financing assumptions are regressed on per capita income.

$$RSi - Txi = 35.95 - 11.52 \ PCYi, \tag{4.16}$$
$$(7.58) \quad (-7.65)$$

$$R^2 = 0.54 \quad F \ value = 58.55$$

$$RSi - GRi = 8.89 - 2.85 \ PCYi, \tag{4.17}$$
$$(1.25) \quad (-1.27)$$

$$R^2 = 0.03 \quad F \ value = 1.60$$

$$RSi - SPi = 18.15 - 5.82 \ PCYi, \tag{4.18}$$
$$(2.09) \quad (-2.11)$$

$$R^2 = 0.08 \quad F \ value = 4.47$$

Although all three equations predict identical break-
even incomes of $3,119, expected income is obviously a
better predictor of net benefits from a tax-financed revenue
sharing program than net benefits from programs financed
with either reduced federal grants or reduced federal
spending. Thus, the goal of favoring low-income citizens is
most effectively pursued with a tax-finanaced revenue
sharing program.

Tax Goal and Citizens

On average citizens paying above-average state and
local taxes do not receive above average (positive) net
benefits. Equations (4.19) - (4.21) regress net benefits

under the three alternative financing assumptions on expected state and local taxes.

$$RSi - TXi = 8.09 - 17.73 \ PCTi, \tag{4.19}$$
$$(2.05) \quad (-2/11)$$

$$R^2 = 0.08 \quad F \ value = 4.45$$

$$RSi - GRi = 5.43 - 11.61 \ PCTi, \tag{4.20}$$
$$(1.31) \quad (-1.35)$$

$$R^2 = 0.03 \quad F \ value = 1.81$$

$$RSi - SPi = 0.20 - 0.43 \ PCTi, \tag{4.21}$$
$$(0.04) \quad (-0.04)$$

$$R^2 = 0.00003 \quad F \ value = 0.00$$

Equations (4.20) and (4.21) are not significant. As a result, the tax goal of favoring citizens that pay high taxes is not furthered with a revenue sharing program financed with reduced grants or reduced federal spending.

Equation (4.19) is barely significant at the 0.05 level. Under a tax-financed revneue sharing program, net benefits are expected to be negative for citizens paying above average state and local tax bills. This is the least prefered alternative for a tax-payer's interest group.

Income-Tax Goals and Citiznes

Under each of the three alternative financing assumptions citizens who expect to pay above-average state

income tax bills are neither favored nor penalized by the revenue sharing program. Equations (4.22) - (4.24) explain net benefits under each financing assumption as a function of expected state inocme tax bills.

$$RSi - TXi = -0.35 + 5.35 \ ITPCi, \qquad (4.22)$$
$$(-0.21) \ (0.26)$$

$$R^2 = 0.001 \quad F \ value = 0.07$$

$$RSi - GRi = 1.59 - 23.18 \ ITPCi, \qquad (4.23)$$
$$(0.90) \ (-1.09)$$

$$R^2 = 0.02 \quad F \ value = 1.19$$

$$RSi - SPi = -1.43 + 21.06 \ ITPCi, \qquad (4.24)$$
$$(-0.64) \ (0.78)$$

$$R^2 = 0.01 \quad F \ value = 0.62$$

All of the equations are insignificant. This indicates that, on the average, revenue sharing is neutral with respect to expected income tax bill of citizens--the income-tax goal is not advanced.

CHAPTER V

SUMMARY AND CONCLUSIONS

Public policies are instituted to achieve goals. This study evaluates the performance of the revenue sharing program in advancing a set of goals. The analysis is distinctive in that it identifies the goals cf the program directly from the distribution formula. The justification for using this process rather than relying on goals stated by Con gress and the program's advocates is that political rhetoric is inherently unreliable. Further, the goals that Congress and the program's advocates intended to pursue should be evident in the distribution formula.

The origins of the two subformulas (the three-factor formula and the five-factor formula) indicate that members of Congress were sensitive to the construction of the distribution formula and the patterns of benefits that alternative formulas were expected to generate. The five-factor formula, which originated in the Ways and Means Committee of the House of Representatives, is more favorable

to the urban states and high-income states than the three-factor formula, which originated in the Senate Finance Committee. This is consistent with the urban states having relatively greater representation in both the House of Representatives and the Ways and Means committee.

The goals derived from the distribution formula are to favor recipients that, relative to other recipients, (1) have low incomes; (2) pay high taxes; (3) pay high state income taxes; and (4) are highly urbanized. The formula also provides incentives for states (5) to increase their taxes, and (6) to substitute state-income taxes for other state taxes.

Tests for the desired paterns of benefits were performed from four different perspectives: (1) the welfare-function perspective that treats states as the recipients of the funds; (2) the welfare-function perspective that treats citizens as the recipients; (3) the pork barrel perspective that treats states as recipients; and (4) the porkbarrel perspective that treats citizens as recipients.

The difference between the welfare function and porkbarrel perspectives is that in testing for the desired relationship between revenue sharing and a variable associated with a goal, the welfare-function perspectives hold other factors constant while the pork barrel approach

does not.   If the recipients are states, their observations in the statistical analysis are not weighted differently. On the other hand, if citizens are recipients, the state's observations are weighted in proportion to their populations.

The performance of the program in achieving its supposed goals is mixed. Its sucess in advancing any one of the goals often varies with the perspective from which it is being evaluated.   For example, the goal of favoring urban recipients is not advanced from any of the four perspectives.   Under the porkbarrel approaches, urban recipients actually receive less per capita than nonurban recipients.   Under the welfare-function approaches, which controls for other factors, the distribution of revenue sharing funds appears to be neutral with respect to the extent of urbanization.   In other words, urban recipients do not expect to receive more or less shared revenue per capita, after controling for the effects of income, taxes and income taxes.   The lack of a cross-sectional relationship between shared revenue and the extent of urbanization is somewhat surprising in light of the positive partial derivatives of shared revenue with respect to urbanness that were calculated for each state in the sensitivity analysis.

The goal of favoring low-income recipients is advanced from both welfare-function perspectives. Holding other factors constant, low income recipients on the average receive more shared revenue per capita than high-income recipients. Also, each state's partial derivative with respect to per-capita income is negative as expected.

The goal of favoring low-income states is advanced from the pork barrel perspective. However, from the pork-barrel perspective in which citizens are the recipients of funds, the weighted analysis indicates that the distribution of funds is neutral with respect to income.

The partial derivatives calculated in the sensitivity analysis indicate that each state faces a marginal subsidy for increasing taxes. The 20 states that base their allocations on the five-factor formula have an additional incentive to substitute state income taxes for other state taxes.

Cross-sectionally, the subsidies for increasing general taxes decrease as per-capita tax burdens increase. This subsidy structure tends to equalize tax burdens across states. The subsidies for substituting income taxes for other taxes increase cross-sectionally with the per-capita income tax burdens. This subsidy structure would tend to increase the variance of per-capita tax burdens. States that have high tax burdens have a larger incentive to

increase income taxes than states with low per-capita income tax burdens.

Under both welfare-function approaches, high-tax recipients are favored after controlling for other factors (income, urbanness, and income tax burdens). From the porkbarrel perspective in which citizens are the recipients, citizens living in high-tax states expect to receive higher-than-average revenue sharing allocations.

The goal of favoring recipients that pay high state income taxes is not advanced under either of the welfare-function approaches. After controling for other factors, recipients who collect (or expect to pay) high income taxes usually do not receive higher-than-average revenue sharing allocations.

Under the porkbarrel approach in which states are the recipients of the funds, states that collect high per-capita income taxes do not receive significantly higher per capita revenue sharing allocations. However, citizens who expect to pay higher-than-average state income taxes also expect to receive higher-than-average revenue sharing benefits.

By using three alternative financing assumptions, the cost of revenue sharing to each state and its net benefits can be calculated. If revenue sharing is financed by a proportional increase in each state's federal personal income taxes, the only formula goal that is advanced is to

favor recipients with low incomes. States with below-
average per-capita incomes expect to receive significantly
higher net benefits than states with high incomes. Also,
citizens living in states with low per-capita income expect
to receive positive net benefits.

The relationship between net benefits and the extent
of urbanization is not consistent with advancing the goal of
favoring urban recipients. Urban states on average receive
significant negative net benefits. Citizens living in
states, which have a high proportion of the population
living in metropolitan areas, expect to receive negative net
benefits.

A tax-financed revenue sharing program produces a
perverse relationship between net benefits and per-capita
taxes. Because taxes are highly correlated with income, the
goals of favoring high-tax recipients (states and citizens)
and low income recipients conflict. On average high-tax
recipients contributed more per capita to finance the
program than they received in benefits.

While not favoring recipients in states with high
state income taxes, a tax-financed revenue sharing program
does not systematicly discriminate against recipients that
collect (or pay) high state income taxes.

If the cost of revenue sharing to each state is
proportional to that state's share of federal categorical

grants, the only goal advanced under either of the porkbarrel approaches is the goal of favoring states with low per-capita incomes. The distribution of net benefits from a grant-financed revenue sharing program is neutral with respect to the extent of urbanization, taxes, and income taxes. For urban and high-tax recipients, grant financing is prefered to tax financing.

If the cost of revenue sharing to each state is proportional to the federal spending in that state, the only goal that is advanced is the goal of favoring low-income recipients. The relationship between net benefits and the likelihood of a citizen living in an urban area is perverse, as is the relationship between net benefits and per-capita state income tax burdens. The remaining goals are simply not advanced.

Does revenue sharing advance the goals that its advocates set for it? It is not surprising that the answer depends on whether the goals are to be advanced independantly of each other, the assumed recipients of the funds, and the perceived opportunity cost of the program.

It seems reasonable that the uncertainty over the financing contributes to the program's appeal. If each interest group in the revenue sharing coalition assumes that the program is financed from the source that most favors the interest group, many conflicts disappear. Low-income and

nonurban recipients can assume that the cost of revenue sharing is higher taxes that fall more heavily on the high income and urban recipients. At the same time, urban and high-income recipients can believe that revenue sharing is financed with reduced federal grants. Thus, low-income recipients can feel they are receiving a positive transfer of wealth, while the high income and urban recipients can feel that revenue sharing has not cost them anything.

APPENDIX

TABLE A.1

OFFICE OF REVENUE SHARING DATA ELEMENTS
FOR THE FIRST THREE ENTITLEMENT PERIODS

	Population	Metro. Population	Urban Population	Per Capita Income
ALABAMA	3444297.	1279750.	2025247.	2317.
ALASKA	302419.	0.	146703.	3725.
ARIZONA	1773596.	1157436.	1407881.	2937.
ARKANSAS	1923322.	378437.	961276.	2142.
CALIFORNIA	19968370.	16147504.	18199172.	3614.
COLORADO	2209528.	1425469.	1737683.	3106.
CONNECTICUT	3032217.	2100404.	2340113.	3885.
DELAWARE	548104.	349476.	394799.	3265.
D.C.	756510.	756510.	756207.	3842.
FLORIDA	6790929.	4134108.	5490466.	3058.
GEORGIA	4587930.	1879380.	2765145.	2640.
HAWAII	769913.	442237.	639451.	3373.
IDAHO	713015.	85056.	387809.	2644.
ILLINOIS	11112749.	7866108.	9229694.	3495.
INDIANA	5195582.	2395039.	3360502.	3070.
IOWA	2825368.	842123.	1619783.	2884.
KANSAS	2249389.	785565.	1487971.	2929.
KENTUCKY	3220711.	112204.	1680728.	2425.
LOUISIANA	3643078.	1703960.	2409896.	2330.
MAINE	993722.	171820.	503966.	2548.
MARYLAND	3923260.	2589455.	2998940.	3512.
MASSACHUSETTS	5689170.	4334056.	4808771.	3408.
MICHIGAN	8881783.	5658912.	6528111.	3357.
MINNESOTA	3806103.	1901437.	2517737.	3038.
MISSISSIPPI	2216994.	321075.	993989.	1925.
MISSOURI	4677623.	2576630.	3266150.	2952.
MONTANA	694409.	142230.	372585.	2696.

TABLE A.1-Continued

	POPULATION	METRO. POPULATION	URBAN POPULATION	PER-CAPITA INCOME
NEBRASKA	1485333.	588867.	917045.	2797.
NEVADA	488738.	336222.	395145.	3554.
NEW HAMPSHIRE	737681.	174261.	417491.	2985.
NEW JERSEY	7171112.	6078204.	6377628.	3674.
NEW MEXICO	1017055.	297570.	710159.	2437.
NEW YORK	18241584.	14268614.	15552775.	3608.
NORTH CAROLINA	5084411.	1213266.	2279596.	2474.
NORTH DAKOTA	617792.	53359.	272446.	2469.
OHIO	10655242.	6640796.	8066551.	3199.
OKLAHOMA	2559463.	1049185.	1749521.	2694.
OREGON	2091533.	983902.	1398922.	3148.
PENNSYLVANIA	11798877.	6922750.	8412009.	3066.
RHODE ISLAND	949723.	745700.	830675.	3121.
SOUTH CAROLINA	2590835.	649177.	1237771.	2303.
SOUTH DAKOTA	666257.	76000.	298716.	2387.
TENNESSEE	3926018.	1490075.	2308499.	2464.
TEXAS	11197434.	6917763.	8888523.	2792.
UTAH	1059273.	733608.	848637.	2697.
VERMONT	444732.	0.	143826.	2772.
VIRGINIA	4651448.	2393539.	2940180.	2996.
WASHINGTON	3413244.	1873387.	2483647.	3357.
WEST VIRGINIA	1744237.	340789.	679468.	2333.
WISCONSIN	4417821.	2065750.	2922389.	3032.
WYOMING	332416.	0.	200347.	2895.

TABLE A.2

OFFICE OF REVENUE SHARING DATA ELEMENTS
FOR THE FIRST THREE ENTITLEMENT PERIODS

	State and Local Taxes (millions)	Tax Effort	State Income Taxes (thousands)	Federal Income Taxes (thousnads)
ALABAMA	959.2	0.09756	121638.	853955.
ALASKA	146.0	0.10426	40325.	148190.
ARIZONA	855.1	0.13323	92045.	665435.
ARKANSAS	522.9	0.09726	65037.	471880.
CALIFORNIA	12199.0	0.13733	1813500.	8775401.
COLORADO	1021.6	0.12064	176150.	849597.
CONNECTICUT	1642.8	0.11110	55500.	1816444.
DELAWARE	278.7	0.11696	89875.	294090.
D.C.	434.2	0.10676	119000.	377936.
FLORIDA	2637.8	0.10577	0.	2658917.
GEORGIA	1548.7	0.10092	261000.	1473755.
HAWAII	484.2	0.14055	128000.	372934.
IDAHO	291.9	0.12637	54147.	200818.
ILLINOIS	5749.0	0.11467	833500.	5699606.
INDIANA	2118.6	0.10765	246700.	2049184.
IOWA	1285.6	0.12339	211000.	1000303.
KANSAS	940.1	0.10934	83800.	814004.
KENTUCKY	1038.1	0.10485	170500.	924614.
LOUISIANA	1396.5	0.12547	100514.	983288.
MAINE	424.9	0.13134	24750.	291784.
MARYLAND	2032.7	0.12107	495100.	1932010.
MASSACHUSETTS	3158.5	0.12709	728800.	2665648.
MICHIGAN	4420.6	0.12237	817500.	3954986.
MINNESOTA	1931.6	0.13248	575450.	1385279.
MISSISSIPPI	701.6	0.12296	48494.	448637.
MISSOURI	1720.7	0.09917	231000.	1794691.
MONTANA	299.3	0.12740	63751.	218174.
NEBRASKA	652.8	0.11719	66510.	524897.
NEVADA	293.7	0.12955	0.	264467.
NEW HAMPSHIRE	285.9	0.10748	6000.	301500.
NEW JERSEY	3639.5	0.11000	28050.	3808304.
NEW MEXICO	402.9	0.12650	41950.	294866.
NEW YORK	12684.2	0.14558	2717500.	9209215.
NORTH CAROLINA	1730.5	0.10596	360500.	1518702.
NORTH DAKOTA	262.2	0.14190	15966.	159851.
OHIO	3921.8	0.09253	334550.	4659840.
OKLAHOMA	843.0	0.09931	76500.	802914.
OREGON	898.0	0.11547	270500.	791036.

TABLE A.2-Continued

	STATE AND LOCAL TAXES (MILLIONS)	TAX EFFORT	STATE INCOME TAXES (THOUSANDS)	FEDERAL INCOME TAXES (THOUSANDS)
PENNSYLVANIA	5278.7	0.11394	874350.	5078630.
RHODE ISLAND	447.3	0.12053	66450.	369250.
SOUTH CAROLINA	781.6	0.10263	133750.	643662.
SOUTH DAKOTA	291.7	0.13836	0.	164495.
TENNESSEE	1204.8	0.09933	13523.	1228007.
TEXAS	3926.9	0.09898	0.	4085167.
UTAH	425.9	0.12466	73500.	307548.
VERMONT	226.8	0.14677	49800.	149492.
VIRGINIA	1755.0	0.10429	400300.	1841693.
WASHINGTON	1679.3	0.12283	0.	1373399.
WEST VIRGINIA	585.1	0.11125	81188.	532797.
WISCONSIN	2394.2	0.14642	610050.	1643146.
WYOMING	164.2	0.13900	0.	125565.

TABLE A.3

ADJUSTMENTS OF STATE REVENUE SHARING ALLOCATIONS
FOR EACH ADDITIONAL "MEAN" CITIZEN

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	25.72	28.16	20.91
ALASKA	3	22.20	23.82	22.44
ARIZONA	3	27.99	30.60	26.12
ARKANSAS	3	27.95	30.60	19.80
CALIFORNIA	5	24.80	23.37	26.98
COLORADO	5	24.43	26.18	26.68
CONNECTICUT	5	21.87	19.27	23.90
DELAWARE	5	29.21	24.36	31.93
D.C.	5	31.45	18.89	34.39
FLORIDA	3	20.94	22.86	21.61
GEORGIA	3	23.29	25.47	22.09
HAWAII	5	30.62	32.53	33.46
IDAHO	3	29.66	32.43	22.12
ILLINOIS	5	23.28	21.31	25.42
INDIANA	3	21.37	23.34	21.84
IOWA	3	26.25	28.71	23.38
KANSAS	3	23.02	25.17	20.82
KENTUCKY	3	26.41	28.94	18.86
LOUISIANA	3	32.61	35.78	22.92
MAINE	3	31.89	34.90	20.13
MARYLAND	5	26.68	23.09	29.15
MASSACHUSETTS	5	28.02	24.72	30.60
MICHIGAN	5	24.15	23.81	26.33
MINNESOTA	5	27.35	29.09	29.84
MISSISSIPPI	3	38.92	42.75	20.39
MISSOURI	5	20.62	22.44	22.51
MONTANA	3	29.33	32.07	24.05
NEBRASKA	3	25.91	28.33	22.53
NEVADA	5	23.52	24.79	25.71
NEW HAMPSHIRE	3	22.37	24.46	18.80
NEW JERSEY	5	22.39	19.84	24.47
NEW MEXICO	3	32.11	35.14	22.14
NEW YORK	5	28.03	24.90	30.57
NORTH CAROLINA	3	25.91	28.38	21.78
NORTH DAKOTA	3	35.64	39.00	19.90
OHIO	5	19.17	18.93	20.92
OKLAHOMA	3	22.70	24.82	20.45
OREGON	5	25.06	24.76	27.38
PENNSYLVANIA	5	22.31	23.90	24.27
RHODE ISLAND	5	25.34	26.20	27.70

TABLE A.3-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH CAROLINA	3	27.33	29.92	21.12
SOUTH DAKOTA	3	35.92	39.31	19.87
TENNESSEE	3	24.58	26.92	19.90
TEXAS	3	21.01	22.93	21.16
UTAH	3	28.64	31.31	27.09
VERMONT	3	32.90	35.98	24.64
VIRGINIA	5	22.39	23.23	24.44
WASHINGTON	3	22.46	24.54	22.40
WEST VIRGINIA	3	29.37	32.16	20.75
WISCONSIN	3	29.33	32.01	29.89
WYOMING	3	29.87	32.66	18.65
UNWEIGHTED MEANS		26.55	27.63	24.02
WEIGHTED MEANS		24.76	25.04	24.66

TABLE A.4

POPULATION ELASTICITIES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.98	0.98	0.98
ALASKA	3	1.00	1.00	1.00
ARIZONA	3	0.99	0.99	0.99
ARKANSAS	3	0.99	0.99	0.99
CALIFORNIA	5	0.88	0.90	0.88
COLORADO	5	0.99	0.99	0.99
CONNECTICUT	5	0.99	0.99	0.99
DELAWARE	5	1.00	1.00	1.00
D.C.	5	0.99	1.00	0.99
FLORIDA	3	0.97	0.97	0.97
GEORGIA	3	0.98	0.98	0.98
HAWAII	5	0.99	1.00	0.99
IDAHO	3	1.00	1.00	1.00
ILLINOIS	5	0.94	0.95	0.94
INDIANA	3	0.98	0.98	0.98
IOWA	3	0.98	0.98	0.99
KANSAS	3	0.99	0.99	0.99
KENTUCKY	3	0.98	0.98	0.98
LOUISIANA	3	0.97	0.97	0.98
MAINE	3	0.99	0.99	1.00
MARYLAND	5	0.98	0.98	0.98
MASSACHUSETTS	5	0.96	0.97	0.96
MICHIGAN	5	0.96	0.96	0.95
MINNESOTA	5	0.98	0.98	0.98
MISSISSIPPI	3	0.98	0.98	0.99
MISSOURI	5	0.98	0.98	0.98
MONTANA	3	1.00	1.00	1.00
NEBRASKA	3	0.99	0.99	0.99
NEVADA	5	1.00	1.00	1.00
NEW HAMPSHIRE	3	1.00	1.00	1.00
NEW JERSEY	5	0.96	0.97	0.96
NEW MEXICO	3	0.99	0.99	1.00
NEW YORK	5	0.87	0.90	0.86
NORTH CAROLINA	3	0.97	0.97	0.98
NORTH DAKOTA	3	0.99	1.00	1.00
OHIO	5	0.95	0.96	0.95
OKLAHOMA	3	0.99	0.99	0.99
OREGON	5	0.99	0.99	0.99
PENNSYLVANIA	5	0.95	0.94	0.94
RHODE ISLAND	5	1.00	1.00	0.99
SOUTH CAROLINA	3	0.98	0.99	0.99

TABLE A.4-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH DAKOTA	3	0.99	0.99	1.00
TENNESSEE	3	0.98	0.98	0.98
TEXAS	3	0.95	0.95	0.95
UTAH	3	0.99	0.99	0.99
VERMONT	3	1.00	1.00	1.00
VIRGINIA	5	0.98	0.98	0.98
WASHINGTON	3	0.98	0.98	0.98
WEST VIRGINIA	3	0.99	0.99	0.99
WISCONSIN	3	0.97	0.97	0.97
WYOMING	3	1.00	1.00	1.00
UNWEIGHTED MEANS		0.9776	0.9802	0.9786
WEIGHTED MEANS		0.9515	0.9586	0.9510

TABLE A.5

ADJUSTMENT OF STATE REVENUE SHARING ALLOCATIONS
FOR EACH ADDITIONAL URBAN DWELLER

(population remains constant)

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.11	0.00	9.83
ALASKA	3	0.01	0.00	9.93
ARIZONA	3	0.06	0.00	9.84
ARKANSAS	3	0.07	0.00	9.90
CALIFORNIA	5	7.57	0.00	8.57
COLORADO	5	8.95	0.00	9.81
CONNECTICUT	5	8.89	0.00	9.76
DELAWARE	5	9.05	0.00	9.91
D.C.	5	9.02	0.00	9.87
FLORIDA	3	0.18	0.00	9.59
GEORGIA	3	0.13	0.00	9.78
HAWAII	5	9.04	0.00	9.90
IDAHO	3	0.03	0.00	9.93
ILLINOIS	5	8.35	0.00	9.27
INDIANA	3	0.14	0.00	9.73
IOWA	3	0.09	0.00	9.86
KANSAS	3	0.06	0.00	9.87
KENTUCKY	3	0.11	0.00	9.93
LOUISIANA	3	0.15	0.00	9.79
MAINE	3	0.04	0.00	9.92
MARYLAND	5	8.84	0.00	9.72
MASSACHUSETTS	5	8.67	0.00	9.57
MICHIGAN	5	8.54	0.00	9.46
MINNESOTA	5	8.89	0.00	9.77
MISSISSIPPI	3	0.11	0.00	9.91
MISSOURI	5	8.84	0.00	9.72
MONTANA	3	0.03	0.00	9.92
NEBRASKA	3	0.05	0.00	9.89
NEVADA	5	9.06	0.00	9.91
NEW HAMPSHIRE	3	0.02	0.00	9.92
NEW JERSEY	5	8.54	0.00	9.42
NEW MEXICO	3	0.04	0.00	9.91
NEW YORK	5	7.70	0.00	8.73
NORTH CAROLINA	3	0.17	0.00	9.83
NORTH DAKOTA	3	0.03	0.00	9.93
OHIO	5	8.47	0.00	9.37
OKLAHOMA	3	0.07	0.00	9.85
OREGON	5	8.99	0.00	9.85

TABLE A.5-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
PENNSYLVANIA	5	8.42	0.00	9.35
RHODE ISLAND	5	9.02	0.00	9.87
SOUTH CAROLINA	3	0.09	0.00	9.88
SOUTH DAKOTA	3	0.03	0.00	9.93
TENNESSEE	3	0.12	0.00	9.81
TEXAS	3	0.31	0.00	9.35
UTAH	3	0.04	0.00	9.87
VERMONT	3	0.02	0.00	9.93
VIRGINIA	5	8.85	0.00	9.73
WASHINGTON	3	0.10	0.00	9.78
WEST VIRGINIA	3	0.06	0.00	9.91
WISCONSIN	3	0.16	0.00	9.76
WYOMING	3	0.01	0.00	9.93
UNWEIGHTED MEANS		3.46	0.00	9.74
WEIGHTED MEANS		5.02	0.00	9.45

TABLE A.6

URBAN POPULATION ELASTICITIES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.00	0.00	0.17
ALASKA	3	0.00	0.00	0.00
ARIZONA	3	0.00	0.00	0.24
ARKANSAS	3	0.00	0.00	0.10
CALIFORNIA	5	0.22	0.00	0.23
COLORADO	5	0.23	0.00	0.23
CONNECTICUT	5	0.28	0.00	0.28
DELAWARE	5	0.20	0.00	0.20
D.C.	5	0.29	0.00	0.29
FLORIDA	3	0.01	0.00	0.26
GEORGIA	3	0.00	0.00	0.18
HAWAII	5	0.17	0.00	0.17
IDAHO	3	0.00	0.00	0.05
ILLINOIS	5	0.24	0.00	0.24
INDIANA	3	0.00	0.00	0.20
IOWA	3	0.00	0.00	0.12
KANSAS	3	0.00	0.00	0.16
KENTUCKY	3	0.00	0.00	0.02
LOUISIANA	3	0.00	0.00	0.20
MAINE	3	0.00	0.00	0.08
MARYLAND	5	0.21	0.00	0.21
MASSACHUSETTS	5	0.23	0.00	0.23
MICHIGAN	5	0.22	0.00	0.22
MINNESOTA	5	0.16	0.00	0.16
MISSISSIPPI	3	0.00	0.00	0.07
MISSOURI	5	0.23	0.00	0.23
MONTANA	3	0.00	0.00	0.08
NEBRASKA	3	0.00	0.00	0.17
NEVADA	5	0.26	0.00	0.26
NEW HAMPSHIRE	3	0.00	0.00	0.12
NEW JERSEY	5	0.31	0.00	0.31
NEW MEXICO	3	0.00	0.00	0.13
NEW YORK	5	0.19	0.00	0.19
NORTH CAROLINA	3	0.00	0.00	0.11
NORTH DAKOTA	3	0.00	0.00	0.04
OHIO	5	0.26	0.00	0.27
OKLAHOMA	3	0.00	0.00	0.20
OREGON	5	0.17	0.00	0.17
PENNSYLVANIA	5	0.21	0.00	0.21
RHODE ISLAND	5	0.28	0.00	0.28
SOUTH CAROLINA	3	0.00	0.00	0.12

TABLE A.6-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH DAKOTA	3	0.00	0.00	0.06
TENNESSEE	3	0.00	0.00	0.18
TEXAS	3	0.01	0.00	0.26
UTAH	3	0.00	0.00	0.25
VERMONT	3	0.00	0.00	0.00
VIRGINIA	5	0.20	0.00	0.20
WASHINGTON	3	0.00	0.00	0.24
WEST VIRGINIA	3	0.00	0.00	0.09
WISCONSIN	3	0.00	0.00	0.15
WYOMING	3	0.00	0.00	0.00
UNWEIGHTED MEANS		0.09	0.00	0.17
WEIGHTED MEANS		0.13	0.00	0.20

TABLE A.7

ADJUSTMENTS OF STATE REVENUE SHARING ALLOCATIONS
FOR A $1.00 INCREASE IN PER-CAPITA INCOME

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	-75985.29	-83735.79	-14103.91
ALASKA	3	-3603.79	-3868.65	-700.03
ARIZONA	3	-33628.35	-36919.50	-6561.35
ARKANSAS	3	-50014.86	-54938.28	-9080.22
CALIFORNIA	5	-60654.37	-258126.91	-55463.25
COLORADO	5	-6563.68	-37249.56	-7033.14
CONNECTICUT	5	-6608.17	-30087.27	-7088.44
DELAWARE	5	-1540.66	-8174.76	-1675.18
D.C.	5	-1687.20	-7435.31	-1832.68
FLORIDA	3	-91661.32	-101490.30	-19233.61
GEORGIA	3	-80150.48	-88465.64	-15775.11
HAWAII	5	-2532.19	-14844.20	-2747.10
IDAHO	3	-15968.96	-17488.65	-2863.78
ILLINOIS	5	-28992.73	-135579.03	-29067.33
INDIANA	3	-71586.53	-79026.17	-15095.60
IOWA	3	-51077.54	-56200.78	-10089.23
KANSAS	3	-35188.07	-38637.83	-7250.32
KENTUCKY	3	-69741.69	-76829.41	-12860.83
LOUISIANA	3	-101149.78	-111811.03	-17246.31
MAINE	3	-24828.50	-27217.29	-4365.29
MARYLAND	5	-10253.34	-51554.77	-10827.17
MASSACHUSETTS	5	-16646.72	-82550.28	-17243.84
MICHIGAN	5	-24946.03	-126011.01	-25250.45
MINNESOTA	5	-12862.13	-72834.38	-13509.49
MISSISSIPPI	3	-89266.99	-98379.91	-13755.96
MISSOURI	5	-12904.51	-71102.30	-13619.57
MONTANA	3	-15084.35	-16518.53	-2766.56
NEBRASKA	3	-27425.52	-30079.91	-5418.06
NEVADA	5	-1386.25	-6818.48	-1510.05
NEW HAMPSHIRE	3	-11039.04	-12084.12	-2245.02
NEW JERSEY	5	-16578.84	-77422.08	-17236.56
NEW MEXICO	3	-26745.58	-29321.90	-4603.93
NEW YORK	5	-61456.02	-251543.22	-56195.22
NORTH CAROLINA	3	-105318.61	-116542.26	-19776.88
NORTH DAKOTA	3	-17807.88	-19504.71	-2939.54
OHIO	5	-25421.52	-126189.50	-25901.82
OKLAHOMA	3	-42894.27	-47129.73	-8489.48
OREGON	5	-5786.81	-32874.14	-6204.48
PENNSYLVANIA	5	-35636.69	-183988.37	-35231.05
RHODE ISLAND	5	-2806.90	-15940.84	-3041.61

TABLE A.7-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH CAROLINA	3	-61145.68	-67270.94	-11099.93
SOUTH DAKOTA	3	-20020.27	-21931.60	-3352.76
TENNESSEE	3	-77737.74	-85726.65	-14794.08
TEXAS	3	-164503.84	-183904.06	-34130.64
UTAH	3	-22436.56	-24591.77	-4064.63
VERMONT	3	-10542.64	-11539.10	-1945.41
VIRGINIA	5	-12888.66	-72116.79	-13551.70
WASHINGTON	3	-45343.15	-49891.96	-9934.50
WEST VIRGINIA	3	-43735.74	-48030.29	-7707.28
WISCONSIN	3	-84321.76	-93250.31	-16981.57
WYOMING	3	-6855.07	-7499.86	-1307.87
UNWEIGHTED MEANS		-37744.38	-66711.18	-12642.55
WEIGHTED MEANS		-52003.38	-125769.19	-25366.70

TABLE A.8

ADJUSTMENT IN PER-CAPITA ALLOCATIONS
FOR A $1.00 INCREASE IN PER-CAPITA INCOME

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	-0.0840	-0.0847	-0.0192
ALASKA	3	-0.0536	-0.0536	-0.0103
ARIZONA	3	-0.0670	-0.0673	-0.0140
ARKANSAS	3	-0.0918	-0.0923	-0.0236
CALIFORNIA	5	-0.0108	-0.0499	-0.0090
COLORADO	5	-0.0120	-0.0637	-0.0118
CONNECTICUT	5	-0.0098	-0.0509	-0.0096
DELAWARE	5	-0.0095	-0.0611	-0.0095
D.C.	5	-0.0070	-0.0519	-0.0070
FLORIDA	3	-0.0625	-0.0634	-0.0127
GEORGIA	3	-0.0732	-0.0740	-0.0152
HAWAII	5	-0.0107	-0.0590	-0.0106
IDAHO	3	-0.0751	-0.0753	-0.0181
ILLINOIS	5	-0.0105	-0.0545	-0.0097
INDIANA	3	-0.0630	-0.0636	-0.0130
IOWA	3	-0.0677	-0.0682	-0.0150
KANSAS	3	-0.0672	-0.0675	-0.0153
KENTUCKY	3	-0.0803	-0.0809	-0.0208
LOUISIANA	3	-0.0827	-0.0836	-0.0203
MAINE	3	-0.0777	-0.0779	-0.0217
MARYLAND	5	-0.0095	-0.0559	-0.0092
MASSSCHUSETTS	5	-0.0100	-0.0570	-0.0095
MICHIGAN	5	-0.0111	-0.0571	-0.0102
MINNESOTA	5	-0.0121	-0.0643	-0.0116
MISSISSIPPI	3	-0.1011	-0.1019	-0.0300
MISSOURI	5	-0.0130	-0.0664	-0.0127
MONTANA	3	-0.0737	-0.0738	-0.0164
NEBRASKA	3	-0.0707	-0.0709	-0.0161
NEVADA	5	-0.0120	-0.0561	-0.0120
NEW HAMPSHIRE	3	-0.0666	-0.0667	-0.0161
NEW JERSEY	5	-0.0099	-0.0528	-0.0094
NEW MEXICO	3	-0.0812	-0.0815	-0.0203
NEW YORK	5	-0.0104	-0.0501	-0.0087
NORTH CAROLINA	3	-0.0775	-0.0785	-0.0174
NORTH DAKOTA	3	-0.0804	-0.0806	-0.0238
OHIO	5	-0.0118	-0.0600	-0.0110
OKLAHOMA	3	-0.0729	-0.0732	-0.0160
OREGON	5	-0.0109	-0.0628	-0.0107
PENNSYLVANIA	5	-0.0128	-0.0615	-0.0116
RHODE ISLAND	5	-0.0116	-0.0638	-0.0115

TABLE A.8-<u>Continued</u>

	COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH CAROLINA 3	-0.0849	-0.0854	-0.0200
SOUTH DAKOTA 3	-0.0831	-0.0833	-0.0252
TENNESSEE 3	-0.0788	-0.0795	-0.0186
TEXAS 3	-0.0664	-0.0679	-0.0136
UTAH 3	-0.0735	-0.0737	-0.0140
VERMONT 3	-0.0718	-0.0719	-0.0177
VIRGINIA 5	-0.0121	-0.0653	-0.0116
WASHINGTON 3	-0.0582	-0.0586	-0.0127
WEST VIRGINIA 3	-0.0843	-0.0847	-0.0211
WISCONSIN 3	-0.0634	-0.0641	-0.0125
WYOMING 3	-0.0688	-0.0689	-0.0210
UNWEIGHTED MEANS	-0.0494	-0.0683	-0.0149
WEIGHTED MEANS	-0.0359	-0.0630	-0.0126

TABLE A.9

INCOME ELASTICITIES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	-1.92	-1.93	-0.44
ALASKA	3	-1.97	-1.97	-0.38
ARIZONA	3	-1.94	-1.95	-0.41
ARKANSAS	3	-1.94	-1.95	-0.50
CALIFORNIA	5	-0.39	-1.78	-0.32
COLORADO	5	-0.37	-1.95	-0.36
CONNECTICUT	5	-0.38	-1.95	-0.37
DELAWARE	5	-0.31	-1.97	-0.31
D.C.	5	-0.27	-1.97	-0.27
FLORIDA	3	-1.89	-1.91	-0.38
GEORGIA	3	-1.91	-1.93	-0.40
HAWAII	5	-0.36	-1.96	-0.35
IDAHO	3	-1.96	-1.96	-0.47
ILLINOIS	5	-0.37	-1.88	-0.34
INDIANA	3	-1.91	-1.93	-0.40
IOWA	3	-1.93	-1.94	-0.43
KANSAS	3	-1.94	-1.95	-0.44
KENTUCKY	3	-1.92	-1.94	-0.50
LOUISIANA	3	-1.90	-1.92	-0.47
MAINE	3	-1.95	-1.96	-0.55
MARYLAND	5	-0.33	-1.94	-0.32
MASSACHUSETTS	5	-0.34	-1.92	-0.32
MICHIGAN	5	-0.37	-1.89	-0.34
MINNESOTA	5	-0.36	-1.93	-0.35
MISSISSIPPI	3	-1.92	-1.94	-0.57
MISSOURI	5	-0.38	-1.93	-0.37
MONTANA	3	-1.96	-1.96	-0.44
NEBRASKA	3	-1.95	-1.95	-0.45
NEVADA	5	-0.42	-1.97	-0.42
NEW HAMPSHIRE	3	-1.96	-1.96	-0.48
NEW JERSEY	5	-0.36	-1.92	-0.34
NEW MEXICO	3	-1.95	-1.96	-0.49
NEW YORK	5	-0.37	-1.79	-0.31
NORTH CAROLINA	3	-1.89	-1.92	-0.43
NORTH DAKOTA	3	-1.96	-1.96	-0.58
OHIO	5	-0.38	-1.89	-0.35
OKLAHOMA	3	-1.94	-1.95	-0.43
OREGON	5	-0.34	-1.95	-0.33
PENNSYLVANIA	5	-0.39	-1.86	-0.35
RHODE ISLAND	5	-0.36	-1.96	-0.36
SOUTH CAROLINA	3	-1.93	-1.94	-0.46

TABLE A.9-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH DAKOTA	3	-1.96	-1.96	-0.60
TENNESSEE	3	-1.91	-1.93	-0.45
TEXAS	3	-1.83	-1.87	-0.38
UTAH	3	-1.95	-1.96	-0.38
VERMONT	3	-1.96	-1.96	-0.49
VIRGINIA	5	-0.36	-1.93	-0.35
WASHINGTON	3	-1.93	-1.94	-0.43
WEST VIRGINIA	3	-1.94	-1.95	-0.49
WISCONSIN	3	-1.90	-1.92	-0.38
WYOMING	3	-1.96	-1.97	-0.60
UNWEIGHTED MEANS		-1.32	-1.93	-0.41
WEIGHTED MEANS		-0.99	-1.89	-0.37

TABLE A.10

ADJUSTMENTS OF STATE REVENUE SHARING ALLOCATIONS
FOR A $1.00 INCREASE IN STATE AND LOCAL TAXES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	9.18	10.11	1.51
ALASKA	3	4.60	4.93	1.63
ARIZONA	3	5.79	6.35	2.06
ARKANASA	3	10.25	11.26	1.52
CALIFORNIA	5	1.80	3.83	1.84
COLORADO	5	1.73	5.66	1.87
CONNECTICUT	5	1.58	3.56	1.71
DELAWARE	5	1.68	4.79	1.83
D.C.	5	1.53	3.29	1.66
FLORIDA	3	5.32	5.88	1.61
GEORGIA	3	6.84	7.54	1.56
HAWAII	5	2.01	5.17	2.19
IDAHO	3	7.24	7.92	1.97
ILLINOIS	5	1.61	4.11	1.69
INDIANA	3	5.19	5.72	1.65
IOWA	3	5.74	6.31	1.90
KANASA	3	5.49	6.02	1.69
KENTUCKY	3	8.16	8.98	1.62
LOUISIANA	3	8.46	9.34	1.93
MAINE	3	7.45	8.16	2.05
MARYLAND	5	1.72	4.46	1.85
MASSACHUSETTS	5	1.79	4.45	1.92
MICHIGAN	5	1.73	4.78	1.82
MINNESOTA	5	1.89	5.73	2.03
MISSISSIPPI	3	12.26	13.51	1.91
MISSOURI	5	1.44	6.09	1.53
MONTANA	3	6.80	7.44	1.99
NEBRASKA	3	5.88	6.44	1.82
NEVADA	5	1.85	4.12	2.02
NEW HAMPSHIRE	3	5.77	6.31	1.68
NEW JERSEY	5	1.55	3.91	1.66
NEW MEXICO	3	8.09	8.87	1.97
NEW YORK	5	1.86	3.59	1.91
NORTH CAROLINA	3	7.54	8.33	1.63
NORTH DAKOTA	3	8.39	9.19	2.22
OHIO	5	1.35	5.13	1.40
OKLAHOMA	3	6.86	7.53	1.54
OREGON	5	1.66	5.76	1.79

TABLE A.10-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
PENNSYLVANIA	5	1.64	5.34	1.69
RHODE ISLAND	5	1.73	5.56	1.88
SOUTH CAROLINA	3	9.02	9.92	1.59
SOUTH DAKOTA	3	8.20	8.98	2.16
TENNESSEE	3	7.96	8.77	1.54
TEXAS	3	5.85	6.52	1.49
UTAH	3	7.11	7.79	1.94
VERMONT	3	6.45	7.06	2.29
VIRGINIA	5	1.51	6.16	1.60
WASHINGTON	3	4.54	4.99	1.89
WEST VIRGINIA	3	8.73	9.59	1.73
WISCONSIN	3	5.36	5.91	2.22
WYOMING	3	6.04	6.61	2.18
UNWEIGHTED MEANS		4.98	6.62	1.81
WEIGHTED MEANS		3.77	5.75	1.74

TABLE A.11

ADJUSTMENTS OF STATE REVENUE SHARING ALLOCATIONS
FOR A $1.00 INCREASE IN PER CAPITA NON-INCOME TAXES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	316080.43	348293.69	52190.35
ALASKA	3	13901.40	14921.36	4927.40
ARIZONA	3	102663.86	112585.53	36612.12
ARKANSAS	3	197043.58	216448.23	29162.51
CALIFORNIA	5	358547.50	763781.01	366389.68
COLORADO	5	38152.72	125102.32	41263.81
CONNECTICUT	5	47820.08	107862.25	51868.41
DELAWARE	5	9174.18	26252.79	10002.73
D.C.	5	11540.37	24891.74	12582.95
FLORIDA	3	361735.31	399653.70	109686.03
GEORGIA	3	313851.70	346142.19	71499.82
HAWAII	5	15432.74	39805.72	16824.69
IDAHO	3	51579.04	56470.84	14053.81
ILLINOIS	5	178984.80	457605.52	187868.99
INDIANA	3	269881.25	297372.63	85797.92
IOWA	3	162259.55	178275.96	53805.14
KANSAS	3	123465.31	135458.16	38147.07
KENTUCKY	3	262649.27	289215.95	52371.34
LOUISIANA	3	307992.79	340046.08	70458.95
MAINE	3	74024.77	81109.11	20326.00
MARYLAND	5	67558.13	174809.37	72725.63
MASSACHUSETTS	5	102147.11	253317.91	109163.89
MICHIGAN	5	153739.89	424694.45	161992.60
MINNESOTA	5	71923.68	218122.23	77135.48
MISSISSIPPI	3	271741.54	299406.97	42356.56
MISSOURI	5	67231.55	285213.41	71525.34
MONTANA	3	47193.04	51663.30	13797.72
NEBRASKA	3	87320.10	95709.81	27053.64
NEVADA	5	9039.65	20150.71	9868.75
NEW HAMPSHIRE	3	42522.37	46537.37	12373.93
NEW JERSEY	5	111542.34	280354.87	119121.49
NEW MEXICO	3	82301.20	90195.41	20043.71
NEW YORK	5	338292.41	653017.21	348598.45
NORTH CAROLINA	3	383375.83	423847.91	82990.70
NORTH DAKOTA	3	51828.46	56748.97	13673.06
OHIO	5	144245.31	547977.38	149432.72
OKLAHOMA	3	175593.71	192856.02	39500.97
OREGON	5	34648.22	120587.97	37454.14
PENNSYLVANIA	5	193371.11	630170.74	199324.02
RHODE ISLAND	5	16384.16	52823.53	17828.35

TABLE A.11-Continued

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH CAROLINA	3	233643.99	256999.64	41345.49
SOUTH DAKOTA	3	54609.12	59802.46	14371.17
TENNESSEE	3	312354.74	344328.33	60419.32
TEXAS	3	656312.61	732020.50	167614.34
UTAH	3	75257.89	82452.02	20567.49
VERMONT	3	28674.61	31374.28	10183.67
VIRGINIA	5	70290.47	286379.28	74717.68
WASHINGTON	3	155022.20	170214.90	64420.96
WEST VIRGINIA	3	152287.56	167191.64	30206.09
WISCONSIN	3	236839.64	260906.85	98112.32
WYOMING	3	20093.29	21978.31	7216.04
UNWEIGHTED MEANS		150277.78	229277.42	69430.89
WEIGHTED MEANS		234377.95	416714.50	149750.29

TABLE A.12

NON-INCOME TAX ELASTICITIES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.97	0.98	0.20
ALASKA	3	1.00	1.00	0.35
ARIZONA	3	0.99	0.99	0.38
ARKANSAS	3	0.98	0.99	0.21
CALIFORNIA	5	0.39	0.90	0.37
COLORADO	5	0.32	0.99	0.32
CONNECTICUT	5	0.39	0.99	0.38
DELAWARE	5	0.29	1.00	0.29
D.C.	5	0.28	1.00	0.28
FLORIDA	3	0.96	0.97	0.28
GEORGIA	3	0.97	0.98	0.23
HAWAII	5	0.41	1.00	0.41
IDAHO	3	0.99	1.00	0.36
ILLINOIS	5	0.34	0.95	0.33
INDIANA	3	0.97	0.98	0.30
IOWA	3	0.98	0.98	0.37
KANSAS	3	0.99	0.99	0.34
KENTUCKY	3	0.97	0.98	0.27
LOUISIANA	3	0.96	0.97	0.32
MAINE	3	0.99	0.99	0.43
MARYLAND	5	0.33	0.98	0.32
MASSACHUSETTS	5	0.34	0.97	0.34
MICHIGAN	5	0.34	0.96	0.33
MINNESOTA	5	0.34	0.98	0.34
MISSISSIPPI	3	0.97	0.98	0.29
MISSOURI	5	0.56	0.98	0.25
MONTANA	3	0.99	1.00	0.36
NEBRASKA	3	0.99	0.99	0.35
NEVADA	5	0.47	1.00	0.47
NEW HAMPSHIRE	3	1.00	1.00	0.35
NEW JERSEY	5	0.34	0.97	0.33
NEW MEXICO	3	0.99	0.99	0.35
NEW YORK	5	0.40	0.90	0.38
NORTH CAROLINA	3	0.96	0.97	0.25
NORTH DAKOTA	3	0.99	1.00	0.47
OHIO	5	0.25	0.96	0.24
OKLAHOMA	3	0.98	0.99	0.25
OREGON	5	0.28	0.99	0.28
PENNSYLVANIA	5	0.31	0.94	0.29
RHODE ISLAND	5	0.32	1.00	0.32
SOUTH CAROLINA	3	0.98	0.99	0.23

TABLE A.12-Continued

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH DAKOTA	3	0.99	0.99	0.48
TENNESSEE	3	0.97	0.98	0.23
TEXAS	3	0.93	0.95	0.24
UTAH	3	0.99	0.99	0.29
VERMONT	3	1.00	1.00	0.47
VIRGINIA	5	0.25	0.98	0.24
WASHINGTON	3	0.98	0.98	0.41
WEST VIRGINIA	3	0.98	0.99	0.28
WISCONSIN	3	0.96	0.97	0.39
WYOMING	3	1.00	1.00	0.58
UNWEIGHTED MEANS		0.73	0.98	0.33
WEIGHTED MEANS		0.60	0.96	0.31

TABLE A.13

ADJUSTMENTS OF STATE REVENUE SHARING ALLOCATIONS
FOR A $1.00 INCREASE IN STATE INCOME TAXES
(amounts in cents)

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	9.25	10.11	7.54
ALASKA	3	4.60	4.93	7.70
ARIZONA	3	5.83	6.35	8.11
ARKANASA	3	10.29	11.26	7.57
CALIFORNIA	5	6.53	3.83	7.17
COLORADO	5	7.21	5.66	7.88
CONNECTICUT	5	1.58	3.56	1.71
DELAWARE	5	7.20	4.79	7.87
D.C.	5	7.04	3.29	7.70
FLORIDA	3	5.32	5.88	1.61
GEORGIA	3	6.93	7.54	7.53
HAWAII	5	7.51	5.17	8.22
IDAHO	3	7.25	7.92	8.03
ILLINOIS	5	6.79	4.11	7.43
INDIANA	3	5.28	5.72	7.63
IOWA	3	5.80	6.31	7.90
KANASA	3	5.53	6.02	7.74
KENTUCKY	3	8.23	8.98	7.64
LOUISIANA	3	8.55	9.34	7.97
MAINE	3	7.47	8.16	8.12
MARYLAND	5	7.07	4.46	7.73
MASSACHUSETTS	5	7.04	4.45	7.70
MICHIGAN	5	6.93	4.78	7.57
MINNESOTA	5	1.89	5.73	2.03
MISSISSIPPI	3	12.33	13.51	7.97
MISSOURI	5	6.89	6.09	7.51
MONTANA	3	6.81	7.44	8.04
NEBRASKA	3	5.91	6.44	7.87
NEVADA	5	1.85	4.12	2.02
NEW HAMPSHIRE	3	5.77	6.31	1.68
NEW JERSEY	5	1.55	3.91	1.66
NEW MEXICO	3	8.12	8.87	8.04
NEW YORK	5	6.24	3.59	6.88
NORTH CAROLINA	3	7.65	8.33	7.56
NORTH DAKOTA	3	8.41	9.19	8.29
OHIO	5	6.73	5.13	7.34
OKLAHOMA	3	6.91	7.53	7.59
OREGON	5	7.10	5.76	7.76
PENNSYLVANIA	5	6.80	5.34	7.41

TABLE A.13-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
RHODE ISLAND	5	7.26	5.56	7.93
SOUTH CAROLINA	3	9.07	9.92	7.62
SOUTH DAKOTA	3	8.20	8.98	2.16
TENNESSEE	3	7.96	8.77	1.54
TEXAS	3	5.85	6.52	1.49
UTAH	3	7.13	7.79	7.99
VERMONT	3	6.46	7.06	8.35
VIRGINIA	5	6.89	6.16	7.52
WASHINGTON	3	4.54	4.99	1.89
WEST VIRGINIA	3	8.77	9.59	7.78
WISCONSIN	3	5.47	5.91	8.05
WYOMING	3	6.04	6.61	2.18
UNWEIGHTED MEANS		6.66	6.62	6.47
WEIGHTED MEANS		6.43	5.75	6.30

TABLE A.14

ADJUSTMENTS OF STATE REVENUE SHARING ALLOCATIONS
FOR A SUBSTITUTION OF $1.00 OF INCOME TAXES
FOR $1.00 OF NON-INCOME TAXES
(amounts in cents)

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.07	0.00	6.03
ALASKA	3	0.00	0.00	6.07
ARIZONA	3	0.05	0.00	6.44
ARKANSAS	3	0.04	0.00	6.05
CALIFORNIA	5	4.73	0.00	5.34
COLORADO	5	5.48	0.00	6.01
CONNECTICUT	5	0.00	0.00	0.00
DELAWARE	5	5.53	0.00	6.04
D.C.	5	5.51	0.00	6.03
FLORIDA	3	0.00	0.00	0.00
GEORGIA	3	0.09	0.00	5.97
HAWAII	5	5.51	0.00	6.03
IDAHO	3	0.02	0.00	6.06
ILLINOIS	5	5.18	0.00	5.74
INDIANA	3	0.09	0.00	5.98
IOWA	3	0.06	0.00	5.99
KANSAS	3	0.04	0.00	6.05
KENTUCKY	3	0.07	0.00	6.01
LOUISIANA	3	0.10	0.00	6.04
MAINE	3	0.03	0.00	6.07
MARYLAND	5	5.35	0.00	5.88
MASSACHUSETTS	5	5.25	0.00	5.78
MICHIGAN	5	5.20	0.00	5.75
MINNESOTA	5	0.00	0.00	0.00
MISSISSIPPI	3	0.07	0.00	6.06
MISSOURI	5	5.45	0.00	5.99
MONTANA	3	0.02	0.00	6.06
NEBRASKA	3	0.03	0.00	6.05
NEVADA	5	0.00	0.00	0.00
NEW HAMPSHIRE	3	0.00	0.00	0.00
NEW JERSEY	5	0.00	0.00	0.00
NEW MEXICO	3	0.03	0.00	6.06
NEW YORK	5	9.66	0.00	9.93
NORTH CAROLINA	3	0.11	0.00	5.93
NORTH DAKOTA	3	0.02	0.00	6.08
OHIO	5	5.38	0.00	5.94
OKLAHOMA	3	0.05	0.00	6.05
OREGON	5	5.45	0.00	5.97

TABLE A.14-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
PENNSYLVANIA	5	5.16	0.00	5.72
RHODE ISLAND	5	5.53	0.00	6.05
SOUTH CAROLINA	3	0.06	0.00	6.03
SOUTH DAKOTA	3	0.00	0.00	0.00
TENNESSEE	3	0.00	0.00	0.00
TEXAS	3	0.00	0.00	0.00
UTAH	3	0.02	0.00	6.05
VERMONT	3	0.01	0.00	6.06
VIRGINIA	5	5.38	0.00	5.92
WASHINGTON	3	0.00	0.00	0.00
WEST VIRGINIA	3	2.78	0.00	6.32
WISCONSIN	3	0.10	0.00	5.83
WYOMING	3	0.00	0.00	0.00
UNWEIGHTED MEANS		1.88	0.00	4.77
WEIGHTED MEANS		3.18	0.00	5.01

TABLE A.15-Continued

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
RHODE ISLAND	5	52535.84	0.00	57495.48
SOUTH CAROLINA	3	1460.80	0.00	156113.28
SOUTH DAKOTA	3	0.00	0.00	0.00
TENNESSEE	3	0.00	0.00	0.00
TEXAS	3	0.00	0.00	0.00
UTAH	3	253.30	0.00	64096.39
VERMONT	3	51.15	0.00	26955.07
VIRGINIA	5	250382.97	0.00	275144.89
WASHINGTON	3	0.00	0.00	0.00
WEST VIRGINIA	3	735.87	0.00	105486.14
WISCONSIN	3	4602.25	0.00	257522.44
WYOMING	3	0.00	0.00	0.00
UNWEIGHTED MEANS		106129.21	0.00	181709.57
WEIGHTED MEANS		309102.54	0.00	397045.54

TABLE A.16

ELASTICITIES OF SUBSTITUTION BEWTEEN
STATE INCOME TAXES AND NON-INOCME TAXES
IMPLICIT IN EACH REVENUE SHARING FORMULA

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.00	0.00	0.10
ALASKA	3	0.00	0.00	0.36
ARIZONA	3	0.00	0.00	0.12
ARKANASA	3	0.00	0.00	0.10
CALIFORNIA	5	0.15	0.00	0.16
COLORADO	5	0.18	0.00	0.18
CONNECTICUT	5	0.00	0.00	0.00
DELAWARE	5	0.31	0.00	0.31
D.C.	5	0.27	0.00	0.27
FLORIDA	3	0.00	0.00	0.00
GEORGIA	3	0.00	0.00	0.15
HAWAII	5	0.30	0.00	0.30
IDAHO	3	0.00	0.00	0.21
ILLINOIS	5	0.16	0.00	0.16
INDIANA	3	0.00	0.00	0.13
IOWA	3	0.00	0.00	0.19
KANASA	3	0.00	0.00	0.11
KENTUCKY	3	0.00	0.00	0.17
LOUISIANA	3	0.00	0.00	0.07
MAINE	3	0.00	0.00	0.07
MARYLAND	5	0.25	0.00	0.25
MASSACHUSETTS	5	0.23	0.00	0.23
MICHIGAN	5	0.19	0.00	0.19
MINNESOTA	5	0.00	0.00	0.00
MISSISSIPPI	3	0.00	0.00	0.06
MISSOURI	5	0.13	0.00	0.13
MONTANA	3	0.00	0.00	0.23
NEBRASKA	3	0.00	0.00	0.12
NEVADA	5	0.00	0.00	0.00
NEW HAMPSHIRE	3	0.00	0.00	0.00
NEW JERSEY	5	0.00	0.00	0.00
NEW MEXICO	3	0.00	0.00	0.11
NEW YORK	5	0.20	0.00	0.21
NORTH CAROLINA	3	0.00	0.00	0.19
NORTH DAKOTA	3	0.00	0.00	0.08
OHIO	5	0.08	0.00	0.08
OKLAHOMA	3	0.00	0.00	0.09
OREGON	5	0.28	0.00	0.28
PENNSYLVANIA	5	0.16	0.00	0.16

TABLE A.16-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
RHODE ISLAND	5	0.15	0.00	0.15
SOUTH CAROLINA	3	0.00	0.00	0.15
SOUTH DAKOTA	3	0.00	0.00	0.00
TENNESSEE	3	0.00	0.00	0.00
TEXAS	3	0.00	0.00	0.00
UTAH	3	0.00	0.00	0.15
VERMONT	3	0.00	0.00	0.27
VIRGINIA	5	0.20	0.00	0.20
WASHINGTON	3	0.00	0.00	0.00
WEST VIRGINIA	3	0.00	0.00	0.13
WISCONSIN	3	0.00	0.00	0.26
WYOMING	3	0.00	0.00	0.00
UNWEIGHTED MEANS		0.06	0.00	0.14
WEIGHTED MEANS		0.09	0.00	0.13

TABLE A.17

STATE PERSONAL INCOME TAX ELASTICITIES

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
ALABAMA	3	0.12	0.12	0.13
ALASKA	3	0.28	0.28	0.46
ARIZONA	3	0.11	0.11	0.16
ARKANSAS	3	0.12	0.12	0.13
CALIFORNIA	5	0.21	0.13	0.21
COLORADO	5	0.23	0.17	0.23
CONNECTICUT	5	0.01	0.03	0.01
DELAWARE	5	0.40	0.32	0.40
D.C.	5	0.35	0.27	0.35
FLORIDA	3	0.00	0.00	0.00
GEORGIA	3	0.17	0.16	0.19
HAWAII	5	0.41	0.26	0.41
IDAHO	3	0.18	0.18	0.27
ILLINOIS	5	0.21	0.14	0.21
INDIANA	3	0.11	0.11	0.16
IOWA	3	0.16	0.16	0.25
KANSAS	3	0.09	0.09	0.14
KENTUCKY	3	0.16	0.16	0.21
LOUISIANA	3	0.07	0.07	0.09
MAINE	3	0.06	0.06	0.10
MARYLAND	5	0.33	0.24	0.33
MASSACHUSETTS	5	0.31	0.22	0.31
MICHIGAN	5	0.25	0.18	0.25
MINNESOTA	5	0.10	0.29	0.10
MISSISSIPPI	3	0.07	0.07	0.08
MISSOURI	5	0.16	0.13	0.16
MONTANA	3	0.21	0.21	0.31
NEBRASKA	3	0.10	0.10	0.16
NEVADA	5	0.00	0.00	0.00
NEW HAMPSHIRE	3	0.02	0.02	0.01
NEW JERSEY	5	0.00	0.01	0.00
NEW MEXICO	3	0.10	0.10	0.15
NEW YORK	5	0.29	0.19	0.29
NORTH CAROLINA	3	0.20	0.20	0.24
NORTH DAKOTA	3	0.06	0.06	0.11
OHIO	5	0.11	0.08	0.10
OKLAHOMA	3	0.09	0.09	0.11
OREGON	5	0.36	0.30	0.36
PENNSYLVANIA	5	0.21	0.16	0.21
RHODE ISLAND	5	0.20	0.15	0.20
SOUTH CAROLINA	3	0.17	0.17	0.18

TABLE A.17-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
SOUTH DAKOTA	3	0.00	0.00	0.00
TENNESSEE	3	0.01	0.01	0.00
TEXAS	3	0.00	0.00	0.00
UTAH	3	0.17	0.17	0.20
VERMONT	3	0.22	0.22	0.38
VIRGINIA	5	0.26	0.22	0.26
WASHINGTON	3	0.00	0.00	0.00
WEST VIRGINIA	3	0.14	0.14	0.17
WISCONSIN	3	0.25	0.25	0.36
WYOMING	3	0.00	0.00	0.00
UNWEIGHTED MEANS		0.15	0.14	0.18
WEIGHTED MEANS		0.16	0.13	0.18

TABLE A.18

PERCENT DIFFERENCE BETWEEN EACH STATE'S ALLOCATION
COMPARED TO A STRICT PER-CAPITA ALLOCATION

	Formula Used	Compromise Formula	Three Factor	Five Factor
ALABAMA	3	0.71	10.09	-18.48
ALASKA	3	-14.76	-8.53	-13.78
ARIZONA	3	8.50	18.60	1.10
ARKANASA	3	8.60	18.71	-23.34
CALIFORNIA	5	7.71	-0.65	17.74
COLORADO	5	-5.30	1.55	3.52
CONNECTICUT	5	-14.88	-25.23	-6.95
DELAWARE	5	12.47	-6.34	22.95
D.C.	5	21.35	-27.35	32.65
FLORIDA	3	-17.27	-9.57	-14.44
GEORGIA	3	-8.57	-0.06	-13.47
HAWAII	5	18.08	25.28	29.08
IDAHO	3	14.31	24.96	-14.83
ILLINOIS	5	-5.34	-14.22	3.47
INDIANA	3	-16.13	-8.32	-14.32
IOWA	3	2.33	11.86	-9.11
KANASA	3	-10.72	-2.40	-19.38
KENTUCKY	3	3.41	13.04	-26.50
LOUISIANA	3	28.79	40.79	-10.51
MAINE	3	23.29	34.77	-22.41
MARYLAND	5	4.76	-9.87	14.52
MASSACHUSETTS	5	11.40	-2.50	21.77
MICHIGAN	5	-3.02	-4.70	6.01
MINNESOTA	5	7.27	14.01	17.26
MISSISSIPPI	3	52.77	67.00	-20.84
MISSOURI	5	-19.32	-12.17	-11.81
MONTANA	3	13.02	23.55	-7.41
NEBRASKA	3	0.21	9.54	-13.00
NEVADA	5	-9.56	-4.70	-1.13
NEW HAMPSHIRE	3	-13.88	-5.86	-27.66
NEW JERSEY	5	-10.74	-21.72	-2.42
NEW MEXICO	3	24.15	35.71	-14.65
NEW YORK	5	23.98	5.49	35.52
NORTH CAROLINA	3	2.44	11.98	-14.42
NORTH DAKOTA	3	37.46	50.26	-23.43
OHIO	5	-22.90	-24.38	-15.72
OKLAHOMA	3	-11.83	-3.62	-20.68
OREGON	5	-2.77	-4.10	6.29
PENNSYLVANIA	5	-9.59	-2.84	-1.17

TABLE A.18-<u>Continued</u>

		COMPROMISE FORMULA	3 FACTOR FORMULA	5 FACTOR FORMULA
RHODE ISLAND	5	-2.32	0.97	6.78
SOUTH CAROLINA	3	6.58	16.51	-17.97
SOUTH DAKOTA	3	38.63	51.55	-23.52
TENNESSEE	3	-3.58	5.40	-22.29
TEXAS	3	-15.21	-7.31	-14.33
UTAH	3	10.55	20.85	4.50
VERMONT	3	26.64	38.43	-5.22
VIRGINIA	5	-12.28	-8.99	-4.11
WASHINGTON	3	-12.49	-4.34	-12.71
WEST VIRGINIA	3	14.05	24.67	-19.73
WISCONSIN	3	15.50	26.26	17.97
WYOMING	3	14.84	25.53	-28.35
Mean % Difference		13.65	16.61	15.12
Mean Difference		13052183.30	11867852.95	15476915.14

BIBLIOGRAPHY

Break, George F.   Intergovernmental Fiscal Realtions in the
    United States.   Washington: Brookings Institution,
    1967.

Break, George F., "Revenue Sharing: It's Implications for
    Present and Future Intergovernmental Fiscal Systems:
    The Case For," National Tax Journal, September 1971,
    pp. 307-312.

Buchanan, James M. and Wagner, Richard E.   "An Efficiency
    Basis For Federal Fiscal Equalization." In The
    Analysis of Public Output. Edited by Julius Margolis.
    New York: Columbia University Press, 1970.

Burkhead, Jesse.   The Reform of General Revenue Sharing.
    Syracuse: Syracuse University, 1975.

Dommel, Paul R.   The Politics of Revenue Sharing.
    Bloomington: Indiana University Press, 1974.

Dresch, Stephen P. "An 'Alternative' View of the Nixon
    Revenue Sharing Program." National Tax Journal.   24
    (June 1971) pp. 131-142.

Keyserling, Leon H. "Revenue Sharing: Its Implications for

Present and Future Intergovernmental Fiscal Systems: The Case Against." National Tax Journal. 24 (September 1971) pp. 313-321.

Goetz, Charles j. "Federal Block Grants and the Reactivity Problem." Southern Economic Journal. 34 (July 167) pp. 160-164.

Goetz, Charles J. What is Revenue Sharing? Washington: The Urban Institute, 1972.

Johnson, Darwin G. and Mohan, Charles M. "Revenue Sharing and the Supply of Public Goods." National Tax Journal. 24 (June 1971) pp. 157-168.

Johnson, Marv. A Discussion and Estimation of the Tax Effort Inducements of General Revenue Sharing. Syracuse: Syracuse University, 1975.

Johnson, Marv. Optimal Fiscal Behavior Under General Revenue Sharing: A Game Theoretic Analysis. Syracuse: Syracuse University, 1975

LeGrand, Julilan and Reschovsky, Andrew. "Concerning the Appropriate Formulae for Achieving Horizontal Equity Through Federal Revneue Sharing." National Tax Journal. 24 (December 1971) pp. 475-486.

Manvel, Allen D. "Differences in Fiscal Capacity and Effort: Thier Significance for a Federal Revenue Sharing System." National Tax Journal. 24 (june 1971) pp. 193-204.

Nathan, Richard P.; Manvel Allem D. and Calkins, Susannah E.
Monitoring Revenue Sharing. Washington: Brookings
Institution, 1975.

Nathan, Richard P. and Adams, Charles F. Jr. Revenue
Sharing: the Second Round. Washington; Brookings
Institution, 1977.

Pechman, Joseph A. and Okner, Benjamin A. Who Bears the Tax
Burden? Washington: Brookings Institution, 1974.

Regan, Michael D. The New Federalism. New York: Oxford
University Press, 1972.

Reischaur, Robert D. "General Revenue Sharing -- The
Program's Incentives." in Financing the New
Federalism, pp. 40-87. Edited by Wallace E. Oates
Washington: Resources for the Future, Inc., 1975.

Report of the Committee on Government Operations. by
Abraham Ribicoff, Chairman. Washinton: U.S. Government
Printing Office, 1975.

Research Utilization Project on General Revenue Sharing. by
Reese C. Wilson, Principal Investigator. 3 vols.
Washington: U.S. Government Printing Office, 1975.

Ross, John P. Alternative Formulae for General Revenue
Sharing: Population Based Measures of Need.
Blacksburg, Virginia: Virginia Polytechnic Institute
and State University, 1975.

Tullock, Gordon. Toward a Mathematics of Politics. Ann

Arbor: University of Michigan Press, 1972.

U.S. Congress. House. _An Act to Provide Fiscal Assistance to State and Local Governments, to Authorize Federal Collection of State Individual Income Taxes, and for Other Purposes._ Pub. L. 92-512, 92nd Cong. 2nd sess. 1972. H.R. 14370.

Wagner, Richard E. _The Fiscal Organization of American Federalism._ Chicago: Markham Publishing Co., 1972.

AN ANALYSIS OF REVENUE SHARING'S PERFORMANCE
IN ACHIEVING ITS FORMULA GOALS

by

Wendell Edmund Sweetser, Jr.

(ABSTRACT)

The State and Local Fiscal Assistance Act of 1972, otherwise known as the revenue sharing act, distributes $30.2 billion to nearly 39,000 state and local governments over a five year period. The purpose of this study is to determine whether or not the actual workings of the program are consistent with the goals its supporters set for it.

Other formula studies of revenue sharing begin by selecting a goal, or goals, that revenue sharing is supposed to advance (or should advance), and then proceed to develope alternative distribution formulas which are more responsive to the predetermined goal(s). This study, by examining the structure of the distribution formula, uses a revealed preference technique to ascertain four program goals inherent in the structure of the distribution formula.

The formula goals are to favor states with: 1) low per capita incomes; 2) high proportions of the states' populations living in urban areas; 3) high per capita state and local taxes; 4) high state personal income taxes.

Achieving goals is not assured merely by constructing a distribution formula which induces the desired marginal relationships between revenue allocations and the key varialbles used in the formula. This is evidence of intent, not performance. The final distribution of funds is determined both by the disbribution formula and by the data set of state-local variables used in the formula. Intercorrelations between vaiables can frustrate efforts to further more than one goal simultaneeously.

To test the general hypothesis - that the formula goals are furthered inspite of any possible adverse intercorrelations among variables - the relationships prescribed by the formula goals are estimated by regression analysis. The allocation formula's elasticities and partial derivatives are also calculated from the perspective of each state, for each of the state's data elements.

In order to test a similar hypothesis about the distribution of net benefits, the cost of revenue sharing to each state is estimated under three alternative financing assumptions - proportional increase in federal income taxes, proportional reduction in federal catagorical aid, and a proportional reduction in federal spending.

On average, the distribution of gross benefits: 1) favors low income states; 2) favors non-urban states; 3) favors neither high or low tax states; 4) favors neither low

or high personal income tax states. However, if the state observations are weighted by population, the program does not discriminate on the basis of per capita income, urbanization, or the expected state personal income tax. It does favor citizens living in states with high per capita taxes.

Parameters of the net benefit distribution vary with the method of finanacing. Generally, high-income-urban states fare better if revenue sharing is financed from reduced federal grants-in-aid, rather than increased personal income taxes.