A MODEL OF MUNICIPAL DISCLOSURES USING EXPLORATORY FACTOR ANALYSIS

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ABSTRACT

The Governmental Accounting Standards Board (GASB) issues standards, including numerous disclosure requirements, that apply to all state and local governmental units that prepare their external financial statements in conformity with generally accepted accounting principles (GAAP). It has been argued (Ingram, 1984, Copley, 1991, Giroux & McLelland, 2003, Laswad, et al., 2005, Malone, 2006, and Guo, et al., 2009) that the extent of compliance with these disclosure requirements is influenced by three constructs: the socio/economic environment, political environment, and audit quality.

Prior studies have investigated the disclosure compliance issue in the public sector and one area of concern has been raised—the methodology used has operationalized the constructs by using multiple variables as proxies. Research regarding disclosure compliance has identified, as a limitation, the absence of a methodological framework within which the observed variables and the constructs they represent are developed (Carpenter, 1991 and Cheng, 1992). Consideration of this limitation is important because the weak explanatory power of prior municipal choice models may be linked to the misspecification of the relationship between disclosure compliance and its determinants. The method used in this study, exploratory factor analysis, allows the relationships to be expressed in terms of the constructs and their indicants.

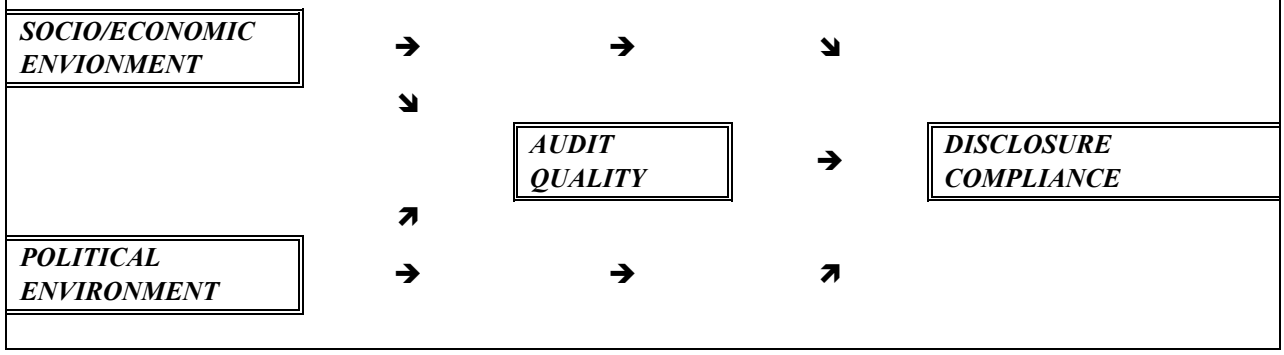
The purpose of this paper is to examine the methodological concern raised in prior research. The issue is addressed by examining municipal disclosure compliance using exploratory factor analysis. This mathematical model consists of a system of equations that directly evaluate the relationships among the constructs of interest, in addition to examining the significance of the observed variables in measuring the constructs.

SUMMARY OF STUDY

The disclosure compliance model, as developed in this study, has four basic constructs that form the underlying theoretical basis of a municipality's degree of financial statement disclosure compliance. The socio/economic environment and the political environment have a direct effect on both audit quality and disclosure compliance. Audit quality, a dependent construct of the socio/economic and the political environment, also has a direct effect on disclosure quality. Figure 1 presents the basic relationships among the constructs. Several

variables, derived from the theoretical literature, are used to measure each construct. The full disclosure compliance model is tested using exploratory factor analysis.

Figure 1
Basic Model of Disclosure Compliance: Relationships Among Constructs



RESEARCH METHODOLOGY

The methodology used in this research is exploratory factor analysis. The disclosure compliance model is composed of the relations among constructs and the measurement of these constructs by observed variables. The mathematical form of the model is a simultaneous system of highly restricted equations. The model, then, consists of certain unknown parameters having a particular structural form. The goal is to estimate, optimally, the parameters and to determine the goodness-of-fit of the model using sample data for the observed variables.

The exploratory factor model (Table 1 and Figure 2) consists of (1) the measurement equations for the dependent and independent observed variables and (2) the structural equation of the latent variables. The structural equation specifies how the independent, ξ, and dependent, η, constructs are related. The coefficient matrix of the η's is represented by β and the coefficient matrix of ξ on η is denoted Γ. The error in the structural equation is the vector of ζ. The measurement equations indicate how the latent constructs are measured in terms of the observed variables. The x's are indicants of independent constructs and the y's are indicants of dependent constructs. The equations also describe the amount of unexplained variance, δ and ε, associated with each indicant.

Table 1
Structural and Measurement Equations for Theoretical Model

$$\eta = \beta\,\eta + \Gamma\,\xi + \zeta$$

$$\begin{bmatrix} \eta_1 \\ \eta_2 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ \beta_{21} & 0 \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \end{bmatrix} + \begin{bmatrix} \gamma_{11} & \gamma_{12} \\ \gamma_{21} & \gamma_{22} \end{bmatrix} \begin{bmatrix} \xi_1 \\ \xi_2 \end{bmatrix} + \begin{bmatrix} \zeta_1 \\ \zeta_2 \end{bmatrix}$$

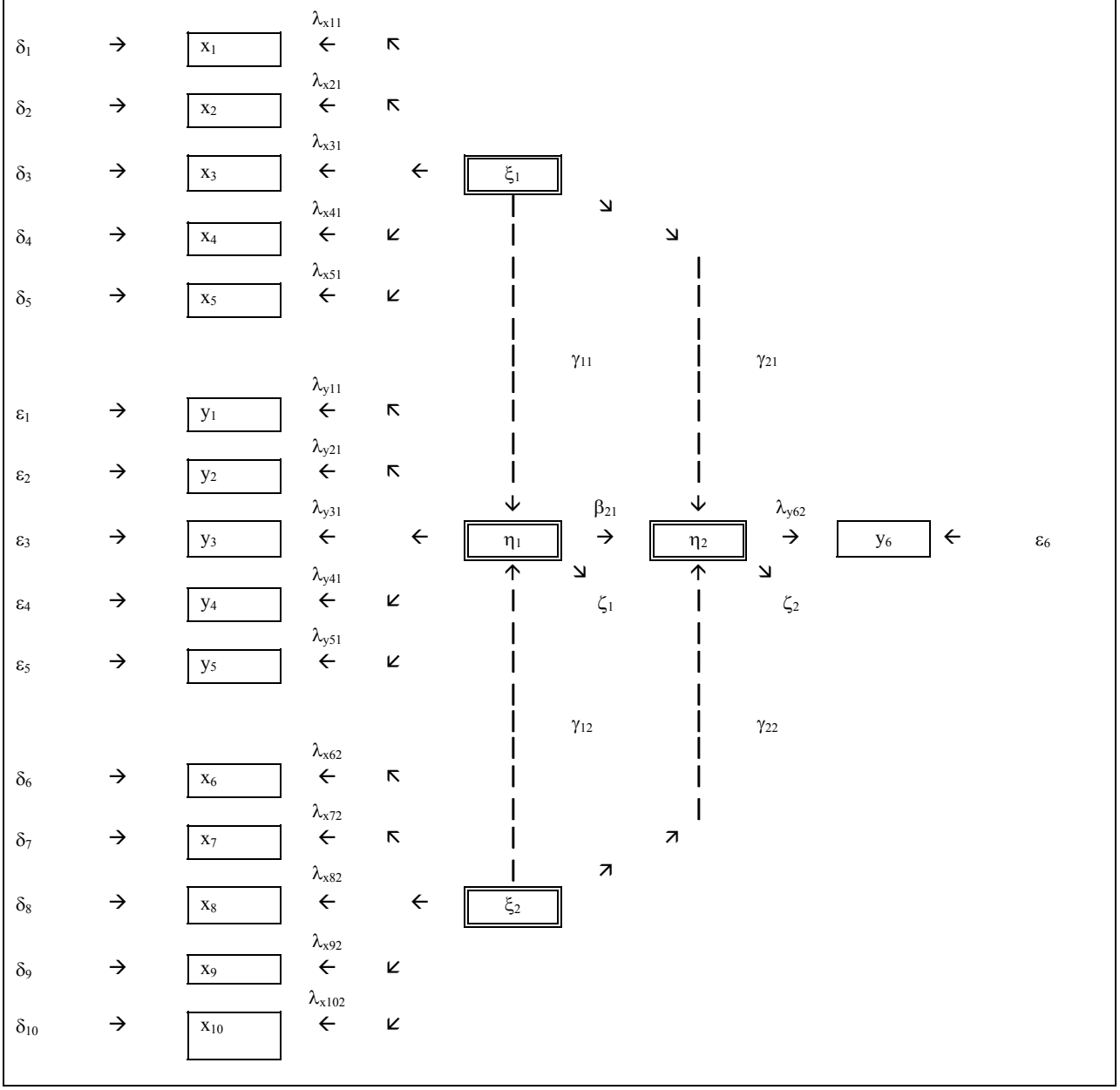
$$\eta_1 = \pi\gamma_{11}\,\xi_1 + \gamma_{12}\,\xi_2 + \zeta_1$$
$$\eta_2 = \beta_{21}\,\eta_1 + \gamma_{21}\,\xi_1 + \gamma_{22}\,\xi_2 + \zeta_2$$
$$x = \Lambda_x\,\xi + \delta$$

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \end{bmatrix} = \begin{bmatrix} \lambda_{x11} & 0 \\ \lambda_{X21} & 0 \\ \lambda_{x31} & 0 \\ \lambda_{x41} & 0 \\ \lambda_{x51} & 0 \\ 0 & \lambda_{x62} \\ 0 & \lambda_{x72} \\ 0 & \lambda_{x82} \\ 0 & \lambda_{x92} \\ 0 & \lambda_{x102} \end{bmatrix} \begin{bmatrix} \xi_1 \\ \xi_2 \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \\ \delta_9 \\ \delta_{10} \end{bmatrix}$$

$$y = \Lambda_y\,\eta + \varepsilon$$

$$\begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \end{bmatrix} = \begin{bmatrix} \lambda_{y11} & 0 \\ \lambda_{y21} & 0 \\ \lambda_{y31} & 0 \\ \lambda_{y41} & 0 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \end{bmatrix}$$

Figure 2
Theoretical Disclosure Compliance Model



CONSTRUCT MEASURES AND HYPOTHESES DEVELOPMENT

Research is examined to develop the measures of each construct and the relationships among the constructs hypothesized to affect disclosure compliance. The major relationships are the effects of the socio/economic environment and the political environment on audit quality and disclosure compliance.

The goal of good government is the efficient response to its citizen's demands for goods and services. Municipalities of greater wealth have more professional administrations and the citizens demand a higher level of financial information (Swanson, et al., 1979). Financially sound municipalities, with higher citizen incomes, would present a lower level of audit risk (DeAngelo, 1981). This lower risk increases the audit quality for the municipality. The measure of income, or wealth, that prior research consistently found significant to policy decisions was per capita income (Ingram, 1984, Baber, et al., 1987, Cheng, 1992, Giroux & McLelland, 2003, Laswad, et al., 2005, Malone, 2006, and Guo, et al., 2009). *Per capita income is expected to be a statistically positive indicant of the socio/economic environment in the disclosure compliance model.*

The density of a municipality is directly related to the amount, and cost, of police, fire, and other public safety services. *Density, measured as the population per square kilometer, is a positive and statistically significant indicant of the socio/economic environment.*

The level of education of the citizens of a municipality can be expected to affect disclosure compliance in two ways. One, the greater the education level of the population, the more demands they make in the form of monitoring (Evans and Patton, 1987). Secondly, the educated citizen forms or becomes a member of a coalition, or interest group, that demands an even higher level of monitoring (Stigler, 1971, Becker, 1983, Malone, 2006, and Guo et al.,2009). *It is expected that education, measured as the percentage of the population with four years of college, is a positive and statistically significant indicant of the socio/economic environment.*

Debt has been included in prior research, and found significant, as an indicator of disclosure quality (Evans and Patton, 1983, Copley, 1991, Carpenter, 1991, Cheng, 1992, Giroux & McLelland, 2003, Laswad et al.,2005, Malone, 2006, and Guo et al.,2009). The amount of debt increases the external constraints on the entity. Also, greater disclosures may signal a better managed municipality, resulting in lower interest costs. Debt is measured as the amount of general obligation long-term debt per capita. *Debt is expected to be a positive and statistically significant indicant of the socio/economic environment.*

The size of an entity has been a major factor in the disclosure compliance research and has proven to be an appropriate and consistently significant variable (Baber, 1983, Evans and Patton, 1983, Baber et al.,1987, Copley, 1991, Carpenter, 1991, Giroux & McLelland, 2003, and Guo et al.,2009). Rubin (1988) found size to be significant in the examination of audit fees for a

group of large municipalities but was not significant for the group of small municipalities. S*ize, as measured by population, is expected to be significant for the group of municipalities*.

Research has determined that several factors, including the form of government, regulation, and competition, are positive indicants of the political environment. The extent of disclosure has been shown to be positively associated with a manager form of government (Evans and Patton, 1983, Copley, 1991, Giroux & McLelland, 2003, Laswad et al.,2005, Malone, 2006, and Guo, et al., 2009). Municipalities with managers are expected to present a greater degree of professionalism and be better managed than those municipalities with elected mayors. Greater and better disclosures are a signaling device to the bureaucracy and city councils of efficient management (Zimmerman (1977) and Evans and Patton (1983)). The form of government is measured dichotomously as either an appointed manager or an elected mayoral form of government. *It is expected that form of government is a positive and statistically significant indicant of the political environment*.

Municipal financial reporting regulation by the state has been found significant as a factor in the degree of disclosure compliance (Evans and Patton, 1983, Baber and Sen, 1984, and Giroux, 1989). State regulation can take one of three forms: (1) state regulations required GAAP, (2) state regulations require financial reporting to be some method other than GAAP, or (3) the municipality is unregulated by the state. Significant differences have been found between municipalities in which the state regulations require GAAP and those where the state regulations require a non-GAAP method (Ingram and DeJong, 1987). No significant differences were found between municipalities in states where GAAP is required and the unregulated states. Regulation is measured dichotomously as (1) GAAP regulated and unregulated or (2) non-GAAP regulated. *It is expected that a state requirement of GAAP or an unregulated state are positive, statistically significant indicants of the political environment*.

Elected officials supply monitoring in the form of auditing and financial disclosures to demonstrate their execution of pre-election promises and their incentives to do so increase as competition increases. Political competition, in general, can take three forms—interparty, intraparty, and intergovernmental. Interparty political competition has been measured, and found significant in prior research, as the percent of legislative seats held by a minority party (Baber, 1983, Baber and Sen, 1984, Marks and Raman, 1987, and Cheng, 1992). The level of voter turnout has been found significant in prior research to measure intraparty competition (Baber and Sen, 1984, Carpenter, 1991, Cheng, 1992, Laswad et al.,2005, Malone, 2006, and Guo et al.,2009). Intergovernmental competition is affected by the level of services that are provided by the municipality and its reliance on resources from outside the municipality. The external reliance can be measured by the amount of intergovernmental funding a municipality receives, both from the federal government and the state. An increased reliance on external funding also imposes on the municipality additional monitoring requirements, which would result in increased level of disclosures. The effect of intergovernmental competition has, in prior research, been measured, and found significant as the percentage of intergovernmental revenues to total

revenues (Ingram, 1984 and Copley, 1991). *Both the percent of council seats held by the minority party and the voter turnout are expected to be positive, statistically significant indicants of the political environment in the disclosure compliance model. Also, it is expected that the reliance on external funding is a positive and statistically significant indicant of the political environment in the disclosure compliance model.*

Audit complexity and auditor firm size have been determined to be significant indicators of the quality of audits. The size of the audit firm has been found to be of importance in prior research as an indicator of the quality of the audit in the public sector (Baber et al.,1987, Marks and Raman, 1987, Rubin, 1988, and Copley, 1991). As DeAngelo (1981) points out, audit firms providing higher quality services have relatively greater investment in their reputation capital and, therefore, have greater incentives to assure that client financial statements do not contain errors or inadequate disclosure. The larger the auditing firm, the more the firm has to lose which increases the audit quality by larger firms. Auditor size is measured dichotomously as (1) Big 6 and national or (2) local and state. *It is expected that the engagement of a Big 6 or national auditor is a positive and statistically significant indicant of audit quality in the disclosure compliance model*.

Audit quality is determined by numerous factors affecting the auditor's exposure to legal liability and this exposure increases with the complexity of the client's operations (Simunic, 1980). Audit complexity can be measured in various ways; the measure employed in this research is the total number of funds of the municipality. *It is expected that the number of funds is a positive and statistically significant indicant of audit quality in the disclosure compliance model for the municipalities*.

Additional factors that are included to indicate the complexity of the audit are (1) "busy season" audits (Rubin, 1988), (2) single audit report required (Baber et al.,1987), and (3) whether the opinion was other than unqualified (Rubin, 1988 and Giroux, 1989). *It is expected that (1) the timing of the municipal audit, (2) the existence of a single audit report, and (3) the opinion issued by the auditor are positive and statistically significant indicants of audit quality*.

GASB Statements and Interpretations, which constitute GAAP for state and local governments, indicate the disclosures required when financial statements are issued and adherence to these requirements measure the quality of disclosure. The index used here consists of 90 disclosure items based on the AICPA Local Government Audit and Accounting Manual. Disclosure compliance is the number of disclosure practices present in the annual reports of the sample of municipalities, as a percentage of the total applicable disclosures for that entity. *The disclosure index is a positive and statistically significant indicant of disclosure compliance*.

H_1: *The municipality's socio/economic environment is positively and significantly associated with disclosure compliance. [γ_{21} is positive and significant.]*

H_2: *The municipality's political environment is positively and significantly associated with disclosure compliance. [γ_{22} is positive and significant.]*

H_3: The municipality's socio/economic environment is positively and significantly associated with audit quality. [γ_{11} is positive and significant.]

H_4: The municipality's political environment is positively and significantly associated with audit quality. [γ_{12} is positive and significant.]

H_5: The municipality's audit quality is positively and significantly associated with disclosure compliance. [β_{21} is positive and significant.]

Table 2
Measures of Model Constructs

SOCIO/ECONOMIC ENVIRONMENT ξ_1	Income Density Education Debt Size	x_1 = Per capita income x_2 = Population per square kilometer x_3 = % population w/4 years college x_4 = Long term debt per capita x_5 = Population
POLITICAL ENVIRONMENT ξ_2	Form Of Government Regulation Intraparty Competition Interparty Competition Intergovernmental Competition	x_6 = Mayor vs manager x_7 = GAAP regulated & unregulated vs non GAAP regulated x_8 = Voter turnout local election x_9 = Percent of council seats held by minority party x_{10} = Intergovernmental revenues/ Total revenues
AUDIT QUALITY η_1	Audit Firm Size Complexity Of Audit	y_1 = Big 6 and national vs local y_2 = Number of funds y_3 = "Busy season" audit y_4 = Single audit required y_5 = Opinion other than unqualified
DISCLOSURE COMPLIANCE η_2		y_6 = Disclosure Index

DATA COLLECTION

A random sample of 400 municipalities was chosen and letters were mailed to the Chief Financial Officers of each municipality requesting a copy of their latest Comprehensive Annual Financial Report (CAFR). Usable responses were received from 220 municipalities, with the distribution among the states for the sample being fairly even. The data was accumulated from

the CAFRs whenever possible. If the information was not in the CAFR, it was obtained from the 2000 Bureau of the Census data.

STATISTICAL RESULTS

Univariate analysis of the sample data was performed to test for normality of the variables. After appropriate transformations, the model of municipalities was tested. The model was transformed to achieve the best fit to the data.

The model is first tested as predicted. Then, through a series of iterations the model is adjusted to achieve the best fit with the data. The admissible revisions to the model are guided by the underlying theory and an examination of the goodness-of-fit measures. If the parameter estimates are small in relation to their standard errors, these relationships are eliminated. Other relationships can be added to the model as a result of the examination of the residuals, correlations between the errors, and the modification indices (Bentler, 1980).

With respect to the socio/economic environment, the variables per capita income and education are not significant and are dropped from the model. The variable, own revenue per capita, is a measure of the socio/economic environment construct instead of the political environment. An examination of the political environment construct indicates that the variables voter turnout and minority party are not significant measures so these two variables are dropped. The audit quality variable "busy season" audit is not a significant measure and is deleted from the model. Audit complexity is accurately measured using the remaining variables. The variables, number of funds and opinion other than unqualified, are measures of the audit quality construct and, in addition, are significant measures of disclosure compliance. The variable, single audit, is not a significant measure of the audit quality construct, but is a significant measure of disclosure compliance.

Several error terms of the independent construct measures are correlated: (1) density and population, (2) long-term debt and own revenue per capita, (3) population and form of government, (4) population and regulation, (5) own revenue per capita and form of government, and (6) form of government and regulation. The error terms are residuals and correspond to the portion of each variable that is not explained by the construct. Correlation between two error terms indicates measurement error in the variables or some relationship between the variables that is not captured in the construct.

With respect to the relationships among the constructs, the socio/economic environment construct is significantly correlated to the construct political environment and the construct audit quality is closely related to the construct disclosure compliance. However, the direct relationships from the socio/economic environment to disclosure compliance and from the political environment to audit quality are not significant and are deleted from the model.

The goodness-of-fit of the model is determined by an examination of the measures of overall fit and also indicators of component measures. The model has a Chi-square, with 32 degrees of freedom, of 43.01 (probability level = 0.093). The Chi-square is not a formal test of

the hypothesis that the model is a good fit. It is a general indicator of the model's goodness-of-fit. It should be noted that the Chi-square value desired is the opposite of the typical use; small Chi-square values indicate a close correspondence between the model and the sample data. A Chi-square with a p-value greater than or equal to 0.05 is considered, by convention, to indicate a satisfactory fit of the model to the data (Bagozzi, 1991).

Other statistics regarding the goodness-of-fit of the model include a goodness-of-fit index (GFI = 0.967) and an adjusted (for degrees of freedom) goodness-of fit index (AGFI = 0.932). These indices indicate the amount of variance that is explained by the model. The squared multiple correlations (SMCs) are estimated to determine if the model is a good representation of the data. The SMCs measure the strength of the linear relationships in the model. In the disclosure compliance model, the SMCs for the structural equations are 0.900 for the audit quality construct and 0.947 for the disclosure compliance construct. The SMC's are also provided for each construct measure to indicate the reliability of the variable as an indicant of the construct. (See Table 2) If the SMC's are large, i.e. greater than .6, this indicates high convergent validity of the model. Of the socio/economic and political environment variables, population is, by far, the most reliable indicant. The coefficient of determination provides an indication of how well the observed variables serve as measurement instruments of the model constructs. This statistic is provided for the independent and dependent observed variables and for the structural equations. The coefficient of determination for the dependent variables is 0.988 and for the independent variables is 0.852. The coefficient of determination for the disclosure compliance model, i.e. the structural equations, is 0.991. The modification indices are examined to ascertain if any of the constrained parameters in the model should be freed. Specifically, they measure the amount the Chi-square would decrease by freeing the constraint. The model, as adjusted, indicates no modification index greater than 4. To further assess the fit of the model, the normalized residuals are examined. If the value is greater than 2.58, a standard normal deviate, the model is unable to explain the relationship between the indicants. The model, as adjusted, indicates no normalized residual greater than 2.58.

ANALYSIS AND SUMMARY OF RESULTS

Several interesting results were obtained from this research. First, per capita income and education were predicted to be significant measures of the socio/economic environment construct. However, both were found to be insignificant and were deleted from the model. The variables were expected to reflect lower audit risk and the citizens' demand for a higher level of financial information. Several factors may explain this. First, the population variable is highly influential in the model. This influence may dwarf the relative significance of per capita income and education. Second, per capita income and education both signal greater demands by the citizens for financial information. The significance of the variables density and debt and the

inclusion of own revenue per capita as a socio/economic variable may capture this citizen demand, making per capita income and education insignificant.

Second, the variable own revenue per capita is a measure of the socio/economic environment construct instead of the political environment. The variable was predicted to be a measure of intergovernmental competition, specifically, the municipality's reliance on external funding, in the political environment. An increase in external funding also imposes on the municipality additional monitoring requirements. This indicator of the demand for monitoring, along with long-term debt per capita, which is also such an indicator, are significant measures of the socio/economic environment construct.

Third, the political environment construct measures of voter turnout and minority party are not significant measures and were deleted from the model. These measures are indicators of intraparty and interparty political competition, respectively, and were predicted to be significant. Voters often obtain information regarding political candidates from interest groups who can affect the election outcomes by disseminating information that favors or disfavors a candidate (Stigler, 1971). If candidates wish to be elected, they cannot ignore the interest groups and, therefore, they advocate policies that appeal to these groups. Increased competition can be viewed as increased effort on the part of group leaders to influence elected officials through actions designed to increase voter turnout. (Becker, 1983). Although the theory would imply that competition would be significant, it may be that voter turnout and minority party percentage in the city council are inadequate as measures of this competition in the political environment.

Fourth, the auditor size variable is a significant construct measure of audit quality, possibly as a result of the audit firm's incentives to uphold their reputation. Also, the demand by municipalities for an independent audit has seen significant growth in the past decade. The larger firms, i.e. Big 6 and national firms, have the resources and expertise available to perform a quality audit. Municipalities, which have fewer resources to hire the auditors, hire smaller firms. In sum, municipalities who can hire Big 6 or national firms have better quality audits and, as a consequence, higher levels of disclosure.

Fifth, an examination of the audit quality measures indicates an inverse relationship between the opinion and the audit quality. A positive association was expected because of the decrease in the auditor's risk as a result of the warning implied by a modified opinion. However, a negative association is not counter-intuitive. The modification of opinion may increase the auditor's risk, and decrease audit quality, because of the increase in necessary audit procedures. The modification may also reflect the municipality's lack of an effective internal control structure, which also increases the audit risk.

The error terms of some of the measures for the socio/economic and political environment constructs are significantly associated. These error terms are assumed a priori to be only random measurement error. The significance of these associations may be the result of two factors. First, these errors may contain some true variance that is associated with a construct or constructs that are not included in the model. Second, the number of associated error terms offer evidence of weakness in the measurement model. This weakness is best described as a lack of

discriminant validity combined with problems in underlying conceptualization of the measures themselves.

The relationships between the constructs (1) socio/economic environment and audit quality, (2) political environment and disclosure compliance, and (3) audit quality and disclosure compliance are all positive and significant, as hypothesized. However, two of the relationships hypothesized to be significant were not: (1) the socio/economic environment and disclosure compliance and (2) the political environment and audit quality. Several factors may have caused these relationships to be insignificant. First, there is a positive significant correlation between the socio/economic and the political environment constructs, which was not hypothesized to exist. Second, the associations between the error terms of the socio/economic and the political environments and the error terms of the audit quality and disclosure compliance constructs may be confusing the relationships. Third, several variables, as discussed above, are construct measures of both the audit quality construct and the disclosure compliance construct.

Table 3
Disclosure Compliance Models Results

Parameter	LISREL Estimate	T-Values	SMC
Socio/Economic			
Own Revenue	0.349	4.982	0.123
Parameter	LISREL Estimate	T-Values	SMC
Density	0.265	3.473	0.070
Debt	0.475	6.982	0.226
Population	0.871	13.746	0.743
Political			
Form of Government	0.440	5.866	0.180
Regulation	0.355	4.677	0.132
Audit Quality			
Size	1.000		0.498
Number of Funds	0.750	4.798	0.484
Opinion	-0.481	-3.376	0.362
Disclosure			
Number of Funds	0.227	2.410	0.484
Opinion	0.793	7.700	0.362
Single	0.796	14.324	0.592
Index	1.000		0.941

CONTRIBUTIONS

This study makes several contributions to the body of literature. First, the methodology of confirmatory factor analysis has been shown to have definite promise as an alternative to

factor analysis and/or multiple regression. The results provided in this study show that municipal disclosure compliance can be modeled using the system of equations of confirmatory factor analysis. The results, when compared to multiple regression, indicate a higher explanatory power.

Another contribution of the research is the improvement in results, in part, due to the data collection method. The multiple regression results of this study exhibited a greater explanatory power than previous research. A major difference between this research and prior studies, other than the time period, is the source of the data. All financial data and most statistical data was obtained directly from the CAFR of the municipality. This increased explanatory power supports the conclusions of Icerman and Welch (1989) that CAFR data is significantly different that the census bureau data. Due to the census bureau recasting the data for regulatory agencies, imputing missing amounts, and interpolating to cast all municipalities as having a June 30 year-end, the data may be less reliable for research studies.

IMPLICATIONS FOR FUTURE RESEARCH

The methodology used in this study, confirmatory factor analysis, provides the researcher with a tool to examine the relationships between latent constructs. The results presented here indicate that the issue of disclosure compliance may be better model using the methodology of confirmatory factor analysis. Future research should test the model, including refinements, on different samples and at different points in time. Only by retesting the model can a true confirmatory factor model be developed.

The disclosure compliance index measure should be refined to eliminate the problem of all items in the index being of the same weight. Because the audit opinion, the number of funds, and the single audit requirement were found to be significant measures of the construct disclosure compliance, future research should examine these as possible alternatives to the index. Another possibility would be to categorize the disclosure items by importance and weight them accordingly.

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