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PUBLIC SECTOR RESEARCH IN ACCOUNTING: A REVIEW AND SYNTHESIS

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ABSTRACT

Accounting researchers have performed many studies related to public sector budgeting and financial management. Public sector accounting research seeks to explain the role of accounting and auditing in the public sector. For example, researchers examine issues such as (1) the use of accounting information by elected officials, (2) the demand for auditing, and (3) the determination of bond ratings. This review of the public sector accounting literature describes some of the theoretical foundations utilized in public sector accounting research and reviews a sample of selected empirical studies.

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INTRODUCTION

The purpose of this study is to provide researchers in public budgeting and finance with an introduction to theories underlying much of the public sector research in accounting. We hope that this article can aid in the development of interdisciplinary public sector research concerning budgeting, financial reporting, and auditing. Our intent is not to provide a comprehensive review of this substantial literature. Rather, we provide a commentary on how public sector accounting research has developed. We believe our paper can serve as an introductory guide to the public sector accounting literature.

The remainder of the article is organized as follows: In Section 2, we briefly explain why public sector accounting and public choice research focus on descriptive research. In addition, we provide background information on principal-agent theory. This theory provides the underlying theoretical support for many descriptive public sector accounting studies. In Section 3, we present our discussion of several public sector accounting studies of principal-agent relationships. Our final section includes our conclusion and discusses additional studies which address public sector accounting research.

DESCRIPTIVE RESEARCH AND PRINCIPAL-AGENT THEORY

Descriptive research does not prescribe solutions to problems in the manner found in normative or prescriptive research. Descriptive research produces theories *about* public sector budgeting, financial reporting, or auditing by describing the relationships that exist in practice. For example, descriptive public sector research is concerned with explaining, or predicting, how the government allocation mechanism performs, but not how government *should* perform.

It is from a descriptive viewpoint that public sector researchers ask questions such as: How do public officials signal that campaign promises are kept? Who has more power, the elected official or the bureaucrat? Why do state and local governments demand audits? What determines the prices paid for state and local government audits?

Kinney explains why descriptive research is performed:

> Basically, descriptive research works like this. If the world seems to have a problem or be peculiar in some way and it has been that way for quite a while, then it is probably because someone wants it that way. If you, as a researcher, can figure out who and why, then you can better understand the world and what will happen to you if you try to change things. Also, you may be able to develop compact descriptions that readily communicate knowledge...[1]

Many public sector accounting studies utilize principal-agent theory as a basis from which to examine the questions posed above. In an agency framework, the fact that managers (generally termed "agents") are privy to information about their performance that cannot be observed by owners (generally termed "principals") leads to situations where agents have incentives to take actions that are not in the best interests of the principals.

This contractual paradigm is associated with Coase's[1] study of the legal context of the firm. More specifically, Coase was interested in why "...economic agents in real economic contexts tend to arrange themselves hierarchically and coordinate their decisions via central authority rather than relying upon voluntary exchange and the automatic coordination provided by the market" (as cited in Moe.[1])

Two problems which arise with contracting are those of adverse selection and moral hazard. Both of these problems have received extensive attention in the literature. Adverse selection pertains to the unobservability of the individual's information, beliefs, values and competence and is a pre-contract problem. Moral hazard pertains to post-contract difficulty that the principal encounters in monitoring the agent's production. The agent has incentives to create a situation of information asymmetry in an effort to gain utility by such actions as shirking or using the principal's resources for personal gain. The adverse selection problem is reduced through the agent's signaling activities. The moral hazard problem is greatly reduced through monitoring activities such as independent audits. Agents employ auditors to satisfy the principals' desire for monitoring.[1] As shown in the sections below, public sector accounting researchers adapted principal-agent theory for use in their research.

PUBLIC SECTOR ACCOUNTING RESEARCH

In 1977, Zimmerman[(1)] was one of the first to introduce agency theory to governmental accounting researchers by analyzing the political incentives associated with the production of accounting information for municipalities. Within the analysis, Zimmerman stated that agency theory which is used to analyze the municipal accounting environment was based on the following assumptions:

- all economic agents are rational, wealth-maximizing individuals;

- nonprofit entities are collections of interacting economic agents;

- accounting systems are the product of the rational choices made by the economic agents.

From the assumptions listed above, Zimmerman described the agency problems in local governments. An agency problem exists in local government because politicians are the elected agents of the electorate. The interests of the principal (electorate) and agent (politician) may differ in that the agent may shirk, consume perquisites, or engage in illegal acts.

The voters are the politicians' principals and the voters' welfare is linked to the performance of their agents. The public officials' actions affect the voters' welfare directly through the politicians' power to levy taxes and to determine the mix and quality of services provided by the nonprofit entity. Voters are affected, in a less direct manner, by the results of politicians' actions which change property values.

As opposed to the stock market capitalizing the future consequences of corporate managements' present actions, the real estate market is the primary market which capitalizes the future consequences of public officials' current actions. The relatively high transaction costs prevent real estate holders from taking actions similar to the selling of stock in the stock market. Thus, voters work collectively (for example, they form special interest groups) to design strict rules and regulations to constrain their public officials' behavior. The legislative process results in a legal mandate that forces nonprofit entities to adopt accounting systems and accounting report formats that permit higher

levels of government and special interest groups to monitor the behavior of public officials.

Zimmerman holds that the voter is the supreme principal and the elected official responds to the voter in an effort to maximize his own expected utility. On the other hand, the elected official may appoint a city manager (a reform government) and, in so doing, becomes the principal with the manager taking the form of agent. The issue to be addressed becomes one of who more fully satisfies the desires of the supreme principal, the voter. In research directed toward this question, Zimmerman analyzes matched pairs of council-manager and mayor-council forms of governments from intermediate sized cities. Findings from Zimmerman indicate that, in general, mayor-council forms of government lean toward "...larger mean and variance of city revenues, expenditures, deficits, number of employees, and liabilities." However, only the variable relating to number of employees was statistically significant. The study also found a significant difference in bond ratings between mayor-council and council-manager forms of government, with council-manager governments receiving the better ratings.

Accounting Studies

Several accounting researchers used Zimmerman's analysis as a basis from which to study the role of accounting information in the public sector at the municipal and state level. Although these later studies incorporated parts of agency theory not mentioned directly by Zimmerman, the basic theoretical support for these studies is consistent with Zimmerman. The group of studies discussed below focus on determinants of the demand and supply of public sector accounting information.

Copeland and Ingram[(1)] conducted a study concerned with the ability of accounting information to help predict mayoral elections in municipalities with mayoral-committee (nonreform) governments. Adopting the theory of voter rationality, their study tended to support the hypothesis that voters are rational and vote to better their own interests. For example, cities having high population densities and low income and business activity levels tended to support mayors that relied less on short-term debt and reductions in services than their counterparts. Cities with high income levels and high business activity ratios tended to reelect mayors that increased public protection services, such as police and fire departments. In cities with high levels of

poverty and low family income, reelected officials tended to maintain lower levels of deficit financing and increased funding of welfare expenditures. While the study by Copeland and Ingram tends to be very accurate when predicting the outcome of mayoral elections, 75% to 95% accurate based on data from the preceding two years, the results do *not* indicate that the voters utilize available accounting information when making their decision. However, Copeland and Ingram argue that voters are cognizant of the service environment and tended to elect officials that provided the desired service. As such, this study provides a positive statement that prediction of election outcomes may be made more accurate by using accounting derived ratios to proxy for the service orientation of the elected official.

Evans and Patton[1] examined Municipal Finance Officers Association (MFOA) Certificate of Conformance Program (CCP) participation as an economic incentive of municipal officials. This study laid the framework for Evans and Patton[1] which examined signaling and monitoring in the public-sector. In the earlier study it was found that cities with more debt, that participated in the CCP program prior to 1976, having more professionally active city officials, located in states which require GAAP reporting, and have the council-manager form of government are more likely to participate in the CCP program.

The relationship of debt among the participating cities was found to form a hierarchy. Winners of the CCP were found to have more debt than those not receiving the CCP and those not receiving the CCP were found to have more debt than nonparticipants. Prior participants in the CCP were found to continue participation possibly due to a reduction in conformance costs, as GAAP is seen to be costly to implement but once implemented can be continued, substantially, without additional fixed costs of information production. It should be noted that this relationship held for municipalities up to populations of 500,000. Above this point it was argued that the municipalities function more like state governments (strong mayoral form) and did not follow the prescribed theoretical framework of Evans and Patton. Municipalities of larger populations offer unique research opportunities as their management has primarily been excluded from accounting theory development and research investigations.

Professionally active city officials are seen as receiving direct benefits from participation in two forms: increased professional performance and increased national recognition. Essentially, the certificate is included in the following

year's annual report as a signal of the quality of the city management that may not otherwise be indicated. However, as the wages of elected officials are relatively fixed, pecuniary benefits may not be forthcoming.

This explanation is made more appealing since council-manager forms of government are more likely to successfully participate for the certificate than are other forms of government. As such, the certificate acts as a signal of the professional abilities or aspirations of the city manager and enables the manager to more readily obtain pecuniary and nonpecuniary compensation.

It is also intuitively appealing that municipalities within states previously requiring GAAP will apply for the certificate as they have a lower setup cost in obtaining compliance. Municipalities that have not previously been required to attain the standards of governmental GAAP would most likely have a higher setup cost than nonparticipants. This condition forces the participation decision to be one of a benefit/cost nature. If the cost will not be borne by the municipality through funding for additional employees, then the cost must be borne by the individual administrator and his staff. The perceived benefits must be great enough to offset any nonreimbursed costs (e.g., unfunded overtime).

On the other hand, bond rating agencies have cited compliance with GAAP as one criteria for reduced interest costs.[(1)] This implies that the CCP is a signaling mechanism consistent with the theory of Spence[(1)] or Ross,[(1)] in that the CCP is a signal that reduces information asymmetry in the economic market. When this condition is incorporated the decision becomes a benefit/-cost analysis to the municipality. Cities with more debt would predictably have more incentive to reduce interest costs by pursuing a higher bond rating. If the benefit of lower interest costs are sufficient to offset the cost of attaining GAAP, or the CCP, then additional benefits may accrue to the city officials through increased wages or nonpecuniary benefits. (For example: a larger budget, nicer office, or city automobile).

Lastly, Evans and Patton point out the need for a theory of voluntary information disclosure. This is consistent with other authors' findings that the public-sector is essentially lacking in theory development (for example, Chan,[(1)] Wallace,[(1)] Chan and Rubin.[(1)]) Specifically, from Evans and Patton, a better understanding is needed as to the incentives of managers/city officials to disclose information.

Baber and Sen[1] hold that elected officials use Generally Accepted Accounting and Financial Reporting (GAAFR) to reduce costs that arise from a contractual relationship between a politician and his constituents. Two reasons for information being publicly reported are posited. First, a contracting incentive exists. It is held that as the number of contracts between the parties increases, information will be generated by the agent in an effort to reduce the cost of monitoring that accrues to the agent. Second, a regulation incentive is present. The regulation incentive holds that officials are responsible to noncontracting third parties for costs that arise from inadequate or misleading financial disclosure. A case in point may be the numerous near-defaults on bond issuances by municipalities during the late 1970s. The assertion of the regulation incentive is that politicians may tend to use regulation in an effort to obtain adequate financial disclosure.

Baber and Sen identify five relevant relationships between GAAFR and the political environment. First, increased political competition is seen as an element that will result in increased demands for standardized reporting methods. Second, an inverse relationship holds between the wage to the political agent and the incentive to provide information. Essentially, if the agent is receiving significant nonwage remuneration, in an effort to overcome a perceived insufficient wage remuneration, then incentives exist to resist disclosure. Third, if information asymmetries exist when issuing debt, an increase in information to the participants may reduce interest costs. This is derived from arguments by Evans and Patton, which posit that the interest cost of public debt will decrease with a perception on the part of buyers that the administration is efficient in information transfers. This efficiency is shown by standardized reporting (i.e., low information cost). Fourth, as the elected official's time in office increases the number of contracts increases and standardized reporting will reduce monitoring costs. Finally, if the cost of adopting standardized reporting practices is too great (i.e., the current system is not near compliance with GAAFR), the agents will seek to employ alternative methods of signaling compliance. The findings indicate general support for the five relationships discussed above.

Ingram[1] utilized a survey to provide an analysis of economic incentives of state government accounting practices. His sample was based on data obtained from a 1980 Council of State Governments (CSG) summary of major accounting and reporting practices. A dependent variable based on the index of disclosure quantity was devised and regressed on select economic and political explanatory variables. Coalitions of voters were measured by a

political competition index, a degree of urbanization index, per capita income, and median school years of the populace. The administration selection process was proxied for by the appointive powers of the governor, and the system of selection for the auditor and accounting system administrator. Management incentives for the type of accounting system used reliance on debt, federal funds, per capita state-generated (own) revenues, salaries of the governor, legislature, and the accounting administrator, in addition to the population (as a level of state complexity variable). Finally, an alternative source of information was constructed by analyzing the power of the press with newspaper circulation per capita. Several findings by Ingram add information to the study of principal-agent relationships. Specifically, the finding that "...on the margin greater press strength results in less accounting information" indicates that alternative forms of reducing information asymmetry under a variety of relationships will need to be investigated further.

Ingram also found that more accounting information was provided by governor-appointed accounting administrators as opposed to legislative appointed (or other forms of selection). This may be interpreted several ways. For example, is this a function of a close personal relationship between the governor and the appointee that results in a desire on the part of the appointee to over-supply information (as with the classic monitoring hypothesis of the principal-agent setting)? Is it out of loyalty to the chief executive and an effort to provide better information for decision making? Or, are these appointees simply better educated and more capable of utilizing more sophisticated accounting techniques? These questions, as of yet, have not been addressed and are fruitful areas for research. Finally, the quantity of state accounting disclosure was found to be influenced by other agency relationships. For example, coalition formations served to reduce external monitoring costs and incentives of appointed administrators to monitor political behavior.

Evans and Patton address the issue of theory development in governmental accounting research by developing a signaling model and a monitoring model to explain municipal manger's participation in the CCP program. The signaling model is based on a single-period world in which the chief financial officer (city manager) is defined as being risk-averse with a separable utility function: $U(\boldsymbol{k}) = U(\boldsymbol{s}) - V(\boldsymbol{a} + \boldsymbol{e})$. In the model, $\boldsymbol{s}$ is salary, $\boldsymbol{a}$ is a minimum level of effort, and $\boldsymbol{e}$ is an increase in effort that must be undertaken if the officer desires to have the municipality participate in the CCP program.

Managers are viewed as coming from a dichotomized pool of managers where a portion are of high quality and the remainder are of a lower quality.

Citizens are seen as preferring the maximum net resources after allocations for debt from any borrowing undertaken. Under this scenario debt must be incurred to correct for an expected deficit. The quality of the financial reporting system is signaled to the public (citizens and creditors) via the managers choice of participating in the CCP program.

The signaling model yields a proposition with a simultaneous separating/pooling equilibrium which consists of three debt levels. First, (0, dH*) accounts for those municipalities which have zero or low debt with a high quality city manager. The implication is that there is no need for signaling. Second, (dH*, dL*) accounts for the interval of high quality managers with low debt to low quality managers with high debt. Municipalities with high quality managers are predicted to participate, whereas those with low quality managers will not. Lastly, the interval (dL*, infinity) will contain low quality managers with high debt. For the final interval all municipalities are predicted to signal credit worthiness via participation in the CCP in an effort to reduce interest costs.

Two predictions are made from the equilibrium setting. First, cities with more debt are likely to participate in the CCP in an effort to lower net interest cost. Second, cities which participate will pay a higher salary to managers in order to elicit the additional effort level (***e***) that is required for participation.

The monitoring model built on Baber,[1] Baber and Sen, and Ingram in an effort to explain cross-sectional variations in public-sector accounting and auditing via monitoring demand. Essentially, the politician is forced to "pay a price" to interest groups in exchange for support in the election or administration of his office. As more interest groups compete for the services of the official (i.e., an increase in political competition) the demand for monitoring is increased in an effort to less costly assure the interest groups of contract compliance. This formulation is the authors' second proposition.

Numerous variables are posited to represent the demand for monitoring. Among these are debt, salary, form of government, population, company town (i.e., a predominant employer), and political competition. The model becomes one of constrained optimization with the values to be optimized being contract value to the contracting parties, salary of the city official, and

quality of the monitoring system. Financial reporting system quality is quantified as the probability of receiving an informative signal. Constraints in the optimization process include cash flows to the contracting parties, the formulation of quality as a probability, and the salary to the official under two different cash flow reporting scenarios.

In an effort to provide guidance for future research in analytical agency theory for municipalities, Banker and Patton[1] conduct an analysis of information that is in line with many of the views discussed in this study. Information is discussed in the context of pre-contract, pre-decision, and post-decision asymmetries. An agency model is derived with attention paid to the production process, probability functions, and utility functions of the principal and agent. The information signal generated by the agent is examined in terms of its precision and sensitivity. Precision pertains to the degree of noise contained in the signal. Sensitivity refers to the degree of change that the signal has in response to changes in the agent's effort. While the study by Banker and Patton is rich with research opportunities, it also discusses some of the pitfalls of analytical agency research and provides a comparison to behavioral agency research. While analytical research has been limited due to the problem of external validity, it ". . . already deals with more complicated settings than most behavioral accounting research in that agency models explicitly include multiple actors - most behavioral accounting research to date has examined the behaviors of individuals in isolation."

In recent years, a stream of research has reexamined the relationship between political competition and public sector accounting. Carpenter[1] identifies three forms of political competition as electoral competition, parliamentary competition and interest group competition. She defines political competition as "any effort exerted by individuals or groups to influence government public policy decisions." Carpenter further defines electoral competition as the effort exerted to win public office, interest group competition as effort exerted to influence elected officials and bureaucrats, and parliamentary (legislative) competition as effort exerted to form a policy-making coalition among elected officials to influence public policy decisions.

Although research previously cited, for example Baber, Baber and Sen, Evans and Patton, and Ingram, identifies political competition as a factor which should be addressed when examining municipal and state financial reporting and performance by elected officials, few studies have attempted to isolate the three types of competition discussed by Carpenter. Most

accounting-based studies which have attempted to examine political competition have focused on the state level of government, which may not be directly comparable to local government competition.

Carpenter uses 1984 data to distinguish between states which have adopted GAAP and those which have not adopted GAAP. Nineteen hundred eighty-four was a politically active year for governmental accounting due to the formation of the Governmental Accounting Standards Board (GASB) and the implementation of the Single Audit Act by the federal government, and this activity may have influenced increased adoption of GAAP by elected officials. In general, Carpenter finds that all three forms of political competition are associated with the decision to adopt GAAP by states, however the strength of the association varies with the definition of the competition variables.

Other studies have used a case study format to examine GAAP adoption by individual states. Carpenter and Feroz[(1)] examine the political environment via the press and interview participants for their perceptions of the reasons for adoption of GAAP in Kentucky. The authors provide a similar analysis for the state of New York.[(1)] In both states the case analysis found that the decision to adopt GAAP included a desire for legitimacy, by bureaucrats with their peers and elected officials with their constituents. The authors also found most parties involved had a desire for a more refined and accurate financial management system than offered under the cash basis or other hybrid basis of accounting. Another factor identified as contributing to the decision to adopt GAAP was concerned with the credit market decision, primarily focusing on the bond rating agencies, and a desire for comparability with other states.

Auditing Studies

Researchers point out that although audits in the public sector may be required by law, the presence of regulation does not eliminate the possibility that agency considerations are the underlying determination of this mandate. Wallace[(1)] asserted that the theoretical structure underlying the demand for auditing in the corporate sector applies to the municipal sector. She argued that the advantages of contracting for an audit in the public sector are similar

to those in the corporate sector because the public sector of the economy is concerned with (1) financial and reputational risks associated with reporting practices, (2) the issuance of debt and property rights, and (3) the problems of absentee "ownership" and sizable operations. Based on these sources of demand, she modeled a municipality's decision to undertake an initial audit as a function of several sources of demand.

Wallace developed empirical measures of the proposed attributes of the demand for initial audits and used these measures to test the predictive accuracy of the model. Results indicated that the empirical measures could predict the timing of initial audits by municipalities and generated several conclusions of interest. Empirical measures directly associated with earlier timing of initial audits were: (1) professional managers affiliations with the municipality, (2) utility ownership by the municipality, (3) bond rating classifications, and (4) reduced interest costs. It was found that a significant level of audit contracting by municipalities took place before regulations requiring audits were initiated. This provided strong evidence that the monitoring, information, insurance, and cost savings demands provided incentives for municipalities to contract voluntarily for audits. It was proposed that this evidence was useful in predicting the potential impacts of proposed legislation.

Baber analyzed the relation between the supply of auditing in a public sector setting and the level of political competition expected in future elections. Using an agency framework he concluded that interest groups demand monitoring of actions taken by political agents and that elected officials supply monitoring to demonstrate their execution of pre-election promises. As expected political competition increases, the level of monitoring supplied by elected officials increases also. Baber tested empirically this hypothesis by examining the cross-sectional relation between state audit budgets and indexed measures of political competition. Results supported his arguments, finding positive correlations between state audit budgets and measures of political competition.

Rubin[1] proposed a theory for the demand of municipal audits and the audit contract based on the relationship between politicians and bureaucrats and the relationship of bond holders with public officials. The components of audit demand for municipalities were generally adapted from theories of private sector audit demand (i.e., monitoring, insurance, and information demands). A source of audit demand unique to the public sector was posited by Rubin

based on the nature of the political environment in which municipal audit contracts are executed. This additional source, termed a "patronage demand," results from politicians' desire to reward constituents once in office or from their desire to broaden their political base of support.

The public sector studies reviewed above, along with similar research in private sector auditing, spawned many empirical tests of public sector auditing. Using data from North Carolina county governments, Baber, Brooks, and Ricks[1] extended private sector audit fee research into the public sector by employing a cross-sectional analysis to relate differences in audit fees to differences in the financial and political characteristics of county government. The structure of audit fees in years surrounding a change in auditor was studied, also. Results indicated significant association between audit fees and two political characteristics (party membership and commission turnover) tested jointly, and between audit fees and outstanding debt. Evidence indicated audit fees for initial engagements after an auditor switch were lower than fees for engagements that did not follow a switch. In a study of public school district auditor changes, Roberts, Glezen, and Jones[1] also found a significant relationship between auditor changes and reduced audit fees. In addition, Roberts, Glezen and Jones found that changes of auditor were more likely to occur following an auditor report of school board or accounting control noncompliance with applicable regulations.

Rubin,[1] using theoretical support developed by Simunic,[1] developed a model of audit fees for municipalities. The model modified private sector audit fee models in order to better analyze the structure of audit fees within the nonprofit environment. Rubin classified the variables used in the municipal audit fee model into the following categories; auditee size, loss exposure, entity complexity, report complexity, auditor retention and selection, audit production costs, and auditor size. Consistent with private sector studies, auditee size as measured by population of the municipality explained much of the variation of audit fees among municipalities. Other proxies in the model positively related to municipal audit fees were; debt per capita, bond rating, entity service index, number of audit reports, CAFR designation, auditor tenure for non-bid cities, and a busy season audit. Proxies inversely related to audit fees were auditor tenure, bid cities and tenure of the municipal finance officer. Auditor tenure without the interaction effect of the bidding process and first audits were not significantly related to audit fees.

Copley[1] extended public sector audit fee studies by investigating the determinants of audit fees for a national sample of city and county governments that were audited by independent CPAs or state agencies. Measures of auditee size, auditor loss exposure, and the auditor cost function were significantly related to audit fees. Roberts and Glezen[1] developed and tested an audit fee model for school districts. Their model included a reported auditor evaluation of the auditee's internal control structure as an audit production cost determinant of audit fees. Results were generally consistent with prior research and the auditor internal control evaluation variable was significantly related to school district audit fees.

Using data from Ohio municipalities, Rubin[1] investigated municipalities' selection of a state or external auditor to perform their financial statement audits. Based on several regression analyses, Rubin concluded that private-sector auditors are more costly and deliver the audit report in a more timely manner. New debt issuances, modified audit opinions, size of the municipality, and type of government management were viewed as potential rationales for selection of a specific auditor type. Ward, Elder and Kattelus extended municipal audit fee research by incorporating additional measures of audit complexity and agency relationships. This study found evidence consistent with the notion that audit firms specializing in governmental audits receive a fee premium for their services. Using the number of audit adjustments as a proxy for inherent and control risk, results from Ward, Elder and Kettelus imply a positive relationship between audit fees and audit risk.[1]

Empirical governmental audit market research discovered many similarities between the private and public sectors concerning the determinants of audit fees. With some exceptions, these studies support earlier findings of relations between audit fees and measures of auditee size, auditor size, audit complexity, and certain auditor-client relationships.

During the mid-1980s, the U.S. General Accounting Office investigated the quality of government audits performed by public accounting firms. Their investigations were published.[1] In 1986 the GAO report concluded that many substandard governmental audits were being performed by private-sector auditors. The 1988 GAO report commented that the accounting profession's internal enforcement activities had improved the quality of governmental audits. In part due to these GAO investigations, governmental accounting researchers began to investigate the determinants of audit quality. Copley and Doucet[1] researched the relationship between audit firm

competition for governmental audits and audit quality. Copley and Doucet obtained an audit quality measure from governmental officials responsible for GAO investigations. The GAO officials reviewed audit firm working papers and decided whether or not professional auditing standards were followed for every aspect of the audit engagement. Audit firm competition was self-reported by public sector entities and measured as the number of audit bids received for the engagement being reviewed. Based on their statistical tests, Copley and Doucet concluded that audit firm competition increases the likelihood that a public sector entity will receive a quality audit and decreases the audit cost. In a cross-sectional study of school district audits, Deis and Giroux[(1)] examined determinants of public sector audit quality. A measure of audit quality was generated from the analysis of government quality control reviews of individual audit engagements. Consistent with private sector audit research, Deis and Giroux found that audit quality is related to measures of auditor reputation, client power, auditor effort, and audit timeliness.

Performance Measurement Studies

While the prior studies have analyzed the relationships with elected or appointed officials and voters or creditors the study of nonprofit entities in a strict sense deals with the services to the constituency. In a very real sense these services may be seen as the resources offered to the interest groups in exchange for political office. However, the use of accounting research for these areas has primarily emphasized the microeconomic perspective of the specific service unit. It is our intention in this section to analyze the emerging research which attempts to use non-financial measures to quantify the quality of the services that bureaucrats or elected officials supply to their constituents.

Governmental accounting standard setters as well as resear-chers have shown an interest in developing reliable nonfinancial measures of government performance. In 1990, the Governmental Accounting Standards Board (GASB) published a research report, *Service Efforts and Accomplishments: Its Time Has Come*.[(1)] This report summarized the results of several research projects, each aimed at discovering the state of the art in service efforts and accomplishments reporting for a particular type of governmental service. Research reports were prepared for each service area (e.g., elementary and secondary education, fire and department programs, sanitation collection and disposal, and water and wastewater treatment).

Hayes and Millar[1] used agency theory as a basis for analyzing the production efficiency of county correctional institutions. Results rejected hypotheses related to conventional budgeting assumptions and found empirical evidence that public sector managers do not exhibit cost-minimizing behavior. Callen and Falk[1] studied the relationship between public sector efficiency and the composition of boards of directors. Empirical tests were undertaken using data from 72 health care charities. Using data envelopment analysis, they did not find empirical support for this expected relationship.

Mensah and Li[1] extended the Hayes and Millar study by comparing efficiency measurement generated from translog cost functions and data envelopment analysis. The techniques produced different views of managerial efficiency. They concluded that care should be taken when using translog cost functions to measure efficiency.[1] In a similar vein, Lawrence and Roberts[1] studied differences in efficiency between governmental and non- governmental hospitals. Utilizing a deterministic cost frontier model, Lawrence and Roberts found that governmental hospitals were more efficient than non-governmental hospitals. It appeared that the results were driven by inefficiencies found in private, non-profit hospitals.

In a preliminary analysis of GASB service efforts and accomplishments reporting recommendations for elementary and secondary education, Roberts and Deis[1] investigated the relationship between school districts' inputs (e.g., student-teacher ratios, salaries, etc.), explanatory factors (e.g., innate abilities, communities' educational level, per capita income) and outcomes (e.g, ACT scores). Roberts and Deis found that several of the GASB's recommended input and outcome measures were significantly correlated. However, their results also pointed out that, due to the complexities inherent in measuring educational outcomes, the nature of the relationships between inputs and outcomes is difficult to capture using bivariate analysis.

Todd and Ramanathan[1] focus on budget line items to examine budgetary slack, the relevance and reliability of budgets, task complexity for major tasks and responsiveness to demands for service in the New York Police Department. The findings indicate that task complexity is a driving force behind allocation decisions; this finding is important in itself since it replicates other managerial research. The researchers also found that, during a period of scarce resources, increased allocations to higher priority, more complex tasks (i.e., felonies as opposed to misdemeanors) are undertaken.

Information for Investors and Creditors

The primary users of financial information have been categorized by the GASB as citizen groups, legislative and oversight officials, and investors and creditors.[1] Several studies have been discussed in the preceding sections which address accountability and accounting needs for citizen groups and legislators (i.e., public choice and political competition studies). This section focuses on the information needs of investors and creditors. The two dominant types of debt for investors and creditors in the state and local government market are general obligation bonds, those based upon *ad valorem* taxes, and revenue bonds for which principal and interest payments rely upon comparably uncertain revenue streams. This section will emphasize general obligation (GO) bond research since GO research has been the focus of most state and local government accounting studies, and revenue bonds are only now beginning to receive attention from government accounting researchers.

Financial accounting research which focuses on the municipal bond market has primarily emphasized two research genres. One area of research examines the use of financial accounting information in the prediction of bond ratings and bond rating changes, i.e., broad ordinal rankings of default risk. The second area of research addresses the bond yields, i.e., a continuous measure of default risk. The difference between the two areas of research is primarily rooted in methodological constraints. Essentially, even though the preferred measure of default risk is the market yield, constraints on the acquisition of bond pricing data has forced much research to focus on the more broad, publicly-available measure of default risk--bond ratings.

Wallace,[1] as discussed in Wilson and Howard,[1] identifies an overriding difficulty in public sector accounting research as the "absence of any paradigm," or even general theory guiding public sector research. As noted in other areas of this review, the late 1980's and the early 1990's have seen several researchers attempt to address the void of theoretical foundation in public sector accounting research. For example, governmental auditing research has been addressed by Berry and Wallace[1] and Rubin, application of public choice theory to municipal accounting by Chan and Rubin, agency theory and municipal accounting by Banker and Patton and Wallace (and, one could argue, Evans and Patton), and more general theoretical

presentations which address municipal financial reporting by Banker, Cooper and Potter.[1] However, difficulties in obtaining data have made most of the theoretical foundations difficult to operationalize and validate.

It is this same data constraint, e.g., difficulty in obtaining post-sale financing information, that has helped to make bond ratings (as opposed to market yields) the focus of numerous studies. Although the municipal finance literature and early studies which examine municipal financial reporting have certainly influenced municipal accounting bond research, we have chosen to emphasize recent studies which incorporate some of the more classical findings of early research (see, for example, Carleton and Lerner,[1] Michel,[1] and Van Horne[1]) and to focus on accounting issues.

Bond Rating Studies

One area of considerable bond rating research has focused on the prediction of bond rating classification and the timing of bond rating changes. Accounting studies have met with only mixed results in examining the impact of government-specific financial information on bond rating classifications. Most likely the poor results may be attributed to the comprehensive nature in which ratings are assigned by Moody's and Standard and Poor's. Similarly, as noted by Raman,[1] the rating agencies tend to be conservative, both with their ratings and rating changes, since premature or frequent rating changes may erode public confidence in the ratings, whereas financial information may predict lower ratings prior to the actual downgrade. Raman did find that more specific accounting information, in the form of the flow of operating working capital, generally improved his prediction of bond ratings and rating changes.

Ingram, Brooks, and Copeland[1] found that accounting information offers a historical perspective for bond rating changes. The researchers found that bond rating changes do contain information for creditors, however accounting information does not tend to influence the market prior to a rating change. Ingram and Copeland obtained similar results when attempting to predict changes in bond ratings. Ingram and Copeland found "some support for the contention that municipal accounting numbers are reliable (ex post) measures of quality changes reflected in bond rating changes."[1] Allen[1] although unable to increase the accuracy of bond rating predictions, does note that type of auditor may play a role in signalling the quality of financial statement

information since models based upon ratings associated with Big 8 auditors were associated with greater accuracy in predicting bond ratings.

Wescott[1] attempted to address shortcomings in bond rating prediction which used financial accounting information as the primary discriminator by incorporating socio-economic variables. Wescott found that municipal financial ratios reflect the underlying socioeconomic attributes of a community. However, as default and marketability risk of a city increased, the socioeconomic factors lessened the information content of the financial ratios. A prior study by Wescott found a similar lack of prediction accuracy when incorporating socioeconomic factors, but pointed to the fact that due to variations in socioeconomic factors municipal financial information may be most appropriate for clusters of municipalities with a similar level of financial distress.

In one of the few behavioral studies to deal with bond ratings Lewis, Patton and Green[1] compared financial analysts' predictions of bond rating changes with those of statistical models. The authors found that the variables selected via statistical methodology to predict bond rating changes were not generally consistent with variable selected by the analysts. The researchers also found that linear statistical models scored higher in predicting bond rating changes than did the subjects (60 percent hit rate for the statistical model versus approximately 45 percent hit rate for the subjects). However, the analysts were significantly better than random estimation of bond rating changes. When compared to a separately developed validation sample (to simulate a hold-out sample since one was not available), the statistical model success rate decreased to 41 percent. This observation leads to a similar conclusion as can be drawn from the studies by Wescott[1] which used cluster analysis and socioeconomic variables; i.e., statistical methodologies may be most appropriate for a clearly-defined set of criteria with distinct characteristics.

With respect to information choice and information use, Lewis, Patton and Green found that the items of information chosen by statistical methods, as opposed to variables selected by the analysts, proved more successful at predicting rating changes. However, the researchers also found that given the information chosen by the analysts, the statistical model was not significantly better in predicting bond ratings.

Bond Yield Studies

A difficulty in employing bond ratings as measures of default risk lies in their ordinal nature, i.e., a very low risk A-rated bond issue cannot be distinguished from a more risky A-rated bond issue. One reason that bond ratings have been the dependent variable for many bond studies is that the secondary market for municipal bonds is very "thin"; essentially, most investors employed a buy and hold-to-maturity strategy as opposed to the actively-traded market for equities and, therefore, there is not a large sample of secondary market information. Another reason bond ratings are often selected as dependent, or response, variables is that they are publicly-available sources of information. Although generally reported by the Bond Buyer at the time of issue, market yields for new municipal bond issues do not have a publicly-available central repository that is machine readable, such as the University of Chicago's Center for Research in Security Prices (CRISP) tapes for the New York Stock Exchange.

Although the American Banker/Bond Buyer, Inc. does serve as a repository of sorts, the management of the firm does not claim to have access to all bond issues, such as private placements and negotiated sales. Also, the Bond Buyer data has only recently begun to be placed in machine readable form and, therefore, archival data must still be purchased in hard copy and encoded to be machine readable (both costly propositions). The Municipal Securities Regulatory Board (MSRB) has begun to experiment with placement of official statements on a central, machine readable, repository; however, the service is currently supported on a voluntary basis and does not, necessarily, include post-sale information (e.g., selling price, or market yield). Access to the MSRB data is also restricted, at this time.

Studies which have included continuous market measures of default risk have generally focused on net interest cost. NIC is an artifact of manual bond pricing for competitive bids derived from the need by bidders to have a quick method of calculating the minimum interest cost which could be offered by the bidder.[(1)] Since NIC does not consider the time value of money, two other types of interest costs which do include the time value of money have been suggested for research, true (TIC) and canadian interest costs (CIC). However, the general lack of reporting TIC or CIC for general obligation bonds has led to reliance on NIC as the dominant dependent variable. As noted by Wallace,[(1)] although NIC does not incorporate time value considerations, its relationship with the theoretically preferred measure of default risk (TIC) is, under usual conditions, a monotone relationship which

suggests that the more readily available NIC is a reasonable surrogate for market yield.

Studies have examined the impact of accounting information on the prices of outstanding bond issues. Ingram and Copeland found that financial accounting information had a significant impact on yield premium, changes in yield premium, and systematic risk for a sample of 122 municipal G.O. bond issues, although their models had only weak explanatory power (R^2 = .339, .267, and .230, respectively) and their results must be considered suspect due to the high number of independent variables (38 financial ratios plus control variables) in the models. A linkage between financial accounting information and bond prices was found by Ingram[(1)] and Wilson.[(1)]

Ingram, Raman and Wilson[(1)] examined the information contained in municipal annual reports as applies to seasoned bond issues. As noted, prior studies have found that financial accounting information appears to be useful to investors in the pricing of new issues, however, due to data limitations, the extension to the seasoned, or secondary, market is problematic. The study by Ingram, Raman and Wilson provides a first attempt at examining the information provided by the release of annual reports and, in general, concludes that the reports do not provide information to the seasoned market. The researchers do note an increase in return variability in the secondary market at the time of new issues and at the time of rating announcements. One implication of the study is that the cost of information search may exceed the benefit derived for seasoned issues, given the complexity of municipal financial statements, an overall lack of timeliness, and thinness of trades in the seasoned market.

Feroz and Wilson[(1)] found that in the national market for municipal G.O. bonds, where information about the quality of management is more readily available, bond prices do not reflect the quality of financial statement disclosures. In contrast, in regional markets for G.O. bonds, where information about management quality is less readily available, bond prices do reflect the quality of financial statement disclosures.

This finding has several implications for research on the role of information in the tax-exempt bond market. First, it appears that market participants are aware of and use information sources other than financial statements. Second, in situations where market participants have a choice between financial information and other types of information, the usefulness of

financial accounting information may be diminished. Finally, Feroz and Wilson emphasize the importance of information which enables market participants to assess the quality of management.

CONCLUSIONS

Public sector accounting research has relied primarily on private sector theories to form the basis for its research. By applying principal-agent research to the study of public sector accounting, auditing, and performance measurement, accounting researchers investigate issues of control and accountability from an economic perspective.

Findings from public sector accounting research generally support this application of economic theory. Empirical evidence is consistent with the notion that (1) public officials act as rational economic agents in their production of financial information, (2) auditing is demanded in the public sector in response to the need to monitor agency relationships, and (3) econometric techniques can be used to measure and analyze public sector efficiency.

We believe it is important to note that although this study focuses on adaptations of agency theory, public sector accounting researchers also utilize theories developed in other disciplines. Public choice research is seen as providing an extremely valuable perspective from which to build public sector accounting theories. Public choice research is defined as the application of economic theory to political science. Extensive reviews of the public choice literature and its relation to accounting are found in Chan and Rubin, Buchanan,[(1)] Rubin,[(1)] and Rubin, et al.[(1)] Finally, Green[(1)] reviews and evaluates governmental accounting research that has studied aspects of human behavior in governmental settings using behavioral research methods.

Although accounting researchers have adapted private sector theories to capture unique aspects of public sector settings, much additional work is needed. Interdisciplinary research between accounting and public administration can aid in the refinement of existing theories and the development of new perspectives. For example, accounting research sometimes ignores institutional details that can enrich the analysis of research results. Similarly, accounting researchers tend to focus on only financial measures of public sector performance. Although recent efforts have

expanded this focus,[1] public administration research can add substantially to this debate.

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