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Developing and Testing a Composite Model to Predict Local Fiscal Distress

One of the thorniest issues of intergovernmental fiscal relations is state oversight of local fiscal affairs. States have oversight responsibility and must take action when local governments run afoul of responsible fiscal behavior. Less accepted is how states can detect local financial difficulties before they become emergencies that require state takeover. Research in the 1970s provided some assistance to states wishing to recognize local financial emergencies. But the time has come to look at this issue anew, particularly with an eye toward predicting local financial problems before they become serious. This article describes a 10-point scale that predicts these problems and tests the scale to predict local fiscal stress in a sample of Michigan local governments.

Examining the fiscal condition of local governments has been the subject of academic scholarship and state legislation since the 1970s, sparked largely by the well-publicized fiscal difficulties of cities such as New York and Cleveland. In the wake of New York's difficulties, some states adopted legislation that dealt with the state's role in monitoring the fiscal status of local governments. Typically, this legislation covered topics such as defining fiscal distress, giving standing to parties seeking a declaration of fiscal distress, appointing an oversight team, and (eventually) dissolving that team (Honadle 2003). Prior to 1976, few states monitored or assisted local governments experiencing fiscal problems. After an initial period of interest in the late 1970s and early 1980s, little action was taken for several years. In recent years a number of states have begun to take a more active role in monitoring the fiscal status of local governments following well-publicized fiscal difficulties in Miami, Pittsburgh, and Philadelphia during the 1990s.

Since that time, the fiscal problems experienced by state and local governments have deepened. In the past few years, states have had to deal with major budget gaps and have had to reduce spending, including that for local governments. The number of local governments experiencing fiscal problems is growing, in part because many states are cutting aid to local governments to help balance their budgets. It is ironic that the states may be creating fiscal problems for local governments that the states will have to deal with in the future.

A substantial flaw in the legislation adopted by most states, however, is that the laws were almost entirely *reactive* to fiscal distress. Most states do not have any sort of

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formal early warning system for fiscal distress, and therefore they are not in a strong position to recognize and prevent fiscal distress before it occurs.

On the academic side, there have been several attempts to identify criteria and, in some instances, to develop a scale, but these have typically been limited given poor data availability and variables that fail to adequately measure fiscal difficulty. This article seeks to remedy this need by presenting a 10-point scale of fiscal distress that can provide an early warning of serious financial difficulties. The scale was developed by the Institute for Public Policy and Social Research at Michigan State University for use by that state's Department of Treasury to oversee the fiscal status of local governments.[1] The scale need not be restricted to state oversight, however, since local governments could also use this scale to assess their own financial condition.

Definitions and Causes of Fiscal Distress

At the outset, it must be clear what we mean by "local government fiscal distress." Fiscal distress reflects short-term considerations, such as a local government's ability to meet its payroll and generally make payments in a timely manner. One short-term definition is the "imbalance between the level of resources a unit of government has committed and potential available resources" (CRCM 2000, 1). However, fiscal distress may also include long-term considerations, encompassing trends in a local government's tax base relative to its expenditures and commitments. This view takes as a given that while there may be some temporal variation in local governments' balance ledgers, it is the situation over several years that is particularly important. Alternatively, one could define fiscal distress in terms of whether a government is sufficiently meeting the needs of its community. For example, the Advisory Commission on Intergovernmental Relations (ACIR 1973) argued that a city may be meeting all of its financial obligations and still not be meeting its citizens' needs. However, this aspect of distress is difficult to operationalize for oversight purposes because there are widely varying estimates of what a community needs, even within the same state.

Fiscal distress can lead to fiscal emergencies where the local government cannot pay its bills or provide existing levels of service (ACIR 1973; Honadle 2003). It would be advantageous for both the state and locality to prevent local government finances from deteriorating to the point of fiscal emergency, where it is necessary to take immediate action (CRCM 2000).

In this article, we define fiscal distress as a failure to meet standards in the areas of operating position, debt, and community needs and resources over successive years. Thus, our definition contains both long- and short-term considerations and tends to avoid errors of both false positives (a city is mistakenly labeled as distressed when it is not) and false negatives (a city is truly in distress but not labeled as such).

The state's role in interceding with local finances is a delicate one given strong home-rule provisions in many states and widespread public support for local governance. However, local financial difficulties can directly and adversely affect a state's bond rating. Also, many local services are financed by states; thus, it is in the state's interest to make certain that local funding is well managed (CRCM 2000). Monitoring and early intervention may avoid more costly involvement when an emergency is recognized (Honadle 2003).

Finally, there are important perception issues. As a Michigan Department of Treasury staffer recently explained, if a local government declares bankruptcy, "From the perception of the news media, the implication would probably be that something might be amiss with the state as a whole" (Carvlin 2002, 29).

Theoretical Perspectives on Fiscal Distress

Local governments' fiscal stress has been attributed to four causes: population and job market shifts, governmental growth, interest group demands, and poor management (Rubin 1982; Pammer 1990). Population and market shifts characterize what is called the migration and tax base erosion model, which suggests that population and job market shifts will be the primary causal forces leading to fiscal stress. Fiscal stress may occur from significant declines in population, such as has occurred in Detroit, and from the loss of jobs as large employers fail or follow the movement of population to the suburbs. Governmental growth, also called the bureaucratic growth model, grew out of the public-choice school, which focuses on the absence of market signals in the public sector. Its basic premise is that government spending increased at too fast a rate relative to inflation and population growth. Interest group demands, or the political vulnerability model, suggest that overspending will result if the mayor and other local elected officials are vulnerable to special interest groups. Vulnerability exists if the mayor or local elected officials do not have a sufficient coalition to aid in reelection efforts, and therefore spending is increased to win the support of certain interest groups. The fourth model might be called the bad or internal management model (Pammer 1990). This approach faults poor accounting methods, inaccurate estimation procedures, poor budgeting practices, or inept managers for fiscal distress.

While the models are theoretically interesting, there is little to no evidence that one model is a better predictor than the others. In part, this lack of linkage may be due to an empirical problem—defining fiscal distress. Consider-

able attention has been devoted to this definition, but the results are far from clear, with scholars and practitioners proposing a number of approaches and indicators.

Measuring Local Government Fiscal Distress

Previous Indicators

One of the first and most important studies to examine the health of local governments was ACIR's 1973 analysis of 30 cities with serious financial problems. The ACIR identified six early warning signs of local financial emergencies. These warning signs have generally been affirmed by subsequent analyses, and some states have enacted legislation consistent with these six indicators. The warning signs include the following:

- An operating fund revenue–expenditure imbalance in which current expenditures significantly exceed current revenues in one fiscal period
- A consistent pattern of current expenditures exceeding current revenues by small amounts for several years
- An excess of current operating liabilities over current assets (a fund deficit)
- Short-term operating loans outstanding at the conclusion of a fiscal year (or in some instances, the borrowing of cash from restricted funds or an increase in unpaid bills in lieu of short-term operating loans)
- A high and rising rate of property tax delinquency
- A sudden, substantial decrease in assessed values for unexpected reasons.

Shortly after the ACIR report was published, several high-visibility cities, including New York, experienced some sort of major fiscal distress. Not surprisingly, these high-profile failures spurred an interest in explaining and predicting fiscal emergencies.[2] Some of these studies attempted to explain New York specifically, although there was a growth in the development of indicators that could be applied to local governments generally (Aronson and King 1978). The most important of these studies include the following:

- The Brookings Institution (Dommel and Nathan 1978) experimented with a fiscal conditions index that described a government's liquidity position, but the authors cautioned that three factors must be recognized in constructing such an index. First, there was little consensus on the best factors to include in the index. Second, much of the data needed was unavailable, unreliable, or incommensurable across cities. Finally, they argued that a local government's true fiscal condition could be determined only after a detailed audit.
- The Congressional Budget Office (CBO 1978) was asked by Congress to develop measures that reflected the needs of cities. The CBO report suggests three main early-warning indicators of fiscal distress: cumulative budget deficits, the sum of net cash balances and security holdings as a percentage of its general fund expenditures, and the debt burden of the local government (total value of debt outstanding standardized by the annual revenue collection).
- The U.S. Department of the Treasury (1978) created an index of urban fiscal strain that was based on the change in population, per capita income, own-source revenue, per capita long-term debt, and percent change in the full market value of property. This index was then combined with five similar indices to produce a composite index of fiscal strain in which cities were categorized as high, moderate, or low strain.
- The Municipal Finance Officers Association (MFOA 1978) examined 29 indicators of fiscal distress, focusing on five categories: declining economic vitality, loss of financial independence and flexibility, declining municipal productivity, deferral of significant amounts of current costs, and use of unsound financial management practices. This approach did not attempt to classify a city by a single index number, but instead suggested that several indicators should be examined individually.
- The International City/County Management Association (ICMA) developed the Financial Trends Monitoring System that lists 36 indicators of fiscal health for local governments (Groves and Valente 1994). The first edition was published in 1980, and it appears to be among the most widely used indicator systems. The ICMA indicators are divided into seven categories: revenue, expenditure, operating position, debt, unfunded liability, capital plant, and community needs and resources.

In addition to these practitioner-based measures, several academic researchers have developed measures to assess the fiscal health of local governments. For example, Ladd and Yinger (1989) examined the fiscal health of the country's largest cities by using a "need–capacity gap" or "standardized fiscal health approach." Generally speaking, the need–capacity measure combines a city's expenditure need with its revenue-raising capacity. A city's expenditure need is defined as the amount the city must spend to provide an average level of public services given the workload the local government faces. A city's revenue-raising capacity is defined as the amount of revenue the local government would collect if its taxation rate were set at the average tax rate for all local governments. If the gap between a government's need and capacity is large, this is thought to indicate fiscal distress. Several studies have used variations of this measure to assess fiscal health (Reschovsky 1993; Sjoquist 1996).

Noting the general absence of comparative ratios available to municipal governments, Brown (1993, 1996) sug-

gested that 10 ratio measures be computed, equally weighted, and aggregated to provide an overall picture of a local government's financial condition. These ratios included per capita revenue, the percentage of general fund revenues from own sources, the percentage of general fund sources from other funds, operating expenditures as a percentage of total expenditures, total revenues divided by total expenditures, unreserved general fund balance as a percentage of general fund revenues, total general fund cash and investments as a percentage of total general fund liabilities, total general fund liabilities as a percentage of total general fund revenues, per capita direct long-term debt, and debt service as a percentage of total revenue.

Brown recommends that each of these indicators be computed annually for many cities, and individual cities score points based on their performance relative to other cities. The cities could then be grouped by quartiles; those that place in the most favorable quartile (having a high ratio) are awarded two points, and those that place in the second-best quartile are given one point. Local governments that fall into the quartile just below the median receive zero points, and those in the bottom quartile lose a point. With each local government scoring 2, 1, 0, or –1 for all 10 ratios, this allows governments to score along a 31-point scale, with a maximum score of 20 points (indicating good fiscal health) and minimum score of –10.

Shortcomings of Previous Indicators

The measures and indices flowing from these studies provide much information on the local fiscal situation, but often they are not useful to states and local governments, for the following reasons:

Too Many Variables. Several of the measures include a large number of variables with little ability to assess which are most important or to combine them in a more usable and easily understood composite. For example, a local government that scores well on all 36 of the ICMA measures would be in little trouble. But if a local government scores poorly on five indicators, it is unclear whether it would be in a better fiscal position than a government that scored somewhat poorly on eight other indicators. No clear guidance is given concerning how many and which indicators need to be violated and to what extent for the state to have a justifiable case for taking over a local government's finances.

Exclusion of Key Variables. Measures of fiscal distress that attempted to offer an overall picture suffer serious deficiencies. The Brookings and Brown indices do not incorporate social or economic characteristics such as population or tax base trends. Excluding these variables and focusing almost exclusively on balance-sheet data seems to hinder an indicator's ability to give an early warning of distress. The U.S. Department of the Treasury and Congressional Budget Office indices have the opposite problem, as they focus almost entirely on social and economic variables to the exclusion of the balance-sheet data.

Ambiguous Expectations. Some indicators include variables that may have differing interpretations. Per capita long-term debt and per capita revenues, for example, may produce similar results for both well-off and very poor districts. When debt or revenue is standardized by some measure of the tax base, this becomes a much more useful variable for assessing fiscal distress. Neither high nor low per capita revenues appear to be good indicators of fiscal distress. In another example, two of ICMA's warning signals make it nearly impossible for a local government to avoid them simultaneously. The handbook suggests that a warning trend is present if per capita expenditures are increasing, yet it also claims that declining per capita revenues constitute a warning trend. In a balanced-budget setting, both variables should follow roughly the same trend. If these variables are sharing a trend, it is impossible for the local government not to be in violation of one of the warning trends.

Failure to Allow for Diverse Preferences. The usefulness of the Congressional Budget Office and the Ladd–Yinger need-capacity approaches can be criticized for assuming a uniform demand function across jurisdictions. By applying *average* spending and *average* taxation to every government to determine fiscal distress, the need-capacity measures do not acknowledge the basic insight of the Tiebout model (1956), which indicates the desire for public-good-provision levels will vary across jurisdictions. Because the demand for services is not constant, indicator systems that purport to identify an objective measure of need are highly debatable.

Relative Rather than Absolute. Brown's test rewards or punishes local governments entirely on a relative rather than an absolute basis for the individual indicators. Local governments in the top quartile are always rewarded and those in the bottom quartile are always punished, regardless of their absolute merit. For example, even if all localities had total revenues exceeding total expenditures (generally a desirable outcome), Brown's system would still penalize governments with the smallest operating surpluses. The same difficulty holds for the composite score that results from summing the scores of individual indicators. Such a system could create a permanent set of fiscally distressed local governments because some governments must occupy the bottom quartiles. Even if all governments were doing well on all 10 measures (in an absolute sense), some governments would score poorly in the aggregate because *someone* has to be in the bottom quartile for the 10 measures.[3]

Unable to Focus on One Locality. Brown's approach poses a problem for states wishing to conduct targeted oversight for only some jurisdictions because ratios for *all*

local governments must be computed before the relative fiscal health of a single government can be determined. Requiring all local governments to be measured before a single government can be evaluated may not be a wise use of resources when alternatives that rely on objective rather than relative performance could be used. This reliance on relative performance is further complicated by the possibility that several governments may not send in their reports or audits in a timely manner. How one should account for this missing data is not clear, and it is especially difficult because late reporting from governments does not appear to be random—rather, it is more likely to proceed from distressed governments.

Data Availability. In addition to these concerns is the very practical problem that states such as Michigan do not have data appropriate to construct some of the indicators proposed by Brown and others.

Given these weaknesses, we sought a new measure of fiscal distress that would avoid these problems and meet nine key attributes or criteria:

- Theoretical validity, so that components operationalize concepts from theories of fiscal distress
- Predictive ability, so that preventive action can recognize distress before it becomes a financial emergency
- Relevance to the state's interest
- Use of publicly available, uniform, and frequently collected data
- Historical sense of the progression of difficulty
- Accessible and easily understood by local officials and the public (parsimonious)
- Resistant to manipulation or gaming
- Hope for those in distress and forgiveness for governments that are doing well generally
- Distinguish well among the governments evaluated.

The final condition—distinguishing well—is difficult because of the inherent tension between type I and type II errors (Heimann 1997). In this case, type I errors occur when the state declares a government to be heading for fiscal distress when in fact it is not. One could describe this error as a "false positive." Type II errors occur when the state fails to declare a government to be heading for fiscal distress when in fact it is. Type II errors can be thought of as missed opportunities or "false negatives." To distinguish well, a measure must perform relatively well in avoiding both type I and type II errors; however, it is difficult to find a set of indicators that will completely eliminate both errors simultaneously.

A 10-Point Scale of Fiscal Distress

A common refrain in the fiscal indicator literature is that no single indicator can paint the whole picture of a government's fiscal position. It is clear that a decrease in population or taxable value does not guarantee a local government will experience fiscal distress. Neither do operating deficits alone automatically dictate the onset of fiscal distress. Debt measures, the size of the fund balance, and related indicators should not stand alone, but, if flagged simultaneously, they describe a much more serious situation, one in which fiscal distress is likely to occur.

To deal with these measures simultaneously, we have developed a 10-point scale of fiscal distress that generally works like this:

- A specific variable is created that directly measures a concept from the public finance literature.
- A standard is set to distinguish good from bad performance on the variable. Sometimes this is straightforward (a negative fund balance is bad), but in other cases it is more difficult to discern an appropriate standard (for instance, general fund expenditures as a percentage of taxable value). In the latter case, standard deviations from average values are used to identify a small percentage that is performing relatively poorly.
- If the local government scores "good" on the variable, it receives 0 points. If, however, its performance rates as "bad," it receives 1 point (2 points in the case of consecutive operating deficits).
- Each government's points are totaled for the year, resulting in a score ranging from 0 to 10. As in golf, higher scores are undesirable.

To assess the value of the scale, we applied it to a random sample of 97 Michigan cities and 53 townships. Our data set covers 1991–2001 for cities and villages and 1994–2001 for most townships.[4] The data set was augmented to include jurisdictions the state identified as having recently experienced some form of fiscal distress. The 2000 population of the 150 jurisdictions included in the data set was about 4.5 million, or nearly 45 percent of the state's population. Data were collected from comprehensive annual financial reports, audits, the Michigan Municipal League, Michigan State University, the Michigan Department of Treasury, the U.S. Census Bureau, and the U.S. Department of Labor.

Components of the Scale

Population Growth. This first indicator measures population change over two-year periods, such as from 1993 to 1995, according to U.S. Census estimates. If a government lost population, it scored a 1; otherwise, it was assigned a 0. This seems a reasonable standard, especially in light of Michigan's statewide growth rate of approximately 7 percent over the last decade.

Real Taxable Value Growth. Using data available from the Michigan Department of Treasury, two-year growth

periods of real (inflation-adjusted) taxable values for each government were computed. Just as was done with the population definition, this involved comparing years, such as 1998 data with 1996 data. Local governments scored a 1 if they demonstrated negative real growth and 0 if they exhibited positive real growth.

Large Real Taxable Value Decrease. This indicator uses the same data and time lag as the previous indicator; the only change is that a different standard is used. For this indicator, governments that measured less than –0.04 in real growth received a 1 and others were marked 0. This is not mere redundancy of the earlier indicator, however. Local governments are especially hard hit when a relatively large taxpayer departs, and therefore governments experiencing major decreases in taxable value are more likely candidates for fiscal distress.

The level of –0.04 was chosen because it is approximately one standard deviation below the average two-year real growth rate for cities and villages. The average score on this variable for Michigan cities and villages is 0.0463 (a 4.63 percent increase in taxable value), with a standard deviation of 0.092. The average score on this variable for townships is 0.0867 (8.67 percent increase), with a standard deviation of 0.085. The score –0.04 is approximately one and a half standard deviations below the township average. The standard used is closer to the city and village standard deviation because very few townships experienced fiscal distress.

General Fund Expenditures as a Percentage of Taxable Value. Whereas the first three indicators look at current-year values compared to those of two years earlier, this indicator has no time lag and deals solely with data from the same year. To compute this variable, general fund expenditures were divided by taxable value for that year.[5] The average value for Michigan cities and villages is 0.0347, with a standard deviation of 0.0353. This means that, on average, these governments spend about 3.5 percent of their taxable value every year for their general funds. The average value for townships is 0.0065, with a standard deviation of 0.0039. A one-half standard deviation in the wrong direction gives a standard of 0.05 for cities and villages and 0.01 for townships. This is the only variable for which we used a separate standard depending on the type of government. Local governments with ratios above the standard received a 1, indicating governments with public sectors that are fairly large for the tax base supporting them; governments below the standard score received a 0.

General Fund Operating Deficit. This variable was computed by subtracting general fund revenues from general fund expenditures for a given year and then dividing by general fund revenue. Results less than –0.01 indicate the local government has a nontrivial operating deficit, scored 1. If the local government does not have a general fund operating deficit, or if the deficit is trivial (less than 1 percent of general fund revenue), then the government is given a 0.

Prior General Fund Operating Deficits. An operating deficit for a single year is considered a minor sign of fiscal distress. Operating deficits are a much more serious concern when they accumulate over time or become larger. The sixth indicator captures this type of concern by measuring whether the government had an operating deficit during the past two years. A score of 1 was assigned for each prior year in which an operating deficit occurred. If a government had no operating deficit the prior year but did have one two years ago, it would score a 1 on this indicator. If the local government had general fund operating deficits for both previous years, then it would receive a score of 2 for this indicator. A total of 3 points may be scored on the 10-point scale due to operating deficits. This would occur if a government had a current operating deficit and had one during the previous two years as well.

Size of General Fund Balance. Most governments maintain a positive general fund balance, and it is a sign of fiscal distress if this fund balance is negative. Governments typically find it beneficial to keep the fund balance from declining too greatly, as this inhibits their ability to cope with unexpected circumstances in either the revenue or expenditure stream. There is some debate as to how large a balance should be maintained and whether this level should focus only on the unreserved portion or include reserved funds as well. Our data reports combined reserved and unreserved fund balances, and, because there is no clear credit industry benchmark for a standard, we again adopted a standard deviation approach.

The variable constructed for this indicator is the general fund balance as a proportion of general fund revenues. On average, cities and villages maintain a general fund balance that is 29.9 percent of general fund revenue, and the standard deviation for this distribution is 0.342. Using a one-half standard deviation in the wrong direction as a benchmark, the resulting indicator threshold is about 0.13. Therefore, if a government maintains a general fund balance that is less than 13 percent of its general fund revenue, it scored a 1 because this indicates a low level of reserves. Conversely, a general fund balance above the 0.13 level scored a 0.

Fund Deficits in the Current or Previous Year. Fund deficits are indicators of fiscal distress, particularly if they are large and increasing. This variable taps this concept by penalizing a government if it has produced a negative fund balance in the current or previous year. Fund balances measured for this variable are restricted to general, special, capital, and debt service. If a local government had a negative fund balance for any of these four funds in the

current or prior year, it received a score of 1. If no deficits in these funds existed for the current or prior year, then the government scored a 0.

General Long-Term Debt as a Percentage of Taxable Value. Large debt levels relative to the government's ability to generate revenue are a clear sign of fiscal distress. This variable is constructed by taking general long-term debt and dividing it by the taxable value of the government. Although the credit industry benchmark recommends that a government's debt not exceed 10 percent of its assessed value, we set a standard somewhat lower because the objective is early warning rather than after-the-fact definition of distress. The average value for cities and villages on this variable was 2.47 percent, with a standard deviation of 0.035. Using one standard deviation in the wrong direction gives us a standard of about 6 percent. Therefore, any local government with a debt-to-taxable-value ratio above 6 percent was coded as a 1 and those beneath, 0.

The nine indicators are summarized in table 1. Under "standard used," governments that do not meet the indicator threshold score 0 by default.

Application of the 10-Point Scale of Fiscal Distress

Using the indicators and standards established in the previous section, we were able to score governments in our sample historically. Table 2 lists jurisdictions scoring 4 or higher from 1993 to 2001.[6]

For all governments evaluated on the 10-point scale, the average score was approximately 1.5. The scale does not merely report a similar percentage of governments every year, but instead shows variation, identifying 29 governments that scored 4 points or higher in 1995, but only 11 governments in 1998. The 10-point scale appears to perform fairly well in identifying the governments that have been identified as distressed. In the time period examined, Michigan had appointed financial managers to take over the finances of Highland Park (2000), Hamtramck (2000), and Flint (2002)—cities that exhibited progressively higher scores over the period of the study.

The usefulness of the 10-point scale can be highlighted by examining how local governments fared over the reported time period. Highland Park, for example, initially established a state review team in May of 1996 to examine its finances. The 10-point scale identified Highland Park at a score of 6 as early as 1994, and this relatively high score was achieved even without potentially damaging financial reports from that local government during 1991–94. Although the scores for the next two years are likely too low given the absence of prior audits and reports, Highland Park still scored 5 in 1995 and 4 in 1996. Highland Park's worsening fiscal status can be observed as it increased to 6 in 1997, 9 in 1998, and 10 in 1999. Although Highland Park's state review team was dissolved in 1999, the scale suggests the city was still in serious fiscal trouble. A review team was again appointed in 2000, ultimately leading to a state takeover. The data for Highland Park in 2000 and 2001 were unavailable, and this accounts for its low scores in these years. Even with the missing data, Highland Park scored 5 in 2000 and 3 in 2001, and these scores are artificially low.

Several other governments that were identified as distressed appear on the 10-point scale. While many of these did not score as high as Highland Park or Flint, there is good reason to carefully examine local governments such as Ecorse, whose scores over the three most recent years increased from 5 to 6 to 7. Although Benton Harbor has exhibited improvement on some of the individual indicators, their recent scores on the 10-point scale are still relatively high. All of the other governments that the Michigan Department of Treasury identified as distressed in their annual reports also were identified by the 10-point scale at various times.

Table 1 Indicators of Fiscal Distress

	Indicator	Description	Standard used
Indicator 1	Population growth	Two-year growth	If < 0, then 1
Indicator 2	Real taxable value growth	Two-year growth	If < 0, then 1
Indicator 3	Large real taxable value decrease	Looks for large drop over a two-year period	If < −.04, then 1
Indicator 4	General fund expenditures as a percentage of taxable value	Current general fund expenses divided by current taxable value	Townships: If > .01, then 1 Cities: If > .05, then 1
Indicator 5	General fund operating deficit	Current general expenditures subtracted from current general fund revenues, divided by general fund revenues	If < −.01, then 1
Indicator 6	Prior general fund operating deficits	Checks indicator 5 for two previous years	A unit is assigned a point for each year that an operating deficit is found. Score may range from 0 to 2
Indicator 7	Size of general fund balance	General fund balance as a percentage of general fund revenues	If < .13, then 1
Indicator 8	Fund deficits in current or previous year	Current or previous year deficit in major fund	If fund deficit is found, then unit scores a 1
Indicator 9	General long-term debt as a percentage of taxable value	Current general long-term debt divided by current taxable value	If > .06, then 1

Table 2 Historical Application of the 10-Point Scale

1993	9	Detroit, Pontiac
	7	Flint
	6	Benton Harbor
	5	Ecorse, Saginaw
	4	Bay City, Buena Vista township, Dearborn Heights, Greenville, Jackson, Lansing, Manistique, Mount Clemens, Roosevelt Park, Taylor, Troy, Williamston
1994	7	Detroit, Pontiac
	6	Flint, Highland Park, Ionia, Saginaw
	5	Buena Vista township, Ecorse, Manistique, Mount Clemens, Roosevelt Park, Royal Oak township, Taylor
	4	Jackson, River Rouge, Troy, Williamston
1995	7	Saginaw
	6	Detroit, Gladstone, Hamtramck, Pontiac
	5	Benton Harbor, Ecorse, Flint, Highland Park, Lansing, Manistique, Mount Clemens, Royal Oak township
	4	Adrian, Bay City, Buena Vista township, Clio, Coleman, Dearborn Heights, Garden City, Gaylord, Grayling, Hazel Park, Ionia, Jackson, Melvindale, River Rouge, Roosevelt Park, Taylor
1996	7	River Rouge
	5	Benton Harbor, Ecorse, Gladstone, Saginaw
	4	Buena Vista township, Clio, Detroit, Flint, Highland Park, Lansing, Manistique, Mount Clemens, Muskegon
1997	7	River Rouge
	6	Benton Harbor, Buena Vista township, Highland Park
	5	Ecorse, Jackson, Royal Oak township
	4	Coloma, Fennville, Flint, Hampton township, Newaygo, Norway, Pontiac, Saginaw
1998	9	Highland Park
	7	Buena Vista township, Ecorse
	6	Benton Harbor
	5	Hampton township, Hamtramck, Jackson, River Rouge, Royal Oak township
	4	Grand Rapids, Pontiac
1999	10	Highland Park
	7	Hamtramck
	6	River Rouge
	5	Benton Harbor, Buena Vista township, Ecorse, Flint, Jackson, Kalamazoo, Pontiac
	4	Detroit, Frenchtown township, Grand Haven, Hampton township, Manistique, Newaygo, Norway, Owosso township, Royal Oak township, Wayne
2000	8	Flint
	7	Benton Harbor
	6	Ecorse, Kinross township,
	5	Hamtramck, Highland Park, Newaygo, River Rouge
	4	Clare, Detroit, Lansing, Manistique, Melvindale, Munising, Norway, Pontiac, Rogers City, Wayne
2001	9	Flint
	7	Benton Harbor, Ecorse
	6	Munising, Plainwell
	5	Detroit, Kinross township, Newaygo, Norway, Pontiac, Reading
	4	Garden City, Gaylord, Manistique, Otsego, Rogers City, Roosevelt Park, Saginaw, Wayne

Judging the Performance of the 10-point Scale

We can now compare the 10-point scale to the criteria discussed earlier for a good system of indicators.

The scale has *theoretical validity*. The connections between the indicators used to construct the scale and the theories of fiscal distress are intuitively obvious and clear. A major objective accomplished by the scale is that it appears to *predict fiscal distress before it occurs*. In the cases noted previously, the scale consistently identified governments in trouble before their review teams were appointed. Some were also identified that are current candidates for a fiscal distress designation.

The indicators that make up the scale are *relevant to the state's interest*, and the data for these indicators are *publicly available*, *uniform in collection*, and *collected frequently*. The scale offers the advantage of demonstrating a sense of *progression*. There are certainly gradations of distress, and this scale captures some of these differences. Highland Park and Flint both scored extremely high, and the gradual movements to these high scores are detectable. Flint's condition, for example, appeared to be somewhat worse in 2001 than it was in 1996 and 1997.[7] Ecorse is a government whose scores have become progressively worse. Each of these descriptions gives a sense of the relative change in fiscal distress, something that is not possible with the unscaled categories of "compliance" and "noncompliance" that are currently used in Michigan law.

Parsimony is achieved by the scale. A 10-point scale has strong intuitive appeal, and each of the indicators within the scale is reasonably accessible to state administrators, local officials, and voters. While the scale is fairly straightforward, it is still broad enough to make it *resistant to manipulation*. Some variables, such as population and taxable value growth, are nearly impossible to manipulate, and many states are already observing local governments on some of the other indicators, such as fund balances and debt levels. It may be that our scale is not sufficiently broad and additional or different indicators could be added to the scale. However, the approach we support here—establishing an index—can easily be adjusted by adding indicators without harming its effectiveness.

The scale does offer some *hope* and *forgiveness*. Local governments that score relatively high do not necessarily remain there. For generally healthy governments, the scale is forgiving in that it only flags those performing badly on several indicators simultaneously. The average local government scored 1.5 on the scale, a score that merits little attention from the state.

Finally, there is the issue of *distinguishing well*. This is closely related to the avoidance of both type I and type II errors. Overall, the scale appears to distinguish well. The cities that scored 4 points and above do seem to be experiencing some sort of fiscal distress. Likewise, the scale does not appear to give high scores to cities that are actually very healthy. That said, the performance of the scale in distinguishing well depends to some extent on the benchmark that is used to distinguish good from bad overall performance. With the fairly low threshold of 4 or higher, several type I errors may result in which governments that are

not headed for distress are mistakenly identified as heading for distress. To diminish these type I errors, one could employ a much higher threshold. If, however, the standard chosen is too high (9 points), then several governments heading for distress would not be identified (type II errors) until they were already in severe fiscal trouble.

The difficulty arises in the attempt to grade a local government as either fiscally healthy or fiscally distressed when experience indicates there are matters of degree involved. One way to distinguish well and to guard against the errors arising from attempts to classify in one of the two aforementioned categories is to grade the categories of fiscal health proportionately to the 10-point scale. In this way, the virtue of proportionality provides a means by which the scale can also distinguish well. One possibility is to divide the categories relative to the 10-point scale, as shown in table 3.

Table 3 Early Warning System

Points from scale	Category	State action
0–4 points	Fiscally healthy	No action
5 points	Fiscal watch	Local government notified of relatively high score
6–7 points	Fiscal warning	Local government notified and placed on published list for current and following year
8–10 points	Fiscal emergency	Local government notified, placed on published list for current and following year, automatic consideration of review team

In 2001, only one jurisdiction would have been classified as in fiscal emergency, four in fiscal warning, and six in fiscal watch. Once a government has entered a watch, warning, or emergency category, the state could decide to have the government maintain that status or higher for the following year as well. These categories are suggestive, but illustrate a possible graded scheme for allowing different levels of intervention. A careful evaluation of the point classification would be necessary. When evaluating the list included with this study, one should recall that our data collection for Michigan was not comprehensive. While it is unlikely that there would be several more governments scoring above 6 points, it is quite possible that several more governments not included in our sample could score 4 and perhaps 5 points.

The time period of this study spanned relatively favorable economic times (1993–2001), and therefore many more governments could qualify for the distress categories in a significant economic downturn. These economic circumstances are important to consider when establishing categories of distress. If a fairly low threshold is chosen for the initial category of distress (4 or 5 perhaps), these categories may swell in size in more difficult times. This could result in significant administrative cost increases, depending on the remedial consequence a state chooses for governments in each category.

Conclusion

Our evaluation uncovered several important limitations on states' effectiveness in predicting the fiscal distress of local governments. These weaknesses include having too many variables, excluding key variables, constructing variables that do not distinguish well among governments, ignoring incentive problems, using relative rather than absolute measures, and requiring data that are often not readily available. Given these weaknesses, we explored other indicators of fiscal distress that better met the desired criteria. Several individual indicators were identified and combined to form a 10-point scale of fiscal distress. The 10-point scale of fiscal distress appears to perform considerably better than Michigan's current system and provides an early warning of fiscal difficulties before they become obvious and difficult to ameliorate.

Although much of our discussion has proceeded from the perspective of a state government conducting oversight of local governments, other parties may also benefit from using the scale. Local governments could use this scale quite apart from any state oversight to evaluate their condition and receive early warning of fiscal distress. Interested citizens could also quite easily construct the scale to aid an effort to evaluate the performance of their elected officials.

With any model of this sort, it is wise to sound a word of caution on its applicability in a future that is uncertain. The model presented here does appear to perform well historically, yet this is no guarantee that its usefulness will extend to all units of government in perpetuity. Those utilizing this scale will need to be aware that conditions may change, which could limit its effectiveness. For example, if the general fund ceased to be the main operating fund for local governments, this could reasonably justify an alteration of the scale. If states or local governments were to implement a scale such as this, it would be instructive to examine any prominent type I or type II errors to assess whether alterations of the scale are warranted. Noting the possibility of future alterations, we submit that the elements we include here are likely to remain valuable for the foreseeable future, as it has never been desirable for local governments to perform poorly on the variables that make up this scale.

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Notes

1. Michigan has two statutes containing 30 conditions that were thought to give some indication of fiscal distress (Public Act 72 [1990], Public Act 34 [2001]). In recent years, the state has sent financial managers into three cities: Hamtramck, Highland Park, and Flint. However, state treasury officials found the 30 conditions cumbersome and difficult to evaluate. Further, they expressed frustration that they were not able to identify cities undergoing long-term distress before they entered fiscal emergency. The Michigan Department of Treasury contracted with the Institute for Public Policy and Social Research at Michigan State University to develop and test a scale that would monitor local units' fiscal well-being over time and identify those at risk.
2. Like ACIR's 1977 work, this analysis deals primarily with states' development of indicators of local fiscal distress. There is also a literature on the broader issue of state supervision of local government budgets, including conformance to state budgetary standards and guidelines and state approval of local budgets. See Rubin (1998) for a summary of the literature and analysis of states' supervisory activities.
3. For a more comprehensive critique of the Brown measure, see Kleine, Kloha, and Weissert (2003).
4. Michigan has an active local governance system comprising counties, cities, villages, and townships that are accorded broad home-rule powers. Townships are 36-square-mile areas that blanket the state and have broad authority in land use, fire protection, law enforcement, parks, water and sewerage, and economic development. Townships and counties enforce state laws and are established by the state. Cities and villages are voluntarily incorporated, with as few as 150 in population for villages and 250 in population for cities. Villages perform fire and police protection services, public works, and utilities. Cities assess property, register voters, conduct elections, and perform the duties conducted by townships (Legislative Service Bureau 2002; Bromage 1961).
5. No adjustment for inflation is necessary when computing percentages within the same year. One may discount both taxable value and general fund expenditures to the same base year, but using this ratio will produce the same ratio as the nominal figures.
6. Although our data set begins in 1991, the first year that could be reported is 1993 because of the variable definitions requiring two-year observations. Many townships could not be assigned scores for 1993 and 1994 because data were unavailable. Nearly all townships were assigned scores from 1995 through their most recent reporting, usually 2001. The data used for any given year are treated as though they were reported in that year in a timely manner. If the data for any of our variables were reported very late, our collection method did not explicitly account for this. Missing data should be recognized as potentially leading to artificially low scores. Many of those for whom data are missing have experienced fiscal distress. Given that some indicators examine data from as much as two years prior to the current year, missing data may also affect the scale as much as two years later. Finally, this table is not comprehensive of all cities, villages, and townships in Michigan. While our sample does include all units identified as distressed by the state, it is possible that several more units could also earn scores of 4 or 5.
7. Financial data for Flint were missing in 1998, indicating a strong possibility that Flint's scores were too low in 1998 and perhaps in 1999 and 2000.

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