

Assessing State Fiscal Sustainability

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Abstract: States face an ongoing challenge to meet their financial obligations. Average state debt, especially unfunded pension benefits, has grown significantly over the past decade and many states face structural issues that make meeting these obligations difficult. Past research has attempted to establish a consistent set of basic indicators to evaluate individual state performance, to better understand the factors that drive changes in performance, and to identify areas where financial reporting may improve. This paper builds on this literature by discussing a holistic approach to assessing state fiscal sustainability. Assessing the sustainability of a state's finances requires: (1) looking at its financial metrics, (2) factoring in the soundness of reporting requirements, (3) supplementing analysis with economic data and other external measures, (4) pairing the metrics with their institutional context, and (5) bringing everything together with case studies. I briefly discuss each step with a special emphasis on step 1 where I test for the validity and reliability of the Fiscal Condition Index (FCI). The FCI can be used to look for red flags in financial performance across the states and for monitoring performance over time, however, it has its limitations. Due to shortcomings of financial reporting standards and the inability to directly incorporate the role of institutions, the FCI should not be the final say in assessing fiscal sustainability. I conclude with recommendations for researchers and policymakers to consider the full fiscal, economic, and institutional context when assessing each state's fiscal performance before providing recommendations for reform.

The financial crisis of 2008 hit many states and municipalities across the country hard. Most states recovered by 2016 when it came to their operating ratios - their ability to match revenues with expenses - but this hardly masks the underlying fiscal problems that many states still face.¹ Long-term liabilities and debt obligations continue to rise.² And the reliance on a thriving economy to help public finances get through tough financial times is an excuse that states can't reasonably rely on. This is especially true with the spread of COVID-19 in 2020 and the destabilizing impact it has had on the global economy. Even when it looks like the market is going to turn around soon, relying on economic progress to carry a state government forward is not a sustainable approach to managing public coffers. The key to sustainable fiscal policy is an eye for understanding the current fiscal environment as well as future risks and contingencies.

The new fiscal environment we find ourselves in only further emphasizes the importance of sustainability. Although it is too soon to know the full extent of the COVID-19 pandemic's

¹ Norcross, Eileen and Olivia Gonzalez, "State Fiscal Rankings," Mercatus Center Research Paper, October 9, 2018. <https://www.mercatus.org/publications/urban-economics/state-fiscal-rankings>

² Ibid.

impact, experience thus far shows that it could be the greatest shock to the U.S. economy in nearly a century.³ There is growing evidence that many states and localities have been experiencing severe fiscal stress due to declines in tax revenues and an increased demand for public services.⁴ These developments raise serious concerns about the ability for governments to not only respond to the coronavirus, but to meet their ongoing financial obligations.

The severity of the COVID-19 pandemic may be unprecedented, but the fiscal recovery will at least in some part depend on the policy approaches of governmental officials. Following the initial outbreak in Spring 2020, policy responses ran the gamut - ranging from tapping into emergency or rainy day funds, limiting discretionary spending as much as possible, to extending tax filing deadlines or delaying budgets altogether.⁵ As these responses clearly demonstrate, the current fiscal environment that state and localities find themselves is austere.

The small sliver of good news, however, is that the issue of fiscal sustainability is not new; there are lessons to be learned from past experiences of public officials and from research on fiscal health. If anything, the pandemic has provided a wake-up call for governments to rethink and reform their approaches to fiscal sustainability.⁶ It's drawing attention to the importance of addressing your long-standing issues even before an emergency hits. The experiences we can look to for lessons may be less severe than the current public health crisis, but principles of sound public finance emerge and persist despite this.

There are many different approaches to reforms and research aimed at improving the sustainability of governments, but they exist separately in different strands of literature and are often piecemeal in nature; not taking the combined importance of a state's budget, entire

³ Buckley, Patricia, "U.S. Policy Response to COVID-19 Aims to Set the Stage for Recovery," Deloitte Insights, April 8, 2020. <https://www2.deloitte.com/us/en/insights/economy/covid-19/evolution-and-policy-response-to-the-covid-19-crisis.html>; McKinsey Global Institute, "Beyond Coronavirus: The Path to the Next Normal," March 23, 2020. <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/beyond-coronavirus-the-path-to-the-next-normal>; White, Kathryn, "State Fiscal Outlook: Pre- & Post-COVID-19," National Association of State Budget Officers, June 25, 2020. For the initial perception of the pandemic's magnitude for municipal governments, see: Maher, Craig, Trang Hoang, and Anne Hindery, "Fiscal Responses to COVID-19: Evidence from Local Governments and Nonprofits," *Public Administration Review*, 2020.

⁴ McDonald, Bruce D. III, and Sarah E. Larson, "Implications of the Coronavirus on Sales Tax Revenue and Local Government Fiscal Health," *Journal of Public and Nonprofit Affairs*, July 22, 2020.; Coronavirus (COVID-19): Revised State Revenue Projections, National Conference of State Legislatures, August 14, 2020.; McNichol, Elizabeth and Michael Leachman, "States Continue to Face Large Shortfalls Due to COVID-19 Effects," Center for Budget and Policy Priorities, July 7, 2020.; Pandemic Budget Crunch Could Force States to Slash Social Services, Education, Police Budgets, and More, Peter G. Foundation, July 1, 2020.; Governors' 2020 Priorities in Their Own Words, The PEW Charitable Trusts, June 25, 2020.; Larson, Sarah E. and Bruce D. McDonald, III, "When the Beaches Close: Impact of COVID-19 upon County Fiscal Health in Florida," SSRN, May 6, 2020.

⁵ Loughead, Katherine et al., "Tracking State Legislative Responses to COVID-19," Tax Foundation.; National Conference of State Legislatures, "State Fiscal Responses to Coronavirus (COVID-19)," June 30, 2020.; Fiedler, Matthew and Willson Powell II, "States will need more fiscal relief. Policymakers should make that happen automatically," Brookings Institute, April 2, 2020.;

⁶ Maher and Hindery (2020) also make this point.

accounting of their finances, as well as the institutions and context of their financial metrics. In this chapter, I set out to outline a holistic approach to assessing state fiscal sustainability that takes these all into consideration.

Assessing a state's fiscal sustainability can be complex, but it is fairly straightforward when breaking it down analytically in the following way. It is helpful to break it down into a step by step approach:

1. Start with the metrics
2. Factor in the soundness of reporting requirements
3. Supplement analysis with economic data and other external measures
4. Pair the metrics with their institutional context
5. Bring everything to life with case studies

Steps 1 through 3 explore the quantitative measures of fiscal sustainability, while steps 4 and 5 emphasize qualitative measures. Robust fiscal analysis comprehensively takes all of these factors into consideration. Step 1's general form is also similar to Sohl et al. (2009) 'Phase I' of their recommended comparative analysis or with "financial position analysis" broadly speaking.⁷

In this chapter, I will be devoting the most attention to step 1, followed by some discussion of the importance of steps 2 through 5. This is not because step 1 is the most important or that it should stand alone. Each step brings important information to the table when it comes to assessing state fiscal sustainability, but I dedicate more time to discussing step 1 to primarily lay a foundation for arguing why the other steps are so essential. I do so by choosing one popular series of metrics – the Fiscal Condition Index (FCI) – and testing it for its validity and reliability as an instrument for assessing fiscal condition. Fiscal condition is another term commonly used in the literature that can be viewed as synonymous with sustainability.

The reason why it's important to consider this holistic analytical process is the same reason why the title of this chapter is "*assessing* fiscal sustainability" and not "*measuring* fiscal sustainability". If the goal is to determine how best to assess states for their fiscal sustainability, it is not merely a matter of finding the best metrics. For any given construct, the assessment process of its validity involves both quantitative *and* qualitative aspects.⁸ More precisely, the term assessment refers "to the systematic collection of information (numerical data, descriptions, etc.) and the interpretations made from that information."⁹ The goal here is to assess states for their fiscal sustainability by discussing a robust method for doing so.

Thankfully, research has started moving in this direction, with many analysts advocating for more robust benchmarking standards and more comparative analysis to help parse through the

⁷ Sohl, Shannon, Michael T. Peddle, Kurt Thurmaier, Curtis H. Wood, and Gregory Kuhn, "Measuring the financial position of municipalities: Numbers do not speak for themselves," *Public Budgeting & Finance*, 2009.

⁸ Taylor, Catherine, 2013. *Understanding Statistics: Validity and Validation*.

⁹ Taylor 2013, p. 3.

many competing financial analysis systems.¹⁰ In fact, some even argue that “where meaningful variables were not readily available, qualitative research was even more crucial.”¹¹ I would extend this even further by saying that qualitative research is what makes quantitative variables more meaningful.

For this chapter, I am defining fiscal sustainability as the ability of a state government to meet short- and long-term obligations without excessive debt or engaging in evasive budgeting practices.¹²

In the next section I start with discussing how metrics can be used to assess fiscal sustainability. Financial metrics can be used to get a pulse of where any state government is at any given point in time. Starting with a state’s financial metrics can also help get a general idea of where each state stands in comparison with one another. In this chapter, I’ll be focusing on the commonly used financial indicators that are the basis of the Financial Condition Index (FCI).¹³ Although any financial metrics on state finances can be used, utilizing the FCI indicators are fairly comprehensive and recommended because of their reliance on government-wide accounting statements.

There has been research conducted that assesses the FCI for its validity and reliability in the context of local governments, so I extend these efforts to data on state governments between 2006 and 2016.¹⁴ This involves conducting several statistical tests for reliability and validity of the FCI, following the approach of Clark (2015).¹⁵ I calculate correlations between components of the FCI and between solvency areas to test for reliability. I also conduct factor analysis to test for construct validity.

Not only do I expand Clark’s approach to include state governments, but to also include Trust Fund Solvency, an area added to the FCI by Eileen Norcross in the 2015 edition of the

¹⁰ Sohl et al. (2009).

¹¹ Ibid, p. 88.; This is echoed by Turley, Gerard, Geraldine Robbins, and Stephen McNena, “A framework to measure the financial performance of local governments,” *Local Government Studies*, 2015.

¹² The term fiscal sustainability can be used synonymously with fiscal solvency, which is why I adopt the same definition used by Norcross and Gonzalez, 2018.

¹³ The FCI was developed by XiaoHu Wang, Lynda Dennis, and Yuan Sen (Jeff) Tu, “Measuring Fiscal Condition: A Study of U.S. States,” *Public Budgeting & Finance* 27, no. 2 (2007):1-21. It was then operationalized by Sarah Arnett, “State Fiscal Condition: Ranking the 50 States” (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, January 2014), and developed further by Eileen Norcross and Olivia Gonzalez, “Ranking the States by Fiscal Condition, 2018 Edition” (Mercatus Research Paper, Mercatus Center at George Mason University, Arlington, VA, October 2018).

¹⁴ Data was collected as part of the Fiscal Rankings Project conducted for the Mercatus Center at George Mason University with Eileen Norcross. State financial information was collected from Comprehensive Annual Financial Reports (CAFRs). Pension and other post employment benefit (OPEB) data was collected from state pension and OPEB actuarial reports. Personal income and population information was collected from the Bureau of Economic Analysis Regional Economic Accounts and US Censuses, respectively.

¹⁵ Clark (2015); “Evaluating the Validity and Reliability of the Financial Condition Index for Local Governments,” *Public Budgeting & Finance*.

Mercatus Center's Fiscal Rankings Report.¹⁶ Adding this solvency area is important because of the mismeasurement of its main components - pension and other post-employment benefit (OPEB) obligations - in state financial reports. Including the Trust Fund Solvency area is an attempt to adjust pension and OPEB unfunded liabilities to reflect more accurate market return assumptions.

In section 2, I go into more detail about why the Trust Fund solvency is essential to include in the analysis for as long as pension and OPEB liabilities are mis-measured. I also discuss how these measurement issues influence standard statistical tests for validity and reliability of the FCI.

In section 3, I discuss the importance of supplementing financial metrics with economic data on each state. This step is beneficial for two reasons. First, it helps provide external measures for testing the validity of the financial metrics used in step 1 of analysis. Second, it provides helpful context for financial metrics. A poor operating ratio is always concerning, but if it's the result of an economic recession it might lead to different policy recommendations than if it's present during an economic boom.

Validity and reliability assessment, however, is not limited to statistical tests or quantitative measures alone. Although this is what Clark (2015) focused on, I want to expand the analysis to include qualitative factors that also affect fiscal sustainability. The FCI and its subcomponents can be used to look for red flags in financial performance across the states and for monitoring performance over time, however, it has its limitations, as does any financial metric. The institutions, or rules of the game, governing state policymakers play a large role in influencing fiscal sustainability. This is why I explore the role that institutions play in shaping fiscal sustainability in section 4.

When you hear that Texas, New York, and California had \$50.81 billion, \$56.70 billion, and \$112.55 billion, respectively, in primary government debt in 2016 what does that mean to you? If you are unfamiliar with state finances, you could still gather that these are quite large numbers. If you are familiar with state finances you may also know that these were the states with the three largest total debt levels in fiscal year 2016. In either case, however, absent the institutional context, there's not much more to be discerned from these numbers.

Without the institutional context, for example, you wouldn't know that even though New Jersey, Connecticut, and Illinois technically have lower debt levels (\$42.73 billion, \$23.55 billion, and \$31.26 billion, respectively), they are actually in worse financial shape than Texas, New York, and California. The former states have consistently struggled because of poor fiscal practices that result in consistent structural deficits; they demonstrate a growing reliance on debt to fund

¹⁶ Norcross, Eileen, "Ranking the States by Fiscal Condition: 2015 Edition," Mercatus Center Research Paper, July 7, 2015.

spending, the practice of underfunding their pensions and other post-employment benefit liabilities, or some combination of these problems.¹⁷

The institutional context helps humanize the metrics. Each data point drawn from state financial reports is ultimately the result of human behavior; and this fact can sometimes be lost when we solely focus on the numbers. Institutions, whether formal or informal, can shape human behavior to produce more or less fiscally prudent practices. Looking at metrics through the lens of institutional context helps make more sense of them.

Lastly, the information collected from steps 1 through 4 can be brought to life by exploring case studies. Although there is not room to discuss any specific examples, case studies are essential for comprehensively assessing the sustainability of any state's finances. In the conclusion of this chapter I discuss how case studies help form a robust story of fiscal sustainability more so than any one step in the analytical process can do on its own.

Ultimately, my goals for this chapter are threefold. First, I hope by describing this step by step approach, I'll bring together several separate, but relevant academic literatures that could learn a lot from each other regarding their attempts to understand fiscal sustainability. In this sense, this chapter can be seen as a review of the state and local financial condition, fiscal metrics, and fiscal sustainability literatures and how they all fit together. All three academic discussions could grow to incorporate the study of institutions into fiscal analysis. Second, I provide an evaluation of the validity and reliability of the Fiscal Condition Index (FCI) as a specific measure of fiscal sustainability, building on prior research on fiscal solvency. Lastly, I hope to advocate for a holistic methodological approach to assessing fiscal sustainability that is largely motivated by lessons from economics and the importance of institutions in shaping economic behavior.

1. Starting with the Metrics

Financial indicators are helpful statistics that summarize the status of an organization or governing body. Similar to how financial indicators are used to assess the profitability of publicly traded companies, they can be applied to assess the solvency and sustainability of governments. This is the idea behind much of the research devoted to assessing the fiscal condition of states and local governments in the United States. Although the focus of these metrics will change by institutional context, with profitability ratios being more common among publicly traded companies, the intuition behind this type of analytical approach remains the same.

Unfortunately, we are more limited in our ability to assess the fiscal sustainability of a government than a private company because the former has less of a rational basis in economic

¹⁷ This isn't to say that these fiscally imprudent practices aren't absent from Texas, New York, or California. New Jersey, Connecticut, and Illinois are highlighted because of how pervasive fiscal imprudence is in the management of their finances and how this makes them stand out as consistent under-performers. Norcross and Gonzalez, 2018.

calculation shaping financial decisions.¹⁸ This leads analysis of a company's fiscal health to focus more on profitability, whereas a public governing body's analysis will entail more of a focus on cash and liability metrics, but the goal for both is the same: to help analysts assess the company's or governing body's financial health and long-term viability.

In this chapter, I will refer to this general goal as assessing fiscal solvency, condition, health, and sustainability interchangeably. They each generally assess a government's ability to meet short- and long-term obligations without excessive debt, engaging in budget gimmicks, or using other evasive tactics. Sustainability or fiscal condition are the two main overarching terms I use for ease of reference, but definitions of fiscal health, and solvency are other commonly used terms in the literature that utilize similar conceptual definitions; each is generally concerned with the short- and long-term financial viability of a governing body. In the next section, I provide a brief overview of the metrics literature and how it discusses different approaches to assessing fiscal sustainability broadly construed.

The Fiscal Metrics Literature

There is a significantly sized literature that explores the idea of financial condition of governing bodies. Various approaches are undertaken, with their motivation largely driven by the policy context and intended audience. A recurring theme amongst these different strands of the literature, however, is the desire to develop quantitative measures or indicators that robustly capture fiscal condition. Before discussing them, it's useful to review the great tension present in public finance, concisely summarized by McDonald (2018):

“When there is a constraint on the ability of a local government to provide a good or service, a hardship appear[s] for both the residents of the community and the management of the local government that represents them. The presence of a constraint also creates a tension between residents, who want to have public goods provided, and local officials, who want to ensure the financial sustainability of the government.”¹⁹

The struggle is to determine when the constraints are significant enough to put the fiscal health of the government at risk. Many rely on ratio analysis to help determine when this is the case. Typically utilizing percentages, proportions, or rates, ratio analysis attempts to standardize the financial data of a government so trends can be plotted over time or be compared with other governments.²⁰

Although there are debates about what indicators are best, a common thread amongst many different monitoring systems is ratio analysis. Still, the many different monitoring systems and

¹⁸ Mises, Ludwig von, 1951, *Profit and Loss*.; Weber, Max, 1978, *Economy and Society*, University of California Press.

¹⁹ McDonald (2018), p. 46.

²⁰ *Ibid.*

indicators utilized - and the debate surrounding them - often leaves public administrators confused about how to assess their finances.²¹

To date, there has been more work done at the local level than at the state level. A large portion of said literature attempts to conceptualize and measure local financial condition.²² Research in this area became more practical following the passage of GASB Statement No. 34, *Basic Financial Statements - and Management's Discussion and Analysis - for State and Local Governments* by Governmental Accounting Standards Board (GASB) in 1999. GASB Statement No. 34 required that government-wide financial statements be provided by state and local governments, "opening the door for a more comprehensive methodology for analyzing, interpreting, and communicating financial condition."²³

Financial statement analysis has consistently played a large role in financial condition analysis. Financial statements help analysts assess the stock and flow of financial resources for governing bodies. Although government-wide statement analysis has been recommended by many researchers, there is also the option of fund-level analysis, or some combination of both approaches. It is important to keep in mind the competing accounting methods - accrual versus modified accrual - that underlie each of these methods.²⁴

If GASB Statement No. 34 expanded the practicality of fiscal condition research, the Great Recession of 2007-2009 only further bolstered interest in the subject. The serious fiscal distress of this event led to more research on how to develop models that aid state policymakers in their efforts to predict local fiscal distress.²⁵ Although this is when interest grew most recently,

²¹ Ibid.

²² Sohl et al. (2009).; Turley et al. (2015).; Rivenbark, William C., Dale J. Roenigk, and Gregory S. Allison, "Conceptualizing financial condition in local government," *Journal of Public Budgeting, Accounting & Financial Management*, 2010.; Rivenbark, William C. and Dale J. Roenigk, "Implementation of financial condition analysis in local government," *Public Administration Quarterly*, 2011.; Maher, Craig S., Wei-Jie Liao, Yansi Liao, and Jae Won Oh, "Developing a fiscal condition monitoring approach for Nebraska Local Governments.;" McDonald, Bruce D., "Local governance and the issue of fiscal health," *State and Local Government Review*, 2018.; Ritonga, Irwan T., "Developing a measure of local government's financial condition," *Journal of Indonesian Economy and Business*, 2014.; Kelly, Janet M. and Sarin Adhikari, "Indicators of financial condition pre- and post- merger Louisville," *Journal of Urban Affairs*, 2013.

²³ Rivenbark et al., 2010.

²⁴ Rivenbark and Roenigk, 2011.

²⁵ Kloha, Philip, Carol S. Weissert, and Robert Kleine, "Developing and testing a composite model to predict local fiscal distress," *Public Administration Review*, 2005a.; Kloha, Philip, Carol S. Weissert, and Robert Kleine, "Someone to watch over me: State monitoring of local fiscal conditions," *American Review of Public Administration*, 2005b.; Justice, Jonathan B. and Eric A. Scorsone, "Measuring and Predicting Local Government Fiscal Stress: Theory and Practice," in *Handbook of Local Government Fiscal Health*, ed: Helisse Levine, Jonathan B. Justice, and Eric A. Scorsone.; Zafra-Gomez, Jose, Antonio Manuel Lopez-Hernandez, and Agustin Hernandez-Bastida, "Evaluating financial performance in local government: maximizing the benchmarking value," *International Review of Administrative Sciences*, 2009.; Jimenez, Benedict, "Fiscal stress and the allocation of expenditure responsibilities between state and local governments: An exploratory study," *State & Local Government Review*, 2009.; Crosby, Andrew and Donijo Robbins, "Mission Impossible: Monitoring fiscal sustainability and stress in Michigan," *Journal of Public Budgeting, Accounting & Financial Management*, 2013.

research did not start here. States became more involved in the monitoring of local finances following the financial distress of New York City and Cleveland in the 1970s. Some states even codified this role through legislation that required more direct state involvement in local finances. As Kloha et al. (2005) documents, the purpose of these state monitoring systems were (and are) to identify financially distressed communities so that “the state could step in or take over the locality and restore financial stability. It was in the state’s interest to act, because local problems could affect the credit rating of other localities and the state.”²⁶

Using financial monitoring systems, state governments can label municipal governments as fiscally stressed which usually comes with requirements to implement financial recovery plans. When it comes to the effectiveness of state monitoring systems, the evidence is mixed. One study finds that fiscal stress labels on municipal government finances can reduce total expenditures per capita by nearly 25 percent.²⁷ A survey by Kloha et al. (2005b), on the other hand, finds that these systems are not effectively carried out in most states. Their 50-state survey of state officials found that only 15 states indicated some use of indicators to evaluate their local governments’ fiscal positions.²⁸ States may be interested in making early predictions of fiscal distress, but they are largely limited to making ex post assessments.

This institutional evolution marked a significant change in state and local dynamics that corresponds to a strand of the metrics literature that develops monitoring systems. In fact, history has demonstrated that fiscal stress can significantly influence the relationship between state and local governments. The state monitoring systems literature seems to suggest that state involvement in local affairs increases following periods of fiscal stress. Interestingly, Jimenez’s (2009) research shows that the general state-local public sector actually tends to become more decentralized following *state* fiscal distress.²⁹ Most research like this looks at instances where fiscal stress is instigated by recessions. A natural extension would be to explore how these dynamics play out following an economic shock prompted by a global pandemic.

Researchers have extended many of the lessons for local governments to state governments, with more research growing in this area within the last decade.³⁰ Like for local analysis, state applications started with ratio analysis and has over time become more sophisticated. Many

Maher, Craig S., Jae W. Oh, and Wei-Jie Liao, “Assessing fiscal distress in small county governments,” *Journal of Public Budgeting, Accounting & Financial Management*, 2020.

²⁶ Kloha et al. (2005b), p. 238.

²⁷ Thompson, Paul N., “Effects of fiscal stress labels on municipal government finances, housing prices, and the quality of public services: Evidence from Ohio,” *Regional Science and Urban Economics*, 2017.

²⁸ Kloha et al (2005b).

²⁹ See Jimenez (2009) for a discussion of three frameworks that explain the intergovernmental dimension of fiscal stress.

³⁰ Kamnikar, Judith, Edward Kamnikar, and Keren Deal, “Assessing a state’s financial condition,” *The Journal of Government Financial Management*, 2006.; XiaoHu Wang, Lynda Dennis, and Yuan Sen (Jeff) Tu, “Measuring Financial Condition: A Study of U.S. States,” *Public Budgeting & Finance* 27, no. 2 (2007):1-21.; Arnett, Sarah, “Fiscal stress in the U.S. States: An Analysis of Measures and Responses,” Georgia Institute of Technology Dissertation, 2011.; Rubin, Marilyn M. and Katherine Willoughby, “Financial Management Grades for the States: A Prospective Use,” *Public Budgeting & Finance*, (2009).

financial indicators stem from usage in the private sector and have been adapted to public sector contexts. Some examples include the cash, quick, and debt to asset ratios.³¹

Quantitative assessments, whether done at the state or local level, usually build upon ratio analysis to create comprehensive systems. Brown's (1993) ten-point test is one popular example applied primarily at the local level.³² Wang, Dennis, and Tu's (2007) solvency test has grown to be a prominent system used to assess state finances. A more subjective approach that incorporates more qualitative measures uses a grading system to assess the financial management capacity of state governments.³³

Bohn (1995, 1998) proposes a formal, more direct way to test for state fiscal sustainability based off of fiscal balance.³⁴ First, analysts must calculate each state's surplus (or shortfall) relative to their lagged stock of debt. A positive and significant change to a state's surplus in response to an increase in their debt constitutes a sufficient condition for fiscal sustainability. As Mahdavi (2014) writes: "*The intuition behind this simple yet robust condition is that the debt ratio will not explode if, in reaction to an increase in the past debt ratio, policymakers adapt changes to increase revenues and/or cut expenditures.*"³⁵

Mahdavi (2014) employs Bohn's suggestions for calculating a "fiscal reaction function" for the states during the pre-Great Recession period in the U.S. He confirms Bohn's predictions of this function being a sufficient condition for sustainability with some interesting additional findings. States that relied more on own-source revenue (rather than intergovernmental aid), had no-deficit-carryover provisions, and rainy day funds also tended to have a higher primary surplus ratio. Additionally, states tend to react to imbalances by increasing revenue rather than lowering expenditures.

Although these efforts to measure fiscal sustainability are empirically creative, they are not the full picture. They are a good starting point, but analysts should also consider other ways of alleviating fiscal stress other than solely by increasing revenues or lowering expenditures.³⁶

³¹ Kamnikar et al. (2006).

³² Brown, Ken W., "The 10-Point Test of Financial Condition: Toward an Easy-to-Use Assessment Tool for Smaller Cities," *Governing Finance Review*, 1993.; Maher, Craig S. and Karl Nollenberger, "Revisiting Kenneth Brown's '10-Point Test,'" *Government Finance Review*, 2009.

³³ Rubin, Marilyn M. and Katherine Willoughby, "Financial Management Grades for the States: A Prospective Use," *Public Budgeting & Finance*, 2009.

³⁴ Bohn, Henning, "The sustainability of budget deficits in a stochastic economy," *Journal of Money, Credit, and Banking*, 1995.; Bohn, Henning, "The behavior of U.S. public debt and deficits," *Quarterly Journal of Economics*, 1998.

³⁵ Mahdavi, Saeid, "Bohn's test of fiscal sustainability of the American state governments," *Southern Economic Journal*, 2014, p. 1029.

³⁶ The line of literature that Mahdavi references on fiscal sustainability defines it solely as "the ability of a government to achieve a balance between its revenues and expenditures *intertemporally*," Mahdavi (2014), p. 1029. I employ a broader definition in this chapter, one more adequately encapsulated by the fiscal condition literature. By focusing on fiscal sustainability as the idea of governments ability to meet short and long term commitments without fiscal evasion, we avoid policymakers focusing solely on tax and revenue metrics that do not in practice account for long-term commitments.

Chapman (2008) identifies three primary pressures that affect state fiscal sustainability: (1) cyclical pressures, (2), structural pressures, and (3) intergovernmental pressures.³⁷ The first category includes variables that tend to fluctuate, like stock and housing markets. The second category includes variables like demographic changes, suburbanization trends, increased mobility (of people and businesses), the movement from consumption of goods to services, and the growing importance of e-commerce.

Lastly, infrastructure and Medicaid are examples of intergovernmental pressures; both of which have structural components. Chapman stresses that each of these components, in addition to public pensions (a structural pressure), will become increasingly intense pressures on state fiscal sustainability in the years to come.

The nuances involved in the fiscal metrics discussion can easily distract the reader from the importance of the difference between evaluating financial *position* and financial *condition*.³⁸ An evaluation of financial position would entail ratio analysis alone and could discover where a state's finances are weakest. This analysis, however, would not be as informative as one that explores a state's financial condition.

Perhaps this confluence stems from old versions of the Accountant's Dictionary defining the terms financial position and financial condition as being the same.³⁹ Financial statement analysis usually focuses on assessing financial position. Making policy recommendations, as Rivenbark and Roenigk (2011) aptly point out, requires an understanding of financial condition.

Financial position analysis is static and narrow whereas financial condition analysis is dynamic and takes into consideration contextual factors. Financial condition analysis would ideally start with the financial metrics and then eventually explore how the cyclical, structural, and intergovernmental pressures that Chapman writes about are affecting a state's financial position.

Another concept gaining more traction in the literature is the idea of benchmarking. Benchmarking is done both through official government programs and through financial analysis conducted by researchers external to governing bodies. It stems from the desire to have objective standards for assessing financial ratios. Where possible such benchmarking is developed by building upon industry-wide standards or by pulling from private sector standards.

For example, current ratios - current assets relative to current liabilities - below two are considered healthy; meaning that states should have at least two times as many assets on hand than the value of their current liabilities.⁴⁰ These standards are not always readily available,

³⁷ Chapman, Jeffrey, "State and local sustainability: the Challenges," *Public Administration Review*, 2008.

³⁸ Sohl, Peddle, and Thurmaier (2009).

³⁹ Kamnikar et al. (2006).

⁴⁰ Finkler, Steven, *Financial Management for Public, Health, and Not-for-Profit Organizations* (Upper Saddle River, NJ: Prentice Hall, 2012).

however. One way around this is to develop benchmarks by creating a cohort of similar governing bodies - whether at the state or local level - in order to form a basis for assessing financial condition. A common way to do this is to develop comparable groups based off of population or organization size. Sohl et al. build on this by developing a more systematic multivariate technique where cohorts are also screened according to scope of public services, revenues, expenditures, tax base, economic activity, and other characteristics.⁴¹

At best, benchmarking can encourage best practices and improved performance across the board. At worst, benchmarking can lead to convergence upon financial metric values, particularly when benchmarks are based upon peer performance. When benchmarks are based upon relative performance, this can encourage both high and low performers to make financial decisions that move them toward the average value of their peers; this means some governments improve, but it also means previously high performing governments may be incentivized to worsen in performance until they hit the average value.

Gerrish and Spreen (2017) demonstrate that such a phenomena occurred following the implementation of a benchmarking program in North Carolina.⁴² Norcross and Gonzalez have similarly warned against misinterpreting highly ranked states in Wang, Dennis, and Tu's (2007) financial condition (FCI) as being financially sound due to the relative nature of the final index scoring.⁴³

Although there has been considerable debate about what indicators and monitor systems best assess state financial condition, I do not view this chapter as an advocate of any sole metric system. Those familiar with the metrics debate might have interest in seeing several systems compared side by side. McDonald (2018), for example, surveys the pros and cons of three of the most prominent monitoring systems - (1) ratio analysis broadly speaking, (2), Brown's (1993) ten-point test, and (3) Wang, Dennis, and Tu's (2007) solvency test. As McDonald (2018) does in his comparison, I leave it up to government administrators to choose the tool that best reflects the "unique circumstances of the government they are analyzing and relay that perspective to their constituents."⁴⁴

I will argue, however, that "the best system" is the one that accounts for various perspectives. McDonald's comparison of three prominent metrics systems attempts to do this. Other researchers have also made progress in developing different comparison methods.⁴⁵ In this chapter, I further demonstrate the value in pairing any given metric system with other quantitative and qualitative information. Qualitative information gained from studying the

⁴¹ Sohl et al. (2009).

⁴² Gerrish, Ed and Thomas L. Spreen, "Does benchmarking encourage improvement or convergence? Evaluating North Carolina's fiscal benchmarking tool," *Journal of Public Administration: Research and Theory*, 2017.

⁴³ Norcross and Gonzalez (2018).

⁴⁴ McDonald (2018), p. 48.

⁴⁵ Sohl et al. (2009).

relevant institutional environment, for example, is rarely included in any metric system; even in the prominent ones described by McDonald.

To illustrate this, I will be focusing on the Fiscal Condition Index (FCI); a version based on research that has evolved from Wang, Dennis, and Tu's (2007) solvency test. My goal is not that readers walk away thinking that the FCI is the best system, but instead with the idea that any metric system paired with the other steps listed in this chapter is made a more robust system. Even the widely used FCI has its drawbacks and can benefit from external metrics and qualitative information when used to assess state fiscal sustainability. The reader can repeat the exercise advocated for in this chapter with their metric system of choice by swapping it out for the FCI in step 1, before continuing to steps 2 through 5.

This holistic approach not only helps minimize measurement error, but also helps assuage public choice concerns. Regardless of the metrics system used in step 1, solely relying on it can pose the risk of analysts only looking at financial ratios that paint their government in a more positive light. In fact, focusing solely on any step of the proposed method is subject to public choice concerns, particularly when analysts are policymakers or public administrators themselves. This has been demonstrated in the case of benchmarking where some governing bodies have been incentivized to improve *reported* performance, but not *actual* performance.⁴⁶ When more steps of the proposed method are used, it becomes harder to cherry pick numbers that favor a particular political motive or to hide financial trouble.

The Fiscal Condition Index (FCI): A Common Approach to Measuring Fiscal Condition

Under the Fiscal Condition Index (FCI), financial indicators can be grouped together by the area of fiscal condition that they assess. To date, the main categories of fiscal solvency developed in the literature are (1) cash solvency, (2) budget solvency, (3) long-run solvency, (4) service-level, and (5) trust fund solvency. Each solvency area is associated with various financial indicators that can be calculated by drawing from a state or city's financial statements.

Solvency areas 1 through 4 were first developed by Groves, Godsey, and Shulman (1981) and then operationalized by XiaoHu Wang, Lynda Dennis, and Yuan Sen (Jeff) Tu.⁴⁷ Mercatus Center researchers extended this approach to measuring fiscal condition to produce a ranking of the states on the basis of their relative performance.⁴⁸ In her 2015 publication utilizing this approach, Eileen Norcross stresses the importance of adding the 5th, trust fund, solvency area to ensure that pension and other post employment liabilities are also comprehensively included

⁴⁶ Turley et al. (2015).

⁴⁷ "Financial Indicators for Local Government - Groves - 1981 - Public Budgeting & Finance - Wiley Online Library."; Wang, Dennis, and Tu (2007).

⁴⁸ Sarah Arnett, "State Fiscal Condition: Ranking the 50 States" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA January 2014).;

when assessing financial condition.⁴⁹ Follow up studies from the Mercatus Center further developed this with improvements upon the methodology of the FCI in each edition.⁵⁰

My experience working on these follow up studies with Eileen Norcross informs much of the discussion on state fiscal sustainability in this chapter. Analyzing state financial data from between fiscal years 2006 and 2016, discussing the results of our research with policymakers and other researchers taught us a lot about what it's like to operationalize the FCI. I attempt to relay many of the lessons we learned from this experience and expand on how these lessons point to the need for a more holistic approach to analyzing state fiscal sustainability. First, I'll start with an overview of the FCI and its statistical reliability and validity.

Table 1 displays the prominent financial indicators used to assess fiscal condition, along with how they are calculated and what FCI dimension that they fall within. The FCI is calculated by standardizing each of the ratios in table 1, summing each of the ratios' z-scores for each solvency area, and then aggregating the solvency area scores into one overall score.

Table 1. Indicators Used to Assess Fiscal Condition		
Indicator	Definition	Dimensions
The cash ratio	(Cash + cash equivalents + investments)/current liabilities	Cash Solvency
The quick ratio	(Cash + cash equivalents + investments + receivables)/current liabilities	Cash Solvency
The current ratio	Current assets/current liabilities	Cash Solvency
The operating ratio	Total revenues/Total expenses	Budget Solvency
Surplus (deficit) per capita	Change in net assets/population	Budget Solvency
Net asset ratio	Restricted and unrestricted net assets/total assets	Long-run Solvency

⁴⁹ Eileen Norcross, "Ranking the States by Fiscal Condition" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, July 2015).

⁵⁰ Eileen Norcross and Olivia Gonzalez, "Ranking the States by Fiscal Condition, 2016 Edition" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, June 2016); Eileen Norcross and Olivia Gonzalez, "Ranking the States by Fiscal Condition, 2017 Edition" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, June 2017); Eileen Norcross and Olivia Gonzalez, "Ranking the States by Fiscal Condition, 2018 Edition" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, October 2018).

Long-term liability ratio	Long-term (noncurrent) liabilities/total assets	Long-run Solvency
Long-term liability per capita	Long-term (noncurrent) liabilities/population	Long-run Solvency
Tax to income ratio	Total taxes/state personal income	Service-level Solvency
Revenue to income ratio	Total revenues/state personal income	Service-level Solvency
Expenses to income ratio	Total expenses/state personal income	Service-level Solvency
Pensions to income	Unfunded pension liability/state personal income	Trust fund solvency
OPEB to income	OPEB/state personal income	Trust fund solvency

In the 2018 edition of our fiscal rankings study, Eileen Norcross and I applied the FCI to ten years of data (2006 and 2016).⁵¹ Doing so allowed us to benefit from the structure of the FCI in identifying what financial ratios to focus on in fiscal condition analysis, while also benefiting from time series analysis that is absent FCI studies that solely focus on one year of data. We recommend, like McDonald (2018), that analysts use both the FCI as well as ratio analysis on the financial indicators within the FCI. Pivoting between the two can be a more robust approach than solely relying on one or the other.

Assessing the Reliability and Validity of the Fiscal Condition Index

Work conducted by the original authors of the FCI and subsequent researchers suggests that the index is a relatively reliable and valid measure of financial condition.⁵² Clark (2015), on the other hand, concludes in his research that the FCI is limited in how it can assess local government financial conditions.⁵³ He does so by first applying the FCI to 117 municipalities in Ohio and their financial data from 2004 to 2010. Most of the authors in favor *and* against the FCI have conducted their analysis on local data. There has not been a comprehensive test for reliability and validity of the FCI when applied to state-level time series data. I want to contribute to this discussion by extending Clark’s tests to a ten year (2006-2016) panel dataset composed of U.S. state financial information.⁵⁴ I re-run Clark’s statistical tests in this context, but for the

⁵¹ Norcross and Gonzalez (2018).
⁵² Wang, Dennis, and Tu (2007).; Ritonga (2014).
⁵³ Clark (2015).
⁵⁴ I rely upon the same dataset utilized by Norcross and Gonzalez (2018) that draws from state comprehensive financial reports (CAFRs), state actuarial pension and OPEB reports.

sake of brevity I do not report every test; instead I highlight those that I believe are the most informative.⁵⁵

Table 2 displays the descriptive statistics for the different solvency areas and their financial indicators for the states during the period examined. On average, states during this period have enough cash on hand to over liabilities, but there is considerable variation in this area. Although the mean cash ratio of 1.82 is above the industry standard of one, a standard deviation of 1.96 puts many states above and below this depending on the year; with the worse cash metrics primarily being a result of the 2008 recession. The same goes for the operating ratio average of 1.04; most states on average brought in more revenues than expenditures between 2006 and 2016, but with considerable variation.

The average long-term liability ratio of 0.40 is concerning considering how the benchmark standard for this is ratio 0.50.⁵⁶ Especially since this ratio has on average been on a steady increase over the years.⁵⁷ These ratios, as well as the pension to income and net asset ratios will be especially important to keep an eye on in the years to come.

Table 2. Descriptive Statistics for FCI Metrics FY2006-2016						
Indicator	N	Mean	Std. Dev.	Min	Max	Dimension
The cash ratio	550	1.82	1.96	0.32	21.86	Cash Solvency
The quick ratio	550	2.55	2.06	0.24	22.25	Cash Solvency
The current ratio	550	2.81	2.08	0.86	22.78	Cash Solvency
The operating ratio	550	1.04	0.12	0.32	2.08	Budget Solvency
Surplus (deficit) per capita	550	\$269.53	\$1,431.76	-\$10,379.72	\$14,527.85	Budget Solvency
Net asset ratio	550	0.02	0.45	-2.98	0.85	Long-run Solvency
Long-term liability ratio	550	0.40	0.45	0.01	3.88	Long-run Solvency
Long-term liability per capita	550	\$2,792.13	\$2,513.66	\$103.81	\$18,928.22	Long-run solvency

⁵⁵ I do run every test, even if they are all not reported here. Readers interested in the expanded results are welcome to contact me.

⁵⁶ Finkler, p. 480.

⁵⁷ Norcross and Gonzalez (2018), figure 4 on p. 30.

Tax to income	550	0.06	0.02	0.00	0.25	Service-level Solvency
Revenue to income	550	0.14	0.05	0.07	0.53	Service-level Solvency
Expenses to income	550	0.13	0.04	0.06	0.30	Service-level Solvency
Pensions to income	550	0.29	0.15	0.03	0.98	Trust Fund Solvency
OPEB to income	550	0.04	0.06	0.00	0.44	Trust Fund Solvency

Assessing the FCI's reliability and validity of the FCI is important because it can be a helpful starting point for telling us how strong of a measure it is. Reliability tests help determine whether a measure of fiscal condition is consistent over many replications.⁵⁸ The results in this section will be discussed in reference to Clark's (2015) findings as a basis for comparison, which implicitly adds another test for reliability of the FCI.

Validity tests, which I will explore next, attempt to assess the extent to which an indicator actually measures the concept in question; fiscal condition in this case.

But first, let's explore how reliable the FCI and its subcomponents are. A basic way of testing reliability of a measure is to see if the subcomponents are highly correlated. Table 3 shows that many of the FCI indicators are significantly correlated with each other, with trust fund solvency indicators as an exception; suggesting that there is strong measurement reliability for all but this solvency area.

Cash solvency variables	Cash ratio	Quick ratio	Current ratio
Cash ratio	1		
Quick ratio	0.9554***	1	
Current ratio	0.9566***	0.9879***	1
Budget solvency variables	Operating ratio	Surplus (deficit) per capita	
Operating ratio	1		

⁵⁸ Meyer, Patrick, *Reliability: Understanding Statistics Measurement*, Oxford University Press, USA; 2020.

Surplus (deficit) per capita	0.9321***	1	
Long-run solvency variables	Net asset ratio	Long-term liability ratio (inv)	Long-term liabilities per capita (inv)
Net asset ratio	1		
Long-term liability ratio (inv)	0.4343***	1	
Long-term liabilities per capita (inv)	0.2494***	0.8426***	1
Service-level solvency variables	Taxes to income (inv)	Revenues to income (inv)	Expenditures to income (inv)
Taxes to income (inv)	1		
Revenues to income (inv)	0.6521***	1	
Expenditures to income (inv)	0.6255***	0.9518***	1
Trust fund solvency variables	Pensions to income (inv)	OPEB to income (inv)	
Pensions to income (inv)	1		
OPEB to income (inv)	0.0231	1	
Note: *p<0.10, **P<0.05, ***p<0.01. Correlations are between standardized versions (z-scores) of the variables list above. To improve interpretability, several indicators are transformed by taking their inverse before calculating their correlation coefficients.			

Excluding the trust fund solvency area, the strength of these correlations are stronger than Clark’s (2015).⁵⁹ Overall, the long-run solvency area stands out as having slightly weaker reliability which is similar to Clark’s findings, but this difference is smaller in magnitude in the correlations found here.

Trust fund solvency stands out as the weakest in this area. The correlation coefficient between the pensions to income and the OPEB to income ratios is quite small in magnitude (0.0231) and is insignificant. The trust fund solvency area therefore does not demonstrate measurement reliability.

⁵⁹ Clark did not include the trust fund solvency area in the FCI analysis.

Most of the relationships in table 4 for state government metrics are compatible with Clark’s findings for local governments. All five solvency measures have a positive significant relationship with the FCI. The cash and long-run solvency areas are the most strongly correlated with the FCI. Additionally, there is some variation in the correlations between the FCI solvency subcomponents. Budget and service level solvency are negatively related, whereas the association between the cash and service level solvency areas is insignificant.⁶⁰

Table 4. FCI Solvency Areas Correlation Matrix						
	FCI	Cash	Budget	Long-run	Service	Trust Fund
FCI	1					
Cash	0.7109***	1				
Budget	0.4367***	0.3381***	1			
Long-run	0.7826***	0.4811***	0.2961***	1		
Service	0.3815***	-0.0573	-0.3082***	0.0771*	1	
Trust Fund	0.4359***	-0.0019	0.0013	0.3151***	0.2498***	1

Note: *p<0.10, **p<0.05, ***p<0.01.

Overall, the correlations displayed in tables 3 and 4 demonstrate some evidence for the reliability of the FCI solvency areas. This is especially the case when they are correlated with the overall FCI score, but the considerable variation between the sub-indices lends some room for skepticism.

Another way to measure the reliability of the FCI variables, but in a more holistic way, is to calculate its Cronbach’s alpha. Values of Cronbach’s alpha can range from 0 to 1, with 1 indicating perfect correlation among all of the variables composing the index, and 0 indicating a complete lack of correlation. “Ideally with a Cronbach’s alpha you want it between 0.81-1, this indicates a ‘high reliability among the measurement variables⁶¹.’ If the value is between 0.7-0.8, the reliability is judged to be “moderate, but acceptable”. Values below 0.7 “should cause analysts to consider a different mix of variables.”

I calculate a Cronbach’s alpha reliability coefficient of 0.7824 for my dataset of state governments between 2006 and 2016. This indicates that the FCI falls in the “moderate, but acceptable” level of reliability, at least when utilized at the state level. Clark’s (2015) Cronbach’s alpha of 0.7095 suggests that the FCI when applied to the local level is slightly less reliable.

⁶⁰ Earlier studies find this too. Wang, Dennis, and Tu (2007).; Arnett (2011).

⁶¹ (Clark 2015, 79; Berman and Wang 2012, 56).

Wang, Dennis, and Tu's (2007) coefficients range from 0.600 to 0.800, depending on the sample, which they consider to be a "moderately acceptable level of reliability of a measure."⁶² Arnett's (2011) analysis produces a Cronbach's alpha of 0.7037 (Arnett 2011, 85).⁶³

It is important to note that calculating a Cronbach's alpha for my dataset without the trust fund solvency included in the FCI causes the coefficient to rise to 0.8208. Although I would argue that including some measure of trust fund solvency in the final FCI is important, this Cronbach's alpha is more directly comparable to prior studies that do not include trust fund solvency. A coefficient of 0.8208 suggests that the FCI is significantly more reliable at the state level than the local level. The fact that the coefficient drops to 0.7824 when including trust fund solvency in the FCI primarily provides more emphasis on this area requiring better measures.

Now moving to testing for validity. Validity explores whether the construct of interest is being properly measured.⁶⁴ The goal for assessing validity of the FCI is to figure out if we are actually measuring the concept of fiscal condition. There is more than one way to measure validity, but I adopt Clark's (2015) three-pronged approach that includes assessing (1) content validity, (2) construct validity, and (3) criterion-related validity. I will be focusing on discussing the first two of these in this section and will explore criterion-related validity more in section 3 of this chapter.

For content validity, recall that I have been defining fiscal condition (or sustainability) as the ability of state government to meet short- and long-term obligations without excessive debt or engaging in evasive budgeting practices. Other researchers use varying definitions, but they usually only differ slightly in wording and they all generally get at the importance of both the short and long term solvency of governments. The FCI is generally valid in this area due to its intuitive assessment of these concepts. The FCI includes metrics that matter for both short and long term solvency, as well as metrics that can alert the analyst to any budget gimmicks that may be going on.

Construct validity is viewed as the most important and complex form of measurement validity. It asks: which factors of the FCI account for the variance in performance of the concept we are trying to measure? Beyond this, construct validity is also about connecting to and validating theory that supports the concept being measured.

A goal for construct validity is to discover how well the components of the FCI converge. If the components of the FCI converge, then they should all move in the same direction or in other words - they should be positively correlated. One way for efficiently testing for convergence is by using factor analysis. The purpose of factor analysis is to "explore the underlying variance of a set of correlation coefficients. Thus, factor analysis is useful for exploring and verifying patterns in a set of correlation coefficients..."⁶⁵

⁶² Wang, Dennis, and Tu, 2007 "Measuring Financial Condition," 18.

⁶³ Arnett, "Fiscal Stress in the U.S. States," 85.

⁶⁴ Taylor, Catherine S., *Validity and Validation: Understanding Statistics*, Oxford University Press, USA; 2013.; Clark (2015).

⁶⁵ Brown 2001, *Using Surveys in Language Programs*, 184.

Table 7 shows the factor analysis for all years of data combined.⁶⁶ This analysis helps visualize how the different FCI components converge, making more sense of the correlations we see in tables 3 and 4. Four general “factors” emerge, demonstrating that there are four rough dimensions of fiscal condition that each contain a set of indicators that are correlated with each other. These four factors, based off of their indicators are the cash, service, budget, and long-run dimensions; corresponding to four of the five FCI solvencies.

If the five FCI solvency areas have “good measurement properties” they should converge or “exhibit high factor loadings...on the latent factors for which they are indicators.”⁶⁷ Overall, this factor analysis reveals slightly stronger evidence for construct validity than Clark’s results, but with some caveats.

Table 7. Rotated factor loadings (orthogonal varimax rotation)					
Variable	Factor1 (Cash)	Factor2 (Service)	Factor3 (Budget)	Factor4 (Long-run)	Uniqueness
Cash solvency variables					
Cash ratio	0.9549				0.0445
Quick ratio	0.9721				0.0324
Current ratio	0.9773				0.0166
Budget solvency variables					
Operating ratio			0.9442		0.0331
Surplus (deficit) per capita			0.9238		0.0902
Long-run solvency variables					

⁶⁶ To determine which factor loadings to include, we use the benchmark that “factor loadings are considered only if their values are at least 0.5”, as Clark does. To determine what factors to include, we begin with the widely used “eigenvalue-greater-than-one-rule” as a starting point. In my analysis, however, I include four factors when the strict “greater-than-one-rule” would suggest only including three. Producing a scree plot of the eigenvalues shows that the fourth factor’s is just under 1 (0.878747). The rule is meant as a guideline, with room for interpretation, especially when a factor has an eigenvalue so close to the cutoff.

⁶⁷ Clark 2015, 83.; Seagers and Grover 1993, “Re-examining Perceived Ease of Use and Usefulness,” 519.

Net asset ratio					0.5108
Long-term liability ratio (inv)	0.6621			0.5199	0.1673
Long-term liabilities per capita (inv)				0.7828	0.3196
Service-level solvency variables					
Taxes to income		0.6477			0.4390
Revenues to income		0.9425			0.0314
Expenditures to income		0.9797			0.0062
Trust fund solvency variables					
Pensions to income (inv)					0.7850
OPEB to income (inv)					0.9138

The factors load in such a way that we can name them according to the primary solvency variables that fall within each. The cash ratios all load together under factor 1. This is similar to Clark’s results, but the long-term liability ratio also loads under this factor in our analysis, albeit with a smaller factor loading than the cash variables. All of the service level variables load under factor 2 and all of the budget solvency variables load under factor 3. The long-term liability and the long-term liabilities per capita ratio load under factor 4, by a slightly smaller magnitude. The long-term liability ratio curiously loads under both the first and fourth factor. Therefore, excluding the long-term liability ratio, the factors load more according to how theory would predict than what Clark finds.

The financial indicators that compose the trust fund solvency area, however, do not load under any of these factors. They exhibit high levels of uniqueness. This provides more evidence against the validity of the trust fund solvency area.

Main Lessons from Validity and Reliability Tests

In some ways my findings are both more and less promising than Clark's (2015) findings for the FCI. Reproducing the Clark's tests for my panel dataset of state governments, I find more robust evidence for the FCI's validity and reliability overall; with the exception of the newly added trust fund solvency area.

When it comes to reliability, the FCI is fairly easy to reconstruct based on state financial reports and I produce roughly similar results to Clark's tests. My results lend slightly more support for the FCI as a robust measure of fiscal condition, which when highlighting this difference with Clark's may raise some reliability concerns. Or it may be due to the fact that the FCI is a more robust measure at the state level. Additionally, if Clark's sample was expanded to include more local governments, the differences may lessen.⁶⁸

The correlations between the FCI metrics and solvencies in tables 3 and 4 demonstrate reliability on average, but the considerable variation across items does lend some room for skepticism. The FCI's Cronbach's alpha in this context is also more robust than Clark's, but is lowered slightly when the new Trust Fund solvency is included.

As for validity, the FCI demonstrates strength in this area, but with similar concerns in regards to the trust fund solvency area. The cash, budget, long-run, and service-level solvency areas remain important.

Many of the shortcomings of the FCI highlighted here, especially in regards to the trust fund solvency area, point more to the importance of supplementing the FCI with other information and analysis. It is no coincidence that the trust fund solvency is the weakest in regards to reliability and validity. The two government liabilities making up the trust fund area - pensions and other post employment benefits (opeb) - are more significantly mis-measured than any other line item covered in the FCI. The measurement error produced by their indicators stems from the inferior reporting requirements governing them.

2. Factoring in the soundness of reporting requirements

When conducting fiscal condition or sustainability analysis, analysts should familiarize themselves with the reporting requirements for the underlying data. The financial information that is used to calculate financial indicators is subject to reporting requirements that can both (1) change over time and (2) be imperfect at accurately depicting the true size of a liability. Both issues can produce measurement error if the analyst does not account for them. The Government Accounting Standards Board (GASB) is an independent organization that issues reporting requirements for state and local government financial statements. Although the organization is continuously working to improve reporting requirements, their rules – and their implementation – are still imperfect and has led to the underreporting of pension and OPEB liabilities in particular.

⁶⁸ Clark's sample includes 117 of the largest cities in Ohio, based off of their revenues.

GASB was established in 1984 to become the official source for enforcing generally accepted accounting principles (GAAP) for state and local governments in the United States. Ideally, accounting rules would not change frequently both for reliability and consistency on behalf of state and local governments and creditors. But, in order to incorporate feedback that GASB has sought out to improve reporting requirements, there has been several significant accounting rule changes in the past two decades.

In 1999, GASB released Statement No. 34, which did many things to help make financial reports more comprehensive, easier to understand, and easier to use.⁶⁹ The most significant change was the push for government-wide financial statements, making comparison between governing bodies easier.

Another notable change is GASB Statement No. 68 which was issued in 2015 and resulted in many state and local governments to report considerably larger pension liabilities.⁷⁰

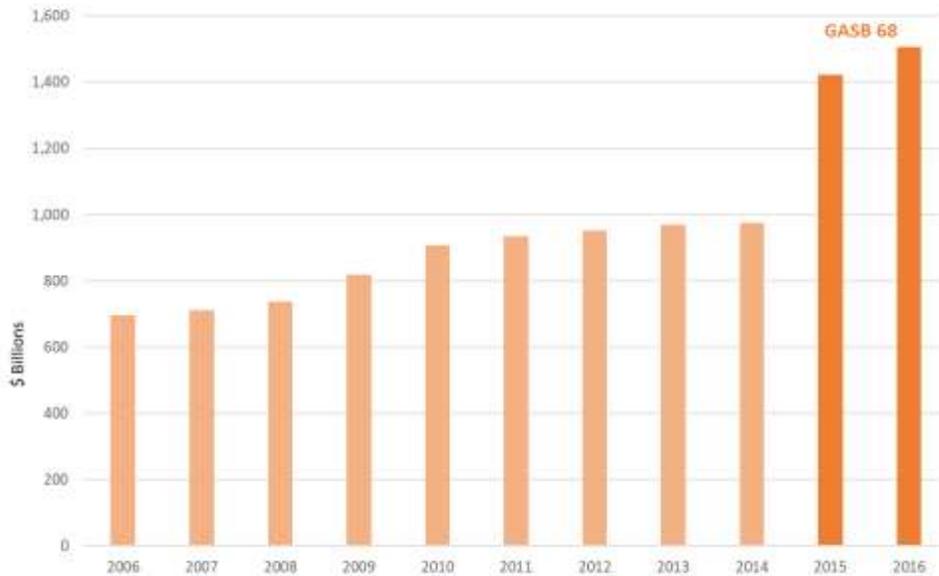
The figure below illustrates what an accounting rule change can have on time series data.⁷¹ The larger pension line items that states started reported following GASB 68 consequently led to larger long-term liabilities. Long-term liabilities increased by 46 percent between 2014 and 2015 – a drastic change from the average annual growth rate of 4 percent between 2006 and 2015.

⁶⁹ Governmental Accounting Standards Board (GASB), “Summary of Statement No. 34,” <https://www.gasb.org/st/summary/gstsm34.html>.

⁷⁰ Kim, Youngbin, Xiaowen Jiang, and Jaeseong Lim, “GASB Statement No. 68 implementation magnifies attention to Connecticut pension crisis,” *The Journal of Government Financial Management*, 2020.

⁷¹ Eileen Norcross and I use a similar chart to depict the effect of GASB 68 on long-term liabilities relative to personal income in the Mercatus Center’s Fiscal Rankings Report. I produce a similar chart here to further drive home this point.

Long-term Liabilities in the States Rise Following GASB 68



Source: Norcross, Eileen and Olivia Gonzalez, "State Fiscal Rankings," Mercatus Center Research Paper, October 9, 2018.
<https://www.mercatus.org/publications/urban-economics/state-fiscal-rankings>

Absent knowledge of the GASB 68 rule change in 2015, an analyst may be misled to think that the states' fiscal condition severely worsened in 2015. State long-term liabilities did in fact worsen in 2015, but not by as intensely as this figure would suggest. Rather, GASB 68 helps to more accurately reveal the size of long-term liabilities. A more apt assessment of reported long-term liability numbers – and indirectly pension liabilities in particular – , therefore, is that they were actually a lot worse than the public originally thought over the whole time period depicted.

The implementation of GASB 68 resulted from years of discussion between GASB, economists, accountants, and other practitioners about the adequate discount rate to use when valuing public pension liabilities. GASB's pension project began when the organization solicited feedback on a proposed rule starting in March 2009. The proposed rule with incorporated feedback was finalized in June 2012 before being put into effect for financial statements starting in fiscal year 2015. Part of the difficulty for GASB in incorporating feedback, however, was that economists and accountants strongly disagree on how to value public pension liabilities.

Many accountants tend to prefer to discount public pension liabilities using the expected rate of return on plan assets, usually around 8 percent.⁷² Economists argue that since public pension benefits are virtually guaranteed to public workers, they should be discounted using a lower interest rate that reflects this; relying on the U.S. Treasury rate would be a more comparable number to use.

⁷² Biggs, Andrew, "Proposed GASB rules show why only market valuation fully captures public pension liabilities," *Financial Analysts Journal*, 2011.

On the surface, this deceptively small difference produces a drastic difference when calculating pension liabilities. The difference in aggregate state public pension liabilities using the discount rates preferred by accountants (and GASB before rule no. 68) and economists is in excess of \$2 trillion.⁷³ This difference is why economists often re-evaluate public pension plans by rediscounting liabilities using lower market rate of return assumptions.⁷⁴

GASB 68 was a movement in the direction of more accurately depicting public pension liabilities using more realistic market return assumptions; in line with what economists would recommend. However, it still provides a lot of discretion to states, leading to the option to utilize a “blended rate”.⁷⁵

Consequently, current actuarial rules do not present a full picture of plan liabilities. Economists recommend that GASB further update their rules to require even more realistic discount rate assumptions in state financial reports. Until that time comes, there will be measurement error in any financial indicator that relies upon state reported pension liability numbers. Additionally, if and when that time comes, analysts will need to account for this change in time series analysis.

There is also the issue of other post-employment benefit (OPEB) reporting. Like pensions, OPEB liabilities need to be rediscounted with more realistic market return assumptions. GASB statements No. 74 and 75 are the most recent accounting rules to influence OPEB reporting for state and local governments. These rules were not relevant until fiscal years 2017 and later, however, which have not been collected in one place yet at the time of writing.⁷⁶

What we do know, however, is that unfunded OPEB liabilities – under more realistic discount rates than what state financial reports use – were just over \$1 trillion in 2019, according to researchers Savidge et al. (2020) at the American Legislative Exchange Council (ALEC).⁷⁷ Unfortunately, I don’t have an aggregated figure reflecting state reported unfunded OPEB

⁷³ Novy-Marx, Robert, and Joshua D. Rauh. “The intergenerational transfer of public pension promises,” NBER Working Paper 14343, 2008.; Novy-Marx, Robert and Joshua D. Rauh, “The crisis in local government pensions in the United States.” In *Growing Old: Paying for Retirement and Institutional Money Management After the Financial Crisis*. Edited by Yasuyuki Fuchita, Richard J. Herring, and Robert E. Litan. Washington, DC: Brookings Institution, 2011a.; Novy-Marx...

⁷⁴ Biggs, Andrew G. and Eileen Norcross, “The crisis in public sector pensions plans: a blueprint for reform in New Jersey, Mercatus Center Working Paper, 2012.; Norcross, Eileen, “Delaware’s public employees’ retirement system: A complete and transparent accounting,” Mercatus Center Working Paper, February 5, 2013.; Norcross, Eileen, “Pension reform in Alabama: a case for economic accounting,” Johnson Center: Troy University, 2014.

⁷⁵ Weinberg, Sheila and Eileen Norcross, “A judge in their own cause: GASB 67/68 and the continued mismeasurement of public sector pension liabilities,” *Journal of Law, Economics & Policy*, 2017.; Weinberg, Sheila and Eileen Norcross, “GASB 67 and GASB 68: What the new accounting standards mean for public pension reporting,” Mercatus Center Policy Brief, 2017.

⁷⁶ If there is enough time (and space in the paper) before the final draft is submitted, I would love to collect OPEB data or long-term liability data for 2017 and 2018 to show how the GASB rules have affected OPEB liabilities. If I collect the long-term liabilities, I can just add to the chart I already made for GASB 68 and continue it for 2017 and 2018.

⁷⁷ Savidge, Thomas, Jonathan Williams, and Skip Estes. Other Post-Employment Benefits, 2019. American Legislative Exchange Council. 23 January 2020. For plans with assets, Savidge et al. use the 15 year treasury rate of 2.49 and for plans without assets, they use a money market rate of 0.19.

liabilities for comparison for 2019. However, the latest number I do have is the unfunded OPEB liability for the states from fiscal year 2016, which was \$710.18 billion.⁷⁸ If I'm to assume an average annual growth rate of 5 percent for unfunded OPEB liabilities⁷⁹, I estimate that the state reported unfunded OPEB liability would have been close to roughly \$798.86 billion.

Comparing my estimate of the state reported unfunded OPEB number of \$798.86 billion with ALEC's Savidge et al.'s rediscounted number of over \$1 trillion, we see that rediscounting increases the state reporting number by over 25 percent.

The GASB rule changes I have summarized here for pension and OPEB liabilities are a few examples of how the soundness state financial reporting can influence the accuracy of numbers that ultimately go into financial analysis. When using the fiscal condition index (FCI), for example, it is important to note that the areas where financial reporting is weaker will correspond to what makes the FCI weaker when it comes to assessing financial condition. It is not surprising then, that the weakest solvency areas of the FCI when it comes to reliability and validity are also related to pensions and OPEB liabilities.

I have not summarized all GASB rule changes – just several notable rules to illustrate how important it is for analysts to be aware of them before assessing state fiscal sustainability. Analysts merely looking at state financial position – how particular line items are changing year to year – would be deceived into thinking that state pensions and long-term liabilities substantively worsened in 2015 when in fact they were worse than they originally appeared all along. A similar conclusion would be reached for OPEB unfunded liabilities absent the effort to rediscount them with more accurate assumptions.

This section also further emphasizes the importance to include a trust fund solvency component in the FCI until improved reporting requirements reflect a more accurate accounting of long-term liabilities in the long-term solvency area.

Ultimately, financial metrics are only as good as their reporting requirements.

3. Supplement analysis with economic data

Assessing fiscal sustainability also means taking into consideration the economic environment that a state finds itself in. Doing so provides more helpful context for interpreting financial indicators. A drastically declining operating position should stand out to an analyst, but the driving factor could influence the policy recommendations that follow. A decline in revenues could be because of a prior policy change or because of an economic recession or demographic factors that are beyond the state's control. Knowing of regional or national economic booms or recessions also similarly helps the analyst better understand when there are drastic changes across several or many states.

⁷⁸ Eileen Norcross and I collected this information for our 2018 Mercatus Fiscal Rankings Report.

⁷⁹ This is the same annual growth rate of state reported pension numbers between 2006 and 2015, before significant GASB rule changes.

Expanding fiscal condition analysis to economic data also helps further test for the validity of financial metrics; building on the analysis from section 1. This is especially helpful in the assessment of criterion-related validity. Economic data can act as an external criterion through which we evaluate the criterion-validity of our financial metrics.

The process of assessing criterion-related validity usually involves establishing a relationship between the instrument of interest – financial metrics in this context – and a measurable external criterion. Wang, Dennis, and Tu (2007) did this by utilizing a number of state-level socio-economic and population indicators to see how they compare to the overall economic condition of the states. “This approach is not directly tied to a measure of financial condition but could still provide evidence to support criterion-related validity because the economic condition of a state would be directly tied to their financial condition.”⁸⁰

Table 5 shows the results of my criterion-related validity assessment of the FCI indices using socio-economic and population indicators as the external criterion.⁸¹ I find that the FCI is negatively (and significant at $p < 0.01$) associated with population, wages per capita, and employment per capita, similar to Clark’s and earlier studies’ findings. Using the entry and exit of establishments as two more measures of each state’s economic environment, I find that they’re also negatively related to the FCI. These variables converted to measures of change are all positively related to the FCI, except for the establishment exit rate, which is not significantly related. When looking at the five subindex areas, the relationships are less consistent.

Table 5. Associations Between FCI Indices and Socioeconomic Condition						
	Cash solvency	Budget solvency	Long run solvency	Service level solvency	Trust fund solvency	FCI
Static measures of socioeconomic condition						
Population	-0.2946***	-0.1309***	-0.2850***	0.2144***	0.0169	-0.1868***
Wages per capita	-0.2686***	-0.0378	-0.3173***	0.1513***	-0.0070	0.1906***
Employment per capita	0.1527***	0.1807***	0.2554***	0.1861***	0.2019***	-0.3404***
Entry of Establishments ^a	0.2745***	-0.1621***	-0.2899***	0.2381***	0.0577	-0.1652***

⁸⁰ Clark 2015, 73.

⁸¹ I utilize similar measures as Wang, Dennis, and Tu (2007), with the addition of establishment entry and exit metrics.

Exit of Establishments ^a	-0.2854***	-0.1697***	-0.3084***	0.2343***	0.0460	-0.1833***
Measures of socioeconomic change						
Population change (from prior year)	0.1390***	0.1704***	0.1483***	0.1298***	0.0922**	0.2439***
Wage change (from prior year)	0.0718*	0.1909***	0.0645	-0.0343	0.0459	0.1096**
Employment change (from prior year)	0.0363	0.0942**	0.0488	0.0661	0.0454	0.1004**
Establishment entry rate ^a	0.0848*	0.0963**	-0.0208	0.2080***	-0.0144	0.1457***
Establishment exit rate ^a	-0.0257	0.0042	-0.1451***	0.1902***	-0.0991**	-0.0033
<p>Note: *p<0.10, **p<0.05, ***p<0.01. Correlations are between standardized versions (z-scores) of the variables listed above.</p> <p>(a) Correlations were restricted to 2006-2014 because more recent data was not available for these variables</p>						

Another way to assess the FCI for criterion-related validity is by comparing it with another financial condition analysis technique. Clark does this by comparing his results with the state of Ohio's Auditor's fiscal distress status designation. Here, I compare the FCI with state bond ratings issued by S&P, Fitch, and Moody's, as displayed by their correlations in table 6. In doing so, we should expect that the states ranked as least solvent in the FCI would also have lower bond ratings.

The qualitative ratings issued by S&P, Fitch, and Moody's were converted into numerical form using a similar method utilized by Dove et al. (2018).⁸² S&P ratings were assigned a number between 1 and 25, with 1 being the lowest rating and 25 being the highest possible rating.

⁸² Dove, Collins, and Smith, "The Impact of the Public Pension Board of Trustee Composition on State Bond Ratings."

Similar transformations were applied to Moody's and Fitch, but they were assigned different ranges of between 1 and 21 for the former and between 1 and 19 for the latter.

Table 6. Associations between FCI indices and bond ratings						
	Cash solvency	Budget solvency	Long run solvency	Service level solvency	Trust fund solvency	FCI
S&P	0.2267***	0.1744***	0.3252***	0.0961**	0.2822***	0.3758***
Fitch	0.1060	0.1177	0.2831***	0.2051*	0.1859**	0.2813***
Moody's	0.0276	0.0435	0.2397***	0.2051***	0.2448***	0.2575***

Note: *p<0.10, **p<0.05, ***p<0.01. Correlations are between standardized versions (z-scores) of the solvency areas listed above and the coded

After these transformations, states with higher numerical values should also have high bond ratings. If the FCI measures fiscal condition well and exhibits strong criterion-related validity, then in theory, the FCI should be positively correlated with these numerical transformations of the bond ratings. Looking at table 6, we see that this roughly holds true. The coded values of the S&P, Fitch, and Moody's ratings are significantly and positively related to the FCI at the 0.01 level. This implies that the bond ratings are associated with greater fiscal condition, as expected, and corroborates what earlier studies have found.⁸³ The magnitude of the coefficients, however, are relatively small ranging from 0.2575 for Moody's to 0.3758 to S&P.

4. Pair the metrics with their institutional context

Perhaps the most neglected component of fiscal condition analysis in the literature currently is the role that institutions play. By institutions I mean the rules that govern the fiscal decision-making process.⁸⁴ More broadly speaking, institutions are crafted – or evolve – to ideally help facilitate coordination among individuals.⁸⁵ In the realm of fiscal condition analysis, it is very important to take stock of all potential institutions – or rules of the game – that could be influencing a state's finances. There are of course many different institutions that could potentially fit this bill and it often varies by state what is the most pertinent. The goal of this section is not to argue for a complete accounting of every institution on the books, but instead to

⁸³ "Studies of credit rating have been found to be associated with financial condition measured by socioeconomic factors such as population growth, employment, housing, and poverty, as well as financial factors such as debt history, debt burden, capital spending level, and fund balances (Ammar, Duncombe, Hou, Jump & Wright 2001; Wang, Dennis, and Tu 2007.)

⁸⁴ Mitchell, Matthew D. and Olivia Gonzalez, "State Budget Institutions," Mercatus Center Economic Perspectives, April 19, 2016.

⁸⁵ Boettke, Peter J. and Alexander Fink, "Institutions first," *Journal of Institutional Economics*, 2011.

highlight a vision for fiscal condition analysis that goes beyond merely using fiscal metrics to analyze state finances.

The reason comes back to the difference between fiscal position and fiscal condition emphasized earlier in this chapter. To illustrate this importance in the realm of institutions – let’s imagine a scenario when two state’s finances are being compared: state A and state B. Suppose both states have comparable operating positions, debt levels, assets, and cash on hand. At first look, based on their financial position listed on the books, these states would appear to have effectively the same fiscal condition. However, if state A has a rainy day fund whereas state B does not, this immediately improves state A’s fiscal condition in relation to state B. Especially if state A’s rainy day fund is robustly designed, i.e. it is only used in the case of emergencies and the state makes regular payments into it during strong economic times.

Even if rainy day funds were listed on state comprehensive annual financial reports – in many cases they are not – only the dollar amounts of their balances would be portrayed. The rules governing withdrawals and deposits are vital in understanding how robust a rainy day fund is in preparing a state for a financial shock, but fiscal metrics do not pick up this information.⁸⁶

This will be especially important to note when fiscal condition analysis is conducted on the period following the start of the COVID-19 pandemic. State fiscal positions will suffer following the initial shock of the pandemic and analysts will need to look beyond financial statements to understand the role that different institutions, like rainy day funds, are playing in helping alleviate the financial strain that states experience.⁸⁷

Research shows that well-structured rainy day funds are associated with less spending volatility and less fiscal stress.⁸⁸ Rainy day funds are an example of an institution that can shape the legislative process surrounding state budgets, but there are also institutions that shape the budget process itself or the political process. Balanced budget requirements and tax and expenditure limits (TEs) are examples of the former.⁸⁹

The many fiscal institutions covered in this book further demonstrates the diversity of rules that can influence state finances.

Informal institutions, or socially shared rules that are usually unwritten or not codified, are just as important. An example is if a state makes regular contributions to its rainy day fund even though there is no codified rule requiring that it does so. Continuing to balance budgets even when there is not a balanced budget requirement is another example. States that do such things also

⁸⁶ Pew Research Center report, “When to use state rainy day funds,” April 13, 2017.

⁸⁷ Pew Research Center report, “State rules can complicate rainy day fund withdrawals,” May 12, 2020.

⁸⁸ Wagner, Gary A. and Erick M. Elder, “The role of budget stabilization funds in smoothing government expenditures over the business cycle,” *Public Finance Review*, 2005.; Mitchell, David and Dean Stansel, “State fiscal crises: States’ abilities to withstand recessions,” Mercatus Center Working Paper January 20, 2015.

⁸⁹ Mitchell, Matthew D. and Nick Tuszynski, “Institutions and State Spending: An Overview,” *The Independent Review*, 2012.

usually have a more robust culture of fiscal prudence. The inverse of this – lack of fiscal prudence – is an equally important informal institution to be wary of when analyzing financial metrics.

Whether formal or informal – there is considerable institutional diversity facing state finances. This diversity is not readily apparent in state financial metrics, so analysts need to expand beyond accounting statements and economic data to incorporate this information into their understanding of fiscal condition.

5. Next steps

Assessing state fiscal sustainability is a multifaceted analytical process that involves incorporating information from many sources. I've shown here that starting with financial metrics is an important step, but that's not where the analysis should stop. Analysts should also take into consideration the soundness of the reporting requirements governing the financial data they are utilizing and should then supplement this with economic data and other external measures. Although not discussed in detail in this chapter, case studies are a helpful avenue for bringing information from each of these steps together.

Following this holistic process can help analysts more robustly assess the sustainability of state finances. Financial metrics help depict how a state's financial position changes following economic shocks and then the steps throughout the rest of the process help make more sense of a state's financial position. It is important to remember the key distinction between fiscal position and fiscal condition; the latter of which is more comprehensive and helpful for policymakers both make sense of past experiences and prepare for tough financial times of the future.

Following a similar approach to Clark (2015), I test for the validity and reliability of the Fiscal Condition Index (FCI) – a prominent fiscal monitoring system – and find mixed results. When it comes to both reliability and validity, I provide evidence that the FCI is more robust using state government financial data than for local governments. What stands out in comparison with Clark's research, however, is that the newly added trust fund solvency area appears to be the weakest link statistically in terms of validity; it does not converge well with the other solvency areas.

Although the shortcomings of the trust fund solvency I discover also weaken the FCI's reliability, they do not point to a need to take it out of the fiscal condition assessment toolbox altogether. The trust fund solvency area is measured by two components: unfunded pension liabilities and other post-employment benefits (OPEB); two areas that are rife with measurement error. For this analysis, I utilized the same dataset that Eileen Norcross and I put together for our 2018 Mercatus report, where we adjust publicly reported pension liabilities to account for more accurate market return assumptions. Even with these adjustments, they are still imperfect measures.

Unfunded pension and OPEB liabilities are not always consistently and accurately calculated at the state level, and therefore, until they are, their measurement reliability and validity will be significantly limited. Their conceptual importance remains. For the time being, although the indicators within the trust fund solvency are not significantly correlated with each other, they are significantly correlated with the FCI itself.

The FCI is not the objective standard for conducting fiscal analysis. More research needs to be conducted that robustly compares different monitoring systems, but even then, the type of system necessary for analysis may vary by the context. Regardless, I demonstrate in this chapter that the more robust system is the one that minimizes chance for measurement error by accounting for various perspectives and that minimizes the chance of public choice manipulation. By following the steps outlined in this chapter, analysts can more systematically incorporate both quantitative and qualitative information when assessing state fiscal condition or sustainability.

Many states face a tough path forward out of the fiscal distress that the COVID-19 pandemic has created for them. Hopefully it can provide a wake-up call for governments to rethink their approaches to fiscal sustainability. The first step before making policy recommendations is to take an honest stock of where a state's finances are; only then can a sustainable way forward be found. This chapter outlines a comprehensive approach for how to conduct such an honest assessment.