Quantitative Fiscal Brief: New York State Fiscal Stress Data for County Governments

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ARPA New York State Local Government Improvement Program Series

This study is part of a four part series about the efforts of the State of New York to improve local government efficiency. The series includes reports on:

1. The New York State Fiscal Stress Monitoring System for Local Governments.
2. The Financial Restructuring Board for Local Governments *A New York State Entity*.
3. The New York State Local Government Real Property Tax Freeze.
4. The New York State Department of State Local Government Efficiency Program.

Quantitative Fiscal Brief Studies

The *Quantitative Fiscal Brief* studies use inferential statistics such as regression analysis to study public management tools in the area of government finance.

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Fiscal Brief: New York State Fiscal Stress Data

Abstract

This paper examines the data used by the Office of the New York State Comptroller (OSC) and by the New York Financial Restructuring Board (FRB) for Local Governments as they make financial stress determinations. The FRB uses two variables to designate if a local government may have fiscal stress including a property tax rate variable, and a fund balance variable. This paper uses regression analysis to study the variables for 54 county governments in New York State The analysis shows that the use of a property tax rate variable by the FRB is problematic. The fund balance variable used by the FRB is a better metric to use when making a fiscal stress determination.

Introduction

The State of New York New York currently has a Fiscal Stress Monitoring System maintained by the Office of the New York State Comptroller (OSC). The system uses a number of metrics to designate whether a local government is experiencing fiscal stress. New York State also has a Financial Restructuring Board (FRB) which uses financial metrics to designate whether individual governments are subject to fiscal stress. This paper uses regression analysis to determine whether the two fiscal stress systems support each other. Data for county governments in New York State are used in the regression analyses.[1]

Background

The OSC developed a new Fiscal Stress Monitoring System for Local Governments during 2012.[2] The system uses data for nine variables to develop a fiscal stress score. Examples of the variables include fund

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[1] County governments were used in the study since they represent the entire population and geographic areas in New York State outside of the City of New York.

[2] See Albany Research in Public Administration Report Number 2016-1, entitled *The New York State Fiscal Stress Monitoring System for Local Governments.* August 1, 2016. (www.albany.rpa.com)

balance ratios, operating deficit/surpluses, cash position, use of short term debt for cash flow, and fixed costs. (Martinez 2016). The system develops a fiscal stress score for the governments and those with scores greater than 45 percent are considered to have varying levels of fiscal stress. The more important variables in the system for county governments are related to fund balance, operating deficits, and cash levels.[3]

The FRB also makes a fiscal stress determination.[4] This system examines approximately 1,600 local government entities and examines two variables. (Bronner 2015). The first variable examines the property tax rate for the locality.[5] This variable is computed by taking the property tax levy and dividing it by the full value of taxable real estate over a five year period. The key assumption used by the FRB is that the higher the tax rate the greater the level of fiscal stress. Any local government with a tax rate exceeding 7.1674 percent is considered susticiple to fiscal stress.

It is important to consider how the tax rate variable is being used by the FRB. The FRB logic is that if a government has a high tax rate then it has less flexibility to raise taxes in the future. Another way to view the tax rate variable is that those localities with higher tax rates are funding current operations to a greater degree and are actually increasing fund balance. This would make the locality less susticiple to fiscal stress.

An important element to study in the regression analyses that follow is the sign of the coefficient of the property tax rate variable. The sign can either be positive (+) or negative (-). If the coefficient is negative that indicates that fiscal stress is lower for governments with higher tax rates than for other governments. That would indicate that local governments with higher tax rates are funding current operations to a greater degree than other governments and most likely have a higher fund balance than they would otherwise have. If the

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[3] Ibid.

[4] See Albany Research in Public Administration Report Number 2016-2, entitled *The Financial Restructuring Board for Local Governments A New York State Entity.* September 1, 2016. (www.albany.rpa.com)

[5] This metric divides the property tax levy by the full value of taxable real estate.

coefficient is positive this would illustrate that those governments with higher tax rates are more susticiple to fiscal stress. This would confirm the logic being used by the FRB.

The second FRB variable measures fund balance to expenditures over a five year period. Governments with a fund balance to expenditure ratio below 5 percent are placed on a fiscal stress list. The logic behind the FRB assumption is that those governments with a lower fund balance have less assets in reserves or rainy day funds so they are more susticiple to fiscal stress. It is also important to consider the coefficient computed for this variable. A positive coefficient would indicate that the higher the fund balance ratio the greater the amount of fiscal stress. A negative coefficient would indicate that the higher the fund balance, the lower the amount of fiscal stress. If a negative coefficient is computed, this would confirm the reasoning used by the FRB.

The analysis developed by the FRB indicates that if a local government fails either the property tax rate variable test, or the fund balance test, the locality can be determined to be placed on the fiscal stress list.[6] This means that in order for the FRB logic to be confirmed, the statistical tests must be passed for both variables.

Regression Analysis for County Governments

Appendix 1 contains the fiscal stress scores used by the OSC. (OSC 2016) The appendix also contains the property tax rate variable and the fund balance ratio used by the FRB. (FRB 2016) A regression analysis can be used to determine if there is a statistical relationship between the OSC's fiscal stress scores, and the two variables used by the FRB. [7] Three regression analyses are discussed below. More detail on the three regression analysis is shown in Appendix 2.

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[6] Financial Restructuring Board for Local Governments, Resolution No. 2016-08, Approving the Determination of Automatically Fiscally Eligible Municipalities.

[7] A standard regression analysis using the formula Y = M(X) + b is used. Y=the dependent variable represented by the fiscal stress score. The term M(X) represents the independent variable effects such as the tax rate, or the fund balance variable. The term b is a standard error term. (Berry and Feldman (1985), Lewis-Beck and Lewis-Beck (2016), Schroeder, Sjoquist, and Stephan (2017).

Regression #1: The first regression analysis uses the OSC's fiscal stress score as the dependent variable and the FRB's tax rate variable as an independent variable. The regression was run using data for the 54 counties listed in Appendix 1 that had fiscal stress scores. The regression analysis is attempting to find out if the property tax rate variable used by the FRB has an effect on fiscal stress as determined by the OSC. The data for the analysis is summarized in Appendix 2. Note that the tax rate variable is not statistically significant. This means that from a statistical perspective, there is little association between the property tax rate used by the FRB and the fiscal stress scores as computed by the OSC. The implication is that it is problematic for the FRB to use the property tax rate score as a stand-alone indicator of fiscal stress.

Regression #2: The second regression analysis uses the OSC's Comptroller's fiscal stress score as the dependent variable and the FRB's fund balance ratio as an independent variable. This equation specification is reasonable since governments with lower fund balances should have greater fiscal stress. The results show that the fund balance ratio is a significant variable and that it explains about 36 percent of the fiscal stress score.

Fund Balance Variable Significant:	Yes
Variable Coefficient	-.884
Constant	45.874
Amount of Fiscal Stress Score Explained:	36%

The regression equation for the fund balance ratio is computed as follows:

$$FSC = 45.874 - (0.884 \text{ x the fund balance ratio})$$

If we examined the data for the first county in Appendix 1 (Albany County with a fund balance metric of 7.640) we would find that the regression analysis indicates that it should have a fiscal stress score of 39.12. This is computed as follows:

$$FSC = 45.874 - (0.884 \text{ x } 7.64) = 39.12$$

The actual fiscal stress score for Albany County is 51.30, so the regression equation prediction is about 76 percent correct for Albany County. Notice that the variable has a negative coefficient (-.884). This means that the higher the fund balance, the lower the fiscal stress score. This regression analysis indicates that the fund balance ratio used by the FRB and the fiscal stress score computed by OSC are in agreement.

Regression #3: The third regression analysis uses the OSC's fiscal stress score as the dependent variable and the FRB property tax variable and fund balance ratios as two separate independent variables. This multiple regression analysis shows the effects of the two independent variables together on the fiscal stress score dependent variable. The results (Appendix 2) show that the tax rate is not statistically significant and that and the fund balance ratio is significant with a coefficient of -0.864. This regression explains about 36 percent of the fiscal stress score.

The regression analysis shows that the FRB's use of a fund balance ratio to determine fiscal stress is reasonable because the variable is statistically significant and it is associated with about 36 percent of the fiscal score as computed by the OSC. The use of a stand- alone tax rate variable by the FRB to determine fiscal stress is problematic. The tax rate variable is not statistically significant when viewed in conjunction with the fiscal stress scores as computer by the OSC.

Summary and Conclusions

This paper analyzed a number of fiscal stress indicators used by the OSC and the FRB to determine whether fiscal stress is occurring for county governments operating in New York State. Regression analysis is used to study the fiscal stress scores computed by the OSC. The analysis also analyzed two indicators of fiscal stress as used by the FRB. The FRB uses a property tax rate variable, and a fund balance ratio as indicators of fiscal stress. According to the FRB, if a locality fails a test associated with either variable, it can designate a locality as susceptible to fiscal stress. The use of the fund balance ratio is supported by the statistical analysis contained in this paper while the use of the tax rate variable is not supported. There are implications for further

research from this paper. The data could be examined for other groups of localities in New York State such as city governments, town and village governments, and school districts.

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Appendix 1

County Data for the Regression Analysis

County	OSC Fiscal Stress Score	FRB Tax Rate Variable	FRB Fund Balance Ratio
Albany	44.6	3.478	7.64
Allegany	12.5	15.971	27.46
Broome	67.5	7.009	4.81
Cattaraugus	17.5	12.348	21.32
Cayuga	3.3	8.354	18.98
Chautauqua	12.9	8.873	17.44
Chemung	32.5	9.256	17.6
Chenango	6.7	9.571	35.7
Clinton	29.2	4.675	18.42
Columbia	42.1	5.434	14.03
Cortland	22.1	14.113	14.28
Delaware	12.9	4.841	19.50
Dutchess	6.3	3.360	12.18
Erie	31.7	6.174	8.82
Essex	15.8	2.370	33.54
Franklin	67.5	4.062	6.22
Fulton	15.8	8.630	34.17
Genesee	27.5	9.704	24.50
Greene	0.0	3.741	14.56
Hamilton	12.5	1.990	34.97
Herkimer	19.2	5.437	31.05
Jefferson	35.0	6.523	19.07
Lewis	22.5	7.128	40.74
Livingston	9.6	7.715	34.46
Madison	n/a	7.055	20.86
Monroe	82.1	9.976	1.24
Montgomery	25.4	12.192	17.19
Nassau	62.5	4.525	4.37
Niagara	6.7	8.697	25.79
Oneida	51.3	7.062	9.03
Onondaga	25.4	7.861	12.39
Ontario	6.3	6.256	37.25

County	OSC Fiscal Stress Score	FRB Tax Rate Variable	FRB Fund Balance Ratio
Orange	51.3	3.472	26.38
Orleans	25.8	9.523	17.23
Oswego	22.5	8.335	31.33
Otsego	28.8	2.708	24.82
Putnam	24.2	2.723	26.28
Rensselaer	38.3	6.334	7.70
Rockland	65.8	3.702	-2.85
St. Lawrence	n/a	4.161	2.370
Saratoga	31.7	2.780	7.18
Schenectady	32.1	6.777	14.87
Schoharie	19.6	8.238	19.09
Schuyler	28.8	8.369	8.35
Seneca	16.3	5.485	56.10
Steuben	15.8	7.706	48.69
Suffolk	60.8	2.694	-4.81
Sullivan	36.7	6.407	16.19
Tioga	n/a	8.679	22.15
Tompkins	3.3	6.525	17.62
Ulster	16.3	4.219	18.05
Warren	12.5	3.569	14.94
Washington	9.6	6.087	20.34
Wayne	19.2	7.755	56.81
Westchester	56.7	4.369	9.08
Wyoming	12.9	7.819	25.21
Yates	15.8	6.351	39.43

Appendix 2 Regression Analysis Detail

Regression #1: Fiscal Stress Score = Tax Rate Ratio Metric (N=54)

R-squared =	.015
Coefficient =	-1.188
t-ratio =	-1.337
p-value =	.015 (Not significant)
Constant =	35.494
Standard Error =	.888

Regression #2: Fiscal Stress Score = Fund Balance Metric (N=54)

R-squared =	.359
Coefficient =	-0.884
t-ratio =	-5.538
p-value =	.000 (Significant at 99% confidence level)
Constant =	45.874
Standard Error =	.160

Regression #3: Fiscal Stress Score = Fund Balance Metric + Tax Ratio Metric (N=54)

R-squared =	.357
Tax Rate =	-0.67
t-ratio =	-0.921
p-value =	.361 (Not significant)
Standard Error =	.724
Fund Balance Coefficient =	-0.864
t-ratio =	-5.356
p-value =	.000 (Significant at 99% confidence level)
Standard Error =	.161
Constant =	49.898

Note: Three counties were excluded from all regressions since they did not have a fiscal stress score.