Casting Light on Shadow Government: An Exploratory Analysis of Public Authorities in the Southern States

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ABSTRACT

This study seeks to understand how state governments in the sixteen southern states employ special purpose entities for financial management, their characteristics, and how they fit into state debt management. The study analyzes the characteristics of special purpose entities: the formal differences between subsets of special purpose entities and their functions and uses. The findings indicate that the formal differences between subsets of special purpose entities support the theoretical concept that public authorities, government corporations, and special districts underlie the conceptual entity commonly referred to as a special purpose entity. The analysis supports the findings that the formal differences between public authorities, government corporations, and special authorities include the ability to control the amount of information reported to the state government, the financial aspects that each entity possesses, and the ability to issue debt in the market place.

INTRODUCTION

For many years, the "Public Authority" has been defined as a debt instrumentality (Walsh, 1990; Miller et. al., 1998) of state and local governments (Bennett and DiLorenzo, 1982). The excludability of debt instrumentalities from the budget process of their establishing government (Walsh, 1990; Axelrod, 1992; Trautman, 1995) has led to concerns that these entities circumvent constitutional debt limits (Smith, 1964, 1974; Walsh 1978; Bennett and DiLorenzo, 1982; Bunch, 1991; Trautman, 1991, 1995; Axelrod, 1992). To the extent that "Public Authorities" are excluded from the budget, they can understate the size, growth, and costs of the public sector (Axelrod, 1989). Unfortunately, the nomenclature "Public Authorities" has impeded the research on these entities (Smith, 1974). The broad concept of a "Public Authority" includes a multitude of nomenclatures, such as government corporations, off-budget enterprises, special districts, public benefit corporations, boards, commissions, bond banks, authorities, special purpose governments, and the like. To diminish the confusion surrounding the name "Public Authority" this study uses the name special purpose entity to represent the conceptual entity "Public Authority".

Since their inception in 1857[1] special purpose entities have been considered an essential part of government finance worldwide. Many public programs and infrastructure projects depend on these special purpose entities. The special purpose entity is created and empowered to perform operations necessary to set up and run a public enterprise (Trautman, 1991). This entity can plan, construct or purchase, maintain, operate or lease, and support a variety of enterprises. Special purpose entities[2] have the legal power to issue revenue bonds and pay for any projects they undertake. These projects are financed through own-source revenues and their independent ability to borrow. The own-source revenues are collected through the setting of rates, fees, toll rentals or other charges related to any project undertaken by the entity. Their borrowing is

similar to all entity borrowings, either private or government. That is, borrowing is based on the financial condition of the entity and the market perception of that financial soundness.

Although a number of authors agree that special purpose entities should be examined separately, efforts to develop and use the special purpose entity concept as a tool of social science research have resulted in significant confusion (Leigland, 1994). As Smith (1974) notes, although the nomenclature special purpose entity indicates a semi-autonomous government enterprise that is off-budget, our lack of understanding of these entities may be simply based on their different functions and uses. The research associated with special purpose entities has been limited to singular case studies, and studies that make questionable assumptions or "anticipate" that these entities behave as dictated by the definitional literature and nomenclature (Mitchell, 1999). It is interesting that such a limited pool of research exists in an area that is so vital to government financial management. In a very real sense, special purpose entities shape the services that governments provide to their constituents since they are the providers of infrastructure, services, and financing that we take for granted.

This study is about the function and uses of special purpose entities at the state level. The study analyzes the characteristics of special purpose entities: the formal differences between subsets of special purpose entities and their functions and uses. Unlike much special purpose entity research, this study relies on entity level data, accumulated through a survey instrument of the sixteen southern region states, to link and differentiate special purpose entity functions and uses.

The remainder of this paper is organized as follows: the next section describes the relevant literature and basic models with respect to special purpose entities. The methodology

and survey instrument are presented in the third section and the analysis and discussion are discussed in the fourth section with the conclusions offered in the fifth section.

RELEVANT LITERATURE AND MODELS

The first step in the process of determining special purpose entity function and uses in governmental financial management requires a set of unique characteristics that can assist us in differentiating the entities. In his seminal work on special purpose entities, Willoughby's (1927) suggests that government corporations be distinguished from other forms of

government by focusing on three distinct characteristics. Government corporations have a board of directors who are subordinate to the enabling government. The entity is used for revenue producing services only. The budget of the entity is subject to an annual review and audit by the enabling government.

Gulick (1947) offers a focused general theoretical discussion on the characteristics and uses of special purpose entities. Gulick focuses on the nomenclature public authority independent of other nomenclatures. This theory views public authorities as governmental business corporations set up outside of the normal structure of traditional government. These entities offer governments continuity, business efficiency and flexible management for the construction or operation of self-supporting or revenue-producing public enterprises. In the United States, public authorities are mainly used for port development, toll bridges and speedways, public housing, terminals, rural banking and municipal water and sewer systems (Gulick, 1947).

The distinguishing characteristics established in the theoretical literature indicate that a part-time board of directors governs public authorities with a full-time manager that does not answer to the enabling government officials directly. Public authorities do not levy taxes in general, however may levy taxes under legislative approval, and are exempt from enabling governmental review of their budgets (Gulick, 1947; Walsh, 1978; Axelrod, 1992).

Hawkins' (1976) provides an argument in the literature for the entities entitled special districts. Special districts have been included and evaluated in the conceptualization of special purpose entities (Axelrod, 1992; Leigland, 1994). A distinguishing characteristic of a special district is that their creation can avoid state constitutional and statutory restrictions on local government taxing and borrowing powers (MacManus, 1981). In other words, creating a special district is a way for local governments to expand their revenue sources, particularly in urban areas (Bollens, 1957).

The fiscal structure of special districts is not random or arbitrary. The fiscal structure of districts is a function of the types of goods they produce, the problems they attempt to solve, and the preferences of the local community. As goods and services become indivisible, generate externalities, or face common resource problems, special districts will rely on taxing mechanisms to produce the necessary revenue. However, when goods and services are divisible, generate few externalities, and face no common resource problems, special districts will use a pricing mechanism that is in many ways analogous to the market [e.g. fees, charges, special assessments] (Hawkins, 1976). Furthermore, special districts generally do not utilize the debt market to provide revenue for services and in general, have elected governing boards (Mitchell, 1990). The characteristics of special districts include their ability to tax (Hawkins, 1976; MacManus, 1981). An important characteristic of special districts may be their non-reliance on the municipal debt market.

Unfortunately, other nomenclatures used with reference to special purpose entities (e.g., boards, commissions, enterprises, etc.) are not specifically defined within the existent literature. These other entities may possess characteristics common to public authorities, special districts, and government corporations or independent of these defined entities. These overall characteristics lead to the operational hypothesis that multiple entities exist independently within special purpose entities in the sixteen southern region states.

The operational hypothesis implies that we should expect each theoretical characteristic to play a specific role within the underlying entities. The degree of independence within the administrative and financial characteristics of an entity may provide a key to determining what type of entity (public authority, government corporation, or special district) provides the service, infrastructure or financing.

Basic Models

Formally, the three basic models inferred in the literature on special purpose entities are presented. The models are based on the literature that addresses the function of public authorities, government corporations, and special districts. The distinguishing characteristics that are presented in the following models are derived from the literature. The goal in the development of the models is simply to allow for a specific set of characteristics to accommodate the tasks assigned to the entity. In this way, the creating government has established a specific function for the entity that can be used to differentiate between the types of instrumentalities. The models are presented in functional form below:

GC = ¦ (X_c, Q_d)

where,

GC = Government Corporation

X_c = Vector of characteristics shared with public authorities and special districts (Legislated as corporation, wholly owned by the creating government, tax-exempt, oversight by board of directors, able to cross state lines, free of regulations and procedures applicable to traditional government service organizations, revenue producing, let contracts, charge fees for services)

Q_d = Vector of distinguishing characteristics (Politically appointed board, board is subordinate to enabling government, budgetary annual review, and audit by enabling government)

PA = ¦ (X_c, Z_d)

where,

PA = Public authority

X_c = Vector of characteristics shared with government corporations and special districts (Legislated as corporation, wholly owned by the creating government, tax-exempt, oversight by board of directors, able to cross state lines, free of regulations and procedures applicable to traditional government service organizations, revenue producing, let contracts, charge fees for services)

Z_d = Vector of distinguishing characteristics (Self-supporting, perpetual existence, debt is not part of enabling governments debt, board is business dominated, business type budget, business type accounting system)

SD = ¦ (X_c, R_d)

where,

SD = Special District

X_c = Vector of characteristics shared with public authorities and government corporations (Legislated as corporation, wholly owned by the creating government, tax-exempt, oversight by board of directors, able to cross state lines, free of regulations and procedures applicable to traditional government service organizations, revenue producing, let contracts, charge fees for services)

R_d = Vector of distinguishing characteristics (elected board, ability to tax)

Authors who have focused on special purpose entities as a specific and unique form of semi-autonomous government argue that lumping public authorities with special districts (Preston, 1961; Bollens, 1957) or other governmental entities impede the understanding of these entities (Leigland, 1994). Considered an important and powerful public policy tool (Walsh, 1978), the aggregation of these entities impedes an evaluation of their usefulness as tools of state financial management.

[INSERT METHODOLOGY ABOUT HERE]

ANALYSIS AND DISCUSSION

The goal of this study is to determine if multiple entities compose the concept of a special purpose entity, and to evaluate what variables influence the underlying entities. The analysis would provide a vehicle for predicting entity membership of a future sample of special purpose entities. In this way, the first analysis, the cluster analysis, is the focus of the empirical evaluation. In any practical problem setting two questions need to be answered with respect to a given cluster analysis. The first question is what is the optimal (i.e., correct) number of clusters. The optimal number of clusters is addressed both diagrammatically and empirically in the cluster analysis results and discussion. The second question is how do the clusters differ. Validating this question is the focus of the second and third analyses. Two techniques are used in the validation process. A comparative analysis is used to assess the clustered entities as a qualitative technique. The multinomial logit is developed to quantitatively analyze the clusters on a set of external variables for which information is available on the cluster members, but was not used in the clustering procedure. The results of each of the analyses are discussed in the following sections.

Cluster Analysis and Discussion

To classify the entities into groups based on the selected variables, two agglomerative clustering techniques are used. The first technique was a variation of Ward's Error Sum of Squares Method. Ward's (1963) method of forming clusters is based on the loss of information resulting from the grouping of entities. The distance between two clusters is the sum of squares

from the objects to the joint cluster means minus the sum of squares from the object to their individual cluster means. That is to say, distance is the increase in total sum of squares that would result if the two clusters were combined. The sum of squared distances from the cluster mean is a popular criterion in cluster analysis and in other forms, is popular throughout statistics (Hand, 1981). The second technique was the Nearest Neighbor Method or single linkage method. This method utilized a minimum distance rule that began by first finding those two entities having the shortest distance. Initially all the clusters consist of one point each and the inter-cluster distance matrix is simply the inter-point distance matrix. From this, the clusters are merged using the distance between the point and the nearest member of the cluster.

The differences between the techniques are simply the different ways of measuring inter-cluster distances. The results of the two analyses are extremely similar, with the nearest neighbor method used as a second assessment to ensure that the first method, Ward's method, was replicated so as to assess the stability of the cluster solution (Dillon and Goldstein, 1984). Therefore, for simplicity, the clustering results of Ward's method are presented.

To assess the cluster analysis results, two verification tools are used to determine the "natural" number of clusters. The first tool to determine the number of clusters is a hierarchical tree diagram as illustrated in Figure 1. Figure 1 shows the individual observations (Code) on the horizontal axis and the effect on the semi-partial R-squared on the vertical axis. The diagram offers a visual illustration of the affect of the cluster groups on the semi-partial R-squared. The objective function attempts to minimize the change in the semi-partial R-squared due to the clustering.

[INSERT FIGURE 1 ABOUT HERE]

In Figure 2 the final connecting lines and the observations have been removed to show that three groups are apparent in the clustering analysis. These three clusters (groups) minimize the affect of the clustering on the semi-partial R-squared. This finding is consistent with the literature that indicates three entities compose the concept of a special purpose entity.

[INSERT FIGURE 2 ABOUT HERE]

The second tool used to determine the number of clusters is Hotelling's T^2 test. In using Hotelling's T^2 statistics it is advisable to ignore the value levels of clustering greater than 20% of the number of data points, which is 0.20*68 = 13.6 or approximately 14 for this data set. The values of the pseudo Hotelling's T^2 (PST^2) are shown in Table 4 along with the number of clusters (NCL), and the clusters joined.

[INSERT TABLE 4 ABOUT HERE]

The values of the PST^2 statistic printed in each cluster row can be used to help determine whether the two clusters combined in that row should have been combined. If PST^2 is large, the two clusters should not be combined; but if PST^2 is small, then the two clusters can safely be combined. Unfortunately, the designation of the values of PST^2 as "large" and "small" is somewhat relative to the data being analyzed. Usually, it is best to use these values according to how they compare to one another (Johnson, 1998). Table 4 shows that the value of PST^2 is 14.3, 12, and 12.7 for the first three clusters, which can be

considered large when compared to all the other PST^2 values. The PST^2 value is an indication that increasing the number of clusters to more than three may be inappropriate.

The two findings with respect to the number of clusters, the hierarchical tree figures and the pseudo Hotelling's T^2, indicate that three clusters are appropriate. However, in any practical setting, like principal components analysis, cluster analysis is frequently the first step of the analysis (Dillon and Goldstein, 1984). That is also the case in this analysis. Consequently, the results of the cluster analysis lead to a further investigation of the data and not simply to casual acceptance of the clusters obtained.

Qualitative Analysis and Discussion

The characteristics of the entities within each cluster are exhibited in Table 5. Table 5 indicates the number of entities with each characteristic in each cluster and the percentage of entities within each cluster with those characteristics. To evaluate the clusters with respect to the relevant literature, Table 6 compares the defining characteristics within each literature with the clustered entities by percentage. Observing both Table 5 and 6, it becomes clear that none of the cluster groups exactly replicates the extant literature on public authorities, government corporations, or special districts. Although this statement is correct, a comparative of the defining characteristics and the clustered groups does show some commonalities. The variable POLITICL, that the board is politically appointed, is a poor discriminator of these entities.

[INSERT TABLE 5 ABOUT HERE]

That is, POLITICL is found in 81% or more of the entities within each cluster and thus does not allow for differentiation between the clusters. This finding is consistent with the literature on

public authorities, government corporations, or special districts that indicates this is a common characteristic among the entities. This variable allowed for a form of control within the study.

[INSERT TABLE 6 ABOUT HERE]

Looking at the entities that comprise Cluster 1, all of the entities with the characteristic found in special district of having the ability to tax, TAXER, are included within this cluster. The majority of Cluster 1 entities also have two of the characteristics found in government corporations, they must report their budget, BUDGET, and the are subject to a state government audit, AUDIT. Also important in Cluster 1 entities is that 50% or less have any common characteristics with the entity, Public Authority. With respect to Cluster 2, at least 29 of the 32 of the entities within this cluster have two characteristics in common with both public authorities and government corporations.

The final cluster, Cluster 3 is clearly different from the other two clusters. Cluster 3 entities share most of their characteristics with the entity, public authority. They appear to be the most independent of the entities since less than 21% of them must undergo a state audit or report their budget to the state. The cluster analysis indicates that these entities may differ with respect to the extant literature. This leads to a further evaluation of these clustered entities.

Multinomial Analysis and Discussion

The second analysis of this study is a multinomial logit. As argued by Dillon and Goldstein (1984), assessing the cluster analysis is a necessary step when applying inference to the cluster solution. To further assess the cluster solution, six variables are used in the multinomial logit. A short discussion of the variables used in the multinomial analysis follows.

The dependent variable is the cluster assignment of each entity (CLUSTER). The first independent variable is a categorical variable that has three categories that are labeled SERVICE, FINANCER, and INFSTRUC. The categories are established from Question 2 of the survey, which asked the respondent to provide the focal purpose of the entity. SERVICE is a dummy variable in which 1 indicates that the entity provides a service. FINANCER is a dummy variable in which 1 indicates that the entity provides financing only for programs, services, or infrastructure. INFSTRUC is a dummy variable in which 1 indicates if the entity provides infrastructure. These variables allow for differentiation between the entities by their legislated or statutory focal purpose (e.g., why they were created).

The principal purpose for which most special purpose entities were created is to enable borrowing to finance public projects that could not be paid for in other ways (Leigland, 1994). Moreover, Gulick implies that public authorities are mainly used for port development, toll bridges and speedways, public housing, terminals, rural banking and municipal water and sewer systems (Gulick, 1947). These arguments imply that services, financing, and infrastructure may allow for differentiation of these entities. Table 7 shows the frequency of purpose by cluster group. Table 7 indicates that the purpose of the entity is well dispersed within the clusters.

[INSERT TABLE 7 ABOUT HERE]

The second independent variable used in the multinomial analysis is labeled REPORTED. REPORTED is an aggregate of Question 3 of the survey, which asked the respondent to indicate what kind of information must the entity report to the state. This variable is closely aligned with the theoretical argument that the more information that must be reported to the state the less independent the entity. As noted by Willoughby, reporting the entities

budget is indicative of a government corporation that is limited in its independence from the establishing state government. Furthermore, Axelrod and Walsh argue that independence is a function of how removed the organization is from the establishing government's control (Axelrod, 1989; Walsh, 1978). REPORTED indicates the independence of the organization by allowing for the identification of entities that must report budgets, projects, contracts, salaries, a change in directors, a change in entity boundaries, or other information to the establishing state government. Thus, the more information the entity must report to the state, the less independent the entity is from the establishing government. Table 8 shows the frequency of reported information to the state by cluster group. Table 8 indicates that cluster 3 contains entities that report a maximum of two kinds of information to the state. Moreover, cluster 3 has 75% (6 of 8) of the entities that do not report any information contained in Question 3 to the state.

[INSERT TABLE 8 ABOUT HERE]

The third and fourth independent variables used in the multinomial analysis are indicators of the aggregated number of characteristics of the entity. These variables are labeled FINANCE and ADMIN. FINANCE indicates the number of financial characteristics possessed by the entity and ADMIN indicates the administrative characteristics possessed by the entity. These characteristics are found in Question 17 of the survey. The financial and administrative characteristics possessed by the entity offer an opportunity to assess the independence of the entity. Theoretically, creating governments should limit independence of the entity through specific restrictions on both the financial and administrative aspects. The limited independence provides flexibility and opportunity for the creating government to impart a specific service

while simultaneously possessing the desired amount of control over the newly created entity (Doig, 1983). Table 9 indicates the frequency of financial characteristics by cluster group. Table 9 shows that cluster 3 contains only entities that have at least five of the twelve financial characteristics. Moreover, 71% (10 of 14 entities) in cluster 3 have at least eight of twelve financial characteristics. This differs from cluster 1 in which only one entity (5%) has at least eight financial characteristics and from cluster 2 in which 56% of the entities have at least eight financial characteristics. This finding may indicate that cluster 3 is more financially independent than both clusters 1 and 2.

[INSERT TABLE 9 ABOUT HERE]

Table 10 shows the frequency of administrative characteristics by cluster group. Table 10 indicates that 64% of the entities in cluster 3 have at least 11 of the 15 administrative characteristics. Comparatively, 9% of the entities in cluster 1 and 34% of the entities in cluster 2 have at least 11 of the 15 administrative characteristics. Similar to the findings in Table 9, financial characteristics, cluster 3 may be more administratively independent than either cluster 1 or cluster 2.

[INSERT TABLE 10 ABOUT HERE]

The fifth independent variable used in the multinomial logit analysis is the dummy variable ISSUDEBT, in which 1 indicates that the entity has the ability to issue debt. This variable corresponds with Question 22 on the survey. The theoretical literature of Willoughby,

Gulick, and Hawkins has implied that the ability to issue debt may differentiate the underlying entities government corporations, public authorities, and special districts. Table 11 indicates the frequency of debt issuers by cluster group. Table 11 implies that with respect to the ability to issue debt, cluster 1 differs from the other two clusters. That is, over 54% of the entities in cluster 1 do not have the ability to issue debt.

[INSERT TABLE 11 ABOUT HERE]

Table 12 presents the simple statistics for the dependent variable (CLUSTER) and the five independent variables, SERVICE, FINANCER, INFSTRUC, REPORTED, FINANCE, ADMIN, and ISSUDEBT.

[INSERT TABLE 12 ABOUT HERE]

The analysis of the cluster groups is performed using CATMOD in SAS. This technique is used when the categories of the dependent variable are unordered and the predictor variables are characteristics of the individual, and possibly the individual's environment. That is the case with the cluster analysis data. Each predictor variable is a characteristic of the individual entity within the cluster. The main results of the analysis are shown in Table 13. Table 13 indicates the global tests for the effect of each variable on CLUSTER, controlling for the other independent variables in the model. Each chi-square is a test of the null hypothesis that the explanatory variable has no effect on CLUSTER. There are two degrees of freedom for each chi-square because each variable has two coefficients. So the null hypothesis is that both

coefficients are zero. SERVICE, FINANCER, and ADMIN have a *p*-value that is more than .10, but the other three variables are all significant at beyond the .10 level. The last line in Table 13, labeled "Likelihood Ratio," is the deviance statistic that is twice the positive difference between the log-likelihoods for the fitted model and the saturated model, where high *p*-values suggest a good fit. The *p*-value of .9969 is reassuring, however; caution should be observed since deviance statistics calculated from individual level data may not have chi-square distributions (Allison, 1999) leading to inaccurate *p*-values.

[INSERT TABLE 13 ABOUT HERE]

As a reminder, CATMOD always estimates *K*-1 equations for *K* categories of the dependent variable CLUSTER since one category is redundant. Moreover, each equation is a contrast between a given category and the reference category. In the equations presented in Table 14, all three categories are offered. To obtain the third column of the table, cluster 1 v. cluster 2, simply subtract column 2, cluster 2 v. cluster 3, and column 1, cluster 1 v. cluster 3. Recoding the data allowed me to obtain the p-values for the coefficients in column 3. The inference presented in Table 6 indicated that cluster 1 was similar to the theoretical entity, special district; cluster 2 was similar to the theoretical entity government corporation; and cluster 3 was similar to the theoretical entity public authority. The use of these theoretical names will assist in simplifying the presentation of the multinomial analysis.

Examining the first column, four of the six variables have significant effects on special districts v. public authorities. The coefficients may be interpreted just like coefficients in a binary logit since they were treated as quantitative variables in the analysis. Exponentiating the

coefficient for SERVICE, we get exp (-3.28) = 0.04. We can then say that the odds that service entities are in special districts rather than public authorities are about one-twenty fifth the odds of non-service entities. This finding is similarly found in the coefficient for FINANCER. Exponentiating the coefficient for REPORTED, we get exp (1.45) = 4.26, implying that each increase of one item in reported information to the state multiplies the odds of the entity being a special district rather than a public authority by about a factor of four. Finally, an increase of one financial characteristic multiplies the odds of being in special district rather than a public authority by about one-half (exp [-.75] = .47).

[INSERT TABLE 14 ABOUT HERE]

The coefficients in column 2, government corporation v. public authorities, have the same signs as those in the first column. In general, the coefficients are smaller except for the coefficient for REPORTED, which indicates that each increase of one item in reported information to the state multiplies the odds of the entity being a government corporation rather than a public authority by about a factor of five (exp [1.56] = 4.76).

The third column, special district v. government corporation has a dual interpretation. The coefficients represent the effect of the explanatory variables on being a special district v. government corporation. But they also represent the difference between the coefficients in the first two columns. While FINANCE increased significantly from column one to column two, ISSUDEBT decreased significantly. Equivalently, FINANCE and ISSUDEBT are the only variables having a significant effect on an entity being a special district v. government corporation. Exponentiating the coefficient for FINANCE, we get exp (-.60) = .55, implying that an increase of one financial characteristic multiplies the odds of being a special district

rather than a government corporation by about one-half. Finally, exponentiating the coefficient for ISSUDEBT, we get exp (-2.04) = .13, which implies that special district entities had odds that were only about one-eighth those of government corporations for having the ability to issue debt.

A test of the null hypothesis that all the coefficients in the first column in Table 14 are identical to the corresponding coefficients in the second column was performed. The test indicated to reject the null hypothesis and conclude that at least one pair of coefficients differs across the two equations (*p*-value .0032, chi-square 19.68, 6 degrees of freedom).

The results of this multinomial analysis lead to some interesting aspects of the three clusters. The most interesting finding is that in the global analysis of the variables listed in Table 13, the variables REPORTED, FINANCE, and ISSUDEBT are statistically significant. With respect to these variables, this finding coincides with the theoretical arguments that these variables are indicators of entity independence. The ability to control the amount of information reported to the state government, the financial aspects that each entity possesses, and the ability to issue debt in the market place are all considered in the literature as functions of the independence of these entities. Furthermore, the finding that the variable ADMIN, administrative characteristics of the entities, is not statistically significant supports previous research that the financial characteristics are important in differentiating these entities. In summary, the findings of the multinomial logit further the theoretical arguments that public authorities, special districts, and government corporations, which are differentiable, compose the conceptual entity commonly referred to as a special purpose entity.

SUMMARY AND CONCLUSIONS

This study has empirically looked at the concept of a special purpose entity and the theoretical entities that compose this concept. The basic theoretical models presented at the beginning of this study are a key to determining whether or not the three clusters found in the cluster analysis indicated the three entities, public authorities, government corporations, and special districts, which was argued comprise the concept of a special purpose entity. The models indicated the theoretical differences between the three entities. A summary of the empirical findings is addressed through a comparative of the three theoretical entities and the three clustered groups established in the analysis.

The first theoretical entities are public authorities. Public authorities have distinguishing characteristics of self-supporting, perpetual existence, business dominated board, business type budget and a business type accounting system as noted in Table 6. In the comparative analysis self-supporting (SUPPORT) is indicated as a characteristic of cluster 3. Both a business type budget (BUSBUDGT) and a business type accounting system (ACCTG) were also found to be characteristics of cluster 3, but they were also characteristics of cluster 2. Both perpetual existence (PERPTUAL) and a business dominated board (BUSINESS) were not statistically significant characteristics in any of the three clusters.

The multinomial logit indicates that as the number of items that must be reported to the state increase (REPORTED), the odds of the entity being a public authority decreases. The statistical finding for the variables AUDIT, BUDGET, and REPORTED are consistent with both Gulick and Axelrod's argument that public authorities are independent of the establishing government. This finding furthers the inference that the entities that are grouped in cluster 3 are similar to the theoretical entities, public authorities.

The second theoretical entities are government corporations. Government corporations have distinguishing characteristics of politically appointed board, a board that is subordinate to the enabling government, must report budget, and are audited by the enabling government as noted in Table 6. In the comparative analysis, reporting a budget (BUDGET) and audited by the enabling government (AUDIT) were characteristics of cluster 2, however were also characteristics of cluster 1. Moreover, EXOFICIO, which indicated if the board had an ex-officio member and was a proxy for a subordinate board, did not differentiate cluster 2 from either cluster 1 or 3. Cluster 2 has similar characteristics with the theoretical entity government corporation.

The final theoretical entities are special districts. Special districts have distinguishing characteristics including the ability to tax and non-debt issuers as noted in Table 6. In the cluster comparative analysis, the ability to tax (TAXER) was found only with the entities in cluster 1. In Table 11, frequency of debt issuers by cluster, over 54% of the entities in cluster 1 do not issue debt. Moreover, the variable ISSUDEBT in the multinomial analysis indicates that special district entities had odds that were only one-eighth those of government corporation entities for having the ability to issue debt. These findings indicate that cluster 1 has similar characteristics with the theoretical entities, special districts.

The analyses presented in this study addressed the issue of the underlying entities within the conceptual entity entitled special purpose entities. Evidence was presented both qualitatively and empirically that supports the hypothesis that three entities compose the conceptual entity special purpose entity. The analyses also indicate that the three clusters that were found in the cluster analysis have some similar characteristics to the theoretical entities public authorities, government corporations, and special districts. Although the analyses suggest that the three

clustered groups are associated with the three theoretical entities, this analysis is just the beginning of the search for the characteristics that describe these "peculiar animals" (Doig, 1983).

The provision of public services through the use of quasi-governmental entities in America began in 1921with the creation of the Port Authority of New York. This first experience with special purpose entities and the rich history that followed contrasts the different views of special purpose entities, from those eras, 1930s, 1940s, 1950s, and 1960s, in which the use of special purpose entities was perceived as a solution to a societal need, to the eras of the 1970s, 1980's and 1990s in which the use of special purpose entities was seen as a circumvention of constitutional laws and constituent desires. The irony of this latter perception of special purpose entities may be associated with the underlying type of special purpose entity. That is, the perception of the evolution of special purpose entities from a provider of social need to a circumventer of constitutional laws and constituent desires, may be misdirected since different types of entities perform different roles within the concept of special purpose entities.

Current policy, such as the focus on "reinventing government", has brought concerns regarding actions of the government agencies which have direct contact with the American public such as the Internal Revenue Service, Department of Interior, and other regulatory and service delivery agencies. These concerns have created an environment that encourages a rethinking of how government delivers services and performs its responsibilities at all levels of American government. The rethinking of service delivery in "reinventing government" may demand further expansion of special purpose entities for the provision of services, financing, and infrastructure. This expansion will require policymakers to use the entities that compose special purpose entities to accommodate this changing environment.

The visibility of special purpose entities is critical to the success of the policies that surround the legislative activity that enables the entities. One focus of the differentiation between these entities is the opportunity to offer policymakers choices between the "best" kinds of entity to use for the desired service provision. Moreover, differentiating special purpose entities clarifies their role to third parties such as rating agencies, provides disclosure to the public of the goals of the entity, and discloses the autonomy of the entity, which removes the "shadow" from this form of state financial management.

ENDNOTES

1. In 1857, with the creation of the Mersey Docks and Harbor Act, the British government began using quasi-governmental entities to provide a variety of governmental services.

2. As a formal definition, special purpose entities are entities of government, established by a legislative body to perform a public purpose, which provide a market-oriented service and produce revenue that meets or approximates its expenditures (Mitchell, 1999 and Moe, 1995). The legislative template commonly associated with special purpose entities is that the entity is wholly owned by government; changeable only by statutory amendment, not by executive order; any changes in powers and structures may be limited by legally binding bond covenants or contracts for services; governed by a board composed of members who are appointed by elected officials; given the freedom to set fees, charges, and rents for services; required to hold public meetings before making major decisions (adapted from Axelrod, 1989; Doig, 1983; and Mitchell, 1990).

3. The calculation of the total response rate for mailed questionnaires is based on the calculations provided in Citizen Surveys How to Do Them, How to Use Them, What They Mean (Miller and Miller, 1991).

4. This survey was inclusive of several research questions. This analysis is limited to the theoretical arguments presented, thus the use of the survey was limited to twelve questions. The survey was conducted with cooperation from the Council of State Governments (CSG). Portions of this survey will be analyzed for CSG in a monograph while the remainder of the questions on the survey composes my current research agenda.

METHODOLOGY AND SURVEY INSTRUMENT

The analysis focuses on whether differences associated with the theoretical entities of a public authority, a government corporation, and a special district allow for differentiation between the groups. To do this, first a survey was conducted amongst similar states to discover the underlying set of entities; second, consideration is given to the theoretical formal models; and third a measurable way to classify the entities is specified. The logic behind this tiered analysis is simple: if there is independence between the financial and administrative characteristics of each entity type then we should be able to classify each entity into its theoretical group. That is, if there are at least three entities that compose special purpose entities the basic models should discriminate between the three types.

To examine special purpose entities and their role in government financial management, this study involved the development and use of a survey instrument. As noted by many of the authors who have attempted to analyze special purpose entities, the store of knowledge and available data is limited at best. The survey sought to obtain factual information regarding special purpose entities in the sixteen southern region states. The states are: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia. This relatively homogeneous region has been studied previously for similar issues including bond rating determinants (Moon and Stotsky, 1993) and vertical organizations and economies (Hanson, 1996).

The target population was Executive Directors and Chief Executive Officers of the state level special purpose entities in the sixteen southern states. Because the population of special purpose entities is unknown (Mitchell, 1997), an intentional sample of these entities was

developed. The sampling process entailed five steps. First, the special purpose entities were identified in the sixteen southern region states through the use of the U.S. Census of Governments, Governmental Organizations (1992), Fitch's State Debt Issues, Standard and Poor's State Debt Issues, Moody's State Debt Issues. The three bond rating agencies were contacted via e-mail and telephone for information regarding the identity of state level special purpose entities that have issued debt in the last ten years. The entities within these states utilize a variety of nomenclatures (e.g., authorities, commissions, corporations, councils, districts, agencies, trusts, units, plans, associations, projects, foundations, banks, boards, etc.) within their titles.

Second, with the names of the special purpose entities identified, two searches were conducted on the entities names. The first was a web-based search. The second was contact made via telephone. The goal of the searches was to identify the executive director or chief executive officer of these entities. The identity of the executive director or chief executive officer was found for 272 of the identified special purpose entities. This accounts for approximately 74% of the total sample.

Third, two lists were put together for the survey. The first list consisted of 272 special purpose entities in the sixteen southern region states that included the name of the entity, the address of the entity and the executive director or chief executive officer. The second list of the remaining 96 special purpose entities in the sixteen southern region states included only the name of the entity and the address of the entity.

Fourth, a survey was sent to the two lists of entities that encompass all 368 entities that were identified. The survey packets included the survey, a pre-paid addressed envelope for the return of the completed survey, instructions pertaining to the survey, and a cover letter. The

outgoing envelopes that were used included the notation "address correction requested" to allow for undeliverable surveys. The first mailing was followed by a second mailing two weeks after the first mailing. The third and fourth mailings were limited to a reminder card. The surveys were sent out with assistance from the Council of State Governments. Lastly, the responses were organized into a database. Table 1 indicates the number of respondents and the response rate.

[INSERT TABLE 1 ABOUT HERE]

As shown in Table 1, the total response rate was 41.4%. The response rate is calculated by first calculating the total number of surveys that reached the entities, which is the number of surveys that were undeliverable (20) subtracted from the total number of surveys mailed (368) that yields 348 total surveys that reached the entities. The total responses by the entities are then divided by the total number of surveys that reached the entities yielding a total response rate of 41.4%[3].

The total responses include 56 entities that provided information that the entity was no longer in existence. This category includes entities in which the establishing government provided information that stated the entity met one of the following conditions: 1) the entity was legislated only and did not currently have employees and financial funding; or 2) the entity had a legislative sunset clause that had removed the entity from state government on or before January 2000; or 3) the entity was legislated only without formally having employees or funding and then was removed from state government.

The completed surveys column shown in Table 1 includes six entities that are currently state agencies and one entity that is a federal special purpose entity. The six entities sent

information that included legislation that showed the entities were changed from a special purpose entity to a state agency. The federal entity sent documentation that showed it was not affiliated with state government. Therefore, the survey process yielded a sample size of 81 respondents.

The questionnaire was pre-tested in November 1999. The revised survey instrument was mailed on January 5, 2000. The follow-up questionnaire was mailed on January 21, 2000. The follow-up post cards were mailed on February 8, 2000 and February 15, 2000, respectively. Electronic mail response was used, along with faxes, as a further follow up on the survey with some of the entities. The respondents included all sixteen southern region states.

The survey data were analyzed in two ways. Descriptive statistics and frequencies were collected about the entities functions and characteristics. A series of multivariate analysis were then undertaken to examine the research question presented. Statistical significance was measured with the *F* and *t* statistics.

Survey Instrument

The survey questions addressed type of organization, purpose of the organization, board composition and characteristics, financial characteristics, administrative characteristics, debt issues, rating issues, and taxation issues regarding the organization. These questions allowed the survey questionnaire to be divided into subsections for use in the analysis. Although the survey contained forty-three questions only twelve questions were included in the analysis.[4] These twelve questions correspond to the arguments presented in the extant literature.

A complete listing and identification of the variables used in the analysis are presented in Table 2. The sample size (n), means, and standard deviations of the variables are presented in Table 3.

[INSERT TABLE 2 ABOUT HERE]

[INSERT TABLE 3 ABOUT HERE]

Table 2 describes and defines the variables used in the theoretical analysis. The focus of the analysis is to test the hypothesis that multiple entities exist independently within special purpose entities in the sixteen southern region states. To analyze this question the data are reduced from 81 respondents to 68 respondents. This reduction is due to the fact that only 68 respondents have boards as the oversight governing body of the entities operations. In the survey, Question 5 asks the respondents if a board or single administrator governed the entity. Thirteen respondents stated that they had a single administrator as an overseer of the entity. In the literature presented by Willoughby (1927), Gulick (1947), and Hawkins (1976) an explicit condition was that the entities have a board that oversees the entities. In fact, the literature concerning these entities state that special purpose entities have boards as the governing body (for example see Smith, 1974; Walsh, 1978; Bennett and DiLorenzo, 1982; Axelrod 1989, 1992; Mitchell 1990, 1999; Bunch, 1991; Trautman, 1991, 1995; Leigland, 1994).

To classify the entities into groups based on the 10 selected variables, I considered several techniques. Perhaps the two most commonly used techniques are logistic discrimination and factor analysis. In logistic discrimination, whether multinomial or binomial, *a priori* information is required for the dependent variable. Logistic discrimination would allow for an investigation of the relationship between the explanatory variables and the response variable. The assumption is that the classification of the entities into groups has been accomplished. This technique is indeterminant (i.e., not workable) when the response variable is not categorized.

Similarly, factor analysis is good for analyzing variable relationships and for purposes of data reduction. But by itself, it does not provide an objective algorithm for classifying individual units. In factor analysis, it is customary to classify individual units on the basis of factor scores. However, this often turns out to be a very subjective exercise when entities have high absolute scores on more than one factor. So how does one proceed? Since the concept of a special purpose entity connotes multiple groups, one might try to group entities on the basis of their characteristics.

One well-known technique for accomplishing this objective is cluster analysis. While there are a large number of clustering algorithms, perhaps the most useful is an agglomerative method (Dillon and Goldstien, 1984). Agglomerative methods follow the subsequent procedure: Each object starts out in its own cluster; at the next level the two closest objects (clusters) are fused; at the third level a new object joins the cluster containing the two objects or another two object cluster is formed, with the decision resting on an assignment criterion. This process continues until eventually a single cluster containing all *n* objects is formed.

Two agglomerative techniques are used in this study. The first technique is a variation of Ward's Error Sum of Squares Method. Ward (1963) proposed a method of forming clusters that is based on the loss of information resulting from the grouping of entities. This loss of information is measured by the total sum of squared deviations of every observation from the mean of the cluster to which it belongs. The rule for entities being assigned to a cluster is based on the increase in the error sum of squares (E.S.S.) induced from combining every possible pair of clusters. E.S.S. is used as the objective function and is formally computed as

$$E.S.S. = \sum_{j=1}^{K}\left[\sum_{i=1}^{n_j} X_{ij}^2 - \frac{1}{n_j}\left(\sum_{i=1}^{n_j} X_{ij}\right)^2\right] \qquad \text{(Equation 1)}$$

where X_{ij} denotes the trait value for the *i*th entity in the *j*th cluster, *k* is the total number of clusters at each stage, and n_j is the number of entities in the *j*th cluster. The E.S.S. is zero at the first stage since each entity constitutes a cluster.

The algorithm developed by Ward also employs a hierarchical grouping procedure in which the process begins by considering *K* groups of entities, one entity per group. The first group is formed by selecting two of the *K* groups, that when put together, will produce the least impairment in the value of the objective function. This *K* - 1 set of groups is then reexamined to determine the next two of the *K* – 1 groups to unite while minimizing the increase in the objective function. At each stage of the clustering (from *K* to 1) the value of the objective function is reassessed. Changes in the value of the objective function from stage to stage provide an important clue for determining the number of "natural" clusters.

The second technique is the Nearest-Neighbor Method or single linkage method. This method utilizes a minimum distance rule that begins by first finding those two entities having the shortest distance. They constitute the first cluster. At the next stage one of two occurrences happens: Either a third entity will join the already formed cluster or the two closest unclustered entities are joined to form a second cluster. The decision rests on whether the distance from one of the unclustered entities to the first cluster is shorter than the distances between the two closest unclustered entities. Both techniques, the nearest-neighbor method and Ward's method, are used in the statistical software package PROC CLUSTER in the SAS System software.

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Table 1: Survey Information				
Surveys Mailed	Undeliverable	Total Responses	No longer in existence	Completed Surveys
368	20	144	56	88
	5.4%	41.4%	16.1%	25.3%

Table 2: Variables Used in the Theoretical Analysis		
Variable	Survey Question	Description
ACCTG	Question 17	Business type accounting system or not
AUDIT	Question 18	State audit required or not
BUDGET	Question 3	Report budget or not
BUSBUDGT	Question 17	Business type budget or not
BUSINESS	Question 9	Business member board or not
EXOFICIO	Question 9	Ex-officio/ State employee member on board or not
PERPTUAL	Question 17	Perpetual existence or not
POLITICL	Question 8	Political appointment or not
SUPPORT	Question 20	Self-supporting or not
TAXER	Question 41	Ability to tax or not

Table 3: Simple Statistics of the Variables			
Variable	n	Mean	Standard Deviation
ACCTG	68	0.66	0.48
AUDIT	68	0.78	0.42
BUDGET	68	0.76	0.43
BUSBUDGT	68	0.66	0.48
BUSINESS	68	0.34	0.48
EXOFICIO	68	0.41	0.50
PERPTUAL	68	0.63	0.49
POLITICL	68	0.90	0.31
SUPPORT	68	0.63	0.49
TAXER	68	0.06	0.24

Figure 1: Hierarchical Cluster Tree Figure Complete

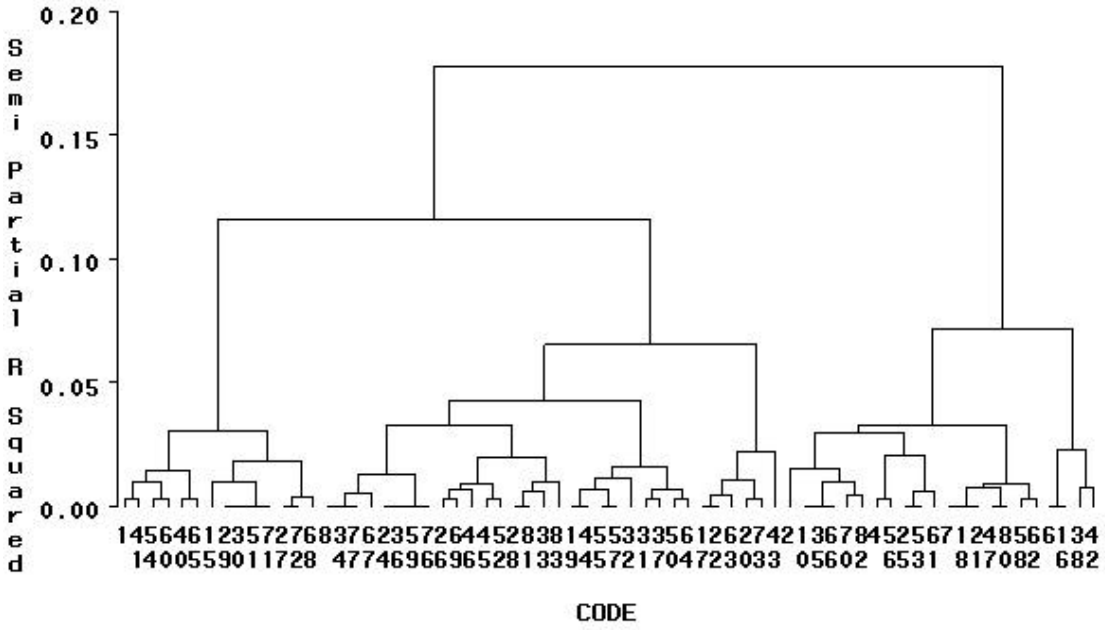

Figure 2: Hierarchical Cluster Tree Figure Modified

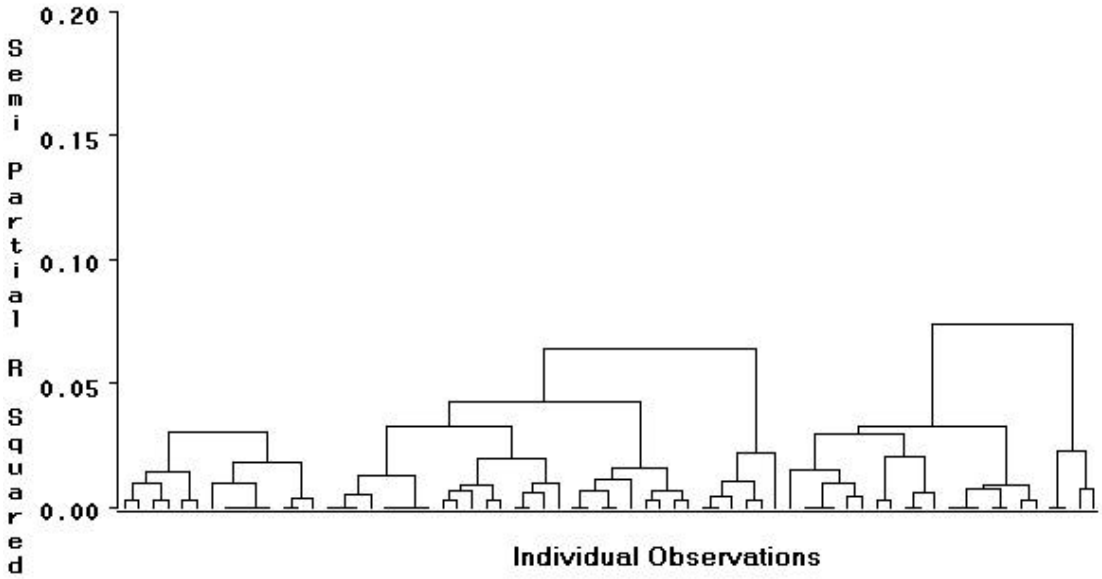

Table 4: Clustering Results and Statistics			
NCL	Clusters Joined		PST^2
14	CL22	CL37	7.7
13	CL25	CL21	3.7
12	CL45	CL32	7.1
11	CL20	Code43	4.8
10	CL67	CL28	6.3
9	CL16	CL12	4.6
8	CL17	CL14	5.6
7	CL9	CL26	4.8
6	CL18	CL13	6.6
5	CL6	CL15	6.5
4	CL5	CL11	7.7
3	CL7	CL10	12.7
2	CL8	CL4	12
1	CL2	CL3	14.3

Table 5: Entity Characteristics of the Clusters						
	Cluster 1 (n=22)		**Cluster 2 (n=32)**		**Cluster 3 (n=14)**	
Variable	Entities	Percentage	Entities	Percentage	Entities	Percentage
ACCTG	2	9	29	91	14	100
AUDIT	20	91	30	94	3	21
BUDGET	19	86	31	97	2	14
BUSBUDGT	2	9	29	91	14	100
BUSINESS	4	18	14	44	5	36
EXOFICIO	6	27	13	41	9	64
PERPTUAL	11	50	21	66	11	79
POLITICL	21	95	26	81	14	100
SUPPORT	11	50	19	59	13	93
TAXER	4	18	0	0	0	0

Table 6: Cluster Comparison to Literature Entities			
	Cluster 1	Cluster 2	Cluster 3
Public Authority			
ACCTG	9%	91%	100%
BUSBUDGT	9%	91%	100%
BUSINESS	18%	44%	36%
PERPETUAL	50%	66%	79%
SUPPORT	50%	59%	93%
Government Corporation			
BUDGET	86%	97%	14%
AUDIT	91%	94%	21%
EXOFICIO	27%	41%	64%
Special District			
TAXER	100%	0%	0%

Table 7: Frequency of Purpose by Cluster				
	FINANCER	SERVICE	INFSTRUC	Total
Cluster 1	3	10	9	22
Cluster 2	5	13	14	32
Cluster 3	4	4	6	14

Table 8: Frequency of Reported Information by Cluster								
	Number of Reported Information							
	0	1	2	3	4	5	6	Total
Cluster 1	1	1	3	4	5	6	2	22
Cluster 2	1	6	3	2	7	8	5	32
Cluster 3	6	6	2	0	0	0	0	14

Table 9: Frequency of Financial Characteristics by Cluster													
	Number of Financial Characteristics												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
Cluster 1	0	3	4	4	4	0	6	0	0	1	0	0	22
Cluster 2	2	0	0	1	3	6	2	8	5	2	2	1	32
Cluster 3	0	0	0	0	1	3	0	4	1	1	3	1	14

Table 10: Frequency of Administrative Characteristics by Cluster														
	Number of Administrative Characteristics													
	2	4	5	6	7	8	9	10	11	12	13	14	15	Total
Cluster 1	2	0	1	4	3	3	5	2	0	0	1	1	0	22
Cluster 2	1	2	2	3	3	5	2	3	4	3	0	2	2	32
Cluster 3	0	1	1	1	0	1	1	0	2	1	1	4	1	14

Table 11: Frequency of Debt Issuers by Cluster			
	Issue Debt	Cannot Issue Debt	Total
Cluster 1	10	12	22
Cluster 2	24	8	32
Cluster 3	10	4	14

Table 12: Multinomial Variables			
Variable	n	Mean	Standard Deviation
CLUSTER	68	1.88	0.72
SERVICE	68	0.41	0.50
FINANCER	68	0.16	0.37
INFSTRUC	68	0.43	0.50
REPORTED	68	3.04	2.00
FINANCE	68	6.75	2.72
ADMIN	68	8.90	3.39
ISSUDEBT	68	0.65	0.48

Table 13: Maximum-Likelihood Analysis-of-Variance Table			
Variable	DF	Chi-Square	*p*-value
INTERCEPT	2	5.03	0.0809
SERVICE	2	3.36	0.1860
FINANCER	2	3.86	0.1454
REPORTED	2	9.99	0.0068
FINANCE	2	9.96	0.0069
ADMIN	2	3.39	0.1837
ISSUDEBT	2	5.20	0.0742
Likelihood Ratio	122	83.6	0.9969

Table 14: Multinomial Analysis Resulting Equations			
Effect	Special District v. Public Authority	Government Corporation v. Public Authority	Special District v. Government Corporation
INTERCEPT	5.63	2.02	3.61**
SERVICE	-3.28*	-2.00	-1.29
FINANCER	-3.18*	-3.15*	-0.03
REPORTED	1.45***	1.56***	-0.10
FINANCE	-0.75**	-0.16	-0.60***
ADMIN	-0.11	-0.33	0.21
ISSUDEBT	0.22	2.26	-2.04**
* p < .10 ** p < .05 *** p < .01			