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AN ASSESSMENT OF MICHIGAN'S LOCAL GOVERNMENT FISCAL INDICATOR SYSTEM

by

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INTRODUCTION

Michigan local governments are facing unprecedented levels of fiscal distress. Property taxes are at record lows, unemployment has skyrocketed, and municipal bonds are less safe than ever. In order to assist local governments in not only being aware of their current and future fiscal conditions but also in planning for the future, the State government has implemented a system to analyze the fiscal distress level of each locality through a fiscal stress indicator scoring system.

The Michigan Department of Treasury began implementing the new local government fiscal indicator system in 2007. This system was based on work that had been done at Michigan State University's Institute for Public Policy and Social Research. This system was designed as a preventative tool that is intended to identify and head off potential fiscal problems among cities, counties, villages, and townships.

However, with recent changes to laws regarding the structure of financial reporting, as well as advances in fiscal distress analysis, the current fiscal stress indicator system needs to be updated. Changes are needed in three main areas: alterations in the types of funds monitored to reflect the changes brought about by GASB 34; the use of the Treasury's local government web portal, which makes more data readily available; and advancement in the methods of scoring each locality based on relative ranks and clusters of localities into quartiles based on size. This issue paper discusses these recommended changes by first reviewing the current fiscal stress indicator system in Michigan, then discussing changes since implementation of the current system, and finally detailing the recommendations for change.

This issue paper also is designed to provide an overall assessment of local government fiscal health as of fiscal year (FY) 2009-10 and FY 2010-11. The issue paper uses the newly created Municipal Finance Web Portal created at the Michigan Department of Treasury along with debt data obtained from a variety of sources.

Fiscal Distress

Designers of local government fiscal measurement systems face a difficult dilemma in choosing among the indicators to select. The dilemma is embodied in the notions of *fiscal health* and *fiscal stress*. Fiscal health refers to a local unit's overall ability to maintain services and respond to an emergent situation. It emphasizes indicators such as economic and population change, revenue and expenditures per person, and debt per person.

Fiscal stress, on the other hand, is associated with the ability of a local unit to meet short-term financial obligations and avoid state takeover or even municipal bankruptcy. There is a general emphasis on indicators such as fund balance, cash availability, deficits, and property value losses. In this context, there tends to be a correlation between cash and budgetary solvency and fiscal stress-type measures.

There are four generally agreed upon measures of fiscal health.[1] They are cash solvency, budget solvency, long-run solvency, and service-level solvency, and are defined as follows:

- **Cash solvency** measures a local government's liquidity and effective cash management, and its ability to pay current liabilities.
- **Budgetary solvency** refers to the ability of the government to generate sufficient revenue to fund its current or desired service levels.
- **Long-run solvency** refers to the impact of existing long-term obligations on future resources.
- **Service level solvency** refers to the ability of the government to provide and sustain a service level that citizens require and desire.

[1] Groves et al., 2003

The designers of the current Michigan fiscal indicator system chose to emphasize budgetary and service level solvency measures. Arguably, this represents a mix of fiscal stress and fiscal health measures. The deficit indicators, size of fund balance, and losses in property values represent fiscal stress, whereas fund balance as a percentage of expenditures, population growth, and long-term debt are fiscal health measures associated with a service level solvency perspective.

Current Michigan Fiscal Stress Indicator System

In 2002, the Michigan Department of Treasury commissioned Kleine et al. from the Institute for Public Policy and Social Research at Michigan State University to evaluate the local government fiscal indicators included in State law at that time.[2] The institute completed an analysis and proposed a more effective fiscal indicators system, which then was put into place in 2006.[3]

Under this new system, each local unit's score is calculated and then posted to the Department of Treasury's web site under the appropriate year. The scores are grouped by level of distress as shown in Table 1:

Table 1

Scoring System		
Fiscal Stress Score	**Level of Distress**	**State Response**
0-4	Fiscally Neutral	No State action is needed.
5-7	Fiscal Watch	Unit is placed under fiscal watch for the current and following year.
8-10	Fiscal Stress	Unit is notified of its high score and is placed on a watch list for the current year and following year, and receives consideration for review.

Source: Michigan Department of Treasury

Kleine et al. based their fiscal indicator system on four groups of variables thought to cause fiscal distress: population and job market shifts (which focuses on the dynamics of a government unit's tax base -- if the tax base decreases, this can lead to budgetary problems and fiscal distress), governmental growth (fiscal distress caused by a public sector too large for its tax base), interest group demands (overspending as a result of vulnerability of the mayor and other local elected officials to special interest groups), and poor management (poor accounting methods, inaccurate estimation procedures, poor budgeting practices and or inept managers for fiscal crisis).

The authors used the following criteria for constructing their indicator system:

- theoretical validity,
- ability to predict fiscal distress before it occurs,
- ability to capture concepts relevant to the State's interest,
- availability of the data,
- uniformity of data collection,
- frequency of data collected,
- ability to discern the progressing levels of distress,
- parsimony,
- resistance to manipulation or "gaming",
- inclusion of a measure of hope for those in distress and forgiveness for those that are doing well, and
- the minimization of both type I and type II errors: that is, both the chance that a fiscally healthy unit is found to be fiscally stressed, and the chance that a fiscally stressed unit is found to be fiscally healthy.

[2] Kleine, Kloha, Weissert, 2002
[3] Michigan Department of Treasury

This new system consists of indicators in nine categories: 1) population growth, 2) real taxable valuation growth, 3) large real taxable value decrease, 4) general fund expenditures as a percentage of taxable valuation, 5) general fund operating deficits, 6) prior general fund operating deficits, 7) size of general fund balance, 8) fund deficits in current or previous years, and 9) general long-term debt as a percentage of taxable value. The indicators make up a 10-point scale and can be seen in Table 2.

Table 2

Current Michigan Fiscal Indicators System

Indicator	Calculation	Scoring System	Type of Solvency Measured	Weaknesses
Population growth	Current population - population in 2000	If population change is < 0, unit receives a 1. If population change is ≥ 0, then unit receives a 0.	Long run	No sense of scale. May duplicate other measures and not provide new information. Measurement change based on population in 2000 rather than previous year.
Real taxable value (TV) growth	Current taxable value – taxable value from two years past	If change in two year taxable value was < 0, unit receives a 1. If two year TV was ≥ 0, unit receives a 0.	Long run	"Real" was taken to mean real property when calculation of the indicator occurred, when in fact it was meant to mean real as in inflation adjusted.
Large real taxable value decrease	Current taxable value – taxable value from two years past	If change in two year TV was < one standard deviation, unit receives a 1. If change in two-year TV was ≥ one standard deviation, unit receives a 0.	Long run	Standard deviations based on 2002 data.
General fund expenditures as a percent of taxable value	General fund expenditures/ taxable value	If ratio is > one standard deviation, unit receives a 1. If ratio is ≤ one standard deviation, unit receives a 0. (Note: standard deviations different for townships and cities for this indicator only.)	Service	Standard deviations based on 2002 data. Only measures general fund.
General fund operating deficit ratio	(General fund expenditures - General fund revenue)/General fund revenue	If ratio is < -.01, unit receives a 1. If ratio is ≥ 1, unit receives a 0.	Budget	Only measures general fund.
Prior general fund operating deficit ratios	(General fund expenditures - General fund revenue)/General fund revenue all measured in previous year, and two years past	For each year that ratio is < -.01, unit receives a 1. For each year that ratio is ≥ 1, unit receives a 0.	Budget	Only measures general fund.
General fund balance ratio	General fund balance/General fund revenue	If ratio is < half a standard deviation, unit receives a 1. If ratio is ≥ 0, then unit receives a 0.	Budget	Standard deviations based on 2002 data. Only measures general fund.
Fund deficits in current or previous year	Fund (general, special, capital, and debt service funds) deficit in current and previous year	If a unit had a negative fund balance in any of these funds in the current or prior year, it receives a 1. If it did not, it receives a 0.	Budget	No sense of scale or number of funds that have negative deficits.
General long-term debt as a percent of taxable value	General long-term debt/taxable value	If ratio is > one standard deviation, unit receives a 1. If ratio is ≤ one standard deviation, unit receives a 0.	Long run	Only measures general fund debt.

Source: Michigan Department of Treasury

The data sources for these new fiscal stress indicators include comprehensive annual financial reports, audits, Michigan Municipal League records, Michigan State University records, Michigan Department of Treasury records, the U.S. Census Bureau, and the U.S. Department of Labor.

As it stands now, Michigan has no measure of cash solvency, four measures of budget solvency, four measures of long-run solvency, and only one measure of service-level solvency. Service-level solvency, however, is the most difficult level to measure through simple indicators, and therefore is best measured in a second round of analysis after the stressed communities are identified. Cash-level solvency is relatively simple to measure and should be added into this system.

This mixture of different types of fiscal indicators is both a strength and a weakness of the current system. On one hand, a diversity of indicators can provide for a comprehensive view of the status of a local government. One can assess both the short- and long-run viability of an entity's fiscal status. The downside of this approach is that it potentially mixes fiscal health and fiscal stress approaches. This may make it difficult to ascertain the real nature and timeliness of problems.

The Michigan fiscal indicator system has been designed as more of a fiscal stress than a fiscal health approach. Its goal, as stated earlier, is to provide warning and preventative actions to avoid a fiscal crisis leading to a potential State takeover. It is in the interest of the State of Michigan to avoid financial emergencies and the need to appoint emergency financial managers.

Given this focus, the current Michigan fiscal indicator system does seem to be on target in balancing the type of indicators used. Besides the obvious deficit measures, the tax base and population indicators are used in a short-term context to identify potential revenue losses. The one potential problematic measure in this context is the long-term debt measure. There may be better measures to identify short-term, fiscal stress-oriented indicators as opposed to the one currently in use.

Examples of Current Scores

This section highlights two communities as examples of the fiscal scoring system in action.

High Scoring Government: City of Ecorse (Wayne County)

In 2008, one of the highest-scoring cities (most fiscally stressed) was the City of Ecorse in Wayne County. Ecorse scored a 1 for almost every indicator (every one except general long-term debt as a percentage of taxable value), giving it a total of 9 points out of 10. This placed Ecorse in the "fiscal stress" category for level of distress. Ecorse's fiscal stress scoring sheet can be seen in Table 3.

Ecorse has been in economic decline sine the post-WWII era similar to most other industrial inner-ring suburbs. In 1986, the City entered into bankruptcy, which lasted until August 1990.[4] The City did not fully recover from this bankruptcy, however, and was declared to be in a state of financial emergency in 2009 when an emergency financial manager was appointed.[5] This followed on the heels of arrests and corruption charges against the mayor and city controller at the time.[6]

[4] http://www.mackinac.org/article.aspx?ID=5583

[5] Lawrence, Eric (19 September 2009). "Stage is set for a financial manager". The Detroit Free Press. http://www.freep.com/article/20090919/NEWS02/909190319/1322/Stage-is-set-for-a-financial-manager-. Retrieved 26 September 2009.

[6] Schmitt, Ben (26 September 2009). "Ecorse officials charged in bribery, fraud case". The Detroit Free Press. http://www.freep.com/article/20090926/NEWS02/909260311/1001/NEWS/Ecorse-officials-charged-in-bribery--fraud-case. Retrieved 26 September 2009.

Ecorse also received high scores in the fiscal stress indicator system in both 2007 and 2006 when the system was first put into place. Ecorse is an example of a fiscally stressed city.

Table 3
Scoring Sheet for the City of Ecorse

ECORSE City 2008 Score: 9 MuniCode: 82-2-060

INDICATOR	DESCRIPTION	YEAR	CATEGORY		Score
Population Growth	This first indicator measures population change. If a unit lost population, then it scores a 1, otherwise it is assigned a 0. The estimates provided are from the U.S. Census Bureau. Note that the values for Year 2000 are not estimates but taken from the Census that year.	2008 2000	Population Population	9858 11229	1
Real Taxable Value Growth *1.150885115*	Two-year growth periods of real taxable value for each unit are computed. Units score a 1 if they demonstrate negative real growth, and a 0 if they exhibit positive real growth. To compute real taxable value, the current year taxable value is divided by the adjusted deflator indicated to the left.	2008 2006	Taxable Value Real Taxable Value Taxable Value	$141,305,762.00 $122,780,076.10 $132,592,626.00	1
Large Real Taxable Value Decrease	This indicator uses the same data and time lag as indicator 2. The only difference is that a different standard is used. For this indicator, units measuring less than -0.04 receive a 1 and others are marked 0.	2008 2006	Taxable Value Real Taxable Value Taxable Value	$141,305,762.00 $122,780,076.10 $132,592,626.00	1
General Fund Expenditures as a Percent of Taxable Value	This indicator has no time lag and deals solely with data from within the same year. To compute this variable, general fund expenditures are divided by taxable value. This is the only variable for which separate standards are used. A standard of 0.05 is used for cities and villages and 0.01 for townships and counties. Units with ratios above the standard receive a 1 and those below score a 0.	2008 2008	General Fund Expenditure Taxable Value	$15,908,348.00 $141,305,762.00	1
General Fund Operating Deficit	This variable is computed by subtracting general fund expenditures from general fund revenues for a given year. This figure is then divided by general fund revenues. If the number that results is less than -0.01, this indicates a unit has a nontrivial operating deficit and this unit received a score of 1. If the unit does not have a general fund operating deficit, or if this deficit is trivial, the unit is given a 0.	2008	General Fund Expenditure General Fund Revenue	$15,908,348.00 $12,682,583.00	1
Prior General Fund Operating Deficits	This indicator is computed in the same manner as Indicator #5 except that it is applied to the two years prior to the current year. A score of 1 is assigned for each prior year in which a non-trivial operating deficit had occurred.	2007 2006	General Fund Expenditure General Fund Revenue General Fund Expenditure General Fund Revenue	$13,164,211.00 $10,765,419.00 $14,411,937.00 $10,554,750.00	1 1
Size of General Fund Balance	The actual variable constructed for this indicator is the general fund balance as a proportion of general fund revenue. If a unit maintains a general fund balance less than 13 percent of its general fund revenue, it scores a 1. Conversely a general fund balance above the 0.13 level scores a 0.	2008	General Fund Balance General Fund Revenue	($9,270,027.00) $12,682,583.00	1
Fund Deficits in Current or Previous Year	If there are any fund deficits in one or more of the unit's unreserved major fund balances the unit scores a one, otherwise is scores a zero.	2008 2007	Major Fund Deficit ☑ Major Fund Deficit ☑	$9,270,027.00 $5,867,852.00	1
General Long-Term Debt as a Percent of Taxable Value	This variable is constructed by taking general long-term debt and dividing it by the taxable value of the unit. Any unit with a debt to taxable value ratio above 6 percent is scored a 1 and those beneath it a 0.	2008	General Long Term Debt Taxable Value	$5,953,045.00 $141,305,762.00	0

9/10/2009 Local units that file biennial audits have scores based on fiscal years 2008, 2006, and 2004 instead of three consecutive years.

Source: Michigan Department of Treasury

Low Scoring Government: Ludington (Mason County)

One of the lowest-scoring cities in 2008 (least fiscally stressed) was the City of Ludington in Mason County. Ludington scored a 0 for almost every indicator (every one except population growth, which involved a minimal loss of 33 people), giving it a total of 1 point out of 10. This placed Ludington in the "fiscally neutral" category for level of distress. Ludington's fiscal stress scoring sheet can be seen in Table 4.

Ludington is a harbor town located on Lake Michigan at the mouth of the Pere Marquette River. The City is a tourist attraction due to its boating, swimming, hunting, fishing, and camping opportunities, and nearby parks. The City has faired relatively well compared with other cities in the State, and scored a 1 in 2007 and a 0 in 2006 (a perfect score). Ludington is an example of a fiscally sound city.

Table 4
Scoring Sheet for the City of Ludington

LUDINGTON City 2008 SCORE: 1 MuniCode: 53-2-010

INDICATOR	DESCRIPTION	YEAR	CATEGORY		Score
Population Growth	This first indicator measures population change. If a unit lost population, then it scores a 1, otherwise it is assigned a 0. The estimates provided are from the U.S. Census Bureau. Note that the values for Year 2000 are not estimates but taken from the Census that year.	2008 2000	Population Population	8324 8357	1
Real Taxable Value Growth *1.150885115*	Two-year growth periods of real taxable value for each unit are computed. Units score a 1 if they demonstrate negative real growth, and a 0 if they exhibit positive real growth. To compute real taxable value, the current year taxable value is divided by the adjusted deflator indicated to the left.	2008 2006	Taxable Value Real Taxable Value Taxable Value	$229,009,283.00 $198,985,354.85 $198,153,769.00	0
Large Real Taxable Value Decrease	This indicator uses the same data and time lag as indicator 2. The only difference is that a different standard is used. For this indicator, units measuring less than -0.04 receive a 1 and others are marked 0.	2008 2006	Taxable Value Real Taxable Value Taxable Value	$229,009,283.00 $198,985,354.85 $198,153,769.00	0
General Fund Expenditures as a Percent of Taxable Value	This indicator has no time lag and deals solely with data from within the same year. To compute this variable, general fund expenditures are divided by taxable value. This is the only variable for which separate standards are used. A standard of 0.05 is used for cities and villages and 0.01 for townships and counties. Units with ratios above the standard receive a 1 and those below score a 0.	2008 2008	General Fund Expenditure Taxable Value	$4,913,706.00 $229,009,283.00	0
General Fund Operating Deficit	This variable is computed by subtracting general fund expenditures from general fund revenues for a given year. This figure is then divided by general fund revenues. If the number that results is less than -0.01, this indicates a unit has a nontrivial operating deficit and this unit received a score of 1. If the unit does not have a general fund operating deficit, or if this deficit is trivial, the unit is given a 0.	2008	General Fund Expenditure General Fund Revenue	$4,913,706.00 $5,319,155.00	0
Prior General Fund Operating Deficits	This indicator is computed in the same manner as Indicator #5 except that it is applied to the two years prior to the current year. A score of 1 is assigned for each prior year in which a non-trivial operating deficit had occurred.	2007 2006	General Fund Expenditure General Fund Revenue General Fund Expenditure General Fund Revenue	$5,015,472.00 $5,374,665.00 $4,354,527.00 $4,872,379.00	0 0
Size of General Fund Balance	The actual variable constructed for this indicator is the general fund balance as a proportion of general fund revenue. If a unit maintains a general fund balance less than 13 percent of its general fund revenue, it scores a 1. Conversely a general fund balance above the 0.13 level scores a 0.	2008	General Fund Balance General Fund Revenue	$897,707.00 $5,319,155.00	0
Fund Deficits in Current or Previous Year	If there are any fund deficits in one or more of the unit's unreserved major fund balances the unit scores a one, otherwise is scores a zero.	2008 2007	Major Fund Deficit ☐ Major Fund Deficit ☐	$0.00 $0.00	0
General Long-Term Debt as a Percent of Taxable Value	This variable is constructed by taking general long-term debt and dividing it by the taxable value of the unit. Any unit with a debt to taxable value ratio above 6 percent is scored a 1 and those beneath it a 0.	2008	General Long Term Debt Taxable Value	$2,439,825.00 $229,009,283.00	0

8/19/2009

Source: Michigan Department of Treasury

POST 2002 CHANGES AFFECTING THE CURRENT SYSTEM

The indicators currently used by the Department of Treasury represent a major improvement over the previous indicator system. However, since the implementation of this system, there have been changes allowing for updates that would improve the indicators. In addition, the original system scores each locality based on standard deviations that were set in 2002 and are no longer relevant. A way to update the scoring system each year is needed. This and other ways to improve the system are discussed below.

GASB 34

In 1999, the Governmental Accounting Standards Board (GASB) established new financial reporting standards that fundamentally changed the way that state and local governments report their financial results. Among these provisions was GASB 34, which completely revised the financial reporting model for state and local governments in the United States. GASB 34 required the reporting of data that were not provided in the previous financial reporting model, and changed the way certain fund-level and entitywide-level information is reported.[7]

[7] U.S. Department of Transportation, 2000

GASB 34 switched the focus of financial statements from fund-level to governmentwide-level reporting by adding "government wide financial statements" to audits. This allows analysis at the overall government level instead of at each fund separately, which makes it harder for governments to hide fiscal stress through accounting methods and fund transfers. For instance, a unit's general fund may appear to be fiscally healthy when the unit's overall government balance is under stress due to transfers or loans from other funds into the general fund.

Interfund transfers and loans are not always inappropriate, however; for instance, a city may be using a special fund to keep close tabs on whether a project is self-supporting over time. This can allow the government to assess whether the project is worthwhile. However, if this project is losing money and creating stress for the unit, that might not appear in the general fund balance. Therefore, an overall governmentwide indicator may give some indication of this fiscal stress.

Interfund borrowing also may be appropriate when a reasonable level of interest is charged. This is often the case, for instance, with short-term special assessment projects. However, both interfund transferring and borrowing can be abused and can be used to "game" the system into making it appear that the government unit is fiscally healthy when in fact it is not. Because of this, the measurement of "operating deficit" (for all types of funds) should include transfers in its calculation. If transfers are not included, gaming the system is actually easier. If they are not counted, recurring expenditures can be replaced with recurring interfund transfers out to the fund that will ultimately report the expenditures. However, if they are counted, revenue can be replaced by temporary interfund transfers in -- but only to the extent that there are resources in other funds to transfer in. Therefore, including transfers in the calculation in addition to measuring the indices at all levels of government will reduce the ease of gaming the system through transfers and borrowing.

GASB 34 was not yet in effect when the current fiscal stress indicator system was created. Therefore, the system does not reflect the changes brought about by GASB 34 and should be updated. This can be done through the addition of indicators that reflect governmentwide level analysis, in addition to the already present general fund indicators.

There are benefits to analysis both at the general fund level and at the governmentwide level. As mentioned earlier, a government's general fund may appear to be healthy when in fact the unit's governmentwide funds are under stress due to interfund transfers or loans. In addition, the use of general fund data can be biased in measuring financial condition for larger governments such as states, counties, or mid-size and large cities where the general fund accounts for a relatively smaller part of a government's financial transactions.[8]

It is still important, however, to analyze the general fund as well as the governmentwide funds when measuring fiscal stress. The general fund is still the main discretionary fund and is usually the biggest fund outside of some water/sewer funds. If someone looks at governmentwide indices only, he or she may be looking at a lot of restricted funds that are not relevant for general operations. Even if another fund has a large surplus, it might not be available for use by the general fund. In addition, fund-based measurements (both general fund and all governmental funds) focus on short-term liquidity. When a community is experiencing fiscal distress, the shorter-term measures seem to be a more accurate predictor of ability to pay. Therefore, it is important to look at both the general fund and governmentwide funds when creating fiscal stress indices.

Recommendation: The Michigan Department of Treasury should consider measures that capture both general fund fiscal stress as well as overall governmental funds fiscal stress. In addition, the measurement of operating deficit should include interfund transfers in its calculation. For example, indicators 4, 5, 6, 7, and 9 could all be replicated for both the general fund and the governmentwide fund.

[8] Wang et al., 2007

Local Government Web Portal

A local government fiscal web portal would be an ideal setting to maintain fiscal indicators. Although the Michigan Department of Treasury currently does provide individual unit scores on its website, providing the underlying fiscal data would be more useful. This is currently done in states such as Colorado, Massachusetts, New York, Ohio, and Pennsylvania. The proposed web portal would simplify the collection and analysis of Michigan local government fiscal data, increasing the amount and types of fiscal data readily available to the State. This new portal could expand the possibilities for fiscal stress analysis within the system.

First, the population growth indicator would be able to use the previous year's population estimate to calculate population change rather than the change in population from 2000 to the current year as it does in the current system. This would increase the accuracy of this measure.

Second, the new web portal could essentially be self implementing. Once the indicators were designed and coded, the system could create the indicators immediately each year. However, someone would have to monitor these numbers in order to further analyze the units deemed to be in fiscal distress or watch.

Although not available currently in the system, it would be useful for the portal to include unfunded Other Post Employment Benefits (OPEB) contributions (e.g., for retiree health care) for use in the fiscal indicators system. These are a huge cost for many local governments and may drive them into fiscal stress in the near future. A useful indicator involving unfunded OPEB contributions would be as follows: [(Restricted Net Assets + Unrestricted Net Assets + Unfunded OPEB contributions)/Total Assets]. This would measure long-term net assets.

Another useful piece of data would be the amortization of the Unfunded Actuarial Accrued Liability (UAAL) (e.g., the long-term cost of pensions that is not covered by present assets) and whether it is overfunded or underfunded. Financial audits contain a six-year trend of overfunded versus underfunded UAAL. This could be considered for inclusion in the future.

Recommendation**:** The Michigan Department of Treasury should set a goal of establishing a new local government web portal to implement a modified version of the current fiscal indicators system.

Levels versus Changes

Both current and lagged ratios as well as percentage changes over the past few years are useful because they can together tell whether a unit is heading for stress or improving. For instance, a unit's fund balance may be negative in the current year as well as during the previous two years, but if the balance currently is less negative than in previous years, the unit's fiscal condition may be improving. In addition, a unit may appear to be fiscally healthy because it has had a positive fund balance over the previous two years, but it might be heading for fiscal distress if this number is trending downward quickly. Both of these concerns can be captured by a mix of level ratios as well as change ratios.

In the example below (Table 5), two cities start with identical fund balance ratios. In the following fiscal year, City A experiences a significant decline in fund balance ratio. City B experiences a slight increase in fund balance. Under a fiscal scoring system that tracks levels of indicators, City A would score the same as City B. However, it may be helpful to consider the direction of the change in indicators and not just the level. In the case of a scoring system that considers changes in indicators across time, City A would score one point and City B would score zero points. Although one can dispute which approach is correct, this type of change or what is referred to in education policy as "value added" approach is one that should be tested and considered. The current system used by Treasury is level type scoring system.

Table 5

Example of City Scores Under Levels vs. Changes		
	City A	**City B**
Previous Fund Balance Ratio	0.25	0.25
Current Fund Balance Ratio	0.15	0.30
Change	(0.10)	0.05
Level Score	0.0	0.0
Change Score	1.0	0.0
Summary	This city has a positive fund balance ratio in the current and previous years, but the ratio has become worse, indicating that the city may be heading for fiscal stress.	This city has a positive fund balance ratio in the current and previous years, and the ratio has increased, indicating that the city may be heading in the right direction or stable.

Source: Senate Fiscal Agency

Recommendation: The Michigan Department of Treasury should use both indicators that capture level amounts (current fiscal situation) as well as changes (trends and predictions for future fiscal situation).

Local Government Debt

The uncertainty of local government debt is a growing concern for many local units in Michigan. The cost of insuring municipal debt has skyrocketed: There is now only one AAA-rated municipal bond insurance company left in Michigan. In addition, many local governments have special assessment bonds for development projects that were left to the cities to repay after the development projects failed and the developers pulled out during the housing crisis of 2007. Although there have been no municipal bond defaults in Michigan since the 1960s, these bond repayments are placing excess fiscal stress on many units of government and default could occur in the future. Default also could lead to a contagion effect, causing the municipal bond market to collapse. Although this is considered to be unlikely by most economists, it is possible. Therefore, keeping close track of municipal debt is an important part of fiscal stress management.

In order to better measure the ability of local governments to pay back their debt, a measure of debt service is recommended for inclusion in the fiscal stress indicator system. For instance, debt service divided by total revenue would give an indication of the ability of the unit to repay its debt without affecting services. These data could be made more readily available with a new local government web portal. This would allow the debt indicators to capture a broader array of debt measure, which the current indicators do not.

Recommendation: The fiscal indicator system should include a new measure that uses debt service for general fund or all governmental funds.

Grading and Scaling System

Each fiscal indicator is measured using a threshold value. These thresholds vary across the indicators. Some indicators use a fixed number while others use a value that is based on some form of statistical analysis. The following indicators use a fixed value:

- Population growth
- Real taxable value growth
- Fund deficits in current or previous year

These three indicators use a fixed value that is not associated with any statistical analysis. A government entity that scores above (or below) the threshold -- for example, has negative population growth compared with the base year of 2000 – scores a point.

The other six indicators use a statistical approach. This implies that the data for that respective indicator are compiled across all government entities and a statistical standard deviation is estimated. A standard deviation is a specified range away from the median or average value. Thus, a local government can be said to be abnormal, atypical, or out of the average if it scores one standard deviation or more from the average. The theory is that these fiscal indicators are such that being in the average range is a good quality.

The following fiscal indicators use a statistical approach:

- Large real taxable value decrease
- General fund operating deficit
- General fund expenditures as a percentage of taxable value
- General fund balance ratio
- Fund deficits in current or previous year
- General long-term debt as a percentage of taxable value

According to these indicators, a certain range or standard deviation away from the average is a threshold indicating a problem. For example, if general fund expenditures as a percentage of taxable value for a government entity are one standard deviation range above the average, the unit receives one point. This threshold was set in 2002 when Kleine et al. wrote their original paper. For this indicator, the threshold was set at 0.05 for cities and 0.01 for townships. If a city has general fund expenditures as a ratio of taxable value greater than 0.05 or 5.0%, the unit scores one point on that indicator. The problem is that this threshold or standard deviations were established by analyzing local government data from 1991 to 2000. While this made sense for an analysis in the earlier part of this decade, given the availability of more current data, it only would seem sensible to update these standard deviations or thresholds for data from 2000 through 2009, which are now available.

For indicator three, a large decrease in taxable value, the threshold is based on being atypical compared with peer governments. The Kleine et al. study found that for this indicator the average was a 4.63% increase in taxable value and a standard deviation of 9.2%. This is a fairly large variation around the mean value. For cities and villages, Kleine et al. used a one standard deviation range measure, which results in a threshold of -4.0%. Thus, any city or village that has a 4.0% decline or greater receives one point on the fiscal index.

For townships, they found an 8.7% increase with a standard deviation of 8.5%. Without a great deal of explanation, the authors used the same (4.0%) threshold for townships, which represents one and a half standard deviations from the mean.

Using the new dataset from 2005 through 2008, some new thresholds for indicator three can be estimated. The average growth rate for taxable value for cities and villages was 5.0% with a standard deviation of 2.3%, and for townships an average value of 6.0% with a standard deviation of 0.51%. Using a one standard deviation measure, the new threshold would be 2.7% for cities and villages and 5.5% for townships. The threshold in the original study was a -0.4%. These large differences reflect different samples and the different structure of the economy in the early and mid 2000s.

For indicator four, general fund expenditures as a percentage of taxable value, Kleine et al. used a statistical threshold approach. The average value for cities and villages on this indicator was 3.47% with a standard deviation of 3.5% and for townships was 0.65% with a standard deviation of 0.39%. Using for this indicator a standard of one half standard deviation, the threshold becomes 5.0% for cities and villages and 1.0% for townships. This indicator is designed to assess the size of government relative to the size of the underlying tax base. In this case, any government above the threshold receives one point.

Using revised data from 2005 through 2008, a new set of thresholds were calculated for indicator four. This new calculation found an average value of 2.3% for cities and villages and an average of 0.51% for townships. The standard deviations were 1.7% for cities and villages and 0.3% for townships. Using a standard of one-half of one standard deviation, the revised threshold would be 3.2% for cities and villages and 0.81% for townships. This implies that the size of cities and villages relative to the tax base fell over the last few years. However, this may be due to differences in data sample. The data used by Kleine et al. had fewer governmental units due to data limitations.

Indicator seven, the size of general fund balance, also was developed using a statistical threshold. For cities and villages, the average size of the general fund balance was 29.2% and a standard deviation of 34.2%. Using a half-standard deviation range, the threshold indicator became 13.0%. Any unit below a 13% threshold scores one point. There was no discussion of township general fund balance in the original paper.

Using the new dataset, new thresholds were calculated. For cities, villages, and townships in this case, the average value was 29.0% with a standard deviation of 38.5%. Given the standard of one-half of one standard deviation, the threshold would be 9.75%. This is substantially lower than the threshold used previously, which was 13.0%. This raises an important question of whether there is a minimum threshold that needs to serve as a lower bound for this indicator.

Finally, indicator nine, general long-term debt as a percentage of taxable value, is based on a statistical threshold. In the original paper, the average calculated for the cities and villages was 2.47% with a standard deviation of 3.5%. This resulted in threshold of 6.0%. For townships, there was no explicit discussion. The justification for the use of one standard deviation, which is lower than credit rating agency standards at the time, was that this was a prediction tool rather than an after-the-fact assessment tool. In theory, however, credit rating agencies also attempt to predict fiscal stress and a one standard deviation may or may not be adequate for predictive purposes.

Using the new dataset, new thresholds were estimated. The estimates were 1.9% with a standard deviation of 1.5%. Thus, the threshold would be 3.4%, which is quite a bit lower than the previous estimate. This may be due to the different samples in the analysis.

Table 6 shows the current and revised thresholds for indicators three, four, seven, and nine.

Table 6

Current and Revised Thresholds		
	Current Threshold	**Revised Threshold**
Indicator 3	-.4/-.4	2.7/5.5
Indicator 4	5.0/1.0	3.2/.81
Indicator 7	13.0	9.75
Indicator 9	6.0	3.4
Note: The first number is for cities and villages; the second number is for townships.		

Source: Michigan Department of Treasury and the Senate Fiscal Agency

With this type of revisions to thresholds, one would expect a very different set of outcomes in terms of identifying fiscal stress. Changes to thresholds, if they are to be statistically based, make sense in this context.

In addition, the current system does not adequately measure the scale of distress. For instance, a unit with a population loss of 3,000 people would receive the same score as one with a population loss of one person. An example of how two very different cities could have the same score can be seen in Table 7.

Table 7

Example of Two Different Cities with the Same Score		
	City A	**City B**
Change in Population	-1	-3,000
General Fund Operating Deficit Ratio	-0.01	-0.95
General Long Term Debt / Taxable Value	0.06	0.95

Source: Senate Fiscal Agency

Both of these weaknesses (benchmarking based on old standard deviations as well as a lack of degree of distress) would be improved through implementation of a ranked scoring system such as that discussed by Zafra-Gomez et al. (2009). Under this scoring system, localities are listed in order of each ratio, and then localities with a value that is among the 25% lowest values in the sample are given a score of 1 point, localities with scores between the 26% and 50% limits are given a score of 0.5 point, localities with scores between 51% and 75% are given a score of 0.25 point, and localities with scores above 75% are given a score of 0 point. This is illustrated in Table 8.

Table 8

Proposed Scoring System	
Ranking	**Score**
Lowest 25%	1
26%-50%	0.5
51%-75%	0.25
75%-100%	0

Source: Senate Fiscal Agency

This scoring system would allow the cutoff points to be determined each year (rather than being based on 2002 standard deviations) as well as provide a better measure for idiosyncratic rather than systemic risk. It also would give a better indication of the scale of distress experienced by each locality. Now, a locality with a very high ratio for one indicator will receive a higher score than one that is on the margin.

Another useful change to the current system would be to cluster each type of locality into groups based on population and size of government. This would help to allow comparisons of localities with similar characteristics, avoiding comparisons of places like Detroit with small cities in the Upper Peninsula. Specialists of fiscal stress measurement emphasize the importance of benchmarking between municipalities with similar characteristics.[9] For instance, the minimum level of fund balance needed for Detroit to be fiscally healthy is very different from the minimum needed for a small city.

Therefore, groups based on demographics such as population and expenditures would be helpful in the ranking and scoring system. A simple way to create these groups is to calculate an index based on population and expenditures per capita. Basing the groupings solely on population may miss an important characteristic of local governments: the level of government desired by their constituents. Previous research indicates that as population density increases, the desire for government services increases as well (such as for fine arts, parks, etc). Therefore, a higher expenditure level for a densely populated city might not indicate fiscal distress but rather a higher level of demand for government services from its residents. Grouping by population and size of government may help to decrease the chance of these comparisons.

This grouping can be done by standardizing each unit's population and expenditures per capita, weighting them, and then adding them together to create an index. Standardizing each unit's population and expenditures allows them to be compared and combined into one index. The localities then can be broken into quartiles based on this index for comparison (after they are first broken down by type of government). This will allow localities of similar size to be compared within each grouping.

[9] Zafra-Gomez et al., 2009

In making these groupings, it also will be important to separate all June year-ends with December tax collections (i.e., common law townships) from March year-ends with December tax collections (common-law and charter townships) and from December year-ends with December tax collections (charter townships). The reason for this separation is that the impact of using a different fiscal year than the natural property tax year will artificially inflate assets and equity, and will make those local units no longer comparable with local units that have fiscal years that match their tax year (such as a June year-end city that collects taxes on July 1).

Based on analysis of this index, it is suggested that the standardized scores be weighted as follows: 75% population and 25% expenditures per capita. This appears to group localities most sensibly. An example of this grouping using 2008 data can be found in Appendix A. These groupings also can be created through more advanced clustering techniques using a data processing package such as Stata. However, for simplicity's sake, the first method is recommended.

Recommendation: The grading system should be changed to a sliding scale based on rankings within each indicator as discussed above. In addition, localities should be clustered into groups based on population and total expenditure in order to more accurately compare localities with similar demographic characteristics.

"Real" versus "Real Property"

For the indicator titled "Real Taxable Value (TV) Growth", the real was meant to refer to inflation- adjusted growth. This adjustment should be based on the inflation only from two years previous to the current year and updated each year. During implementation of the fiscal stress indicator system, it is believed that the indicator was created to reflect "real property" rather than inflation-adjusted total TV. This provides an incorrect measure of TV growth.

Recommendation: Changes should be made to the calculations for real taxable value growth to reflect that "real" means inflation adjusted rather than "real property".

Summary of Recommendations for Changes to Current Fiscal Stress Indicator System

Based on the above discussion, the following changes should be made to the current fiscal stress indicator system in Michigan.

- First, a cash solvency measure, such as the current ratio (current assets divided by current liabilities), should be added to the indicators. Cash solvency is an important aspect of a unit's fiscal health and is not currently included in the system.

- Second, the system should be updated to reflect the changes brought about by GASB 34. To do this, measurements of governmentwide fiscal stress should be added to the fiscal stress indicator system. This can be done either through the addition of more ratios, or through the creation of two separate scores -- one for the general fund and one for the overall government. For parsimony, the addition of ratios seems like the best option. Therefore, the following ratios should be measured both for the general fund, and for the governmentwide fund: expenditures as a percentage of taxable value, operating deficit, prior operating deficits, size of (unrestricted) fund balance, and long-term debt.

- Third, using the new web portal, the population growth indicator should use the previous year's population estimate to calculate population change, rather than the change in population from 2000 to the current year.

- Fourth, the grading system should be changed to a sliding scale based on rankings within each indicator, as discussed above.

- Fifth, localities should be clustered into groups based on population and total expenditure to more accurately compare localities with similar demographic characteristics, as discussed above. In addition, grouping also should separate the following units:

    - June fiscal year end townships (common law or charter)
    - March fiscal year end townships
    - December year end townships, cities, and villages
    - September year end counties
    - December year end counties
    - All others (cities, villages, and December year end townships)

- Sixth, a debt service ratio should be added to give a more accurate picture of a unit's ability to pay back its loans. This can be measured as debt service divided by total revenue.

- Seventh, changes should be made to the calculations for real taxable value growth to reflect "real" meaning inflation-adjusted rather than "real property".

- Finally, it is important to stress that the indicator system does not function in isolation. That is, unless it is used as a tool for further analysis, the system will not serve to help those localities in need. The State must analyze further the localities that have been flagged as being in fiscal distress or on fiscal watch by looking more closely at their financial statements and debt issuance. Without this step, the indicator system will not be helpful to these localities.

These proposed changes will help to better capture not only the relative level of stress of each unit of local government, but also the overall amount of stress on a governmentwide level. This will help to minimize the amount of missed stress due to interfund transfers and short-term solutions. It also will help to compare localities that are similar in terms of demographics and size of government, thus minimizing the chance of error.

In addition, in updating the indicator system, it will be important to think about whether it measures fiscal stress or fiscal health. The designers of the Michigan fiscal indicator system decided to choose a hybrid of fiscal health and stress indicators. For example, cash solvency indicators have not been included in the system. There is no "right way" to design a fiscal indicator system. The important issue is to consider the tradeoffs that the designers built into their system and assess whether those choices remain appropriate under the circumstances. If fiscal stress is a more pressing concern, it may be necessary to alter the system to ensure that all local governments facing these challenges are identified. Cash solvency and budgetary solvency indicators would be more appropriate potentially. On the other hand, if the policy makers are more concerned with long-term fiscal health, service-level solvency indicators would be appropriate.

CONCLUSION

The current fiscal stress indicator system represents a major improvement over the system in place before 2006. However, with State and local governments under more stress than ever before, this indicator system is of the utmost importance. The failure of one local government may lead to a domino effect on other governments in the State. Therefore, any updates that can be made to ensure that the system does not miss any localities under distress should be undertaken. The recommendations presented here are intended to help stimulate a debate among government policy makers and staff to assess the potential improvements discussed in this paper. This will help both the State and local governments for years to come.

APPENDIX A

To review the main homepage for the fiscal indicators:
http://www.michigan.gov/treasury/0,1607,7-121-1751_47023-171423--,00.html

To review the original report for the fiscal indicators:
http://www.michigan.gov/documents/treasury/MSUStudy_238307_7.pdf

To see the scores of individual units for FY 2007-08 (most recent available):

Cities: http://www.michigan.gov/documents/treasury/City_Cumulative_293744_7.pdf

Counties: http://www.michigan.gov/documents/treasury/CountyCumulativeScores_293188_7.pdf

Townships: http://www.michigan.gov/documents/treasury/Cumulative_TWP_297161_7.pdf

Villages: http://www.michigan.gov/documents/treasury/Village_Cumulative_Scores_294023_7.pdf

Or to see scores of individual units by county (2007-08):
http://www.michigan.gov/treasury/0,1607,7-121-1751_47023-222539--,00.html

APPENDIX B

Other Methods of Fiscal Stress Analysis

In 1993, Ken Brown created a 10-point test that uses data from the Government Finance Officer's Association (GFOA) Financial Indicators Database to compare a city's key ratios with those of hundred of similarly sized cities across the nation. His test consisted of the following indices:

- Three revenue measures:
  1) Total Revenue/Population,
  2) Total General Fund Revenue from own Sources/Total General Fund Revenue,
  3) General Fund Sources from other Funds/Total General Fund Sources;
- One expenditure measure:
  4) Operating Expenditures/Total Expenditures;
- Three operating position measures:
  5) Total revenue/Total Expenditures,
  6) Unreserved General Fund Balance/Total General Fund Revenue,
  7) Total General Fund Cash and Investments/Total General Fund Liabilities; and
- Three debt measures:
  8) Total General Fund Liabilities/Total General Fund Revenue,
  9) Direct Long-Term Debt/Population, and
  10) Debt Service/Total Revenue.

Brown's test consisted of three steps: 1) calculate 10 key financial ratios based on data contained in the city's current annual financial report, 2) compare these ratios to similarly-sized cities, and 3) grade the city's financial condition based on the comparisons. For comparison, cities are broken into 1) between 50,000 and 100,000, 2) between 30,000 and 50,000, 3) between 15,000 and 30,000, and 4) under 15,000.

From this, a city determines in which quartile its ratio falls for its population subgroup and compiles a score based on these quartile rankings. Brown's test uses groupings as discussed in the main text, but rather arbitrarily chooses the sizes.

Ladd and Yinger (1989) also discussed fiscal health among cities in the U.S. They argued that revenue collected is a poor measure of a city's capacity to raise revenue because this could be influenced by the fact that the city needs to raise more money to provide the same quality of services (inefficiency or lack of economies) or due to the citizen's desire for high-quality services. Therefore, they use a measure of what a city could raise at a given tax burden on its residents.

Ladd and Yinger also argued that expenditure needs depend on the amount of money cities must spend in order to achieve a given quality of public services. For example, cities with a harsh environment in which to provide police and fire services, such as Newark, New Jersey, must spend much more to obtain a given level of police and fire protection than cities with a favorable environment.

In 2007, Wang et al. **t**ested a measure of financial condition using governmentwide information as required under the new financial reporting model set forth in GASB 34. The authors found that the use of general fund data can be rather biased in measuring financial condition for larger governments such as states, counties, or mid-size and large cities where the general fund accounts for a relatively smaller part of a government's financial transactions.

Wang et al. also argued that the use of socioeconomic factors is questionable because they may affect financial conditions, but they are not financial conditions. For instance, population growth is thought to positively influence financial condition. However, larger populations also may demand greater public

spending, which can lead to deteriorating financial conditions if additional revenue is not generated proportionally to fund the increased service demand.

Wang et al. therefore used the following indicators in their analysis: 1) cash ratio = (cash + cash equivalents + investments)/Current liabilities, 2) quick ratio = (cash + cash equivalents + investments + receivables)/current liabilities, 3) current ratio = current assets/current liabilities, 4) operating ratio = total revenue/total expenses, 5) surplus (deficit) per capita = total surpluses (deficits) / population, 6) net asset ratio = restricted and unrestricted net assets/total assets, 7) long- term liability ratio = long-term (noncurrent) liabilities/ total assets, 8) long-term liability per capita = long-term (noncurrent) liabilities/ population, 9) tax per capita = total taxes/population, 10) revenue per capita = total revenue/population, and 11) expenses per capita = total expenses/population.

According to Wang et al., there is "little agreement on what dimensions and indicators definitively represent the concept of financial condition" and there is no general uniformity among the states to assess financial condition. They also questioned the reliability of financial condition studies that assess financial condition at the fund level rather than at the level of governmentwide financial and operating data.

In 2007, Dollery et al. looked at fiscal sustainability in Australian local government. In this article, the authors pointed out that relative rather than absolute values of indicators serve to punish councils whose absolute values are satisfactory but nevertheless fall at the bottom end of a given scale.

Dollery et al. discussed the South Australian Financial Sustainability Review Board's (FSRB's) financial indicators, which are as follows: 1) net financial liabilities as a measure of the council's indebtedness to other sectors of the economy, 2) operating surplus or deficit as a measure of the intergenerational equity of the funding of the council's operations, 3) net outlays on the renewal or replacement of existing assets as a measure of the intergenerational equity of the funding of the council's infrastructure renewal or replacement activities, and 4) net borrowing or lending as a measure of the impact of the council’s annual transactions -- both operating and capital -- upon the council's indebtedness to other sectors of the economy. Later, the local government and shires associations of New South Wales did a similar study and suggested the following indicators: 1) net debt over total operating revenue, 2) net financial liabilities over nonfinancial assets plus holdings of externally restricted cash and securities, 3) net interest expense over total operating revenue, 4) operating surplus (deficit) over own source revenue, 5) net borrowing (lending) over annual capital expenditure on new or enhanced assets, 6) annual renewals deficiency over annual capital expenditure on renewal or rehabilitation of existing assets, and 7) renewals backlog over nonfinancial assets.

Zafra-Gomez, et al. focused on benchmarking in their 2009 work. The authors stressed the importance of benchmarking between municipalities with similar characteristics. They criticized current financial indicators in that the values measured by different authorities are not comparable as the services they provide differ significantly.

Zafra-Gomez et al. argued that analysts should group local authorities by social and economic factors influencing their provision of public services. They said that this will create a model that evaluates financial performance, detecting and minimizing the influence of the socioeconomic environment and, thus, maximizing the value of benchmarking.

In 2009, Sohl et al. measured the financial position of municipalities from the point of view of analyzing whether a city's revenue structure is fair and reasonable. They emphasized the difference between comparative financial position and comparative financial condition. Comparative financial position uses financial indicators to compare one unit of government or a group of jurisdictions against like-situated jurisdictions in order to establish that jurisdiction's relative position for each financial indicator. An analysis of comparative financial condition involves using financial indicators or indices to objectively measure the financial condition of a municipality and then benchmarking the municipality's position over time against an industrywide standard or a standard accepted by the governing body.

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