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Abstract

This study is aimed to review and to provide critical review to the methods of assessing the financial condition of local government (LG). Research assessing the financial conditions of LG is relatively new. As a result, there is little agreement about what appropriate methods, procedures, dimensions, and indicators to assess the financial condition of LG. To review the methods, this study utilise the criteria of a good measure (i.e. reliability, validity, and practicality) as a benchmark. The methods reviewed are compared with the criteria. The critical review will identify the strengths and limitations of the methods.

The results show that there is no model that satisfies all the attributes of a good measure. Several common weaknesses of the previous methods are involving too many variables; assuming that all dimensions and indicators of the financial condition have equal importance; utilizing non-financial indicator instead of financial indicators to assess the financial condition; deriving dimensions and indicators not based on a clear definition of the financial condition; do not testing the reliability and validity of the measure; do not practical; and do not establish key attributes or criteria as guidance. On the other hand, attributes of economy and convenience are always present in all the models.

Results of this study provide inputs for scholars, local and central governments, and professional institutions to improve the methods of assessing financial condition of LG. To overcome those weaknesses, this study suggests that the future research should sets up criteria of validity (i.e. face, predictive, convergent, and concurrent validities), reliability (i.e. dimension-level and composite-level reliabilities), and practicality (i.e. interpretability, economy, and convenience).

Keywords: financial condition, local government.
1. INTRODUCTION

Research on the assessment of the financial condition of local government (LG) received attention after the occurrence of financial problems experienced by LGs around the world. In the United States, the cities of New York and Cleveland experienced financial distress in the 1980s, followed by the cities of Miami, Pittsburgh and Philadelphia (Kloha et al. 2005). The same situation also existed in European countries, such as financial distress in Norwegian LGs in 2001, British LGs in 1985 and Netherlands LGs in the 1980s (Carmelli 2008). In Australia and Japan, such conditions occurred as well in their LGs (Dollery et al. 2006; Takahashi 1999). This phenomenon motivated researcher to conduct research to create an instrument to evaluate the financial condition of LGs in order to detect the symptoms of financial distress before it occurred.

Compare to the business sector in which financial assessments of firms are clearly defined, research assessing the financial conditions of LG is relatively new because research assessing financial conditions started in the 1980s (Kloha et al. 2005). This can be contrasted to the business sector where such research commenced 20 years earlier. In the business sector, Beaver (1966) and Altman (1968) established a seminal model to assess the financial conditions of a firm. In the LG sector, scholars and practitioners have attempted to develop instruments for assessing local financial conditions using various dimensions and indicators. They have their own methods and procedures. As a result, there is still little agreement about what appropriate methods, procedures, dimensions, and indicators to assess the financial condition of LG (Wang et al. 2007; Dennis 2004). Furthermore, Carmeli (2003) stated that researchers know little about the dynamics that create local government financial condition. Carmeli (2003) argues that those situations are due to the complexity of the factors driving the financial condition of local government. There are no easy or immediate ways, at least not in the near future, to understand the variation of local government financial condition. Accumulative knowledge is the only way to ensure that researchers will understand the phenomenon properly (Carmeli 2003). In addition, Padovani et al. (2010) state that there is a lack of research on local government financial condition measurement systems. There is still a lack of any international comparison of how financial condition is identified and measured across countries. Such a situation is tightly intertwined with the information available to measure financial condition (Padovani and Scoresone 2011).

Although there are several previous studies that discussing methods of assessing LG financial condition (Brown 2003; Casal and Gomez 2011; Chaney et al. 2002; Dennis 2004; Hendrick 2004; Kamnikar et al. 2006; Kloha et al. 2005; Mercer and Gilbert 1996; Nollenberger et al. 2003; Rivenbark et al. 2010; Wang et al. 2007; Zafra-Gomez et al. 2009), this study will review the most three cited methods according to Googlescholar.com as of 29 March 2013; and will provide critical reviews on the methods. The methods are those which are developed by International City/County Management Association, Kloha et al. (2005) and Brown (1993) with number of citation of 88, 73 and 70 times respectively.

The objective of this study is to review and to provide critical review to the methods of assessing LG financial condition. The critical review will identify the strengths and limitations of the previous methods. Results of the critical review will provide inputs for future research to develop a good instrument to assess financial condition of local
government. Such a good instrument will benefit local government stakeholders. For local government itself, the instrument could be used as an alert system to detect undesirable financial conditions that are likely to happen. In turn, local government will be in a good position to identify and avoid financial difficulties before they occur (Kloha et al. 2005a). For the central government, especially for the Ministry of Home Affairs and the Ministry of Finance, the instrument can be used to monitor the financial condition of local governments and providing an input to these ministries into developing policies and regulations related to managing local government finance. The legislative members of a local government and the community can use the information about the local government's financial condition to watch over local government executives in managing local government finance.

This study consists of five main sections, which are introduction, methods of review, reviewing methods of assessing LG financial condition, conclusion, and suggestions for future research.

2. METHODS OF REVIEW

To review the methods, this study utilise the criteria of a good measure as stated in Cooper and Schindler (2011), Sekaran and Bougie (2010), and Trochim (2006) as a benchmark. The method reviewed is compared with the criteria. The more attributes of those criteria belongs to a method, the better is a method, and vice versa. The criteria are reliability, validity, and practicality (Cooper and Schindler 2011).

Reliability refers to the consistency of an instrument to measure a concept (Trochim 2006). To estimate reliability, there are four common types of reliability estimators namely inter-rater or inter-observer reliability; test-retest reliability; parallel-forms reliability; and internal consistency reliability.

The validity of a measurement indicates whether a test or a model measures something that is intended to measure. The clearer and easier definition of a variable or construct, the easier someone tests its validity (De Vaus 2002). Face validity and content validity are embedded when conceptualizing the definition of financial condition (Sekaran and Bougie 2010). Other types of validity are predictive validity, concurrent validity, and convergent validity (Trochim 2006). Predictive validity refers to the ability of a measure to explain its relationship with other variables that are believed to associate with it. Concurrent validity pertains to the distinctive ability to distinguish groups that should theoretically difference (Trochim 2006). Convergent validity refers to whether the test results from the instrument is being built has the same variation with the other test instruments that theoretically should be similar (Sekaran and Bougie 2010).

Practicality is associated with various variables of economy, convenience, and interpretability (Cooper and Schindler 2010). The criterion of economy is satisfied when the model is build based on publicly available, uniform, and frequently collected data. Using such data, local governments incur low cost to develop the measure because the data is publicly available. The criterion of convenience is satisfied when a measure developed based on data that are periodically released by authorized organizations; and the interpretability criterion is fulfilled when a measure is easily understood by its users.
3. REVIEWING METHODS OF ASSESSING THE FINANCIAL CONDITION OF LOCAL GOVERNMENTS

The following subsections will summary and then discuss the three most cited research related to the methods of assessing financial condition of local governments. The discussion will be based on the frequency of citations.

3.1. ICMA’s Fiscal Trend Monitoring System (FTMS)

The Fiscal Trend Monitoring System (FTMS) is developed by the International City/County Management Association (ICMA) in 1980 and have been revised twice in 1994 and 2003. (FTMS) is an early warning system to predict financial condition of LG through trend analysis of several indicators. ICMA defines LG financial condition as LG’s ability to finance its services on a continuing basis.

FTMS measures LG financial condition using eleven factors which are broke-down into forty two indicators. The eleven factors in the FTMS consist of (1) revenue indicators, (2) expenditure indicators, (3) operating position indicators, (4) debt indicators, (5) unfunded liability indicators, (6) capital plant indicators, (7) community needs and resources indicators, (8) intergovernmental constraints, (9) disaster risk, (10) political culture, and (11) external economic conditions. Indicators numbers 1 through 6 are known as financial factors, while indicators 7 through 11 are considered as environmental factors. Each factor consists of several indicators, and each indicator is broke down into sub-indicators. Table 1 below shows the factors, indicators, sub-indicators and formula used in the FTMS.

To analyze each of the indicator, firstly, one collects data for several years (usually 5 years), then calculate every ratio for each year. Secondly, draw a graph of each ratio by plotting the values of each ratio over time so it would appear a trend. The next step is analyzing the results by identifying whether the trend is not expected (unfavourable trend). The analysis involves several activities such as determine when the unfavourable trend began; consider mitigating circumstances; identify the causes underlying the unfavourable trend; compare the indicator trends to another local government; compare the economic condition of the LG to national or regional trend; compare the trend to the benchmarks used by credit rating firms. Finally, implement professional judgments to develop policy statements.

The strength of the FTMS is that it conceptualizes definition of LG financial condition before determining indicators to measure the financial condition. This procedure satisfies the attribute of face validity. In addition, the main excellence of the FTMS is that it offers a complete description of the factors composing the financial situation of a local government (Jung 2008; Rivenbark et al. 2009; Wang et al. 2007) and the model is more aligned with a bond rating approach (Rivenbark et al. 2009).

However, there are several weaknesses found in the FTMS model. Brown (2003), Kloha et al. (2005), Rivenbark et al. (2009) state that the FTMS involves too many variables used to analyse both financial and economic factors of the financial condition, making it appropriate tool only for large local governments and can be very time consuming for a local government. As a result, the sheer number of indicators increases the challenge of
implementation, interpretation, and presentation (Rivenbark and Roenigk 2011). The FTMS does not address government-wide statement (Rivenbark et al. 2009). Brown (2003) also criticizes that a large number of indicators can be very time consuming and costly for a municipality and difficult to communicate the results to local government’s management, governing board, and citizenry. In addition, the FTMS does not explain which ratios are more important than other ratios (Brown 2003) and the results of analysis are heavily depends on the financial decision makers professional judgments.

From the methodological point of view, a good instrument should have characteristic of valid, reliable, and practical (Cooper and Schindler 2010). However, the ICMA does not have such criteria of validity and reliability because the FTMS does not analyze the reliability and validity of the indicators composing it. Furthermore, FTMS is not practical and easily understood because it does not offers a composite index of LG financial condition.

3.2. Kloha, Weissert, Kleine’s 10-Point Scale of Financial Health

Kloha et al. (2005) define LG financial condition in the context of fiscal distress. They define it as a condition in which LGs cannot meet standards in operations, debt and the needs of society for several consecutive years. Kloha et al. (2005) use 10 indicators to describe the financial health of LG. The indicators used are (1) population growth, (2) real taxable value growth, (3) large real taxable value decrease, (4) general fund expenditures as a percentage of taxable value, (5) general fund operating deficit, (6) prior general fund operating deficits, (7) size of general fund balance, (8) fund deficits in current or previous year, and (9) general long-term debt as a percentage of taxable value. The model is intended to scaling the likelihood of a LG to suffer fiscal stress. The indicators and techniques to calculate the indicators are shown in the Table 2 following.

In general, if an indicator indicates a good financial condition, then it will get score of 0. When an indicator shows worsening financial condition, then it will get score of 1. For the ratio of operating deficits, if there is a deficit of two years in a row, it will be given a value of 2.

To distinguish between the good and the bad condition of a ratio, they use the standard deviation of the average sample value of the local governments. For example, see indicator 9 general long-term debt as a percentage of taxable value. The greater the value of the ratio means worsening condition. Based on the sample used, the average ratio was 2.47% with a standard deviation of 3.5%. Thus, the ratio of the average plus one standard deviation is around 6%. Therefore, if a LG has a ratio greater than 6% (i.e. 2.47% + 3.5%) will be given a value of 1 (poor), and if it has a value of less than 6%, then will be assigned a value of 0 (good).

Regarding to indicators that are clearly good or bad, for an example indicator of fund balance, then the standard deviation is no longer used. If a LG has a deficit fund balance, then it will be given a score of 1.

After each ratio is given a value, then all values are summed to obtain the total value that indicates the overall financial condition. The maximum value is 10 and the minimum value is 0. Local governments with total score of 0 – 4 points are categorized as fiscally
healthy; total score of 5 points as fiscal watch; total score of 6 – 7 point as fiscal warning; and total score of 8 – 10 points as fiscal emergency.

One advantage of Kloha et al. (2005) provide the definition of LG financial condition (i.e. in term of level of financial distress) before develop indicators of LG financial condition. This situation satisfies criterion of face validity. Another advantage is that they create a composite index to conclude the soundness of the financial condition of a local government. The composite index makes the instrument practical (i.e. easy to use and easy to understand) because it provides a comprehensive information of local government’s financial condition. Furthermore, based on the composite index, they create an early warning system by categorizing LG financial condition into four groups: health condition, watch condition, warning condition, and emergency condition. They tested the accuracy of the model by comparing between the results of the model and the actual condition of local governments observed. The results show that the model developed can capture the gradations of LG financial condition. Thus, the model satisfies the criterion of concurrent validity.

In addition, the strength of their model is they established key attributes or criteria as guidance in developing the measure. The criteria are theoretically valid; predictive ability; accordance with the interests of states, using data that available to the public, uniform, and collected regularly; accessible and easily understood; resistant to manipulation or gaming; and distinguish well among the LG evaluated.

However, several weaknesses still exist in their model. The main drawback of Kloha et al. (2005) is that the determination of the threshold to differentiate the good and the bad condition of an indicator is somewhat arbitrary (Jung 2009). For a certain indicator, for example indicator 3 which is large real taxable value, they use one standard deviation, but for other indicators, for example indicator 4: general fund expenditure as a percentage of taxable value and indicator 7: size of general fund balance, they used one-half standard deviation. Another weakness is that they do not explain the concept how to create cut off of scale to categorize local governments as health condition, watch condition, warning condition, and emergency condition. For a certain group the interval scale is four (i.e. group of fiscally healthy), but for other group the interval scale is only one (i.e. group of fiscal watch). Thus, the grouping system as an early warning system they offer seems arbitrary.

Wang et al. (2007) argues that the method used by Kloha et al. (2005a) has a flaw which is the involvement of non-financial socioeconomic variables, for example variable of indicator growth, in assessing the financial condition. Socioeconomic variables could influence the financial condition. However, the variables are not the financial condition itself. Thus, Kloha et al. (2005) confuse between variables affecting LG financial condition, for example indicator 1 of population growth, and variables composing LG financial condition, for example indicator 7 of size of general fund balances, in assessing LG financial condition. As a result, the model developed does not measure what it intends to measure.

In addition they do not test the validity and reliability of the measure. They should test whether the indicators created measure the same concept – fiscal distress. According to Cooper and Schindler (2011), a good measure has three characteristics, namely validity, reliability, and practicality. Thus, Kloha’s model meets one characteristic which is practicality.
3.3. Brown’s the 10-Point Test of Financial Condition

Brown (1993, 1996) introduced 10 key ratios to measure LG financial condition with populations less than 100,000 people. The ten key ratios are composed of four basic factors of LG finance which are revenues, expenditures, operating position, and debt structure. These ratios are shown in Table 3.

To test the financial condition, firstly, one calculates the 10 key financial ratios of all LGs based on existing databases of financial statements. Secondly, compare the ratios of a particular LG resulting in the first step with ratios from other LGs. If a ratio of a LG fall in quartile 1 (25% of LG at the worst level) it will get a score of -1. If its score fall in the second quartile it will be given a score of 0. If it lies in the third quartile scores 1, and if it is in quartile 4 (25% of LG at the best level) it will get a score of 2. Therefore, if all ratios of a LG lay in quartile 3, then the LG will get a total score of 10. If all ratios are in quartile 2, the LG will get a total score of 0, and if all ratios are in quartile 1 will get a total score of -10. Thus, this rating system only gives a positive value if a ratio of a LG lies at least at the third quartile. If the ratio of an indicator lies in quartile 3, it means that for the ratio the LG has better position compared with 50% of LG that exist in the database.

The final step in assessing LG financial condition is giving financial condition score based on the results of the comparison in step two. To determine a comprehensive assessment of a LG financial conditions, then the score of all ratios are added together. Local governments with total score of 10 or more are concluded as among the best financial condition; total score of 5 to 9 are better than most others; total score of 1 to 4 are about average; total score of 0 to -4 are worse than most others; and total score of -5 or less are among the worst financial condition among others.

The strength of Brown’s 10-point test is its ability to evaluate financial condition of LG with only ten indicators and the use of benchmark data for interpreting each financial indicator, although it also has a weakness, which is the limited analysis across all major funds (Rivenbarket et al. 2009; Maher and Deller 2012). In addition, Brown’s model offers a composite index of the financial condition. The composite index helps LGs’ stakeholders to assess the financial condition of LG quickly and effectively because the composite index provides an overall picture of a LG. In addition, Brown demonstrated an attempt to classify LGs into four different level of financial condition.

Brown acknowledges that there were several limitations of his model. The first limitation is the total score generated by the financial condition of the 10-point test is relative interpretation: better or worse. The total score does not provide information in absolute interpretation: financially health or financially distress. Thus, if a LG received a low score, even negative, it does not mean that the LG is in real bad financial condition. Another limitation is that this model assumes that each ratio has equal weight, although Brown realizes that there is a ratio that is more important than other ratios.

The main draw back of the Brown’s model is that Brown does not explain the definition of LG financial condition or financial health. This result in a fundamental weakness in the model developed because the indicators are not developed based on a clear definition. This condition does not meet the criteria of face validity. Maher and Deller (2012) argue that several indicators included in assessing financial condition might not significant in
assessing the financial condition. The indicators include general fund sources from other funds divided by total general fund revenues, total general fund liabilities divided by total general fund revenues, and operating expenditures divided by total expenditures.

Furthermore, another weakness of Brown’s model is that the author does not establish key attributes or criteria as guidance in developing the measure as in case of the models developed by Kloha et al. (2005) and Wang et al. (2007). Brown does not provide an argument or explanation when determining the four basic factors and financial ratios for each financial factor. As a consequence, the determination of the four financial factors and the ratio seems arbitrary.

In addition, another weakness is that Brown does not explain the method to grade LGs into five conditions: among the best financial condition, better than most others, about average, worse than most others, and among the worst financial condition. Brown also does not test the accuracy of the cut off developed to grade LG financial condition. Thus, the grading method seems arbitrary and faces risk of type I or type II error. Moreover, Brown does not test validity (i.e. predictive, convergent and concurrent validities) and reliability of the ten ratios to assure that the all ratios together measure the same concept of the LG financial condition.

4. CONCLUSION

Table 4 concludes all models discussed above. The table provides a comparison of the previous models measuring the financial condition of local government, looking from the characteristics of a good measure. The table shows that there is no model that satisfies all the attributes of a good measure. The best model is that with has 5 attributes out of 9 attributes. The model belongs to Kloha et al. (2005). The rest of the models only meet 3 attributes of a good measure.

All attributes of reliability do not fulfilled by all models analyzed. The attribute of validity that is absent from all models reviewed is convergent validity. On the other hand, attributes of economy and convenience are always present in all the models. Therefore it can be summed up that attributes of reliability are those that are always “forgotten” in developing a measure of LG financial condition; and the attribute of practicality is most considered in developing such a measure.

The literature review shows that although scholars have attempted to build instruments to assess LG financial condition, there is no common understanding about definition, dimensions, and indicators to measure it. However, it is agreed that LGs need to have an instrument to assess the financial condition. The instrument will be act as an early warning system for LGs in order to detect financial distress so that LG can prevent the financial distress.

Despite efforts to develop measurement has been developed by researchers, weaknesses still occur. Several common weaknesses of the previous methods in measuring financial condition are:

1. Involving too many variables in measuring LG financial condition, creating very time consuming and costly for a LG and difficult to communicate the results to local government’s stakeholders.
2. Assuming that all dimensions or indicators have equal importance. In fact, certain dimensions or indicators are probably more important than others.
3. Utilizing non-financial indicator, instead of financial indicators to assess the financial condition of LG.
4. Dimensions and indicators are built not based on a clear definition of the financial condition of LG.
5. Do not test the validity and reliability of the measure.
6. Do not create a composite index to indicate the overall financial condition of LG.
7. Do not established key attributes or criteria as guidance in developing the measure.
8. Indicators do not appropriately measure what it intends to measure.

5. SUGGESTIONS FOR FUTURE RESEARCH

Future research should develop a new and a better measure of the financial condition of LG by adopting the strengths of the previous models and by addressing all those identified weaknesses of previous research. To overcome weaknesses of previous studies, the future research should sets up criteria for a good measure as stated by Cooper and Schindler (2011), which are reliable, valid, and practical. Such a measure should have attribute of reliability both in the dimension level and composite-level. The reliability of a measure is shown by the correlation between the indicators in the dimensions and the correlation between dimensions. The indicators and dimensions should be correlated to ensure that they assess a similar construct of the financial condition.

A good measure also have a characteristic of validity including face validity, predictive validity, convergent validity, and concurrent validity. Face validity is embedded when conceptualizing the definition of financial condition. Predictive validity is analyzed by calculating the correlation coefficient between the tested variable and the other variables associated with it. The concurrent validity of the measure is tested by categorizing local government into good, average and poor financial condition based on their financial condition index. Convergent validity refers to whether the test results from the instrument being built having the same variation as the other test instruments that theoretically should be similar.

Finally, a good measure should be practical, which is interpretability, economy, and convenience. The interpretability is achieved by creating a composite index to show the status of local government financial condition; economy is fulfilled by using publicly available data; and convenience is satisfied by using periodically released data.
REFERENCES


## APPENDIX

### Table 1: Fiscal Trend Monitoring System

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<td>Tax revenues (constant dollars)</td>
<td>(↓)</td>
</tr>
<tr>
<td></td>
<td>Uncollected property taxes</td>
<td></td>
<td>Uncollected property taxes</td>
<td>(↑)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Net property tax levy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>User charges coverage</td>
<td></td>
<td>Revenues from fees and user charges</td>
<td>(↓)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Expenditures for related services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revenue shortfalls or surplus</td>
<td></td>
<td>Revenues shortfalls or surpluses</td>
<td>(↑)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Net operating revenues</td>
<td></td>
</tr>
<tr>
<td><strong>2. Expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expenditures per capita</td>
<td></td>
<td>Net operating expenditures (constant dollars)</td>
<td>(↑)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Population</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expenditure by function</td>
<td></td>
<td>Operating expenditures for one function</td>
<td>(↑)</td>
</tr>
<tr>
<td>Employees per capita</td>
<td>Number of municipal employees</td>
<td>Total net operating expenditures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed costs</td>
<td>Fixed costs</td>
<td>Net operating expenditures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fringe benefits</td>
<td>Fringe benefit expenditures</td>
<td>Salaries and wages</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. Operating Position

<table>
<thead>
<tr>
<th>Operating deficit or surplus</th>
<th>General fund operating deficit or surplus</th>
<th>Net operating revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise operating position</td>
<td>Enterprise working capital or operating income (constant dollars)</td>
<td></td>
</tr>
<tr>
<td>Fund balances</td>
<td>Unreserved fund balances</td>
<td>Net operating revenues</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Cash and short-term investments</td>
<td>Current liabilities</td>
</tr>
</tbody>
</table>

### 4. Debt Structure

<table>
<thead>
<tr>
<th>Current liabilities</th>
<th>Current liabilities</th>
<th>Net operating revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term debt</td>
<td>Net direct bonded long-term debt</td>
<td>Assessed valuation, population, or personal income</td>
</tr>
<tr>
<td>Debt service</td>
<td>Net direct debt service</td>
<td>Net operating revenues</td>
</tr>
<tr>
<td>Overlapping debt</td>
<td>Long-term overlapping bonded debt</td>
<td>Assessed valuation</td>
</tr>
</tbody>
</table>

### 5. Unfunded Liabilities

<table>
<thead>
<tr>
<th>Pension obligations</th>
<th>Pension obligations</th>
<th>Salaries and wages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pension assets</strong></td>
<td><strong>Pension plan assets</strong></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual pension benefit paid</td>
<td></td>
</tr>
<tr>
<td>Post employment benefits</td>
<td>Total liability for post employment benefits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of municipal employees</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Condition of capital plant

<table>
<thead>
<tr>
<th>Maintenance efforts</th>
<th>Expenditures for repair and maintenance of general fixed assets (constant dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity of assets</td>
</tr>
<tr>
<td>Capital outlay</td>
<td>Capital outlay from operating funds</td>
</tr>
<tr>
<td></td>
<td>Net operating expenditures</td>
</tr>
</tbody>
</table>

### 7. Community needs and resources

<table>
<thead>
<tr>
<th>Population density</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jurisdiction area in square miles</td>
</tr>
<tr>
<td>Age (population under 18 and over 64)</td>
<td>Population under 18 or over 64</td>
</tr>
<tr>
<td></td>
<td>Population</td>
</tr>
<tr>
<td>Personal income per capita</td>
<td>Personal income (constant dollars)</td>
</tr>
<tr>
<td></td>
<td>Population</td>
</tr>
<tr>
<td>Poverty household or public assistance recipients</td>
<td>Poverty households or public assistance recipients</td>
</tr>
<tr>
<td></td>
<td>Households in thousands</td>
</tr>
<tr>
<td>Property value</td>
<td>Change in property value (constant dollars)</td>
</tr>
<tr>
<td></td>
<td>Property value in prior year (constant dollars)</td>
</tr>
<tr>
<td>Property of top 5 taxpayers</td>
<td>Assessed value for top five taxpayers</td>
</tr>
<tr>
<td></td>
<td>Total assessed valuation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Home ownership</th>
<th>Home ownership rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Indicator 1: Population growth</td>
<td>Two-year growth</td>
</tr>
<tr>
<td>Indicator 2: Real taxable value growth</td>
<td>Two-year growth</td>
</tr>
<tr>
<td>Indicator 3: Large real taxable value decrease</td>
<td>Looks for large drop over a two-year period</td>
</tr>
<tr>
<td>Indicator 4: General fund expenditures as a percentage of taxable value</td>
<td>Current general fund expenses divided by current taxable value</td>
</tr>
</tbody>
</table>

Adapted from Nollenberger et al. (2003)
Table 3: Brown’s 10-Point Ratios

<table>
<thead>
<tr>
<th>Financial Factors</th>
<th>Ratios</th>
<th>Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>Total revenues / population</td>
<td>A high ratio suggests a greater ability to acquire additional revenue&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Total general fund revenues from own sources / total general fund revenues</td>
<td>A high ratio suggests the local government is not reliant on external governmental organizations</td>
</tr>
<tr>
<td></td>
<td>General fund sources from other funds / total general fund sources</td>
<td>A low ratio suggests the local government does not have to rely on operating transfers to finance general government operations in the general fund</td>
</tr>
<tr>
<td>Expenditure</td>
<td>Operating expenditures / total expenditures</td>
<td>A low ratio suggests the infrastructure is being maintained adequately.</td>
</tr>
<tr>
<td>Operating Position</td>
<td>Total revenues / total expenditures</td>
<td>A high ratio suggests the local government experienced a positive interperiod equity.</td>
</tr>
<tr>
<td></td>
<td>Unreserved general fund balance / total general fund revenues</td>
<td>A high ratio suggests the presence of resource that can be used to overcome a temporary shortfall of revenue.</td>
</tr>
</tbody>
</table>

Source: Kloha, et al. (2005)
Ritonga, *Methods of Assessing Local Government Financial Condition:*

<table>
<thead>
<tr>
<th>Debt Structure</th>
<th>Total general fund liabilities / total general fund revenues</th>
<th>A low ratio suggests short-term obligations can be easily serviced by the normal flow of annual revenues.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct long-term debt / population</td>
<td>A low ratio suggests the local government has the ability to repay its general long-term debt.</td>
<td></td>
</tr>
<tr>
<td>Debt service/total revenues</td>
<td>A low ratio suggests the local government is able to pay its debt service requirements when due.</td>
<td></td>
</tr>
</tbody>
</table>

| Total general fund cash and investments / total general fund liabilities | A high ratio suggests sufficient cash with which to pay short-term obligations. |                                                                                                      |

Adapted from Brown (1993 and 1996)

*In 1996, Brown revised favourable condition for this ratio with a high ratio, rather than a low ratio.*

### Table 4: Comparison of Various Models Developing Measures of Financial Condition

<table>
<thead>
<tr>
<th>Attributes of good measure (Cooper &amp; Schindler, 2011)</th>
<th>FTMS</th>
<th>Brown</th>
<th>Kloha et al.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>Testing reliability of indicators forming a dimension</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Testing reliability of all indicators forming composite index of financial condition</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Validity</td>
<td>Face validity (i.e. providing definition of LG financial condition)</td>
<td>✓</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Predictive validity (i.e. testing the relationship with factors believed to be associated)</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Convergent validity (i.e. testing interrelatedness with existing factors that are theoretically related)</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Concurrent Validity (i.e. testing distinctive capability)</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Practicality</td>
<td>Interpretability (i.e compositing financial index)</td>
<td>n.a.</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Economy (i.e. using publicly available data)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Convenience (i.e. using periodically released data)</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>