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Do City Governments Manage their Financial Data Prior to Issuing Bonds

Bruce K. Grace, Ph.D., CFA
Associate Professor Finance
School of Business Administration
Scott Meisel, Ph.D., CPA
Associate Professor Accounting
School of Business Administration

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Abstract

Governmental Accounting Standings Board (GASB) Statement No. 34 requires financial reporting for state and local governments. The motivation behind GASB 34 was to make governmental financial reports more comprehensive and transparent. Until its implementation, data on state and local governments was not reported consistently from entity to entity. This paper extends the earnings management literature to include municipalities and funds management. In particular, earnings cannot be reported in governmental units. Instead, Changes in Fund Balance is used. Thus, a unique contribution is the use of earnings management models to test Fund Balance management. We use a version of the Jones model (Meisel, 2007). Specifically, we test whether city governments manage their financial data for events such as debt or bond issues to achieve certain benchmarks. We find that cities are motivated to manage their financial information lower in the year just before the bond issue.

Keywords: Funds management, earnings management, GASB 34, municipal finance

1. Introduction

This research examines the potential manipulations by city governments related to new bond issues. Financial statements of for profit

institutions have been criticized due to reports of opaque and unreliable data. Stakeholders of municipal governments could also be affected by problems in the financial statements. We examine whether city governments manage their financial position for the purpose of issuing bonds to achieve certain benchmarks to look better for constituents and other parties with an interest in the statements. As such, we develop a model to detect problem areas.

State and local governments receive their reporting requirements from the Governmental Accounting Standards Board (GASB). GASB 34 made governmental financial reports more comprehensive and transparent. State and local governments were required to convert funds based on cash or modified accrual basis to accrual basis accounting.

Net income is not used in Governmental Accounting. The accounting equation for such an entity is current assets minus current liabilities equals fund balance which ignores deferred accruals and deferred expenditures. The General Fund account is prepared on the modified accrual basis.

Expenditures that could be accrued are interest on short-term debt, accrued payroll, and amounts recorded as encumbrances that have become expenditures at year-end. The change in total fund balance is due to revenues, expenditure, and transfers during the year. Financial data can be managed in municipal governments in the same categories that earnings management is detected in for profit institutions: accrued revenues, accrued expenditures, and transfers.

Three other funds that have an influence on this study are the Special Revenue Fund, Capital Projects Fund, and Debt Service Fund. All are converted from modified accrual basis to accrual basis in the government-wide Statement of Net Assets and Statement of Activities. This conversion should allow earnings management models to be used to detect earnings management in the government-wide statements.

This conversion should allow a test of whether city governments manage their financial position, such as debt or bond issues, to achieve certain benchmarks. Other financial data, such as the net assets to expenses ratio, a measure of financial position, can also be incorporated into a model that examines management of financial position. Results indicate that managers are motivated to manage financial position lower in the year just prior to the bond issuance.

2. Literature review

Some studies have found that managers modify information in anticipation of issuing bonds. Some studies find that managers adjust the financial positions just prior to issuing bonds. Howell-Moroney and Hall (2011) showed that managers would attempt to state figures in such a way as to meet or exceed a debt coverage ratio benchmark.

The extant research shows that there is some type of motivation that pushes managers to present their financial positions inaccurately. Boyle and Mahoney (2016) show that some managers present liabilities lower than the actual numbers would show in order to reduce the probability of bankruptcy. Edmonds, Vermeer, and Vermeer (2017) point to governments that try to attain higher credit ratings by manipulating costs lower.

Two studies examine bond issues. Lynnette (2017) investigates state and local governments' disclosure requirements concerning bond issues. 45 states were found to have settled cases related to those concerns. Beck (2018) tests California municipalities over a period of six years to confirm that some municipalities lower their discretionary accruals just before bond issuance.

In addition to the linkage between bond issuances and the manipulation of data, the adoption of GASB 34 led to a new body of research. Wang and Liou (2009) investigate changes in states' economic conditions. The research found that states showed significantly different positions between 2003 and 2004. Palumbo and Zaporowski (2012) examine the credit rating process and the elements impacting it. Malanga (2013) reports on instances of state governments using questionable reporting. Ketz (2014) provides information on one such case instituted by the SEC.

3. Sample and data

3.1 Sample

The cities in the sample were selected from the top 50 cities in population and rank from Infoplease.com. The top city was New York City with 8.3M. The 50th city was New Orleans, LA with .4M. The median city (25) was Nashville, TN with .6M. The overall mean of the 50 cities was 1.2 M. The top 10 cities (20%) were greater than 1M and had a mean of 2.6M. In the other categories, there were 27 cities (54%) in the .5M-1M area. The mean population in this category was .7M. 13 cities (26%) were below 1M in population and had a mean population of .4M. Lastly, there were 25.5M in population in the first 10 cities and 25M in the remaining 40 cities. See Table 1 for these results.

Table 1. Top 50 cities

	GROUP	CATEGORY	N	%	Mean (in millions)
1		> 1M	10	20	2.6
2		.5M-1M	27	54	.7
3		< 1M	13	26	.4
Full population				1.2	

In the actual sample, the first 3 or 10% all have greater than 1M in population or 11.2M total. The mean population in this category was 3.7M.

In the second category, .5-1M, there were 18 cities (60%) with a mean of .7M population. There are 9 cities (30%) with populations below .5N and mean of .4M. The overall mean in the actual sample is 1.6M. See Table 2 for these results.

Table 2. 30 city sample

GROUP	CATEGORY	N	%	Mean (in millions)
1	>1M	3	10	3.7
2	5M-1M	18	60	.7
3	< 1M	9	30	.4
	Full Sample			1.6

A comparison of the results in Table 1 and Table 2 seem to indicate comparability in the mean population of category 2 and category 3. In addition, the difference in the overall population means between Table 1 and Table 2 would not be significantly different. This leads to the conclusion that the population and sample have similar characteristics.

In conclusion, Table 3 indicates 50 cities in the population. Of those 50 cities, 18 had less years of data than required for the model based on other similar studies. In addition, 2 cities had some missing data. Thus, there were 30 cities in the final sample of regressions. See Table 3.

Table 3. Regression sample summary

Cities in Population	50
Cities with less than 13 years of data	18
Cities with missing data	2
Cities in regression sample	30

3.2 Data

GASB 34, implemented around 1999, required cities to convert funds from modified accounting to accrual accounting. The Comprehensive Annual Financial Report (CAFR)* added two statements which facilitated this conversion. These two statements were the Statement of Activities and Statement of Net Assets. Data was collected from these two statements via Internet searches of city financial statements from the implementation of date of GASB 34 to the latest information available.

Key (1997) and Cahan, et al. (1997) used various time periods in their research design. Key (1997) used 12 years to test earnings management in the Cable Television industry. Cahan, et. Al. (1997) used 14 years to test a sample of chemical firms. The number of years of data in this study is based on methodology papers (Jeter and Shivakumar (1999); Dechow et. al. (1995)). Three papers on earnings management ackn,owledge reliable

parameter estimates using periods of the length used by Key (1997) and Cahan, et. Al. (1997).

Research using the Modified Jones Model to search for earnings management including Meisel (2007) and Key (1997) used an aggregate of 12 years of data. Therefore, this research uses at least 13 years or more of data. Of the 50 cities, 30 had 13 years or more of data presented in the CAFR's. This study used 30 cities to determine whether city governments managed their position. We use the same database compiled in Grace, et. al. (2019).

*GASB 98 changed the name from Comprehensive Annual Financial Report to Annual Comprehensive Financial Report for fiscal years after December 15, 2021. In this paper, we continue to use the prior name which was used for data we collected for this study.

4. Methodology

4.1 Hypotheses

The motivation might exist that would induce city officials to manage financial position. The higher the financial position of a city unit in the year of a bond issuance, the better the financial ratios used to assess financial data. In addition to the possibility of setting more favorable interest rates, inflating financial position will make the financial statements look better for bond issuance benchmarks. This could result in statistically significant t-statistics and positive discretionary accruals. One justification for financial position manipulation in the year prior to the bond issuance is to influence the capital adequacy requirement for securing bond issuance benchmarks.

However, a reduction of a cities estimated uncollectible taxes causes an increase in financial position and decreases a city's regulatory capital making it more difficult to meet bond issue requirements. This implies that an increase in the estimated uncollectible taxes reduces financial position and increases a city's regulatory capital making financial position more favorable for a bond issuance. Lowering financial position might result in negative t-statistics and negative discretionary accruals. In addition, a lower financial position can be used by managers to justify a call for higher tax rates. Since earnings can be manipulated in either direction, a two-tailed test was used to test the hypothesis on bond issuance. Therefore, we test the following hypothesis stated in the null form:

H_1: Managers of city governments do not manipulate financial position to achieve bond issuance authorization in the year prior to the bond issuance.

4.2 Model

The Modified Jones model has been used primarily to analyze earnings management in the private sector. Manufacturing Industries have been used as the focus for most of those studies. Cable television firms, a service industry, was used in another study. This study tests whether city governments manipulate financial position to achieve financial goals with the Modified Jones Model. We also used this model in a previous paper regarding whether city governments manipulated financial results after implementation of GASB 34 (Grace, et. al. (2019)).

Three studies [Dechow et al. (1995), Guay et al. (1996), and Young (1999)] tested the ability of discretionary accrual models to detect earnings management. Jones and Modified Jones Models, along with the Healy, DeAngelo, and Industry models, were tested. Results found that discretionary accrual models generate relatively poor measures of managerial accounting choice. However, it was found that the Modified Jones Model was better. Non-discretionary accruals (NDA) are specified by the Modified Jones Model. The model separates total accruals (TA) into nondiscretionary (NDA) and discretionary accrual (DA) components:

$$TA = NDA + DA$$

where:
TA = Total accruals
NDA = Nondiscretionary accruals
DA = Discretionary accruals.

Methods used to manipulate earnings include changes in capital structure, accruals, and accounting methods. We use total accruals to determine whether city governments manipulate financial position to achieve more favorable bond issuance terms. Therefore, the following computation (Jones (1991), p. 211, footnote #29) measured total accruals (TA):

$$TA_{it} = [\otimes CA_{it} - \otimes CASH_{it}] - \otimes CL_{it} - DEP_{it}$$

where:
TA_{it} = total accruals for city government i
$\otimes CA_{it}$ = the change in current assets for city government i
$\otimes CASH_{it}$ = the change in cash for city government i
$\otimes CL_{t}$ = the change in current liabilities for city government i
DEP_{it} = depreciation expense for city government i.

The NDA specification includes changes in revenues (⊗REV) and Property plant and equipment (PPE) to control for changing conditions. A control variable for economic and business cycle changes in the non-discretionary accrual is the change in revenues (⊗REV). The control to

capture the portion of total accruals related to nondiscretionary depreciation expense is PPE (Grace, et. al., (2019)). The nondiscretionary accrual (NDA) can be specified as:

$$NDA = (\otimes REV - \otimes REC) + PPE$$

where:

⊗REV = the change in revenues
⊗REC = the change in receivables
PPE = property, plant and equipment.

Based on the use of lagged assets as a scaler to reduce heteroscedasticity, the following version of the Modified Jones model (from Cahan (1992)) was used in Meisel (2007) to test earnings management in the banking industry and (Grace, et. al. (2019) to test for manipulation in fund balances in municipal governments using the implementation of GASB 34 as the event.

$$TA_{it}/A_{it-1} = ®_{0i}(1/A_{it-1}) + ®_{1i}[(\otimes REV_{it} - \otimes REC_{it})/A_{it-1}] + ®_{2i}(PPE_{it}/A_{it-1}) + ®_{3i}PART_i + \in_{it}$$

where:

TA_{it} = total accruals for city government i.
A_{it-1} = assets for city government i at time t-1
$\otimes REV_{it}$ = the change in revenues for city government i.
$\otimes REC_{it}$ = the change in receivables for city government i.
PPE_{it} = property, plant and equipment for city government i at time t.
$PART_i$ = 1 if observation is from event year 0 if observation is from the other years
$\in_{it}$ = the error term for city government i.

A similar model will be used here. However, the models above used time series data.

4.3 Partitioning Variable

The error term includes discretionary accruals. Therefore, all other factors not included in the NDA would be included in the error term or residuals. The event period is separated from the estimation period by a partitioning variable (PART). PART is an indicator variable equal to 1 in the year in which financial numbers are hypothesized to occur in response to the stimulus identified by the researcher and 0 in the other years. The event year is identified as the year prior to a bond issuance event. Total accruals in the event year is compared to total accruals in other years by the PART variable. Total accruals measure discretionary accruals (Dechow et al, 1995). Therefore, discretionary accruals in the event year in comparison to discretionary accruals in the other years can be measured by the PART

variable. A t-statistic on the dummy variable (PART) can be estimated by Ordinary Least Squares regression on a city specific basis.

Earnings are managed when the estimated coefficient on PART from firm specific regressions is statistically significant according to two studies (Dechow, et. al. (1995) and Key (1997). Therefore, in testing the hypothesis, a city used discretionary accruals more in the event year than in the estimation period to engage in financial manipulation when there is a statistically significant coefficient (β does not = 0) on PART. The following Z-statistic (Dechow, et. al. (1995)) was used to aggregate the t-statistics cross-sectionally:

$$Z = 1/ N^{1/2} \Sigma^{N}_{j=1} t_j/[k_j/(k_j-2)]^{1/2}$$

where

t_j = t-statistic for city j in year prior to bond issuance event

k_j = degrees of freedom for t-statistic of city j in year prior to the bond issuance event,

N = number of firms.

Dechow, et. al. (1995) analyzed the 32 firms accused by the Securities and Exchange Commission to have manipulated earnings from 1982 to 1992. The firms had different event periods within that time period. This study has 30 cities with varying event periods represented by the year before the bond issuance. An aggregate Z-statistic was used to test the Modified Jones model over varying event periods. This approach is feasible, because the same 30 cities are being compared. Therefore, we can adapt the use of the partitioning variable from Grace, et. al. (2019) to this study. That study tested whether city governments manipulated financial position based on the implementation of GASB 34, an event which highlighted accrual accounting in city governments.

5. Resulats

5.1 Descriptive Statistics

The descriptive statistics, as shown in Table 4, indicate that the sample of 30 cities appears to have higher means in all variables than the population means. However, the most significant data that is depicted in this table is the data for discretionary accruals. First, the means for discretionary accruals are very similar indicating that the sample (-5.8M) and the population(-5.6M) are comparable. Since the discretionary accruals are computed through the equation:

Total accruals (TA) = nondiscretionary accrual(NDA) + discretionary accruals (DA), we can state that the DA are negative in both population and the sample. This indicates that cities overall are managing their DA lower to manage financial position in the year just before the bond issue.

Table 4. Descriptive statistics means (in millions)

VARIABLES	POPULATION CITIES	SAMPLE CITIES
Current assets	8.2	11.1
Cash	2.1	2.7
Current liabilities	3.6	5.0
Depreciation	.9	1.2
Revenue	8.3	11.6
Receivables	3.7	5.1
Property plant and equip	4.8	4.8
Total asset	50.0	68.3
Total accrual	-.9	-1.4
Nondiscretionary accrual	4.7	4.4
Discretionary accrual	-5.6	-5.8

5.2 Regression Resuts

The methodology required that we run 30 regressions from 30 city governments. Each city government had at least 13 years in the regression. The regressions generated 30 t-statistics on a dummy variable and 30 discretionary accruals. The aggregate of the t-statistics produced a Z-statistic. In addition, the t-statistic on the dummy variable has the function of comparing that city to other cities in the sample. The discretionary accruals are represented in the error term. They indicate the direction of the management of financial position. That is, which direction is the city managing financial position in the year just before the bond issuance. The Z-statistic determines significance through P-values.

There were 18 negative discretionary accruals and 12 positive discretionary accruals. This indicated that a majority (60%) of cities managed their numbers lower in the year just before the bond issuance. In addition, there were 18 negative t-statistics and 12 positive t-statistics. This confirmed the result that cities managed their financial position lower in comparison to other cities in the year just before the bond issuance.

Since the results made it obvious that cities appeared to manage financial position lower based on both the negative t-statistics and negative discretionary accruals in the year just prior to the bond issuance, we

computed a one-tail test based on the negative t-statistic. The results indicated a Z-statistic of -3.682 with a P-value of .0001. This is significant at the .01 significance level.

A one tail test based on the positive t-statistics and positive discretionary accruals could be used as a sensitivity test. The Z-statistic was 3.007 with a P-value of .0013. This was significant at the .01 level, but lower significance than the negative Z-statistic. Thus, it indicates that the negative Z-statistic has a higher significance level than the positive Z-statistics.

A two-tailed test matching both negative and positive t-statistics showed that the full sample was not significant. This test indicated a Z-statistic of -.9514 which had a P-value above .1.

Another sensitivity test was applied to the data. A pooled Ordinary Least Squares was used to test the PART variable. There were 375 city years for the 30 cities in the sample. The t-statistic was -1.472 which was significant at .1. The key result was that the t-statistic on the PART variable was negative confirming that cities were managing financial position lower just prior to the bond issuance. Therefore, it confirms the negative result in the split negative city group.

Statistics in Table 5 are also comparable to Table 4. The discretionary accruals and t-statistics are predominantly negative indicating that cities on an individual basis are managing financial position lower just before a bond issue. In addition, the Z-statistic is also negative. Therefore, the negative discretionary accrual in Table 4 based on the entire sample and the negative statistics in Table 5 based on individual cities are comparable.

Table 5. Regression summary statistics

	POSITIVE	NEGATIVE
Discretionary Accruals[a]	12	18(60%)
t-statistics[c]	12	18(60%)
Z-statistic (one-tailed test)[d]	3.007	-3.682
P-value	.0013	.0001f[f]

a. $TA_{it} = \beta_{0i} + \beta_{1i}(\Delta REV_{it} - \Delta REC_{it}) + \beta_{2i}PPE_{it} + \beta_{3i}PART_i + \varepsilon_{it}$

Where

TA = total accruals; ΔREV = revenue in time period t minus revenue in time period t-1

ΔREC = receivables in time period t minus receivables in period t-1; PPE = property, plant and equipment; PART = 1 If the year is the event year and 0 otherwise.

All variables except PART are scaled by lagged total assets.

b. 30 cities in sample

c. event year = 2nd year after implementation of GASB 34
d. t-statistics on dummy variable PART
e. Error term or residual
f Significantly different than 0 at the 5% level (1-tailed test)
g N=13

Conclusion

It appears the most significant results are represented by the negative statistics. When the sample indicates that t-statistics and discretionary accruals are predominantly (60%) negative, it makes the case that a one-tailed test is the best test. Thus, the motivation to manage financial position lower in the year just before the bond issuance dominates.

The evidence in this paper indicates that cities manage their data lower just prior to a bond issue. Other research has already had results that indicate the specific causes of the manipulation of discretionary accruals. One study (Boyle and Mahoney (2016)) showed that cities attempt to manage numbers lower by restating liabilities to avoid bankruptcy. Another study, Edmonds, et. al. (2017), indicates that cities issuing bonds would attempt to manage municipal costs lower to achieve higher credit ratings. Since higher risk means higher interest rates, cities manage interest rates lower to bring risk down (Depkin and LaFountain (2006)).

Another study, Beck (2018) also tests discretionary accruals just prior to bond issuance. However, her sample is California municipalities with 6 years of data while we expand the sample geographically to cities in the United States with 13 years of data. Interestingly, our results mirror her results in a larger geographical area with more years of data. We have both concluded that cities manage their discretionary accruals lower just prior to the issuance of bonds on different samples and years of data. In addition, we find it interesting that Beck (2018) predicted 60% of total accruals, and our results indicate 60% in negative discretionary accruals and 60% negative t-statistics on the PART variable. Thus, our contribution to the literature is that our results are comparable to Beck (2018) on a larger geographic sample with more years of data. In addition, we use earnings management models to test Fund Balance management.

Another reason for the results might be the economic stability of the city. In other words, could the negative t-statistics and negative discretionary accruals be driven by the economic conditions of the city. We used the US Metropolitan Area Economic Freedom rankings. They provided an index of 382 metropolitan areas ranked by economic freedom which established stability. We tested the correlation between t-statistics and the index. The index indicated that 26 (87%) of the 30 cities in the sample were in the top 52 cities in the index. Since there were 18 (60%) cities with negative t-

statistics and negative discretionary accruals, we can conclude that the results were not driven by the economic stability of the cities.

The limitations may include a self -selection bias because the sample contains only the top 50 cities in population and rank. Since earnings management or fund financial positions are difficult to measure exactly using publicly available data, measurement error is unavoidable (Barton, (2001)). Even though the Modified Jones model is considered a crude proxy for earnings management (Healy, (1996)), the use of a homogeneous sample restricted to the largest cities, mitigates most of the deficiencies of the model.

Future research might test other models that adjust the nondiscretionary accruals with different combinations of variables that influence discretionary accruals, such as the net assets/expenditures ratio. In addition, the sample could be extended beyond the 50 top cities or even include states' financial data.

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