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***D R A F T***

**INCENTIVES AND DISINCENTIVES IN STATE EQUALIZATION AIDS:  
“GAMING THE SYSTEM”**

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**ABSTRACT**

State governments provide a significant amount of financial resources to local governments through equalization aid programs. Such programs are often intended to provide more state assistance to relatively “poor” communities and less state aid to relatively “rich” communities. Under these programs, conventional wisdom suggests that communities will be “rewarded” for increased local tax effort and “penalized” for increases in local tax base. This paper distinguishes between static and dynamic responses of state equalization aid payments to different configurations of local development and uses a micro-simulation model to demonstrate that conventional wisdom is not true in many cases. The response of state equalization aid in a community experiencing development is determined by a complex set of relationships that involve fiscal factors internal and external to the local community and can be complicated by non-equalizing aspects of aid programs.

## **I. Introduction and Overview**

State governments commonly provide some form of financial aid to local governments for the purpose of augmenting locally raised revenues. In 2001-02, for example, state governments across the U.S. provided over \$355 billion to local governments in the form of aids, representing nearly one-third of the total revenues available to local governments (U.S. Census Bureau 2005). In many cases, states distribute local aids through what are called “equalization” aid programs. The general purpose of these programs is to provide state funds to local governments such that all local governments have roughly the same revenues or revenue base available to fund critical local services, regardless of the actual tax base available to any specific local government (Anderson 1994, ix).

In general terms, equalization aid programs attempt to send more state aid to local governments that are property tax base “poor” and less aid to governments that are property tax base “rich.” Similarly, equalization aid programs attempt to send more state aid to local governments that have higher tax effort and less aid to governments that have lower tax effort. This series of “rewards” and “penalties” creates a fiscal incentive for local governments to approve or promote local development (such as proposed new residential or commercial development projects) in some cases and a disincentive to do the same in other situations.

Contemporary literature dealing with state equalization aid programs tends to concentrate around several major conceptual or empirical areas. A limited number of studies have explored the conceptual basis for establishing either foundation or equalizing state aid programs and identify alternative goals that can be accomplished via either approach (see for example Ladd and Yinger 1994 and Duncombe and Yinger 1998). Another limited set of studies have explored ways of defining and measuring fiscal disparities and capacities and deal with issues such as

equity and efficiency in aid programs and measuring relative expenditure need across disparate local governments (see for example Ladd 1994, Downes and Pogue 1994 and Oakland 1994).

A more substantial body of literature has explored the question of the impact of state or federal aids on local government spending. This research deals mainly with the question of whether intergovernmental aids off-set local spending, thus producing property tax relief (see for example Bradford and Oates 1971a, 1971b); or whether such programs stimulate additional local government spending, producing what is often referred to as the “flypaper effect” (see for example Bailey and Connolly 1998, Fossett 1990, Hamilton 1983, Stotsky 1991 and Fisher and Papke 2000). While the impact of intergovernmental aids on local property tax relief or government spending is debated, the *complexity* of the formulas used to implement many of these programs is cited as a possible explanation for the local government responses that are observed (Deller, Maher and Lledo 2002:3).

Two critical dimensions of the impact literature summarized above can be identified. First, most studies focus on federal or state aid programs for public education; few address issues associated with general purpose local governments. Secondly, most impact studies are attempting to assess the impact of aids on local government behavior (either property tax relief or increased spending). That is, the implied line of causation is that aids affect local behavior. It appears that no studies to date have examined the reverse possibility that local government behavior might affect the aids received. Of particular relevance to this paper, no existing studies have explored the response of state equalization aids to different decisions that are made by local governments concerning increased spending and tax base growth associated with new development.

The purpose of this paper is to examine the *dynamic* behavior of state equalization aids in response to different local development conditions. That is, how do state equalization aids respond when local governments make decisions that change their tax base or spending behavior over time? Dynamic behavior refers to the fact that decisions made by a single local government are made in the context of other local governments that are also making similar or different decisions that are placing demands on shared intergovernmental aids.

To address the above issues, the paper first discusses the significant features of a state equalization aid program, using the Wisconsin Shared Revenue Program as an illustration. Based on this description, the concepts of *static* and *dynamic* responses are developed. The paper then discusses a micro-simulation model that has been constructed for a hypothetical state with four municipalities that compete for limited state equalization aid. Based on this model the paper presents simulations that demonstrate the differential static and dynamic responses that can occur under different local and statewide conditions.

## **II. Significant Features of State Equalization Aid Programs**

Ladd and Yinger (1994) have previously explained the various goals that can be addressed by state equalization programs. States, for example, can use “foundation grants” to ensure adequate levels of finance for state-determined minimum levels of local service, regardless of the local tax base available. Alternatively, states can use “power equalization” approaches to ensure the provision of equal local services for a given level of tax effort, regardless of the size of the local tax base.

Ladd and Yinger (1994) have characterized power equalization programs by the formula

$$A_j = E_j (1 - V_j / V) \quad (1)$$

where  $E_j$  is the level of local spending per capita,  $V_j$  is the local tax base per capita,  $V$  is a state-

determined “guaranteed” value per capita, and  $A_j$  is the state power equalization aid received by municipality  $j$ . Under this equalization program, two communities with identical local spending levels  $E_j$  can receive different amounts of state aid per capita, depending on the local tax base per capita in each community relative to the state guaranteed value  $V$ . The effect of this program is to allow two communities to fund identical levels of spending with identical local tax effort, without regard to the local tax base available to fund such expenditures. Under this approach (and the foundation aid approach), tax base rich communities with local tax bases  $V_j$  above  $V$  do not receive state equalization aid.<sup>1</sup> In theory these communities have enough local tax base to provide necessary local services without state financial assistance.

It is important to note that some writers describe  $V$ , the state guaranteed value, as a “policy parameter,” meaning apparently that it is set by the state (Ladd and Yinger 1994, 214). How this “parameter” is determined is not discussed. In fact it is this variable that adjusts each year so that appropriated funds are exactly distributed. As the level of state guaranteed value is increased, more aid is distributed. Conversely, when the state guaranteed value is decreased in any given year less aid is distributed.<sup>2</sup> Ultimately, as shown later, this parameter plays a major role in determining how state equalization aids respond to various configurations of local development.

This paper focuses on state power equalization aid programs such as the one used to fund municipal and county governments in Wisconsin until 2004.<sup>3</sup> The Wisconsin Shared Revenue

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<sup>1</sup>In theory, places with  $V_j$  above  $V$  should make a “negative” payment to the state, but this is seldom done in practice.

<sup>2</sup>The relationship between aid received by a community ( $A_j$ ) and the state guaranteed value ( $V$ ) flows directly from equation 1 and exists for all communities with  $V_j$  less than  $V$ .

<sup>3</sup>Beginning in 1972, Wisconsin began distributing state-collected revenues to local municipalities and counties using a power equalization aid program based generally on the

Program generally functioned as shown in equation 1. Under such programs it is possible to develop what might be considered “simple” or “static” interpretations of how state aids will respond to varying local developments. For example, using equation 1 and *assuming ceteris paribus conditions* the following two *static responses* can be inferred:

#### **Static Spending Response (SSR)**

\_\_\_\_\_development that causes local government *spending* to increase without concomitant increases in the local tax base should cause state equalization aid received by a municipality to *increase*; and

#### **Static Tax Base Response (STBR)**

development that causes local *tax base* to increase without concomitant increases in local government spending should cause state equalization aid received by a municipality to *decrease*.

Stated in more general terms, *ceteris paribus*, increases in local spending should be *rewarded* by increased state equalization aid and increases in local tax base should be *penalized*. These two “static” responses constitute the prevailing conventional wisdom in terms of what local communities can expect from different types of local development and, in deed, flow logically from equation 1 when *ceteris paribus* conditions are assumed.

Unfortunately, representations such as equation 1 do not fully describe how power equalization aid programs such as Wisconsin’s are administered in practice. Figure 1 illustrates the essential features of the Wisconsin Shared Revenue Program. Numbers in parentheses refer

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program reflected in equation 1. This program, called the Wisconsin Shared Revenue Program, was replaced in 2004 with the County and Municipal Shared Revenue Program. The new program basically froze state aid payments at their 2003 levels and removed the concept of equalization from the aid distribution formula (Olin 2005).

to elements shown in Figure 1.

#### FIGURE 1 HERE

In this illustration two communities (i and j) are competing for limited state shared revenue aids that are fixed at \$1,500 statewide. Community i raises \$1,000 in local revenues (1) using a tax base (value) of \$20,000 (2). Community j raises \$2,000 in local revenues (3) using a tax base of \$30,000 (4). Assuming an “initial” state guaranteed value ( $V$ ) of \$80,000 (5) and equation 1, Community i would initially be entitled to \$750 in equalization aid (6) and community j to \$1,250 (7). Taken together the state would initially owe \$2,000 in total equalization aid (8) to the two communities, an amount that is \$500 too much given the appropriated level of \$1,500 (9). To adjust initial entitlements to the amount available for distribution, the state lowers the state guaranteed value from \$80,000 to \$53,333 (10). Again using equation 1, this has the effect of lowering the equalization aid to be received by Community i from \$750 to \$625 (11) and the aid to be received by Community j to be reduced from \$1,250 to \$875 (12). The combined revised aid entitlements total \$1,500 (13), exactly the amount available for distribution to all communities statewide. The crucial point to be made from this part of the illustration is that it is the state guaranteed value ( $V$ ) that is used to equate aggregate equalization entitlements to the funds available for distribution and that *this value is affected by the local fiscal conditions that exist in all cities in the state*. Thus, while the definition of  $V$  is, in deed, a “policy parameter” of the state, it varies from year-to-year such that total equalization aid entitlements exactly equal the amount of money available for distribution.

Another important feature of equalization aid programs such as Wisconsin’s Shared Revenue Program is the concept of *ceilings* and *floors*. These features are often included in equalization aid programs to “smooth” aid payment fluctuations from year-to-year. In the

Wisconsin Shared Revenue Program no municipality can receive less this year than 95 percent of the previous year's aid payment. The 95 percent *floor* is set by state statute and does not vary from year-to-year. In the current example, Community i received \$684 in state aid in the previous year (not shown) and is guaranteed to receive 95% of this amount (\$650) or more in the current year. Since the adjusted entitlement for Community i (11) is \$25 less than the *floor*, the community's aid payment will be adjusted upward by a \$25 floor adjustment (14), making a final total aid payment to the community of \$650 (16).

Money for the floor payments come not from an additional state appropriation, but rather is "skimmed" from other communities that are entitled to increased state equalization aids during the current year. That is, funds needed to augment communities scheduled to receive reduced state aids are reallocated from communities that are scheduled to receive increased state aid. The *ceiling rate*, much like  $V$ , is determined each year and can vary from year-to-year. The ceiling rate is determined each year such that the downward ceiling adjustments for increasing aid communities just exactly equals the amount of upward floor adjustments needed for decreasing aid communities. As illustrated in Figure 1, Community j is initially entitled to receive \$875 in equalization aid (12), an increase over its previous year's aid payment (not shown) which was \$826. But \$25 is needed to fund the floor adjustment for Community i. By placing a ceiling on Community j's current year aid payment of 102.9% of the previous year's payment (i.e. the ceiling rate), Community j's entitlement is reduced by \$25 (15) to \$850 (17), thus freeing-up exactly the amount of money needed to fund Community i's upward floor adjustment. Like  $V$ , the ceiling rate, once determined each year, applies to all communities in the state (i.e. there is one ceiling rate for the state each year). This non-equalizing aspect of ceilings and floors is seldom, if ever, mentioned when equalization aid programs are being discussed.



Two of the above features have special significance in trying to understand how state equalization aids respond to local development. These two features are: (1) determination of the state guaranteed value,  $V$ , and (2) inter-municipal transfers that occur because of ceilings and floors. In both cases the aids received by an individual community can be affected not only by local fiscal conditions ( $E_j$  and  $V_j$ ), but also the fiscal conditions in other communities throughout the state as they affect  $V$  and the ceiling rate.

In comparison to the static responses (SSR and STBR) identified above, it is conceivable that the equalization aid received by a community responds to local land development in a complex manner that involves changes in both local and statewide fiscal conditions. *Dynamic responses* can, thus, be defined as the changes in state equalization aid that a community can expect to receive due to local development, given changes that are occurring in fiscal conditions throughout the state. Three dynamic responses can be anticipated:

#### **Dynamic Spending Response (DSR)**

state equalization aids received by a community may either increase or decrease in response to local development-induced spending (versus *increase only* under SSR), depending on spending changes occurring throughout the state;

#### **Dynamic Tax Base Response (DTBR)**

state equalization aids received by a community may either decrease or increase in response to local development-induced tax base increases (versus *decrease only* under STBR), depending on tax base changes occurring throughout the state; and

#### **Dynamic Ceiling/Floor Response (DCFR)**

the “penalties” and “rewards” normally associated with state equalization aids can be over-ridden by the existence of ceilings and floors within the equalization aid program.

Both static and dynamic responses are examined in the set of simulations that follow.

### **III. Simulation of Equalization Aid Responses to Different Local and Statewide**

#### **Conditions**

The Wisconsin Micro-Simulation Model (WiMS) simulates the impacts on state equalizing aid in a hypothetical state that is made up of four hypothetical cities. Each of the cities has different levels of local government spending and tax base and the state has \$32,330,000 to distribute in equalization aid statewide each year. The equalization aid program simulated here essentially replicates Figure 1 and has an annual “floor” of 95% of the previous year’s aid payment and a “ceiling” that floats each year to fund necessary floor payments. The model starts with a base year of 2000 and is simulated annually for years 2001-2010 with  $V$ , the state guaranteed value, determined each year such that total state equalization aid is distributed.<sup>4</sup> The model also determines the ceiling rate that would be necessary to fund floor payments among cities each year.<sup>5</sup>

Table 1 shows initial conditions in each of the four cities. Government spending per capita varies from \$190 in City 4 to \$360 in City 3 and tax base per capita varies from \$20,000 in City 1 to \$55,000 in City 3. Each community has an initial population of 100,000 that grows annually by 1% over the simulation period.

TABLE 1 HERE

Conventional wisdom as expressed in the Static Spending Response (SSR) and the Static Tax Base Response (STBR) described above suggest that *ceteris paribus*, equalization aids will

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<sup>4</sup>The WiMS model assumes zero state equalization aid for a city when  $V_j$  exceeds  $V$  in any year.

<sup>5</sup>An abbreviated version of the micro-simulation model is available from the author upon request.

increase as local government spending or tax effort increases and will decrease as local tax base increases. In contrast, the Dynamic Spending Response (DSR), the Dynamic Tax Base Response (DTBR) and Dynamic Ceiling/Floor Response (DCFR) described above suggest that the response of equalization aids will depend upon both the relative spending and tax base impacts of local development *and* upon changes that are occurring statewide in terms of local government spending and tax base growth.

The analysis presented here examines the dynamic response of equalization aids under two separate sets of assumptions. The first analysis examines the dynamic response assuming that aids are distributed based only on equalization dynamics (i.e. equation 1), but *without the presence of non-equalizing ceilings or floors*. This is followed by an analysis of the dynamic responses that would exist when both equalizing and non-equalizing (ceiling and floor) dynamics are considered.

#### Dynamic Responses of Equalization Aid: *Without Ceilings or Floors*

Figure 2 shows the dynamic response of equalization aids to the four cities over the period 2001-2010 when local government spending in each community changes by either -1%, +3% or +7% each year and the local government spending in the remaining three communities change from between -2 and +8 % each year.<sup>6</sup> For example, one simulation was run for City 1 where its local spending was growing at 3% a year and local spending in all other communities was growing at 2% per year, holding property tax base and population growth constant for all places over the simulation period. Thirty three (33) simulations were run for each

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<sup>6</sup>The range of annual spending increases shown in Figure 2 and annual property tax base increases shown in Figure 3 was chosen to amplify potential differences among the four communities and does not necessarily reflect likely rates of sustained increases over a ten year period.

city reflecting different combinations of local spending growth (-1%, +3% and +7%) and spending growth for all other cities in the hypothetical state (-2%, -1%, 0%, +1%,...+8%). In each simulation, total equalization aid received by the community over the period 2001-2010 was determined and compared to the total equalization aid the community would have received over the same period if conditions in the community and state did not change from their 2000 levels (shown as Baseline in Figure 2).

#### FIGURE 2 HERE

As shown in Figure 2, state equalization aid responds to local spending increases in very different ways across the four cities. Consistent with the conventional wisdom associated with the Static Spending Response (SSR), state equalization aid will increase for City 1, a relatively low spending and tax base per capita community, as it increases its spending under all circumstances. For example, cumulative equalization aid received by City 1 will be greater when its spending is growing by 7% a year in comparison to 3% a year, holding property tax base and population growth constant. Conversely, its cumulative state equalization aid will decrease (in comparison to the Baseline) as it decreases its spending each year under virtually all circumstances. Cities 2 and 4 have less assurance that state equalization aids will increase as local spending increases. For example, City 2 will lose cumulative state equalization aid over the 2001-2010 period if its spending is growing by 3% a year and spending in the rest of the state is growing by 2.65% each year or more. City 4 will lose cumulative equalization aid if its spending is growing at 3% each year and spending in all other communities is growing at any positive rate or even declining by up to 0.12% per year. It is important to note that both Cities 2 and 4 will *lose* cumulative equalization aid if their spending is *growing at the same rate* as other communities in the state. In most circumstances the Dynamic Spending Response (DSR) is more

accurate than the Static Spending Response (SSR) in describing the response of state aids to local spending increases for Cities 2 and 4. The equalization aid received by City 3, a relatively high spending and high tax base community, is generally unaffected by spending increases in either City 3 itself or in the remaining cities. This results because in most cases and in most years the per capita tax base in City 3 is above the state guaranteed tax base  $V$  and, thus, the community receives no equalization aid. In all cases City 3 is no worse off fiscally because of increased local government spending throughout the state.

Looking across all four communities illustrated in Figure 2 it is evident that the conventionally assumed static response of equalization aid to local government spending increases (SSR) in a particular city is present, at least in limited circumstances, but that this response can be overwhelmed by changes that occur outside the city. It is very possible that a community anticipating increased state equalization aid in response to increased local government spending can see their cumulative equalization aid decrease over time. It is also evident that the dynamic response of equalization aid to local government spending increases (DSR) is not uniform across communities. Some cities can anticipate increased state equalization aid under most conditions (City 1), while the aid received by other communities depends very heavily on what is happening in other cities (Cities 2 and 4).

Looking across all four communities also illustrates an important concept of “elasticity” in state equalization aid. Assuming a local annual spending increase of 3% in City 1, for example, the state “share” of cumulative local spending (i.e. cumulative state aid / cumulative local spending) may vary from between 53 and 58%, depending on what is happening in spending in all other communities. By examining the slopes of the various response lines for City 1 shown in Figure 2, this translates into a \$1.513 million decrease in cumulative state aid to

City 1 for each 1% increase in spending by all other communities. For City 2 the variation in state share is even greater, ranging between 29 and 40%, when spending in City 2 is growing at 3% per year. This translates into a \$3.648 million decrease in cumulative state aid for each 1% increase in spending by all other communities, over twice the rate of loss compared to City 1. The elasticity of state equalization aid is greatest for City 4. When spending in this community is growing at 3% per year the state share of these expenditures can vary from between 7 and 24%, translating into a \$4.261 million loss in cumulative state equalization aid for each 1% increase in spending by all other communities. Clearly some communities are more affected by the growth in spending by other communities in the state than others.

Figure 3 reverses the above simulations by holding local spending (and population growth) constant and allowing local and statewide property tax bases to vary over time. Again in this analysis, equalization aid to an individual community is assumed to be not affected by ceilings or floors each year, but rather only affected by the equalization dynamic. Like Figure 2, “Baseline” in Figure 3 shows the cumulative equalization aid that would be received by a city over the simulation period if local and statewide conditions do not change from their 2000 levels.

#### FIGURE 3 HERE

As shown in Figure 3, the assumed static tax base response STBR that, *ceteris paribus*, equalization aid will decrease as the tax base in a community increases is evident. In City 1, for example, cumulative equalization aid received by the community will be greatest when its tax base is decreasing by 1% each year and is the least when its tax base is growing by 7% each year. Once again, however, the aid received by City 1 depends heavily on what is happening to tax base throughout the state. When the tax base in City 1 is declining by 1% per year, it is virtually assured that it will receive more equalization aid than if conditions remained at their 2000 levels.

When tax base in City 1 grows at 3% per year it will, in fact, lose cumulative equalization aid as long as the growth rate in tax base in the remaining cities is less than 2.22% per year. If the tax base growth rate is above this level in the remaining cities throughout the state, the cumulative equalization aid received by City 1 will actually increase, counter to the direction suggested by static tax base response STBR.

An identical situation exists for Cities 2 and 4. In some cases cumulative equalization aid to these communities will decrease as their tax base increases, but in other circumstances cumulative aids will increase, contrary to STBR. Interestingly, City 3, the tax base wealthy community, can only stand to gain cumulative equalization aid as its property tax base increases. In some cases when property tax base in this community is growing less rapidly than the rest of the state, it will actually begin receiving state equalization aid.

Looking across all four communities illustrated in Figure 3 it is evident that the assumed static response of equalization aid to increased local tax base occurs, at least for communities receiving equalization aid. *Ceteris paribus*, equalization aid decreases as a community's tax base increases. Increasing property tax base does not, however, mean decreasing cumulative equalization aid when the *ceteris paribus* conditions are removed. Communities can receive increasing equalization aid even when their tax base is increasing if the tax base of other cities in the state are increasing at a higher rate. Communities currently not receiving equalization aid can, in fact, start receiving aid if the value increase in all other cities is large enough to drive up the state guaranteed value  $V$ . Once again it appears that the dynamic response of equalization aid to local tax base increases is not uniform across communities. Property tax rich communities (City 3) are either unaffected or see their cumulative equalization aid increase as their tax base increases. Consistent with dynamic tax base response DTBR, other communities (1, 2 and 4)

experience either decreases or increases in cumulative equalization aid received, depending on what is happening to the tax bases of other communities.

#### Dynamic Responses of Equalization Aid: *With* Ceilings and Floors

As discussed in Section II, state equalization aid programs may also include *ceiling* and *floor* provisions that are intended to “smooth” aid payments received by a community from year-to-year. These provisions do not affect the overall level of funds distributed through the state aid program, but do change the amount of aid received by individual communities. This is accomplished by “transferring” funds from one community to another according to the provisions of the ceilings and floors. In the simulations presented here all communities are guaranteed 95 percent of their previous year’s aid (i.e. there is a 95% *floor*). The funds needed to fund these transfers are diverted from communities entitled to increasing state aid. The *ceiling rate* is determined each year such that funds transferred from “ceiling” communities just exactly equal the funds needed to make the “floor” transfers.

Table 2 shows the equalization aid each of the four communities would receive *with* and *without* ceiling and floor provisions for two separate scenarios. The first scenario, Case A, simulates aid distributions when *spending* in each of the four communities grows by 3% each year, but tax base in each community remains at its 2000 level (comparable to Figure 2). The second scenario, Case B, simulates aid distributions when *tax base* in each community grows by 3% each year, but spending in each community remains at its 2000 level (comparable to Figure 3).

#### TABLE 2 HERE

Referring to Case A in Table 2, City 1 would spend a total of \$300,176,000 over the period 2001-2010 if its spending increases by 3% each year from its 2000 level. Based only on



the equalization portion of the aid program, the community is entitled to \$165,171,000 in state aid over this period. Over the simulation period, however, the amount of state aid City 1 is entitled to exceeds the annual ceiling rate in many years, meaning that after ceiling and floor adjustments have been made, City 1 would only receive \$155,605,000 in state aid over the 2001-10 period. This short-fall of \$9,566,000 is diverted to other communities to help make their floor payments.

A brief example can illustrate how state aid floors and ceilings operate in any given year. City 1 received \$16,808,334 in state equalization aid in 2001 and is initially entitled to \$17,953,665 in 2002. The state, however, needs to redirect \$1,792,066 in floor payments in 2002 to decreasing aid communities and sets a ceiling rate of 1.00613 to generate these funds. This means that Community 1 can only receive 100.613 percent of its 2001 payment and, thus, receives only \$16,911,378 in state equalization aid in 2002. The resulting \$1,042,287 ceiling adjustment is used to partially fund the needed \$1,792,066 in floor payments.

Cumulative spending in City 2 would equal \$362,713,000 over the 2001-2010 period if its spending is growing at 3% per year. Because of its higher tax base per capita (in comparison to City 1), it is only entitled to \$125,041,000 in state aid. Like City 1, this amount exceeds the ceiling limit in several years and, thus, the community only receives \$123,867,000 in state aid after ceiling adjustments are made. The short-fall of \$1,174,000 is again distributed to other communities to help fund their floor payments.

City 3 is a high spending and high tax base community that does not receive equalization aid in 2000. This results because the tax base per capita in City 3 exceeds the state guaranteed value  $V$ . With an increase of 3% per year in City 3's spending, the community would be entitled to 0 state aid over the 2001-2010 period if only the equalization dynamic is taken into account.

Perversely, this relatively tax base wealthy community receives \$10,992,000 in floor makeup transfer over the simulation period.

City 4 is a low spending, high tax base per capita community that swings back-and-forth between being affected by the ceiling and the floor each year. In some years it receives floor payments, equaling \$833,000 over the 2001-10 period. In other years it makes ceiling payments, equaling \$1,085,000 over the simulation period.

Case B in Table 2 illustrates the effects of tax base increases (with constant spending) on ceiling and floor payments. Again the picture is much the same as in Case A, namely Cities 1, 2 and 4 will end up transferring some of the state equalization aid to which they are entitled to City 3, the highest tax base per capita community of the four.

Three aspects of the ceiling and floor provisions of state equalization aid programs are worth noting. First, these provisions can have significant impacts on the distribution of state equalization aid among communities. In Wisconsin in 1999, for example, an estimated 699 communities (roughly one-third of the total number of communities in the state) received floor adjustments. These adjustments were funded through reduced equalization aid (ceiling adjustments) to an estimated 491 communities (Olin 1999, 4-5). Thus, the equalization aid of nearly two-thirds of the communities in Wisconsin was affected by ceiling or floor provisions in 1999. Second, the “self-funding” aspects of the ceiling and floor provisions can be seen by examining the last two columns of Table 2. No new state resources are required to implement ceilings or floors. These provisions simply move entitled equalization aid from one set of communities to another. In the illustration shown by Case A in Table 2, for example, the \$11,825,000 needed overall in the state to fund floor payments is made-up of ceiling adjustments from other communities in the state. Lastly, the dynamic ceiling/floor response DCFR becomes

evident. Even in communities whose equalization aid is responding as assumed in static spending and tax base responses SSR and STBR, the penalties and rewards normally associated with state equalization aid programs can be altered by the inter-community transfer that occurs because of ceiling and floor adjustments.

## **V. Summary**

This paper has explored the different responses that may be seen in state equalization aid when a community experiences development under different local and statewide conditions. State equalization aid programs are an important source of revenues to many local governments and are often complex. Local government officials are constantly concerned about how local development will affect the net fiscal condition of a municipality and state equalization aid is a large part of that determination.

Static interpretations of how state equalization aid will respond to local development have led to the conventional wisdom that in general, *ceteris paribus*, state equalization aid programs will reward increased local spending that is prompted by local development and will penalize increased local tax base that occurs because of local development.

As often occurs in practical economics, much of the interesting dynamic is assumed away by the *ceteris paribus* assumption. All else is not remaining constant when a fixed amount of state equalization aid is distributed among competing communities. In a dynamic framework, the response of state equalization aid to a particular community's development depends upon both the fiscal characteristics of local development *and* development-related changes that are occurring throughout the remainder of the state. Increased spending may or may not be subsidized by state equalization aid. Similarly, increased development-induced tax base may or may not be penalized by state equalization aid. Complicating matters even further is the fact that

dynamic responses associated with state equalization aid programs may be thwarted by non-equalizing dynamics that are often included in such programs in the form of ceiling and floor provisions.

Perhaps the most important implication of this analysis is that our understanding of the basic responses of state equalization aid to local development must move beyond the commonly held, static assumptions about rewarding spending and penalizing tax base growth. This important method by which states augment local revenues is more complex than these simple assumptions suggest. The ultimate distribution of equalization aid across a state depends both on local development parameters and upon changing fiscal conditions throughout a state. For local officials, planners and developers this means that a comprehensive analysis of the fiscal impacts of a proposed development or broad development plan will no longer be able to focus solely on characteristics of specific projects or plans, but will need to incorporate assumptions about how a particular community is changing vis-a-vis the rest of the state. An understanding of the complexity inherently present in state equalization aid programs may also help partially explain why such programs are simultaneously criticized and praised and are almost constantly re-examined.

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**TABLE 1****Initial Fiscal Conditions in Four Hypothetical WiMS Cities**

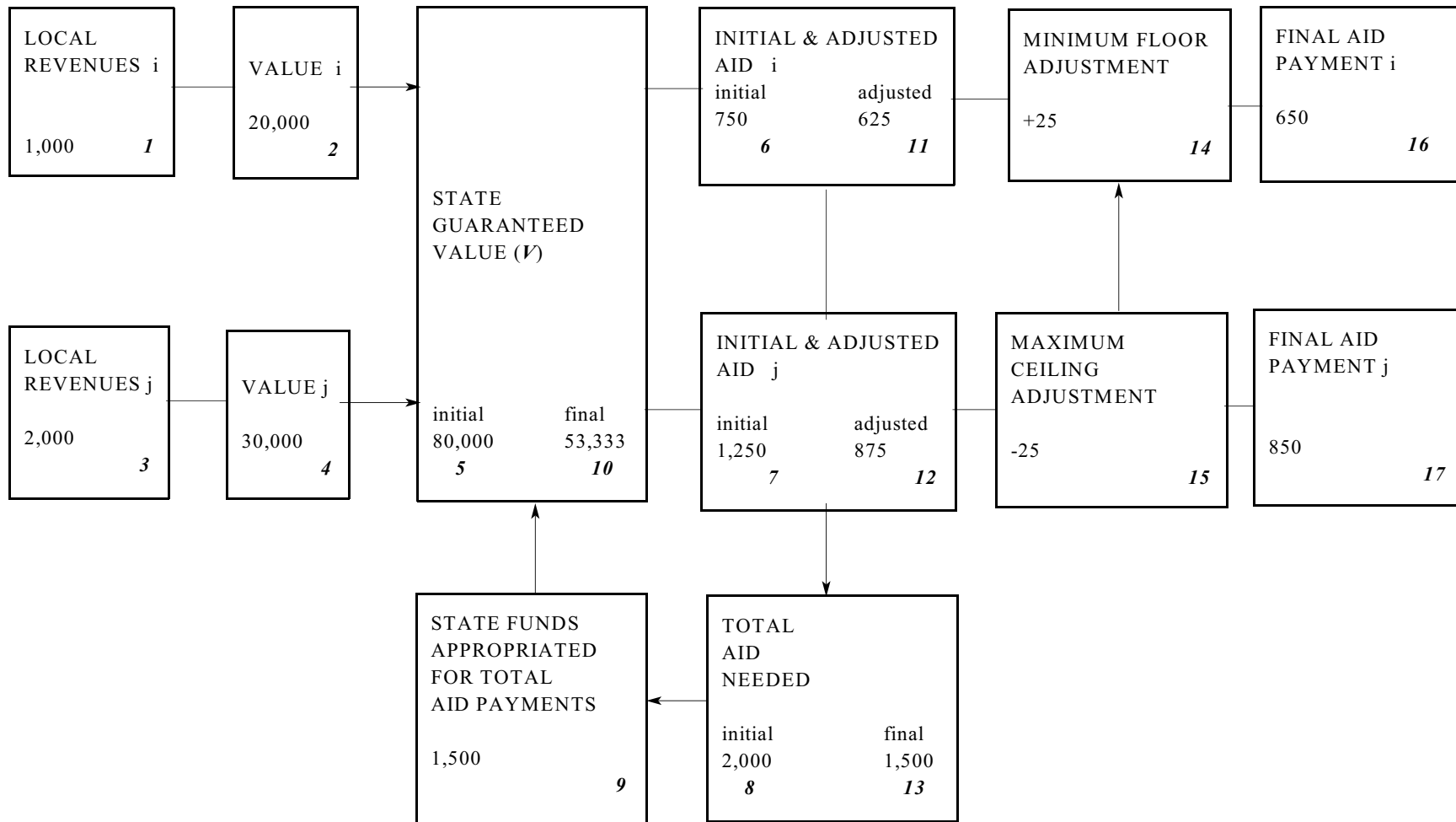
		Tax Base		% of	Spending	% of
City	Population	Per Capita	Mean	Per Capita	Mean	
1	100,000	\$ 20,000	55	\$ 240	89	
2	100,000	\$ 30,000	83	\$ 290	107	
3	100,000	\$ 55,000	152	\$ 360	133	
4	100,000	\$ 40,000	110	\$ 190	70	
Mean		\$ 36,250		\$ 270		

**TABLE 2****Simulated Impact of Ceilings and Floors on State Equalization Aid Distributions****CASE A: 3% Spending Increase All Cities; 0% Tax Base Increase All Cities**

Cumulative Equalization Aid: 2001-10					
	Cumulative	Absence of	Presence of	Gain	Loss
	Spending	Ceilings &	Ceilings &	Due to	Due to
City	2001-10	Floors	Floors	Floor	Ceiling
1	300,176,000	165,171,000	155,605,000	0	9,566,000
2	362,713,000	125,041,000	123,867,000	0	1,174,000
3	450,264,000	0	10,992,000	10,992,000	0
4	237,640,000	33,087,000	32,835,000	833,000	1,085,000
Total				11,825,000	11,825,000

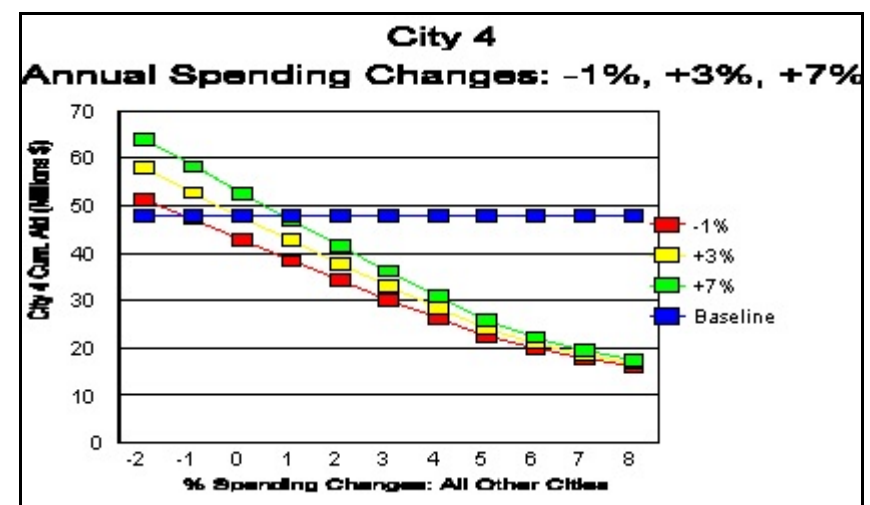
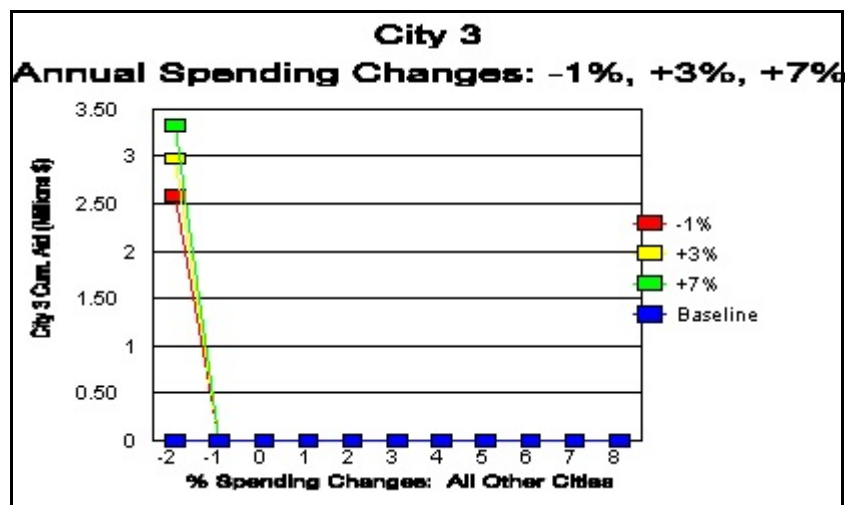
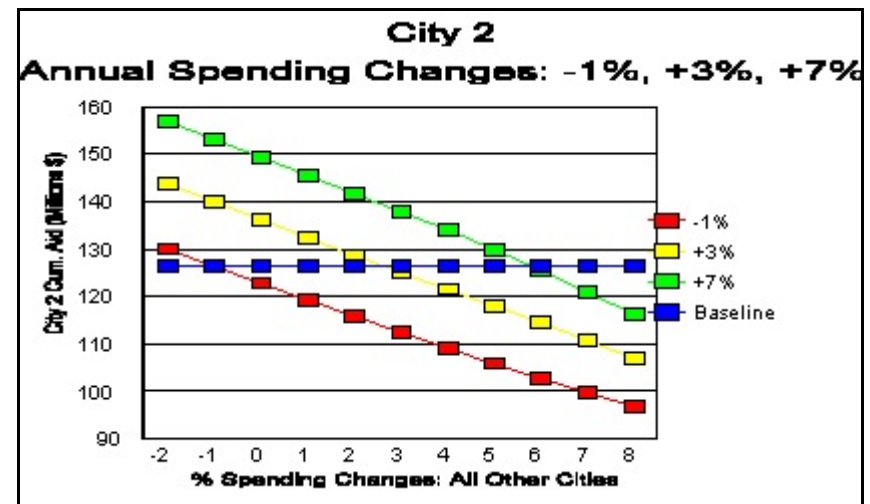
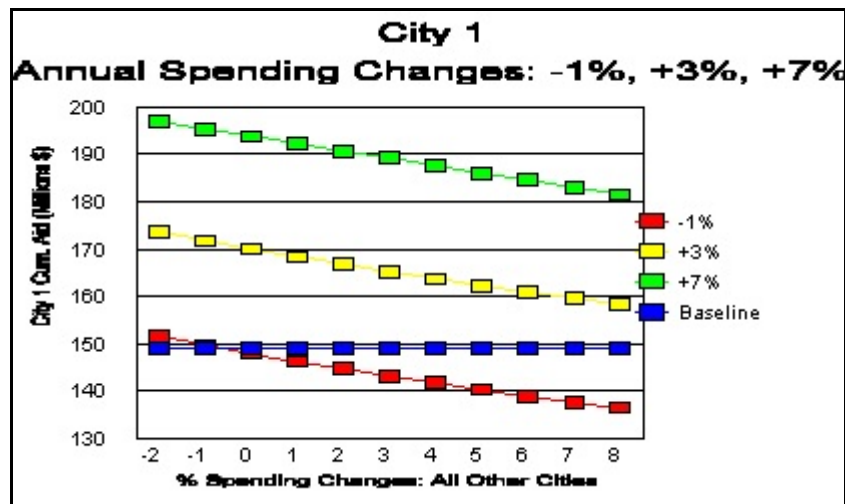
**CASE B: 3% Tax Base Increase All Cities; 0% Spending Increase All Cities**

Cumulative Equalization Aid: 2001-10					
	Cumulative	Absence of	Presence of	Gain	Loss
	Spending	Ceilings &	Ceilings &	Due to	Due to
City	2001-10	Floors	Floors	Floor	Ceiling
1	253,604,000	153,277,000	146,444,000	0	6,833,000
2	306,438,000	126,114,000	124,471,000	0	1,643,000
3	380,406,000	0	10,992,000	10,992,000	0
4	200,770,000	43,908,000	41,392,000	0	1,085,000
Total				10,992,000	10,992,000

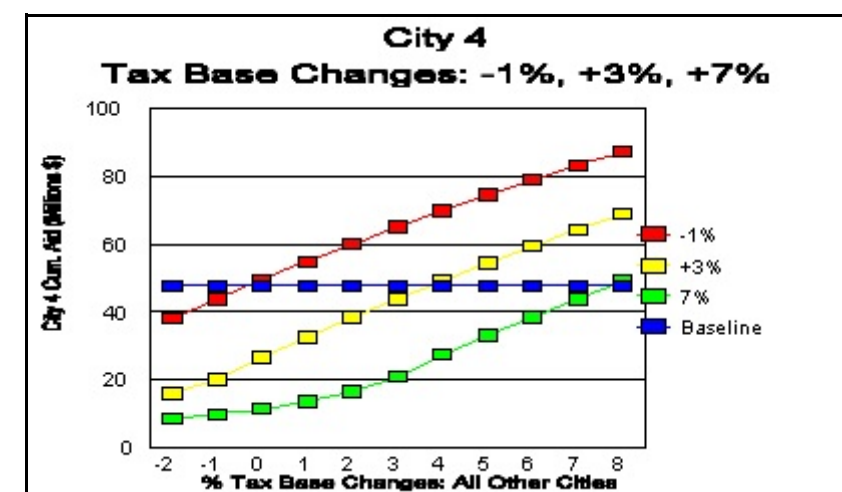
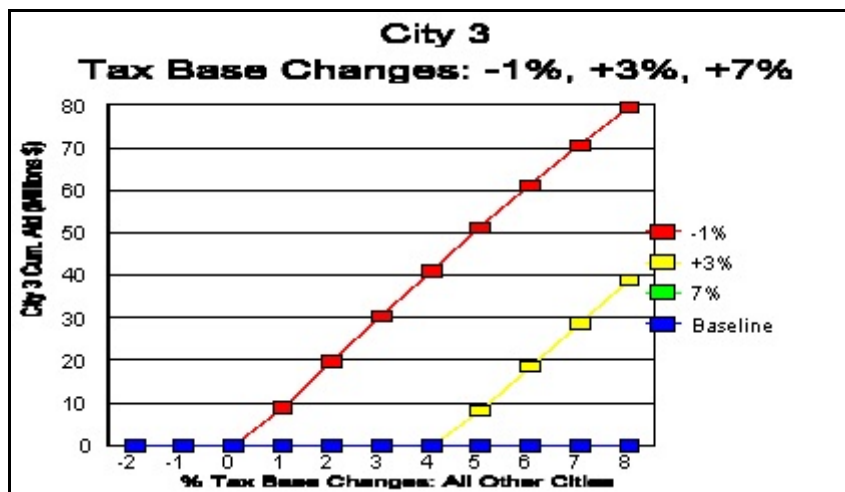
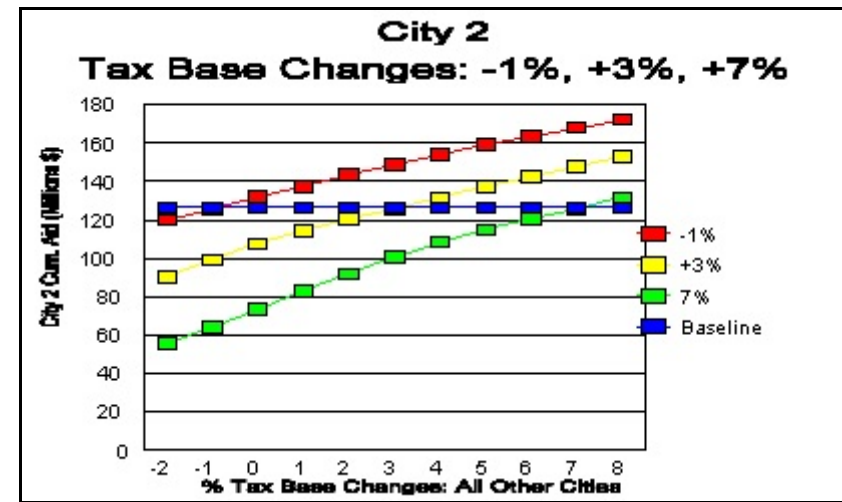
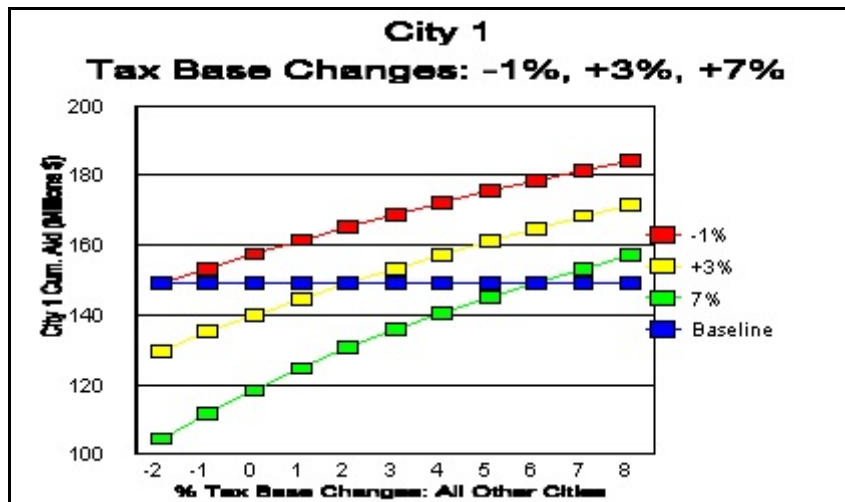


**FIGURE 1**  
**Overview of State Equalization Aid Determination Process**





**FIGURE 2**  
Cumulative Equalization Aid 2001-2010 for Four Prototypical Cities with Variations in  
Local and Statewide Government Spending Growth Conditions



**FIGURE 3**

**Cumulative Equalization Aid 2001-2010 for Four Prototypical Cities with Variations in  
Local and Statewide Local Tax Base Growth Conditions**