Local Government Fiscal Health: Comparing Self-Assessments to Conventional Measures

March 2019

Stephanie Leiser
Gerald R. Ford School of Public Policy
University of Michigan
schmidts@umich.edu

Sarah Mills
Gerald R. Ford School of Public Policy
University of Michigan
sbmills@umich.edu
Abstract

Municipal fiscal condition is typically assessed using objective financial indicators, but little is understood about how local officials subjectively evaluate their own fiscal health. Using both qualitative and quantitative approaches to analyze survey data from Michigan, we explore how local officials conceptualize fiscal health and compare self-assessments with conventional financial indicators. The results reveal that local officials emphasize long-run issues and external stressors, but the relative importance of different factors varies depending on whether they report high or low fiscal stress. We suggest that self-assessments may be a useful supplement to conventional objective measures in capturing “true” fiscal health.
INTRODUCTION

In the wake of the Great Recession, many local governments experienced significant fiscal stress and—in the most extreme cases—filed for bankruptcy. Though interest in gauging municipal fiscal health dates back decades prior to the decline (Farmer 2014), the Great Recession amplified the call for a way to accurately and dynamically monitor municipal fiscal conditions, not just to assess their current status, but to provide early warning of impending fiscal crisis (The Pew Charitable Trusts 2016).

Most scholarly attention has focused on developing indicators and measurement systems using financial statement and other local economic data, with methodological emphases on objectivity and reliability. However, critiques of existing measurement systems have noted challenges of measurement error and non-availability of appropriate data (Clark 2015; Crosby and Robbins 2013), and researchers have struggled to converge on a set of indicators or measures that consistently predict local fiscal stress. Looking at the Venn diagram in Figure 1, this means that the region A + C is not as large as we would hope, and there appears to remain significant scope for improving the measurement of fiscal health.

[Figure 1 here]

In this paper, we explore the potential for using subjective survey-based data, derived from asking local government practitioners how they conceptualize and assess their own fiscal conditions, to improve our understanding of fiscal health. We argue that local officials, with their context-specific knowledge of local circumstances, may be in a good position to fill some of the gaps left by objective measures. We first examine qualitative data from open-ended questions that reveal how local government officials think about fiscal health and what underlying factors affect how healthy or stressed they perceive themselves to be. To our knowledge, this is the first
time such data has been examined in the literature. We find that local officials—especially those that rate their fiscal health worse—place the most emphasis on long-term issues, such as the need for infrastructure funding, and external stressors, such as lack of intergovernmental revenue. We also find that local governments reporting high vs. low stress tend to emphasize different factors in explaining their overall stress levels, suggesting that high stress and low stress are not just two ends of a continuum but rather two fundamentally different states.

Following the qualitative analysis, we examine quantitative survey data that asks local officials to rate their fiscal health/stress on a 1 to 10 scale. We compare these subjective scores with a limited set of objective indicators built from financial and economic data to assess their convergent validity—the extent to which they overlap (i.e., regions C + D in Figure 1). Strong associations between different measures is often evidence that they are measuring the same underlying concept (Adcock and Collier 2001). Consistent with Maher and Deller’s (2011, 2013) findings on local governments in Wisconsin, we do not find terribly strong associations between objective and subjective measures. However, the quantitative evidence does provide some additional support for the hypothesis derived from the qualitative analysis that local officials conceptualize low stress and high stress differently.

Subjective assessments from local officials have the potential to provide insight on the aspects of “true” fiscal health that elude objective measures (i.e., region B in Figure 1), especially regarding long-run spending and external pressures that are difficult to capture with existing data sources. Local officials also appear to make a conceptual distinction between low stress and high stress conditions, an issue researchers should explore further. Moreover, regardless of their contribution to our understanding of “true” fiscal health, it is nevertheless important to understand local officials’ perceptions on their own terms because local officials are
the ones managing day-to-day finances and making policy decisions. Understanding how local officials perceive and respond to fiscal stress is the first step toward working with them to improve local fiscal health.

MEASURING LOCAL GOVERNMENT FINANCIAL CONDITION

A local government’s financial condition can be concisely defined as its ability to meet financial and service obligations (Jacob and Hendrick 2013) and is frequently conceptualized as “a position on a spectrum of financial ‘wellness’” from imminent insolvency to perfect fiscal health (Gorina, Maher, and Joffe 2017, 3).¹ Researchers agree that financial condition is influenced by a complex combination of policy/management decisions, external environments, and institutional structures (Hendrick 2004; Honadle, Costa, and Cigler 2004). Financial condition is commonly divided into four sub-categories based on time horizon: cash, budgetary, service level, and long-run solvency (Groves, Valente, and Nollenberger 2003). Cash solvency focuses on a government’s ability to meet its obligations in the very near term, usually 60 to 90 days, while budget solvency focuses on the annual budget window. Service-level solvency reflects the ability to maintain quality and quantity of services over the intermediate term, and long-run solvency reflects the ability to meet all future obligations.

Much of the research on local government financial condition focuses on developing indicators and methodologies to measure financial condition using financial statement and economic data (Justice and Scorsone 2013). Familiar examples include Brown’s (1993) 10-point test, ICMA’s Financial Trend Monitoring System (Nollenberger, Groves, and Valente 2003),

¹ The terms financial or fiscal condition, solvency, health, and stress are all used relatively interchangeably in the literature, and they are used as synonyms in this paper.
Wang, Dennis, and Tu’s (2007) set of eleven indicators, and the Financial Condition Index (FCI) developed by Groves, Godsey, and Shulman (1981). Gorina, Maher, and Joffe (2017, 4) review the more recent innovations in financial condition metrics, noting that “there are as many empirical fiscal condition metrics as there are studies.” As they explain, despite the extensive development and use of financial metrics in academia and in practice, the research has not yet converged upon a preferred methodology for measuring local government financial condition. Indeed, it may not ever converge because evaluating financial condition is an inherently complex task. Justice and Scorsone (2013, 67) recommend the “incorporation of those indicators into a larger system of adaptive and case-specific investigation, judgment, and response.”

**Limitations of Objective Measures**

Criticisms of financial indicator systems examine the different ways that these objective measures fail to capture the full range of “true” fiscal health, creating opportunities where subjective measures might potentially shed additional light.

*Predictive validity.* The performance of objective indicators in predicting actual fiscal crisis—municipal bankruptcy—is mixed and shows room for improvement. Stone et al. (2015) examine 24 individual indicators as well as the State of Michigan’s 10-point test (Kloha, Weissert, and Kleine 2005) and find that four indicators showed clear signals of Detroit’s 2013 bankruptcy, while twelve showed consistent decline, and eight (including the 10-point test) showed no signals of fiscal crisis. Similarly, McDonald (2017) finds that while two index-style fiscal measures did not predict municipal bankruptcy, certain individual indicators were significant predictors.
Lack of data on long-term solvency challenges. Financial reporting for local governments has historically focused on short-term and budgetary information, neglecting long-term assets and liabilities (Mead 2013). As a result, there are few data points available to construct measures of long-term solvency. The Governmental Accounting Standards Board (GASB) has been working to improve and standardize financial reporting methods related to capital assets and unfunded pension and other post-employment benefit (OPEB) liabilities, but implementation of GASB statements can take several years, and the compilation of local data by states and others lags even further behind. Moreover, as Teras (2016) argues, the information on infrastructure assets in government financial statements is of limited use in assessing the need for future infrastructure maintenance and investment. Moreover, a majority of transportation funding comes from state and federal sources, adding another layer of uncertainty for local governments. Although future infrastructure needs loom large in the financial picture of local governments, standard financial data provide little insight.

Unquantifiable factors. Some aspects of financial health are not easily quantifiable, such as whether a local government has in place good financial management policies and adequate capacity to implement them (Bird 2014). Economic uncertainty and local political conditions are also likely to affect financial condition. For example, low levels of partisanship and high levels of trust and cooperation may make it easier for a government to agree on solutions to difficult financial problems.

Timing issues. Because financial condition indicators are based on financial statement and economic data, they are retrospective in orientation and often out-of-date (Marlowe 2015). On average, local government audited financial statements are not available until nearly six

---

2 See GASB Pronouncements 34 (1999), 67 and 68 (2012), and 74 and 75 (2015).
months after the end of the fiscal year (Truth in Accounting 2018), and there is a similar lag in the availability of most economic data. A related issue is that financial statement and economic data are usually only produced on an annual basis. This can be problematic for indicators with values that fluctuate over the course of a year, such as those using cash balance or unemployment rate, or for data that can change step-wise by large amounts, such as long-term debt.

*Ambiguous interpretation.* Another challenge with commonly-used indicators is that they do not allow for ambiguity in interpretation. For example, Justice and Scorsone (2013) note that high revenues per capita could be a sign of robust fiscal resources or it could be a sign that citizens are over-burdened. As another example, the relative size of the general fund unrestricted fund balance is a commonly-used indicator of cash solvency. However, local governments commonly move portions of the “unrestricted” fund balance into the “assigned” or “committed” categories as part of a rainy day fund strategy. Such a strategy might appear to diminish cash-solvency even though it is really unchanged.

*Subjective Self-Assessment*

Researchers generally point to the need for more nuanced, case-by-case analysis incorporating diverse sources of data and professional judgment to provide a holistic assessment of financial condition (Clark 2015; Bird 2014; Justice and Scorsone 2013; Hendrick 2011). For example, a recent study by Gorina, Maher, and Joffe (2017) constructs an action-based indicator of fiscal distress based on local governments’ displaying “distressed behaviors,” such as implementing employee furloughs, deferring capital projects, and failing to meet the annual required contribution (ARC) for pensions. They model this fiscal distress measure as a function of a set of
traditional objective indicators and find that while the overall explanatory power is rather low, indicators related to cash solvency, long-term solvency, and revenue composition were significant predictors of distressed behavior. In this spirit, another source of information on local financial condition is the subjective assessment of the people who work there. Local officials making decisions about whether to undertake distressed behaviors are presumably drawing on their own perceptions of their local government’s financial health.

Little research has been done about how local government officials conceptualize financial condition. One Governing Institute survey asked state and local policymakers which indicators they relied on the most, and 82 percent chose the general fund balance, while no other financial measure was chosen by more than 25 percent of respondents (Marlowe 2015). While this might suggest that policymakers focus on the short-term in assessing financial health, when asked about the biggest threats to financial health, three of the top six responses—infrastructure costs, pensions/OPEB, and debt—are long-term solvency issues. Similarly, a recent survey of California local government officials shows that five of the top seven fiscal “stress factors” were related to personnel costs: employee/retiree pensions, healthcare costs, and salaries (Goldberg and Neiman 2014). The other top stressors were external economic conditions—declines in property values and retail sales. Together, these surveys suggest that local officials take a multidimensional approach to assessing financial condition.

Maher and Deller (2011, 2013) investigate how consistent practitioners’ self-assessments of financial condition are with objective indicators using financial statements and survey data from local governments in Wisconsin. Maher and Deller (2011) use a set of objective indicators of financial condition and socioeconomic measures to predict the results of seven different survey questions posed to local officials about fiscal health. In general, they find only very
limited associations between objective indicators and certain subjective survey measures, with none of the objective indicators consistently predicting the self-assessment measures.

One limitation of Maher and Deller (2011)—and of the current study—is that it did not include objective indicators that used government-wide full accrual data, which includes long-term assets and liabilities and can be more useful in describing a holistic picture of fiscal health (Mead 2013). Maher and Deller (2013) address this problem and collect government-wide data for 72 Wisconsin counties in FY 2009. They calculate correlations between 15 objective indicators and 11 subjective indicators from a survey of county officials. Overall, of 165 total correlations, only 12 were statistically significant, and of 55 correlations with government-wide indicators, only four were significant (three of these were for financial position/cash solvency).

As Maher and Deller (2011) note, there are a few possible explanations for the lack of correspondence between objective and subjective measures of fiscal health. The first is that objective measures are closer to “true” fiscal health and local officials may have conscious or unconscious biases that influence their self-assessment. It is possible that those who chose to respond to the survey questions about fiscal stress had particularly strong feelings or wished to convey a message. For example, high stress governments may use the survey as an opportunity to call for policy change or financial help from the state and are probably less likely to admit to self-induced financial stress from poor decision-making. Unfortunately, it is difficult to detect this kind of strategic bias, just as it is difficult to detect other possible sources of bias in inherently subjective opinions, an obvious problem for the replicability and reliability of subjective measures.

Another possible explanation is that local officials are simply wrong and ill-equipped to assess fiscal health. We suggest that this is an unnecessarily pessimistic view because local
officials are uniquely positioned to shed light on areas where objective measures are known to fall short. Local officials usually have access to more up-to-date financial and economic information than is provided in their annual financial reports, and they may have understanding of unmeasured factors like management quality, institutional structures, and political environment. They may also have insight on aspects of financial condition where data is often sparse, such as future infrastructure needs or plans to address unfunded liabilities. And perhaps most importantly, they can account for the unique circumstances of their local governments that will affect how financial and economic data are interpreted and weighed in an assessment of overall financial condition. We believe it is possible that subjective measures add value to the task of discerning “true” fiscal health because they have the potential to shed light on aspects of fiscal condition that are poorly captured by objective measures.

MICHIGAN CONTEXT

This article explores the self-assessment of financial condition using data from Michigan, which has 1,856 general purpose local government units, including 83 counties, 280 cities, 253 villages, and 1,240 townships. Michigan has been called an “incubator of [local] fiscal distress” with an environment characterized by “stringent limitations on local revenue…relatively low level[s] of financial assistance to cities, coupled with spending pressures stemming from spiking local service burdens and increased labor costs” (Sapotichne et al. 2015, 3). Perhaps because local governments have such limited autonomy to manage their fiscal situations, the State has been particularly active in monitoring local fiscal conditions and has a relatively far-reaching—and frequently controversial—policy for intervention when a fiscal emergency is declared (Bosman and Davey 2016).
The State of Michigan first began monitoring local fiscal conditions using economic and financial indicators in 1990, and from 2006 to 2011, it used a 10-point pass/fail fiscal indicator scoring system based on a model developed by Kleine, Kloha, and Weissert (2003). In recent years, though, Michigan’s system has faced criticism. Crosby and Robbins (2013) review Michigan’s system and conclude that it fails to achieve its stated purpose of providing “objective, measurable, and straightforward information” concerning local fiscal health. Spreen and Cheek (2015) also find that Michigan’s monitoring of local governments had no impact on improving local fiscal outcomes. In fact, Michigan does not even rely on its own fiscal scoring system in determining the triggers for intervention under its emergency financial manager law.

The Michigan Public Policy Survey, conducted semi-annually by the Center for Local, State, and Urban Policy at the University of Michigan, is a census survey of general purpose local governments on various public policy issues, with local governmental fiscal policy covered each spring. In 2013, it introduced the Fiscal Stress Index as a subjective measure of fiscal condition. Respondents are asked to rate their fiscal health on a ten point scale where 1 = “perfect fiscal health” and 10 = “fiscal crisis.” In 2015, the Survey also included an open-ended question asking respondents, “What factor(s) were you thinking about when rating your jurisdiction’s overall fiscal stress?” This article uses these data to explore how local government

---

3 The unit of analysis for the survey is the local governmental unit, but the survey is sent to two officials in each jurisdiction including county administrators and board chairs; city mayors and managers; village presidents, clerks, and managers; and township supervisors, clerks, and managers. Only one response is included in this analysis, with the selection rules outlined in the codebook for each of the datasets, available online at http://closup.umich.edu/michigan-public-policy-survey/mpps-data-access.php.

4 Survey instruments for the Michigan Public Policy Survey are available online at http://closup.umich.edu/michigan-public-policy-survey/mpps-questionnaires.php. The Fiscal Stress Index was included as question number 36, 27, and 11, respectively, on the Spring 2013, 2014, and 2015 surveys. The open-ended question was number 12 on the Spring 2015 survey.
officials conceptualize fiscal condition and to compare subjective assessments with more traditional measures of financial condition.

METHODS AND DATA

This article uses a mixed-methods design, drawing on both qualitative and quantitative subjective assessments to capture a nuanced understanding of local officials’ conceptualizations of fiscal health and to test the strength of association between officials’ self-assessments and objective measures. Referring back to Figure 1, the goals of the analysis are to gain a greater understanding of subjective measures of fiscal health, including their convergent validity with objective measures (regions C + D), and to assess the potential for subjective measures to offer new insights into “true” fiscal health (region B). Since the data rely on survey responses, the sample is not a random sample, and the results cannot be generalized to all local governments in Michigan. Therefore, the analysis is intended to be exploratory and hypothesis-generating rather than confirmatory.

Qualitative Methods and Data

One way to understand how local government officials conceptualize fiscal condition is to ask them to express in their own words which factors they take into account when assessing their own jurisdiction. Of the 1,314 respondents to the 2015 survey who provided a numerical assessment of their fiscal stress, 897 (68 percent) answered an open-ended question to provide the rationale for their assessment. These responses varied greatly in their level of detail, ranging from a single word (e.g., “economy”) to 400+ word paragraphs and long bulleted lists.
Thematic coding of the responses was conducted manually by the author and a research assistant. We first jointly developed a codebook based upon a cursory read of all responses, noting any recurrent topics. These topics were subsequently organized into ten overarching themes. The research assistant reread and applied thematic codes to all responses, and the author then reviewed a random sample of responses to verify the codes were appropriately applied, and iteratively recoded until there were no errors in each additional random selection. In total, 1,684 codes were applied to the 897 comments, for a mean of 1.9 codes per respondent.

The ten themes identified in the open-ended responses were then mapped onto the four solvency categories from the literature discussed above. Two additional categories were created for codes which did not clearly fit into the framework. First, the fund balance category includes any responses that specifically mention “fund balance.” As Marlowe (2015) notes, fund balance is probably the most closely-watched number in local government finance and has implications across multiple solvency categories. For example, fund balance can be viewed as a source of emergency cash, and so would be associated with cash solvency. However, fund balance also fluctuates with budget surpluses/deficits, so it may also be related to budget solvency. Since it is not always clear which interpretation local officials have in mind, fund balance is assigned its own category. The other additional category combines four of the themes mentioned by local officials—trends in the local tax base, state fiscal policy, population, and the overall economy—which do not apply so much to a single solvency category, but rather provide an external context for fiscal conditions. Therefore, these are grouped together into an “external factors” category.

The content analysis considers which of these six categories—the four solvency categories plus fund balance and external factors—local officials say they took into account when assessing their fiscal condition.
Quantitative Methods and Data

The next part of the research design explores the extent to which subjective assessments are associated with commonly-used measures of financial condition. The goal is to identify objective factors that may be salient to local officials and that can predict variation in subjective measures. In other words, our focus is on predictive validity and co-variation, so the models are not designed for causal interpretation.

*Sample.* Data from the 2013-2015 Michigan Public Policy Surveys is merged with financial data reported by local governments to the State (F-65 Annual Local Unit Fiscal Report)\(^5\) and aggregated by Munetrix, a private fiscal transparency company. The sample includes all local governments that answered the Michigan Public Policy Survey question about fiscal stress in 2013, 2014, or 2015 and reported sufficient F-65 data to calculate the financial indicators described below, for a total sample size of 486 jurisdiction-years.\(^6\) Table 1 provides definitions and descriptive statistics for the sample.

![Table 1 here]

*Dependent variable.* The dependent variable is a subjective self-assessed measure of financial condition, the Fiscal Stress Index from the Michigan Public Policy Survey. Panel A of Figure 2 shows the distribution of scores in the sample, with a sample mean of 3.7. To illustrate

---

\(^5\) The financial data were inspected and cleaned to remove obvious errors.

\(^6\) With full reporting and participation, the sample size could in theory be up to 1,856 local governments * 3 years = 5,568. However, missingness is driven by two main factors. Response rates for the MPPS were 73 percent in 2013, 72 percent in 2014, and 72 percent in 2015, and not every respondent provided a FSI assessment. In addition, many governments provide incomplete F-65 information. As a result, the dataset has an unbalanced panel structure. Local governments excluded from the sample have slightly lower reported fiscal stress (mean = 3.42, versus 3.70) and are generally smaller townships with lower revenue and debt per capita. Because there may be a variety of reasons for survey non-response and/or F-65 non-reporting, both of these factors are possible sources of sample selection bias. Therefore, we cannot generalize our results beyond the sample itself. Nevertheless, since the aim of this research is exploratory rather than confirmatory, our results may be interpreted as suggestive of new hypotheses and lines of inquiry.
the gap between these subjective scores and an example of an objective score, we calculate
differences between Fiscal Stress Index scores and the 10-point index score initially created by
the State of Michigan and now tabulated by Munetrix. Panel B shows the distribution of these
differences. Most of the mass of the distribution is greater than zero, meaning that subjective
assessments typically report higher stress levels than objective scores. On average, the Fiscal
Stress Index is 2.25 points greater than the Munetrix score, suggesting some kind of systematic
disagreement between the two index-style measures.

[Figure 2 here]

Financial indicators. In order to cast as wide a net as possible, a comprehensive set of
financial indicators would need to be constructed based on prominent measures in the literature,
such as Wang, Dennis, and Tu’s (2007) solvency test. Unfortunately, the F-65 data include only
fund-level data and do not include government-wide full accrual numbers reflecting the
implementation of GASB 34, shortcomings that have been previously criticized by other
researchers (Crosby and Robbins 2013). Of the fund-level data it does include, there is a
significant amount of missingness in local government reporting, especially for funds other than
the general fund. To make the best possible use of the F-65 data, we chose the indicators that
maximized the sample size while still covering each of Groves, Valente, and Nollenberger’s
(2003) four sub-categories of solvency. All of the indicators are directly from or closely related
to indicators used by the State of Michigan, in Brown’s (1993) 10-point test or financial

The ten indicators include 1. Population loss, 2. Decline in taxable value, 3. Large (>4%) decline in taxable value,
4. GF expenditures > 5% taxable value, 5. 6. & 7. GF deficit > 1% revenue for current year, prior year, and two
years prior, 8. GF balance < 13% revenue, 9. Deficit in one or more major fund, 10. General LT-debt > 6% of
taxable value. Each time an indicator value exceeds the specified threshold, a point is earned, up to a maximum of
ten points. To ensure that the range of the Fiscal Stress Index and Munetrix scores is the same, all Munetrix zeroes
are recoded to one, reflecting the lowest level of fiscal stress in the Fiscal Stress Index.
condition ratios in Kioko and Marlowe (2016). Unless otherwise specified, all indicators relate to jurisdictions’ general funds.

Cash solvency is measured by the short-run financial position ratio, the size of the unassigned fund balance relative to total revenues, and is intended to measure how much of a “cushion” the government has for unforeseen expenses. Lower levels of this ratio are generally associated with greater fiscal stress. Budget solvency is measured using equity growth and operating margin, with negative values indicating fiscal stress. Another measure of budget solvency, the near-term solvency ratio, measures how large current liabilities are relative to revenue. A larger value for this ratio increases stress. Service-level solvency is measured in two ways. Revenues per capita serves as a proxy for the level of constituent service demand. In terms of fiscal stress, while greater revenues per capita may signal a more affluent community that has low fiscal stress and can afford more, it could also signal that the government is nearing its revenue capacity. Its relationship with fiscal stress, therefore, is ambiguous. The self-reliance ratio, also related to service-level solvency, measures the proportion of revenue from own-source taxes and fees versus intergovernmental grants. Greater self-reliance usually means the government has more flexibility to manage its finances, and therefore lower stress. Long-run solvency is measured by long-term debt per capita, with lower levels associated with lower stress.\(^8\)

*Controls.* Maher and Deller (2013) recommend controlling for survey respondent characteristics in future studies of subjective fiscal health. Therefore, the data also include variables for whether the respondent was elected or appointed, their political

---

\(^8\) While the F-65 form has spaces to allow governments to report the values of other long-term assets and liabilities, including capital assets, unfunded pension, and unfunded OPEB liabilities, few governments actually do. Including these variables in our analysis would reduce the sample size too much for statistical analysis.
affiliation/preference, and the number of years in current position, as well as the type of
jurisdiction. External economic conditions also affect financial condition, especially in terms of
service-level and long-term solvency. Variables for population, median age, percent white,
educational attainment, unemployment rate, median income, and taxable value per capita control
for the community’s demographics and economic conditions.

Models. Maximum likelihood models are estimated using ordered logit with year
dummies and errors clustered at the government level. ⁹

RESULTS

Qualitative Results

Main results. In justifying their self-assessment of their jurisdiction’s fiscal condition,
local officials point less often to indicators found in their current financial statements—cash on
hand, general fund balance, or whether they are running a deficit or surplus—and much more
commonly to future expenses and external factors affecting their municipal budgets.

As shown in table 2, just under half (49 percent) of respondents point to indicators of
long-run solvency when explaining their jurisdiction’s fiscal condition. Roughly one third of
these comments classified as long-run solvency are about the jurisdiction’s level of debt. Some,
like Respondent 422, explained their fiscal stress score by simply writing “No debt.” The
remaining two-thirds of the comments classified as long-run solvency are about the state of their
jurisdiction’s infrastructure, many of them lamenting an inability to devote current resources to
maintain infrastructure. For example, “The amount that needs to be spent on maintaining roads

⁹ To account for the possibility of unobserved heterogeneity, diagnostic test results indicate that including a random
effects parameter does not significantly improve the fit of the model. The fixed effects model is problematic because
it requires at least two observations for each local government. However, only 52 of 486 observations are for
repeated observations of the same local government.
but hasn't been [spent] because of lack of funds (Respondent 668),” or “There has been no upkeep on township property for over 25 years (Respondent 767).” Some of these respondents, even while assessing their fiscal stress as relatively low, note that past infrastructure disinvestment may cause fiscal challenges in the future: “the Village is financially healthy for the reason that not much has been spent for capital improvements…. The Village will need millions of dollars to repair roads and infrastructure, with hundreds of thousands in the bank (Respondent 58).”

The next most common category of comments, which were mentioned by 39 percent of respondents, include a range of external factors. Most common in this category were comments about property values and the size of the tax base, with respondents noting positive impacts—“Growth of values on home sales as we are entirely residential (Respondent 231)” and negative impacts—“We have lost tax base through demolitions (Respondent 474).” This category also includes 163 comments about state fiscal policy. While some noted either increases (e.g., Respondent 532) or decreases (e.g., Respondent 164) in state revenue sharing for their jurisdiction, more common was concern about the State Legislature’s power over a full range of policies that constrain local government finances. Respondent 447 summed up many of these concerns: “Our concerns for financial stability center primarily on actions that may be taken by the State Legislature. Reduction in revenue sharing, increase in unfunded mandates, additional property tax exemptions and business tax credits, and uncertainty in the road repair funding could have a significant effect on our ability to operate.”

Just less than a third (30 percent) of respondents gave a rationale for their fiscal condition self-assessment that related to service-level solvency. These included both their “Ability to fund needed public services (Respondent 31),” but also concerns over rising costs to provide the same
level of services, for example, “Cost of public safety which continues to rise as well as the cost of health insurances (Respondent 125).” Relatively few respondents mentioned issues explicitly dealing with budgetary solvency (20 percent), fund balance (ten percent), or cash solvency (three percent).

[Table 2 here]

*Stratified by fiscal score.* One hypothesis is that local officials may be focusing on different aspects of their financial or economic environments depending on whether they believe their fiscal stress level is high or low. To investigate this possibility, table 2 separates responses into jurisdictions in low fiscal stress (i.e., those who gave themselves a Fiscal Stress Index score between 1 and 4) and those in higher stress (with Fiscal Stress Index scores between 5 and 10).  

The results show that while the rank order of mentions of each of the solvency categories is the same (e.g., both groups mention long-run solvency most often and cash solvency least often), local officials who believe their jurisdiction is currently experiencing low stress more frequently point to their fund balance than do officials who self-rate as being in medium or high stress. Those in low stress also mention their budget or budget policies (e.g., Respondent 349 said they are “living within our means”) twice as often as those with higher Fiscal Stress Index scores.

By contrast, local officials who believe their jurisdiction is in medium or high fiscal stress more frequently point to long-run solvency and external factors as justification. These jurisdictions are significantly more apt to blame deferred maintenance and external factors such as the regional economy or state policy. In general it appears that jurisdictions that report high levels of fiscal stress focus much more on chronic, difficult-to-control (and difficult-to-measure)

---

10 This cut point corresponds with the empirically-determined cut point in the quantitative analysis. It also corresponds with Munetrix’s definition of low stress as scores of 4 or less. Given the small number of jurisdictions (71) who self-identified as being in high stress (what Munetrix defines as scores of 7-10), the medium and high-stress jurisdictions are combined.
issues while jurisdictions that report lower levels of stress focus more on short-term budget balancing and fund balance maintenance.

Quantitative Results

Main results. The first columns in table 3 report results for the ordered logit model showing factors associated with self-reported fiscal stress among all jurisdictions in the sample. Coefficients are reported as odds ratios, with values greater (less) than one associated with increases (decreases) in the odds of moving up a point on the Fiscal Stress Index. Recall that these results should be interpreted in terms of predictive validity, and no causal relationships are implied.

Of the seven financial indicators, four are significantly associated with self-assessed fiscal stress, but only three of the relationships are in the expected direction. As expected, improved short-run financial position (cash solvency) and greater revenue self-reliance (service-level solvency) predicts lower reported fiscal stress, while increased debt per capita (long-term solvency) predicts higher reported fiscal stress. Surprisingly, larger values for near-term solvency (liabilities/revenue, budget solvency) are associated with lower reported fiscal stress, but this finding may be anomalous given the qualitative finding that governments tend not to place much emphasis on current liabilities. Taking a closer look at the odds ratio estimates, a ten percentage point increase in short-run financial position decreases the odds of moving up a point

1 To address concerns of multicollinearity, variance inflation factors (VIFs) were calculated. None of the VIFs exceeded acceptable levels (2.5) for the financial indicator variables.
on the Fiscal Stress Index by about six percent, a ten percentage point increase in the self-reliance ratio decreases the odds of moving up on the index by about eight percent, and a $100 increase in debt per capita increases the odds of moving up on the index by 1.7%, all else equal.

To give a more understandable example using predicted probabilities and marginal effects, consider a local government in relatively poor health with a low short-run financial position ratio (ten percent), a low self-reliance ratio (50%), and relatively high debt per capita ($800), with other variables held at their means. This local government has a 50.0% chance of having a Fiscal Stress Index score of five or greater. With an improvement in the short-run financial position ratio from ten percent to 25%, holding everything else constant, that probability falls to 46.4%. With an improvement in the self-reliance ratio from 50% to 80%, the probability falls to 37.9%, and with a reduction in debt per capita from $800 to $400, the probability falls to 48.5%. If all three variables improve, the probability of having a Fiscal Stress Index score of five or greater falls to 33.2%. Still, a one in three chance seems somewhat high for a local government that has relatively healthy scores on fiscal indicators, suggesting that there are unmeasured factors adding to the perception of fiscal stress. In general, these findings are consistent with the qualitative findings, but they are not able to replicate the relative emphasis on long-term solvency found in survey responses because there is only one indicator related to long-term solvency.

Of the respondent characteristics, only partisanship is significantly associated with fiscal scores. Both Republicans and Democrats (even more so) report lower fiscal stress than Independents. Consistent with qualitative results, three of the six external factors are

---

12 A one unit change would be associated with a \((0.382 - 1) \times 100 = -61.8\%\) change in odds. We divide this by ten to reflect a more realistic change in the short-run financial position ratio. The calculations are similar for other odds ratios.
significantly associated with fiscal stress scores. Local governments that have larger, whiter populations, and greater taxable value per capita report lower fiscal stress. For example, a one percent increase in taxable value per capita reduces the odds of moving up a point on the Fiscal Stress Index by 38%. This result is consistent with the qualitative finding that 31% of local governments cite tax base concerns in explaining their level of fiscal stress.

Stratified by fiscal score. One hypothesis suggested by the qualitative analysis is that high and low stress governments focus on different aspects of fiscal condition, implying that the association between a given predictor and the Fiscal Stress Index may be different depending on the value of the Fiscal Stress Index itself. In methodological terms, this constitutes a violation of a key assumption of the ordinal logit model—the proportional odds assumption—possibly resulting in biased model estimates. Indeed, a likelihood ratio test suggests that the proportional odds assumption is very likely violated (p = 0.07) in the full model. We attempt to split the sample in such a way that the proportional odds assumption is met for each subsample. This requirement is met when the sample is split between Fiscal Stress Index Scores of 4 and 5, suggesting that there is an empirical distinction between governments reporting low stress (1–4) and those reporting high stress (5–10). Table 3 reports ordered logit model estimates for these two groups.

The results for low stress governments are consistent with those of the full sample, albeit with fewer significant findings—likely attributable to the smaller N. Partisan identification, as well as larger short-run financial position and near-term solvency ratios, are associated with lower fiscal stress, controlling for other factors. The circumstances of higher stress are more difficult to understand. Only one variable, the unemployment rate, is significantly associated

---

13 When the sample is split between 3 and 4, the high stress subsample (FSI 4-10) fails the proportional odds test. When the sample is split between 5 and 6, both subsamples fail the test.
with the Fiscal Stress Index. However, a likelihood ratio test shows that the model as a whole is not a statistically significant improvement over a null model with no predictors. Part of the reason may be that the sample size is so small ($N = 157$), but it is also consistent with the qualitative findings that higher stress governments place more emphasis on difficult-to-measure long-run solvency concerns. Together, the qualitative and quantitative findings shed doubt on the assumption that low stress and high stress are two ends of a continuum and raise the possibility that they are two fundamentally different states.

**DISCUSSION AND CONCLUSION**

Overall, the findings of these analyses suggest that local governments’ subjective beliefs about their financial condition are mainly shaped by long-term issues and external stressors, but are not strongly associated with objective measures and data sources. Qualitative evidence shows that local officials cite looming infrastructure expenses, personnel/retiree-related expenses, and tax base concerns among the most important drivers of fiscal stress. In general, the quantitative evidence corroborates the qualitative findings, showing that subjective reports of fiscal stress are associated with certain objective indicators, as well as external factors. The significance of four out of seven financial indicators shows that there is some convergent validity between objective and subjective measures of fiscal health, giving us confidence that those four indicators capture aspects of “true” fiscal health (Figure 1, region C). However, the quantitative analysis also shows that even a government with relatively healthy scores on the objective indicators still has about a one in three chance of reporting a Fiscal Stress Index of five or higher, suggesting that the model does not capture significant sources of perceived stress.
Another important finding is that the difference between low stress and high stress may be more of a difference of kind than of degree. Qualitative findings suggest that relative to lower stress governments, high stress governments place more emphasis on external and long run factors and less emphasis on fund balance and budget solvency. In the quantitative high stress subsample, traditional indicators have no statistically significant explanatory power. While this may simply be attributable to a small sample size, it leaves open the possibility that higher stress does not consist simply of worse scores on conventional indicators but rather that local officials are influenced by other unmeasured factors. Existing indicators may help differentiate between different shades of health for low stress communities, but additional data sources—such as survey- or interview-based self-assessments—may help discern whether communities with higher stress are facing a short-term hardship or nearing fiscal crisis. Future research is needed to clarify the distinction between low stress and high stress conditions for local governments.

In general, the results suggest that there may be significant scope for subjective measures of fiscal health to contribute to a better understanding of “true” fiscal health (Figure 1, region B). Local government officials are ideally positioned to provide the type of forward-looking context-specific knowledge about local economic conditions, future spending needs, politics, management quality, and other factors that can influence the fiscal health of a community. For example, local officials will likely have the best available information about local road conditions because they are the ones who maintain and repair the roads, hear citizen complaints, and drive on the roads every day. They may also have insights about the future plans of local businesses and about how local economic conditions could affect their tax bases. In our sample, respondents had an average tenure of over eight years, a significant amount of time to acquire relevant community-specific knowledge.
Of course, subjective data is susceptible to problems of reliability and intentional or unintentional bias, and states and researchers should pay special attention to these limitations when designing survey instruments. Respondents may have incentives to over-state or under-state (or not report at all) their levels of stress depending on whether they expect possible assistance or punitive action by the state. As a practical matter, it may actually be useful if local officials over-state their levels of stress because it may result in more false positives (Type I error) for detecting fiscal stress, contributing to the goal of early warning of fiscal crisis (The Pew Charitable Trusts 2016). Reliance on only financial and economic indicators, especially without full-accrual government-wide data, likely puts current evaluation systems at risk of more false negatives (Type II errors), failing to detect worsening fiscal stress, as in the case of certain indicators prior to Detroit’s bankruptcy (Stone et al. 2015). Moreover, with the lag in availability of audited financial data after the end of the fiscal year, current evaluation systems may lose precious time in detecting local fiscal distress. If the goal is to intervene before fiscal stress becomes a crisis, then it would seem advantageous to design a system that errs on the side of false positives.

Even if one disagrees that subjective self-assessments of fiscal stress add any explanatory value to the diagnosis of fiscal health, it is still important to understand how local government officials perceive fiscal health if only so we can understand why they make financial and policy choices and work with them to improve decision-making. As Maher and Deller (2011, 475) have pointed out, local officials are making “some very difficult decisions, apparently with very little help from academic research.” With the fiscal future of local governments highly uncertain, both practitioners and scholars will need to cooperate to measure and promote local government financial health.
REFERENCES


FIGURE 1
Measures of Fiscal Health/Stress
FIGURE 2
Panel A

Distribution of Fiscal Stress Index Scores

Panel B

Difference Between Fiscal Stress Index and Munetrix Score
# TABLE 1

Variable Definitions, Descriptive Statistics, and Data Sources

<table>
<thead>
<tr>
<th>Type</th>
<th>Variable</th>
<th>Definition</th>
<th>Source</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Correlation with FSI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td>Fiscal Stress Index (FSI)</td>
<td>Overall fiscal health today 1=perfect fiscal health,…10=fiscal crisis</td>
<td>MPPS</td>
<td>3.695</td>
<td>1.833</td>
<td></td>
</tr>
<tr>
<td><strong>Respondent Characteristics</strong></td>
<td>Appointed</td>
<td>1 = respondent is elected, 2 = respondent is appointed</td>
<td>MPPS</td>
<td>1.340</td>
<td>0.474</td>
<td>0.148 ***</td>
</tr>
<tr>
<td></td>
<td>Republican</td>
<td>1 = respondent is Republican (base category = Independent)</td>
<td>MPPS</td>
<td>0.549</td>
<td>0.498</td>
<td>-0.076 *</td>
</tr>
<tr>
<td></td>
<td>Democrat</td>
<td>1 = respondent is Democrat (base category = Independent)</td>
<td>MPPS</td>
<td>0.251</td>
<td>0.434</td>
<td>-0.064</td>
</tr>
<tr>
<td></td>
<td>Tenure</td>
<td>Years in current position</td>
<td>MPPS</td>
<td>8.403</td>
<td>8.016</td>
<td>-0.106 **</td>
</tr>
<tr>
<td><strong>External/Economic Factors</strong></td>
<td>Population</td>
<td>Population in thousands</td>
<td>Census 5-yr ACS</td>
<td>21,297.55</td>
<td>86,059.88</td>
<td>-0.104 **</td>
</tr>
<tr>
<td></td>
<td>Median age</td>
<td>Median age</td>
<td>Census 5-yr ACS</td>
<td>42.926</td>
<td>7.737</td>
<td>-0.073</td>
</tr>
<tr>
<td></td>
<td>Percent white</td>
<td>Percentage of residents that are white</td>
<td>Census 5-yr ACS</td>
<td>90.719</td>
<td>11.452</td>
<td>-0.128 ***</td>
</tr>
<tr>
<td></td>
<td>Percent college</td>
<td>Percentage of residents with at least Bachelor’s Degree</td>
<td>Census 5-yr ACS</td>
<td>23.409</td>
<td>13.880</td>
<td>-0.198 ***</td>
</tr>
<tr>
<td></td>
<td>Unemployment rate</td>
<td>Unemployment rate (civilian population)</td>
<td>Census 5-yr ACS</td>
<td>9.825</td>
<td>4.332</td>
<td>0.166 ***</td>
</tr>
<tr>
<td></td>
<td>Median income ($1,000)</td>
<td>Median household income</td>
<td>Census 5-yr ACS</td>
<td>48.498</td>
<td>16.887</td>
<td>-0.243 ***</td>
</tr>
<tr>
<td></td>
<td>TV per capita ($1,000)</td>
<td>Taxable value / Population in $thousands</td>
<td>Munetrix</td>
<td>47.053</td>
<td>63.701</td>
<td>-0.192 ***</td>
</tr>
<tr>
<td><strong>Financial Indicators</strong></td>
<td>Munetrix</td>
<td>10-point index scale of fiscal distress</td>
<td>Munetrix</td>
<td>1.442</td>
<td>0.940</td>
<td>0.207 ***</td>
</tr>
<tr>
<td>Cash Solvency</td>
<td>Short-run financial position</td>
<td>Unassigned fund balance / Total revenue</td>
<td>F-65 (Munetrix)</td>
<td>0.656</td>
<td>0.542</td>
<td>-0.221 ***</td>
</tr>
<tr>
<td>Budget Solvency</td>
<td>Equity growth</td>
<td>One-year percent change in total fund balance</td>
<td>F-65 (Munetrix)</td>
<td>0.033</td>
<td>0.300</td>
<td>0.117 **</td>
</tr>
<tr>
<td></td>
<td>Operating margin</td>
<td>(Total revenue - Total expenditures) / Total revenue</td>
<td>F-65 (Munetrix)</td>
<td>0.024</td>
<td>0.198</td>
<td>0.039</td>
</tr>
<tr>
<td></td>
<td>Near-term solvency</td>
<td>(Total liabilities - deferred revenue) / Total revenue</td>
<td>F-65 (Munetrix)</td>
<td>0.077</td>
<td>0.187</td>
<td>-0.033</td>
</tr>
<tr>
<td>Service-Level Solvency</td>
<td>Revenue per capita ($1,000)</td>
<td>Total revenue / Population in $thousands</td>
<td>F-65 (Munetrix)</td>
<td>0.492</td>
<td>0.651</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>Self-reliance</td>
<td>Own-source revenue / Total revenue</td>
<td>F-65 (Munetrix)</td>
<td>0.700</td>
<td>0.170</td>
<td>0.001</td>
</tr>
<tr>
<td>Long-term Solvency</td>
<td>Debt per capita ($1,000)</td>
<td>Long-term debt / Population in $thousands</td>
<td>F-65 (Munetrix)</td>
<td>0.420</td>
<td>0.905</td>
<td>0.052</td>
</tr>
</tbody>
</table>

Notes: N = 486 jurisdiction-years, including 123 from cities, 59 from counties, 238 from townships, and 66 from villages.

* p < 0.10, ** p < 0.05, *** p < 0.01
TABLE 2
Open-ended Comments By Solvency Category for Low and Medium/High Stress Units

Table shows percentage of respondents answering each theme

<table>
<thead>
<tr>
<th>Solvency Category Qualitative Analysis Themes</th>
<th>All units</th>
<th>Low Stress units (FSI 1-4)</th>
<th>Medium/High Stress units (FSI 5-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash solvency</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Cash flow / Ability to pay bills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgetary solvency</td>
<td>20</td>
<td>24</td>
<td>13 ***</td>
</tr>
<tr>
<td>Budgeting (policies, living within means)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service-level solvency</td>
<td>30</td>
<td>29</td>
<td>34 *</td>
</tr>
<tr>
<td>Other expenses (public safety, employee wages/benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-run solvency</td>
<td>49</td>
<td>47</td>
<td>59 ***</td>
</tr>
<tr>
<td>Infrastructure (roads, water/sewer, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt (levels, retiree legacy costs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fund Balance</td>
<td>10</td>
<td>13</td>
<td>6 **</td>
</tr>
<tr>
<td>General fund balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;External factors&quot;</td>
<td>39</td>
<td>38</td>
<td>46 **</td>
</tr>
<tr>
<td>Tax base (land values, diversity of tax base, tax appeals)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State fiscal policy (funding structure, transfers, mandates)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population (number of residents, businesses)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall economy (e.g., employment rates, housing market, business/job growth)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N: 866 596 270

Notes: When broken out by stress categories, N does not sum to 897 since some officials answered the open-ended question but did not provide a numerical fiscal stress score
* p < 0.10, ** p < 0.05, *** p < 0.01; test of proportions (Z-test)
# TABLE 3

Factors Associated with Fiscal Stress Index Scores: Results from Ordered Logit Models

<table>
<thead>
<tr>
<th></th>
<th>Entire Sample</th>
<th>Fiscal Stress Index 1-4</th>
<th>Fiscal Stress Index 5-10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio</td>
<td>Std. Error</td>
<td>Odds ratio</td>
</tr>
<tr>
<td>Appointed</td>
<td>1.164</td>
<td>0.230</td>
<td>1.560</td>
</tr>
<tr>
<td>Republican</td>
<td>0.529 ***</td>
<td>0.112</td>
<td>0.455 **</td>
</tr>
<tr>
<td>Democrat</td>
<td>0.323 ***</td>
<td>0.086</td>
<td>0.214 ***</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.985</td>
<td>0.010</td>
<td>0.993</td>
</tr>
<tr>
<td>City</td>
<td>1.348</td>
<td>0.427</td>
<td>0.873</td>
</tr>
<tr>
<td>County</td>
<td>1.935</td>
<td>0.804</td>
<td>1.339</td>
</tr>
<tr>
<td>Village</td>
<td>1.311</td>
<td>0.447</td>
<td>1.802</td>
</tr>
<tr>
<td>Population (ln)</td>
<td>0.761 **</td>
<td>0.090</td>
<td>0.860</td>
</tr>
<tr>
<td>Median age</td>
<td>1.015</td>
<td>0.017</td>
<td>1.021</td>
</tr>
<tr>
<td>Percent white</td>
<td>0.978 ***</td>
<td>0.008</td>
<td>0.993</td>
</tr>
<tr>
<td>Percent college</td>
<td>1.003</td>
<td>0.010</td>
<td>1.005</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>0.998</td>
<td>0.023</td>
<td>0.995</td>
</tr>
<tr>
<td>Median income ($1,000)</td>
<td>0.988</td>
<td>0.008</td>
<td>0.988</td>
</tr>
<tr>
<td>TV per capita (ln)</td>
<td>0.619 **</td>
<td>0.116</td>
<td>0.689</td>
</tr>
<tr>
<td>Short-run financial position</td>
<td>0.382 ***</td>
<td>0.091</td>
<td>0.482 ***</td>
</tr>
<tr>
<td>Equity growth</td>
<td>1.379</td>
<td>0.337</td>
<td>0.701</td>
</tr>
<tr>
<td>Operating margin</td>
<td>1.602</td>
<td>0.557</td>
<td>2.390</td>
</tr>
<tr>
<td>Near-term solvency</td>
<td>0.523 **</td>
<td>0.162</td>
<td>0.353 ***</td>
</tr>
<tr>
<td>Revenue per capita ($1,000)</td>
<td>0.895</td>
<td>0.090</td>
<td>0.950</td>
</tr>
<tr>
<td>Self reliance</td>
<td>0.193 *</td>
<td>0.170</td>
<td>1.555</td>
</tr>
<tr>
<td>Debt per capita ($1,000)</td>
<td>1.169 **</td>
<td>0.078</td>
<td>1.014</td>
</tr>
<tr>
<td>N</td>
<td>486</td>
<td>329</td>
<td></td>
</tr>
<tr>
<td>Chi-sq</td>
<td>134.760</td>
<td>84.500</td>
<td></td>
</tr>
<tr>
<td>Prob &gt; Chi-sq</td>
<td>0.00000</td>
<td>0.00000</td>
<td></td>
</tr>
<tr>
<td>Pseudo R-squared</td>
<td>0.0702</td>
<td>0.0794</td>
<td></td>
</tr>
</tbody>
</table>

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01; year fixed effects; cluster-robust standard errors