

The New York State Fiscal Stress Monitoring System for Local Governments



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Authored by Kevin M. Bronner, Ph.D.

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Produced By:

Albany Research in Public Administration (ARPA)
4 Georgian Terrace
Albany, New York 12211
(518) 489-5252
www.albanyrpa.com

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ABSTRACT

This paper outlines a number of fiscal stress issues in the United States since the 1970s. Much research has shown that there are problems with fiscal stress monitoring systems for local governments. This research discusses the Office of the New York State Comptroller Fiscal Stress Monitoring System that was developed in 2012. The system examines data for local governments and school districts in the State of New York. A fiscal stress score and an environmental indicator score is developed for most local governments in New York State. This paper studies how the system is working for city and county governments. An analysis is developed to examine the fiscal stress score for all cities and counties that have a general obligation bond rating issued by Moody's Investors Service (Moody's). The analysis finds that the system is a valid tool in developing individual fiscal stress scores. The bond ratings developed by Moody's and the fiscal stress scores were analyzed together and except for a small group of outliers, the fiscal stress system performed well.

INTRODUCTION

The Office of the New York State Comptroller (OSC) first developed a fiscal monitoring system for local governments in the 1980s (Pillai and Bronner 1984). A new Fiscal Stress Monitoring System was developed in 2012 to study local governments and school districts in New York State (Office of the New York State Comptroller 2014). The Fiscal Stress Monitoring System evaluates counties, cities, towns, villages, and school districts by developing a fiscal stress score and an environmental indicator score for each government.¹ The fiscal stress scores are based on a scale from 0 to 100 with the higher numbers being used as an indicator of fiscal stress. Environmental scores measuring items such as unemployment and poverty rates are also used in the system. The higher the environmental score, the less the local government is viewed from an economic perspective. There should be a positive relationship between the fiscal stress scores and the environmental scores.

The system is used to monitor the finances of numerous municipalities in New York State including all 57 counties outside of New York City, 61 small and large cities, 10 villages, and 932 town governments. (Office of the New York State Comptroller 2015). About 4 percent of the local governments were estimated to have

¹ Entities operating within the boundaries of the City of New York are not examined by the system.

some amount of fiscal stress during the first three years of the program.² About 21 percent of cities and county governments, however, are on the fiscal stress list.

This study discusses the literature concerning fiscal stress that has been developed over the past 50 years. Then an analysis of the New York State Fiscal Stress System is conducted using city and county governments that are subject to review by the monitoring system.

LITERATURE REVIEW: HOW IS FISCAL STRESS DETERMINED?

The concept of measuring fiscal stress for local governments may seem like a relatively straightforward concept given the vast amount of accounting and finance information available and the use of sophisticated computer models by researchers. A review of the literature on fiscal stress indicates, however, that after more than 40 years of study there are many unknowns concerning how to measure fiscal stress and how to define it. Many researchers have proposed frameworks to measure fiscal stress by analyzing a series of financial and/or economic variables to predict the financial standing of selected localities.

LaPlante (2013) outlined how a number of researchers began to study the fiscal issues associated with local governments during the 1960s. The concept of measuring fiscal stress was highlighted during the 1970s when a series of financial problems developed in several large American cities such as New York and Cleveland. (Kloha, Weissert, and Kleine 2005). During 1973 the Advisory Commission on Intergovernmental Relations (ACIR) issued a report entitled *City Financial Emergencies* (Advisory Commission on Intergovernmental Relations 1973). A follow up report was issued by the ACIR in 1985 where a model was developed to predict the financial health of major American cities (Advisory Commission on Intergovernmental Relations 1985). The updated report used ratios related to general fund operations, revenue and expenditure growth rates, balance sheet ratios, liquidity and short term debt concerns, property tax collection issues, and pension costs.

Additional researchers developed models to predict fiscal stress by using financial indicators such as a deficit/surplus position, and economic variables using factors such as poverty levels in the community (Bahl 1984). Bahl further indicated that concepts such as business cycles, inflation, and shifts in population and economic activity influenced the financial standing of local governments. Bahl cautioned that the concept of fiscal stress can be viewed as a qualitative term that means different things to different people. In a world of intergovernmental finance, there is an issue that fiscal stress indicators can be used to allocate federal or state grants. Bahl noted that there may be an incentive to be in a position of fiscal stress.

More recent information shows that the concept of fiscal stress for local governments still is an important topic. Bronner (2015) found that New York State has a system that can provide grants and other assistance to local governments in New York State that have fiscal stress. During 2016 special grants were offered to local governments under fiscal stress to conduct long term financial planning. (New York State Financial Restructuring Board for Local Governments 2016).

² This metric appears low because the system is dominated by the large number of town governments in the system few of which are on the fiscal stress list.

Mahar and Deller (2013) outlined how organizations such as the International City/County Managers Association, the Government Finance Officers Association, and the Advisory Commission on Intergovernmental Relations have developed tools to monitor the fiscal status of local governments. Survey research from 2005 found that 15 states developed programs to measure financial position of local governments in their jurisdiction. (Kloha et al. 2005). The Kloha study analyzed the various ratios being used by the states and produced some interesting research findings. The indicators used by the local governments were analyzed and the research found that 174 individual ratios were used. Table 1 shows the types of variables used in the analysis.

Table 1
Categories of Fiscal Indicators

<u>Variable</u>	<u>Number</u>
1. Revenue measures	12
2. Expenditures	9
3. Operating position including deficits or surplus	48
4. Debt	44
5. Unfunded liabilities	5
6. Community economic resources	11
7. Legal issues	36
8. Miscellaneous	9
Source: Kloha et al. at page 243.	

The study also found that 98 of the measures were quantitative and 76 were qualitative. This indicates that there is room in the financial evaluations for qualitative material and that quantitative indices may not present all the issues associated with fiscal stress. The survey research analyzed whether the financial monitoring systems were doing a good job in evaluating the local governments. Thirteen of the states responded to the question and 8 of them (62 percent) responded that the system worked reasonably well.

Today, some of the larger states that use fiscal stress systems include North Carolina, New York, and Ohio (Finkler, Smith, Calabrese, and Purtell 2016). Weikart (2013) found that a number of states including North Carolina, Ohio, New Jersey, New Mexico, Pennsylvania and Michigan have ongoing monitoring of local governments. (Crosby and Robbins 2013) provided additional research on the State of Michigan financial monitoring system for local governments. Coe (2007) provided additional information concerning the system developed in the State of North Carolina.

Ammar, Duncombe, Hou and Wright (2001) examined a number of financial variables for a group of 30 large cities across the United States. Their research added support to the concept that data could be analyzed in a cross sectional analysis to predict the level of financial management existing in the cities. Sohl, Peddle, Thurmaier, Wood and Kuhn (2009) analyzed data for a group of municipalities and concluded that a comparative financial position analysis would be useful to develop. Levine, Justice and Scorsone (2013) discussed case studies for the cities of New York, Chicago, and Los Angeles as they relate to the risks from the recession of 2008-2009.

Problems With Fiscal Stress Monitoring Systems

A number of researchers have found that it is difficult to develop models to adequately measure fiscal stress (Cabaleiro, Buch, and Vaamonde 2007; Cahill and James 1992; Kloha et al., 2005; Shamsub and Akoto 2004). Stone, Akheil, Comeaux and Kirshner (2015) analyzed data for the City of Detroit to find out if indicators such as the cash ratio, the quick ratio, and the current ratio could have been used to predict the decline of the city. The study analyzed a scale composed of many variables developed from the data for Detroit. The analysis found that many commonly used variables did not provide indications that a serious financial crisis was going to develop. In other cases such as the use of an operation ratio or a fund balance ratio, there were indications of decline in the data. This recent study is an indication that data used to provide a numeric scale of fiscal stress can provide mixed results.

Some researchers examining local governments in states with fiscal stress systems have found varying results related to the success of the systems. Coe (2007) analyzed the North Carolina system and found that bond rating agencies and the officials in the state found the system useful. Modlin and Stewart (2014) examined a group of 83 counties in North Carolina and found that there are four variables that can be used to measure fiscal stress. These include the fund balance level of the locality, the presence of high increased salaries, increased debt service levels, and whether the local government was affiliated with a countywide water system. Clark (2015) examined 117 cities located in Ohio and found that a “Financial Condition Index” developed by the State of Ohio did a questionable job in measuring fiscal stress. Crosby and Robbins (2013) found that a system used by the State of Michigan with 10 financial indicators had problems. The results for 259 cities were analyzed and numerous problems concerning the validity of the system were exposed. A Pew Charitable Trusts report (2016) found that there is conflict between state and local governments in implementing fiscal stress systems and that inconsistent monitoring exists.³ It is clear that a number of issues still exist about how fiscal stress should be measures and evaluated. Many of the fiscal stress systems have been shown to be problematic in developing valid fiscal stress measures.

³ Pew is conducting a research study on fiscal monitoring which it expects to complete later in 2016.

THE NEW YORK STATE FISCAL STRESS MONITORING SYSTEM

The New York State Fiscal Stress Monitoring System evaluates numerous localities . About 4 percent of the local governments were estimated to have some level of fiscal stress since the program was implemented in 2012. The system computes a fiscal stress score and an environmental indicator score for each local government.

Fiscal Stress Scores

The Office of the New York State Comptroller (OSC) uses annual filings of data submitted by the local governments to compute the fiscal stress scores. Nine variables are included in the computations. Table 2 shows the variables used and the weight given in developing the scores. The fund balance items are the most important variables in developing the fiscal stress scores since they account for 50 percent of the fiscal stress scores. The operating deficit and cash related variables account for 30 percent of the total. The two short term debt variables account for 10 percent of the score. Finally, the personal service and employee benefit items relate to 5 percent of the score and the debt service factor accounts for 5 percent of the fiscal stress score. It is important to note that the weights assigned to the variables are critical in computing the fiscal stress scores. As shown below the fund balance items (which have a combined weight of 50 percent) are the most important contributors to the final fiscal stress scores.

Table 2
Office of the New York State Comptroller
Fiscal Stress Score Variables & Percent Weighting

<u>Variable</u>	<u>Percent</u>
1. Assigned and Unassigned Fund Balance	25%
2. Total Fund Balance	25
3. Operating Deficit	10
4. Cash Ratio	10
5. Cash Percent of Monthly Expenditures	10
6. Short-Term Debt Issuances	5
7. Short-Term Debt Issuance Trend	5
8. Personal Services and Employee Benefits	
Percent of Revenues	5
9. Debt Service % of Revenues	5
Source: OSC 2014 Appendix B.	

All of the variables included in the analysis are intended to measure fiscal stress. For instance, the lower the fund balances the more fiscal stress that should be experienced by the local government. Governments with large operating deficits and low cash balances should experience additional fiscal stress. Those governments with higher short term debt balances, debt service requirements, and high personal and employee service benefit costs should have increased fiscal stress scores.

The OSC uses three categories of fiscal stress:

- Significant Fiscal Stress with metrics of 65 percent to 100 percent
- Moderate Fiscal Stress with metrics of 55 percent to 64.9 percent
- Susceptible to Fiscal Stress with metrics of 45 percent to 54.9 percent.

Local governments with fiscal stress scores below 45 percent are not considered as having fiscal stress. Currently 18 local governments are within the Significant Fiscal Stress category, and 17 governments are designated as having Moderate Fiscal Stress. A total of 34 governments are designated as Susceptible to Fiscal Stress. (OSC 2015). About 21 percent of city governments and 21 percent of county governments are currently on the official fiscal stress list.

Local Government Environmental Indicators

The Fiscal Stress Monitoring System also develops a environmental indicator score for each local government. Fourteen variables are used to compute the environmental scores. These variables include items which should be associated with increased fiscal risk such as increasing poverty rates, unemployment rate increases, property tax base changes and other variables. Table 3 shows the variables used and the approximate weight given in developing the environmental scores.⁴

Table 3
Office of the New York State Comptroller
Local Government Environmental Indicators

<u>Variable</u>	<u>Percent</u>
1. Population Change 1990-2010	15%
2. Change in Median Age 2000-2015	5
3. Median Population Age 2010	5
4. Child Poverty Rate 2010	7.5
5. Change Child Poverty Rate 2000-2010	7.5
6. Change in Property Values	15
7. Property Value Per Capita	15
8. Change in Unemployment Rate	3.33
9. Unemployment Rate	3.33
10. Change in Total Jobs in County	3.33
11. Reliance on State & Federal Aid	5
12. Change in State and Federal Aid	5
13. Constitutional Tax Limit Exhausted	10
14. Change in Local Sales Tax Receipts	0

Source: OSC 2014 Appendix D.

Minor differences occur due to rounding.

⁴ The weights are for city governments. Different weights are used in some cases for county and village governments, and for town governments (Example: variable number 14 has a zero weight in this case).

The environmental scores are provided as additional input for each local government. From a metric perspective they are not used to compute the actual fiscal stress scores. The system assumes that higher environmental scores are an indicator of more risk for the local government. Also, there is an assumption that higher environmental indicator scores are associated with increased fiscal stress.

What Are the Causes of Fiscal Stress for Local Governments in New York State?

The New York State Fiscal Stress System currently identifies 12 city governments and 12 county governments as having various levels of fiscal stress. Table 4 shows the statistics used by New York State to determine fiscal stress for the 12 city governments. There are five categories used to measure fiscal stress including fund balances, operating deficits, cash levels, debt issues, employee benefit costs and debt service levels. The data indicate that about 59 percent of the fiscal stress scores for city governments is related to low fund balance issues. Low cash balances are associated with 20 percent of the fiscal stress scores while operating deficits cause about 12 percent of the fiscal stress scores.

Table 4
City Government Fiscal Stress Scores

City	Fund Balances	Operating Deficits	Cash Level	Debt Issues	Employee Benefits & Debt Service	Total Fiscal Stress Score
	(1)	(2)	(3)	(4)	(5)	(Sum of 1 to 5)
Albany	37.5	6.7	16.7	0	6.7	67.5
Fulton	37.5	10.0	6.7	0	3.3	57.5
Glen Cove	50.0	3.3	13.3	0	3.3	70.0
Glens Falls	31.3	3.3	13.3	6.7	1.7	56.3
Little Falls	31.1	10.0	10.0	8.3	0	59.6
Lockport	31.3	6.7	6.7	0	5.0	49.6
Mechanicville	31.3	6.7	3.3	8.3	0	49.6
Norwich	37.5	10.0	0	0	1.7	49.2
Poughkeepsie	37.5	3.3	20.0	0	1.7	62.5
Tonawanda	18.8	6.7	16.7	0	5.0	47.1
Watervliet	31.3	6.7	13.3	0	3.3	54.6
Yonkers	25.0	6.7	16.7	0	3.3	51.7
Total	400.1	80.1	136.7	23.3	35.0	675.2
Percent	59.3%	11.9%	20.3%	3.5%	5.2%	100%

Minor differences occur due to rounding.

Table 5 shows the information for county governments. Fund balance levels (56.5 percent) and cash balance issues (22.5 percent) account for a majority of the fiscal score determinations for county governments. Operating deficits (10.8 percent) and debt issues (10.1 percent) account for additional amounts of the fiscal stress scores. The data for the city and county governments show that fund balance issues and cash level issues account for the majority of the fiscal stress scores. Approximately 79 percent of the fiscal scores for cities and counties are associated with these two variables. Operating deficits and new debt issue levels account for about 20 percent of the fiscal stress scores. Employee benefit issues and debt service levels only account for a small amount of the fiscal stress issues. This is surprising since the levels of employee benefits, such as other post-employment benefits (OPEBs), have been shown to be a severe challenge for local governments in New York State (Bronner 2013). McFarland and Pagano (2015) also found that pension and health care costs are a major challenge for city governments. In New York State most local government pensions are well funded but the OPEB costs are not funded. Unfortunately, the New York State fiscal stress scores measures only actual expenditures and not long-term accruals for items such as OPEBs.

Table 5
County Government Fiscal Stress Scores

County	Fund Balances	Operating Deficits	Cash Level	Debt Issues	Employee Benefits & Debt Service	Total Fiscal Stress Score
	(1)	(2)	(3)	(4)	(5)	(Sum of 1 to 5)
Albany	31.3	3.3	10.0	6.7	0	51.3
Broome	43.8	6.7	16.7	6.7	0	73.8
Columbia	25.0	6.7	20.0	0	0	51.7
Franklin	37.5	10.0	20.0	0	0	67.5
Monroe	43.8	10.0	20.0	8.3	0	82.1
Nassau	37.5	6.7	16.7	10.0	1.7	72.5
Orange	31.3	10.0	6.7	0	0	47.9
Rockland	37.5	6.7	13.3	8.3	0	65.8
St. Lawrence	37.5	6.7	16.7	8.3	0	69.2
Suffolk	37.5	6.7	6.7	10.0	0	60.8
Sullivan	31.3	3.3	3.3	8.3	0	46.3
Westchester	25.0	3.3	16.7	8.3	0	53.3
Total	419.0	80.1	166.8	74.9	1.7	742.2
Percent	56.5%	10.8%	22.5%	10.1%	0.1%	100%

Minor differences occur due to rounding.

As stated above, New York is one of several large states that have a formal fiscal stress monitoring system for local governments. The Pew Charitable Trust (2016) study indicates that 22 states have some form of fiscal monitoring as shown in Appendix 3. Michigan developed a program in 2007 under the Michigan

Department of Treasury (Plerhoples and Scorsone 2010). The program focuses on metrics related to cash solvency, budgetary issues, long-run liability solvency and service level solvency. The State of Ohio Auditor also maintains a system of fiscal health indicators (Yost 2016 and Yost 2016a). This system uses 16 metrics to monitor the fiscal health of local governments. Examples of the metrics include net asset levels, fund balance amounts, trends in general fund tax revenue, trends in general fund revenues and expenditures, levels of debt service expenditures, and cash balances. The State of North Carolina developed a benchmarking tool for municipalities and counties under the North Carolina Local Government Commission (Public Financial Management 2011, Pew Charitable Trust 2013).⁵ The financial analysis model was developed by Rivenbark, Roenigk, and Allison (2009) from the University of North Carolina at Chapel Hill. The North Carolina system also uses a series of metrics to compute the fiscal status of local governments. Examples include levels of expenditures and expenses to revenues, changes in net assets, cash levels, and debt service amounts (North Carolina Department of State Treasurer (2016). While it is not the purpose of this study to reconcile the variables used in the various fiscal stress systems, it appears that the New York system and those used by North Carolina, Michigan, and Ohio use similar types of variables to measure fiscal stress.

BOND RATING METHODOLOGIES

This paper considers the bond rating methodology being used by Moody's Investors Service (Moody's). Moody's (2014) published information on the bond rating methodology used for general obligation bonds. They use a quantitative scale and other qualitative information to develop their bond ratings. Many of the variables indicated to be important by Moody's are used in the New York Fiscal Stress Monitoring System. This provides an opportunity to study the results of the Fiscal Stress Monitoring System in conjunction with the bond ratings as assigned by Moody's.

Moody's indicates that it uses a series of thirteen factors in developing general obligation ratings for localities (Moody's 2014). Table 6 shows the factors including the weights used. Moody's indicates that it can make adjustments to the final bond rating for other relevant factors after the score is developed. These include items such as population growth or decline, or special features associated with the terms and conditions of the general obligation bonds.

The Moody's scale uses numerous financial and economic variables similar to the metrics used in the New York State Fiscal Stress Monitoring System. While the bond rating agencies indicate that quantitative scales are an important feature in the bond rating process, some researchers have found that numerous other factors are relevant to the bond rating process (Moldogaziev and Guzman 2015; Benson and Marks 2014; Johnson, Kioko, and Hildreth 2012; and Palumbo and Zaporowski 2012). Greer (2016) shows that economic factors are important to bond ratings for a number of Texas local governments, and that rating firms assign varying ratings according to the type of local government being reviewed. For instance, general obligation bonds for local governments are often rated differently than bonds for school districts and special districts such as water facilities. It is important to recognize that not all of the items considered in the bond rating

⁵ The North Carolina Local Government Commission was formed in 1933 due to problems with municipal government financial issues during the Great Depression.

scales by the rating agencies are found to be relevant in the academic bond rating research studies. Additionally, other factors not stated in the bond rating firm criteria documents have been found to influence bond ratings.

Table 6
Moody's Investors Service Bond Rating Variable Categories

<u>Variable</u>	<u>Percent</u>
1. Tax Base Size: Full Value	10%
2. Full Value Per Capita	10
3. Socioeconomic Indices: MFI	10
4. Fund Balance as % of Revenues	10
5. 5-Year Dollar Change in Fund Balance as % of Revenues	5
6. Cash Balance as % of Revenues	10
7. 5-Year Dollar Change in Cash Balance as % of Revenues	5
8. Institutional Framework	10
9. 5-Year Average of Operating Revenues/Operating Expenses	10
10. Net Direct Debt/Full Value	5
11. Net Direct Debt/Operating Revenues	5
12. 3-Year Average of Moody's Adjusted Net Pension Liability/Full Value	5
13. 3-Year Average of Moody's Adjusted Net Pension Liability/Operating Revenues	5
Source: Moodys (2014) Appendix A.	

Petitt, Pinto, Pirie, Grieves, and Noronha (2015); Dody (2012); and Fabozzi (2007) outline the systems used by the rating agencies for municipal bonds. Moody's bond ratings are classified as investment grade if the bond rating is at the Aaa, Aa, A, and Baa level category. Almost all of the bonds for the city and county governments being analyzed in the fiscal monitoring system have investment grade bond ratings. The study analyzes the bond ratings for the city and county governments and compares the bond rating levels to the fiscal stress scores. For instance, if a city or county government has a Baa bond rating it would be expected that the government would have a higher fiscal stress score than a government having an Aa bond rating. Because the fiscal stress scores and the bond rating designation are both measures of financial risk, there should be a relationship between the two risk indicators.

The information from the review of the rating agency bond rating criteria documents and the bond rating academic research studies is relevant to the New York State Fiscal Stress Monitoring System because it illustrates that the use of scaled data may be problematic in making fiscal stress determination decisions. This

view is also supported by the research associated with the history of fiscal stress development as discussed above.

DATA AND METHODS

This study uses data as developed by the Office of the New York State Comptroller for each city and county government included in the Fiscal Stress Monitoring System. As stated above there are 61 city governments included in the system and 57 counties. Some governments were eliminated from the analysis because the Office of the New York State Comptroller indicated that data was not available to make the fiscal stress and environmental score calculations.

Two basic studies are presented here. First, the relationship between the environmental indicator scores and the fiscal stress scores is analyzed for each city and county government using. This study assumes that governments with weaker economic environments such as having high poverty rates and unemployment will have higher fiscal stress scores. This would occur because there are limits on how much revenue can be produced to keep fund balance levels and other financial indicators at reasonable levels.

The second study analyzes the fiscal stress scores for the city and county governments. The fiscal stress scores were analyzed by comparing them to the general obligation bond ratings issued by Moody's. The OSC financial stress scores are developed by using quantitative metrics only. As discussed above, Moody's has a list of similar metrics they use when they rate general obligation bonds (Moody's 2014). While Moody's indicates that they use additional qualitative information as they make individual bond rating determinations, there should be a relationship between the OSC's fiscal scores for the local governments and their bond ratings. Appendices 1 and 2 contains the data for the city and county governments. The bond ratings for each city and county as assigned by Moody's are included. Also the fiscal stress scores and the environmental indicator scores for each city and county are presented.

The Relationship Between the Environmental Indicator Score and the Fiscal Stress Score

Financial and economic theory indicates that there should be a strong relationship between the environmental indicator score and the fiscal stress score for each of the localities in the study. The data for the cities in Appendix 1 and the counties in Appendix 2 were analyzed using a correlation coefficient. It is expected that there should be a positive relationship between the two variables as computed by the Office of the New York State Comptroller. The results indicated only a .13 correlation coefficient between the fiscal stress score and the environmental variable score for the cities and a lesser amount of correlation (.015) for the group of counties. This finding casts some doubt on the basic structure of the Fiscal Stress Monitoring System where the environmental indicator scores and the fiscal stress scored are developed.

The Relationship Between Bond Ratings the Fiscal Stress Score

The data published by the Office of the New York State Comptroller was analyzed to determine if there is a relationship between the bond rating for an individual locality and the fiscal stress score. The analysis was conducted using Moody's bond rating categories. The statistics presented use the general category of bond ratings such as Aaa, Aa, A, and Baa for Moody's.⁶ The theory behind the bond rating study is that the higher the fiscal stress score, the lower the bond rating. The mean fiscal stress scores for the bonds classified in each of the four categories were analyzed to determine if there is a relationship between the fiscal stress score and the bond rating. Table 7 summarizes the data analysis for the city governments. This shows that as the bond rating level decreases, the fiscal stress scores increases as would be expected. For the Moody's bond ratings the average fiscal stress score for each rating category increases as the bond rating decreases: (Aaa = 0, Aa = 10.7, A = 25.5, Baa = 41.0).

Table 7
City Governments in New York State
Relationship Between the Bond Rating Category and the Fiscal Stress Score

Moody's Bond Rating Category	Number of Cities	City Average Fiscal Stress Score	City Average Environmental Indicator Score
Aaa	1	0	2.5
Aa	6	10.7	17.9
A	21	25.5	27.7
Baa	9	41.0	35.8

A similar analysis was conducted for the county governments as shown in Table 8. This shows that as the bond rating level decreases, the fiscal stress scores increases as would be expected. For the Moody's bond ratings the average fiscal stress score increases for each rating category as the bond rating decreases: (Aaa = n/r, Aa = 26.6, A = 32.9, Baa = 72.34).

The analysis of the fiscal stress scores by Moody's bond rating groups indicates that the fiscal stress scores are a sound metric when being compared to bond ratings. There are some outliers in the analysis for the county governments. For instance, the following counties have investment grade bond ratings but also have very high fiscal stress scores: Albany (Aa3, 51.3; Broome A2, 73.8; Nassau A2, 72.5; Suffolk A3, 60.8). For most of the counties, however, the fiscal stress scores tend to follow the bond rating.

⁶ They do not differentiate between 1,2,3 categories for Moody's in the metrics they publish.

Table 8
County Governments in New York State
Relationship Between the Bond Rating Category and the Fiscal Stress Score

Moody's Bond Rating Category	Number of Counties	County Average Fiscal Stress Score	County Average Environmental Indicator Score
Aaa	0	n/r	n/r
Aa	25	26.6	14.9
A	13	32.9	25.2
Baa	3	72.4	15.5

The Relationship Between Bond Ratings the Environmental Indicator Score

The environmental scores are also presented for the city and county governments in Tables 7 and 8. The theory behind the environmental scores is that the higher the score, the more risk is associated with the local government. It is expected that higher rated bonds such as Aa would have lower environmental scores than lesser rated A bonds. Table 7 shows that the city government environmental scores increase as bond ratings fall as is expected. Table 8 shows that for county governments there is not as clear of a pattern between the environmental score and the level of bond rating. Baa rated bonds have an environmental score of only 15.5 while the Aa and A rated bonds have higher environmental scores. About 93 percent of the bonds in Table 8 are rated in the Aa and A categories. The Aa rated bonds have an average environmental score of 14.9 and the A rated group has a score of 25.2. This indicates that the system is working well, however, for most of the county government bonds included in the Aa and A rated categories.

CONCLUSION

The study examines the fiscal stress scores and the environmental variable scores used by the New York State Fiscal Monitoring System for the city and county governments in New York State. The results show that most local governments that are determined to have fiscal stress have low fund balances, operating deficits, and low cash levels. These three factors account for about 92 percent of the fiscal stress score determinations for city governments. For county governments the three variables are associated with about 90 percent of the fiscal stress determination. Factors such as new debt issues and employee benefit and debt service issues contribute only a small amount of the fiscal stress scores.

The Fiscal Stress Monitoring System computes a separate fiscal stress score and an environmental variable score for each local government. The fiscal stress scores are related to financial variables such as fund balances and operating deficits. The environmental variable scores relate to items such as the economic stability in the community as measured by variables such as population growth, community poverty levels, and the value of the tax base. In theory the fiscal stress scores and the environmental variable scores should be related. A good fiscal stress score should be associated with a good environmental variable score. The study used a correlation analysis and found only a weak relationship, however, between the economic status of the community and the level of fiscal stress.

The study also reviewed the fiscal stress scores and the environmental variable scores for the localities by examining how they relate to bond rating levels assigned by Moody's. This was accomplished by comparing the scores by group of local governments with similar bond ratings. The study finds that the fiscal stress scores and the environmental variable scores generally follow the level of bond ratings for the city and for the county governments.

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Appendix 1

City Bond Ratings, Fiscal Stress Scores, and Environmental Indicator Scores

City	Moody's Bond Rating	Fiscal Stress Score	Environmental Indicator Score
Albany	A3	67.5%	28.8%
Amsterdam	w	n/a	n/a
Auburn	A2	11.3	29.6
Batavia	A1	0.0	28.8
Beacon	Aa2	1.7	17.5
Binghamton	A2	28.8	54.2
Buffalo	A1	9.6	52.5
Canandaigua	Aa3	5.0	20.0
Cohoes	A2	5.0	10.0
Corning	A1	17.5	13.3
Cortland	A2	28.8	15.0
Dunkirk	w	20.8	45.0
Elmira	Ba1	n/a	n/a
Fulton	A3	57.5	31.7
Geneva	A2	28.8	33.3
Glen Cove	Baa3	70.0	25.0
Glens Falls	A2	56.3	10.8
Gloversville	A3	n/a	n/a
Hornell	A2	5.0	29.6
Hudson	A2	12.5	32.1
Ithaca	Aa2	n/a	n/a
Jamestown	Baa1	40.8	50.4
Johnstown	w	n/a	n/a
Kingston	A1	31.7	28.3
Lackawanna	A2	8.3	45.0
Little Falls	w	59.6	36.3
Lockport	Baa3	49.6	38.8
Long Beach	Baa1	33.8	12.5
Mechanicville	w	49.6	13.3
Middletown	A1	5.0	27.9
Mount Vernon	A2	30.4	32.9
New Rochelle	Aa3	25.0	17.5
Newburgh	Baa2	18.8	32.5
Niagara Falls	Baa2	31.7	48.8
North Tonawanda	A1	3.3	24.6
Norwich	A3	49.2	39.6
Ogdensburg	Baa1	21.7	41.3
Olean	A1	6.7	36.3
Oneida	A1	6.7	10.4
Oneonta	A1	15.8	18.3
Oswego	A2	15.0	16.3
Peekskill	A1	32.5	25.0
Plattsburgh	A2	41.3	16.7

Appendix 1 (Continued)

City Bond Ratings, Fiscal Stress Scores, and Environmental Indicator Scores

City	Moody's Bond Rating	Fiscal Stress Score	Environmental Indicator Score
Port Jervis	A3	n/a	n/a
Poughkeepsie	Ba1	62.5	32.1
Rensselaer	w	n/a	n/a
Rochester	Aa3	17.5	45.0
Rome	A1	12.5	29.2
Rye	Aaa	0.0	2.5
Salamanca	n/r	12.9	40.4
Saratoga Springs	Aa3	6.3	2.5
Schenectady	A3	0.0	33.8
Sherrill	n/r	6.7	10.8
Syracuse	A1	32.5	42.5
Tonawanda	A2	47.1	27.9
Troy	A2	43.3	29.2
Utica	Baa2	40.0	40.8
Watertown	Aa3	11.3	10.4
Watervliet	A2	54.6	2.5
White Plains	Aa1	7.9	12.5
Yonkers	A3	51.7	31.3

Notes:

Moody's Bond Ratings from July 2016.

n/r or w = not rated or withdrawn bond rating.

n/a = data not available from the Office of the New York State Comptroller.

Appendix 2

County Bond Ratings and Fiscal Stress Scores

County	Moody's Bond Rating	Fiscal Stress Score	Environmental Indicator Score
Albany	Aa3	51.3	13.3
Allegany	A1	15.8	25.8
Broome	A2	73.8	31.7
Cattaraugus	Aa3	12.5	29.2
Cayuga	A1	32.1	23.3
Chautauqua	A1	9.6	26.7
Chemung	A1	16.3	29.2
Chenango	n/r	6.7	17.5
Clinton	A1	29.2	29.2
Columbia	Aa3	51.7	10.8
Cortland	n/r	22.1	3.3
Delaware	Aa3	35.0	11.7
Dutchess	Aa2	22.1	15.0
Erie	A2	31.7	20.0
Essex	n/r	19.2	5.8
Franklin	n/r	67.5	10.8
Fulton	n/r	12.5	14.2
Genesee	n/r	19.6	33.3
Greene	Aa3	9.6	26.7
Hamilton	n/r	15.8	26.7
Herkimer	Aa3	25.4	8.3
Jefferson	Aa3	35.0	20.8
Lewis	n/r	22.5	14.2
Livingston	Aa2	15.8	8.3
Madison	n/r	12.9	9.2
Monroe	Baa1	82.1	18.3
Montgomery	n/r	12.5	14.2
Nassau	A2	72.5	35.0
Niagara	Aa3	3.3	27.5
Oneida	A1	25.8	43.3
Onondaga	Aa2	22.1	2.5
Ontario	Aa1	9.6	5.0
Orange	Aa3	47.9	30.8
Orleans	A1	n/a	n/a
Oswego	n/r	22.5	23.3
Otsego	Aa3	31.7	16.7
Putnam	Aa2	24.2	8.3
Rensselaer	A1	41.3	10.0
Rockland	Baa1	65.8	17.5
St. Lawrence	Baa2	69.2	10.8
Saratoga	Aa2	41.3	2.5
Schenectady	Aa1	41.7	14.2
Schoharie	n/r	12.9	9.2

Appendix 2 (Continued)
Counties Bond Ratings and Fiscal Stress Scores

County	Moody's Bond Rating	Fiscal Stress Score	Environmental Indicator Score
Schuyler	n/r	41.3	8.3
Seneca	n/r	12.9	28.3
Steuben	Aa2	15.8	3.3
Suffolk	A3	60.8	17.5
Sullivan	Aa3	46.3	26.7
Tioga	A1	0.0	30.8
Tompkins	Aa1	3.3	2.5
Ulster	Aa3	9.6	27.5
Warren	n/r	18.8	18.3
Washington	Aa3	19.2	9.2
Wayne	Aa2	19.2	11.7
Westchester	Aa1	53.3	12.5
Wyoming	Aa3	12.9	26.7
Yates	A1	19.2	5.0

Notes:

Moody's Bond Ratings from July 2016.

n/r or w = not rated or withdrawn bond rating.

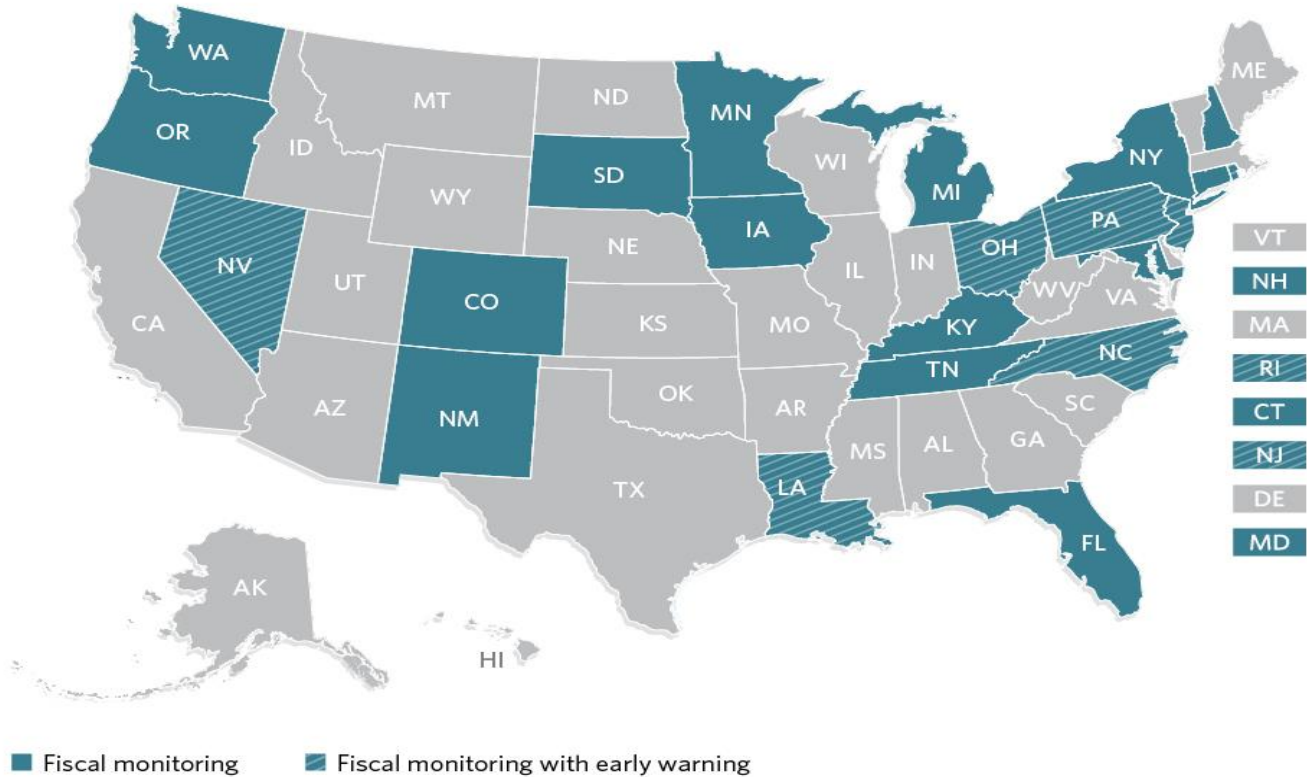
n/a = data not available from the Office of the New York State Comptroller.

Appendix 3

Pew Research 2016

Fiscal Monitoring in the United States

22 states have established programs, including seven with early warning systems



Source: Pew analysis of state statutes and interviews with state officials
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