Prospect Theory in Governmental Accounting: Implications for the Budgeting Process at the Local Level.

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Prospect theory in governmental accounting: Implications for the budgeting process at the local level

McKenzie, Karen Sue, Ph.D.
The Louisiana State University and Agricultural and Mechanical Col., 1989

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PROSPECT THEORY IN GOVERNMENTAL ACCOUNTING: IMPLICATIONS FOR THE BUDGETING PROCESS AT THE LOCAL LEVEL

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The Department of Accounting

by

Karen Sue McKenzie
B.B.A., University of Miami, 1983
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This dissertation is dedicated to the memory of my maternal grandmother, Hulda Gray Holland, who passed away just months before the completion of my doctoral program.

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ABSTRACT

Small local governmental units are responsible for allocating resources on behalf of a substantial portion of all United States citizens. The research reported here investigates the effects of presentation format (or framing) on decision preference in a governmental resource allocation context. The subjects represent a population of governmental units which has not received prior research attention—small local governments. Budget preparers were asked to choose among objectively identical alternatives, which differed in presentation formats. The cases used to investigate the effects of presentation were modelled after Kahneman and Tversky's [1979] seminal work in prospect theory, which addressed violations of expected utility theory.

The survey's approximately 50% response rate provided results indicating that the subjects of this study cannot be considered "rational decision makers" as defined by the well accepted expected utility theory. However, most of their decision behavior could be explained with the concepts of prospect theory. The implications of this research include the need for further investigation of the resource allocation process of small local governments. Readers should note that this study and its findings are based on responses to structured cases, which may not be
representative of the subject's actual decision making environment. Further research is necessary to determine whether similar results can be associated with subjects operating within their natural budgetary decision making environment in the absence of such structured cases. The fact that approximately 25% of the United States population is served by these small governments suggests the need for continued research.
CHAPTER ONE
INTRODUCTION

The objective of the proposed research study is to contribute to the governmental budgeting and behavioral research knowledge base in two principal ways. First, the study will focus on the decisions of local governmental unit budgeting management (or officials). A review of relevant literature suggests that empirical evidence is sparse in regard to behavioral aspects of the budgeting process, including resource allocation, at the level of the local governmental unit. Second, prospect theory, which has received considerable attention in recent psychology and business literature, is used to determine whether a more complete understanding of the budgetary decision making process under uncertainty may be obtained, as compared to the more widely applied expected utility explanation of the process.

The concepts of prospect theory are summarized in the proposal and employed in the research design. Subjects' decision responses will be examined for empirical evidence of violations regarding the fundamental elements of rational choice behavior, consistence and coherence. Results of the study may indicate a need for improvement of the existing approach to budgeting decisions at the local level (e.g., incorporation of deliberate decision frames into typical resource allocation decisions). The next section of this
chapter provides a brief review of the governmental budgeting and prospect theory literatures, and is followed by a presentation of the proposed research methodology. The chapter concludes with a discussion of the contributions and relevance of the study.

Background

THE BUDGETING ENVIRONMENT OF LOCAL GOVERNMENTS

Resource allocation is a major concern to all members of any organization. This is true whether the organization is as global in perspective as the entire human race, or as focused in perspective as small task groups with a single, well-defined objective. Kee, Robbins, and Apostolou [1987, p. 16] identify the allocation of scarce resources among alternatives as "one of the most important tasks municipal administrators must undertake." The allocation process is rarely a strictly quantitative one. For almost every decision made regarding resource allocation, numerous qualitative issues must be addressed. This is especially true in the public sector, where political and social considerations often take precedence over financial analysis. Thus, behavioral research has an important role in society. Such research has worked toward an understanding of the decision making processes in managerial roles under conditions of both certainty and uncertainty. As our understanding grows with regard to decision making
behavior, we should be more capable of improving processes which involve uncertainty, such as resource allocation.

Many authors have expressed the view that this is a time when local governmental units are being forced to make more efficient and effective resource allocations than ever before.\(^1\) According to Naisbett [1984, p. 103], "State and local governments are the most important political entities in America." Americans have become more politically aware on a local level. While voter turnout is embarrassingly low for national elections, Naisbett notes a sharp contrast for local issues. He cites turnouts for initiatives and referenda increasing to over 75% in some areas of the United States. Blubaugh [1987, p. 8] notes, "More and more voters themselves are demanding to be a part of the governmental decision process." Demands are growing for greater bottom-up participation in policy-making as people affected by local government decisions are becoming more a part of the decision making process. Furthermore, Luke [1986, p. 134] believes the increasing numbers of neighborhood groups are becoming more sophisticated and more politically powerful. They are demanding more and monitoring government actions more closely. All of this is happening at a time when the federal government has placed greater resource allocation burdens on local governments by restructuring grant programs.

\(^1\)Recent examples include Naisbett (1984); Kee, Robbins, and Apostolou (1987); Luke (1986); Cothran (1986); and Sharp (1986).
and reducing funding. Interestingly, Luke [1986, p. 135] finds that local governments are now the principal providers of most domestic services nation-wide, which puts the scarce resource allocation decision primarily in the hands of local governments.

Major changes in the U.S. economy, such as the continuous technological innovation, have affected the local governments' budgeting environment. Margolis [1987] states that political pressures have increased as a result of changing technology, which has not only increased the amount of leisure time citizens have available for monitoring public officials but has also improved transportation and communication to aid in such monitoring efforts. In addition, the tremendous changes in computer technology and availability have changed the budgeting environment faced by local officials.

As a result of changing technology and data producing capabilities, local administrators of the near future must be capable of selecting and focusing attention on the few salient issues present within the sea of information available to the officials. Officials (or managers) must be able to think strategically, which includes determining what

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2Reagan's "New Federalism" has been aimed at shifting decision making from the federal to state & local levels of government. Also, Luke [1986] notes that the funding reversals have changed state and local relationships as perceived by local government managers and have led to the constituency's negative perceptions as well as lower employee morale.
kind of information is needed to assist in a particular policy choice or program decision [Luke, 1986, p. 136]. These technological changes suggest that local governing officials must be increasingly careful in their selection of information for analysis, as well as in the actions chosen to serve their constituency, which has grown significantly in strength. For the many locally elected officials who are seeking to make careers of holding public office, current daily decisions must be made with both the community and their own career interests in mind. As a result of the increased pressure and perhaps intimidation that constituencies are placing on elected officials, Blubaugh [1987, p. 9] has noted that considerable turmoil exists "... in the delivery of local government services, more so than ever before." Interestingly, over a decade ago, Hobbs [1971, p. 49] noted the expected population increase for many rural communities long accustomed to decline and suggested the need for "effective planning organizations capable of estimating participatory ways of meeting service needs."

The developments identified above have a significant impact on the state of local government, and an awareness of

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3Blubaugh [1987] discusses this in his article addressing the public administrator's changing role. Also, Luke [1986, p. 135] refers to the Freedom of Information Act as another source for concern among local officials due to the easier access to data which was previously unavailable to their constituency.

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such issues may be used to effectively shape local governments into organizations capable of meeting the varied needs of their constituencies. As Luke [1987, p. 132] states, "(these issues) are challenges that create problems worth solving as well as opportunities worth anticipating."
The change in the local government environment suggests that the decision making capability of budget personnel and the effects of the decision making environment on those personnel warrant consideration. Yet, a review of the literature suggests that empirical evidence is sparse to nonexistent in regard to behavioral aspects of the budgeting process of local governments.

SMALL LOCAL GOVERNMENTS & ASPECTS OF THE BUDGETING PROCESS

Cothran [1986] defines small government as jurisdictions serving populations of less than 10,000. According to the U.S. Bureau of Census Statistical Abstract [1986, p. 286], governments serving less than 10,000 people compose 94% of all townships, 88% of all municipalities, 24% of all counties, and serve approximately 25% of the entire U.S. population. Together with the increasing activism of citizens in local governmental affairs (as discussed in the previous section), these percentages emphasize the importance of small governments and their potential impact on society. Yet, local government research has not adequately addressed the issues of small governments. Cornia and Usher [1981, p. 75] point out that most
governmental budgeting research is focused on state and federal levels and generalized (perhaps unjustifiably) to municipal budgeting. They found very little empirical research addressing local budgeting, even though local expenditures were approaching 10% of GNP at the time of their research. Stallings and Ferris [1988, p. 583] reviewed public administration research for the 45 year period of 1940 through 1984 and found that local government has never been a major focus for governmental research.\(^4\)

Hy, Waugh, and Nelson [1987, p. 136] may provide an explanation for such a lack of empirical research. They state:

> While administrators have become aware of the need for an operating theory or framework for postulating relationships between and among variables or factors and for constructing testable hypotheses, the tools for doing so have not been adequately assimilated. One of the reasons may be that public administration education has not provided the necessary analytical skills and perspectives to frame major or administrative questions in testable and generalizable forms.

The Council of Developmental Choices maintains that to meet the changing needs of the 1980s, all who participate in the development process must be willing to change the status quo [Department of Housing and Urban Development, 1981, p. xii].

\(^4\)Local government research was found to increase slightly in the early 1960s, but has remained constant as a very small portion of published articles. The authors reviewed work in Public Administration Review due to their regard for the journal as the official professional publication within the field and their belief that it would be most representative of research of general interest to the profession.
Until the survey conducted by Kee et al. [1987], no attempt had been made to assess the state of municipal governments' budgeting practices. The survey focused primarily on the area of capital budgeting, which Cothran [1986, p. 32] identifies as one of the more difficult aspects of budgeting and one of the twelve elements of financial management and planning listed by the International City Management Association (ICMA). Kee et al. [1987, p. 22] found that political and social considerations, which may be directly linked to risk, can have significant influence over asset selection in the public sector. Of the 200 municipal finance officers surveyed, 79% of the respondents indicated that the degree of investment risk is a primary consideration in the selection of capital projects. Furthermore, 39% of the respondents rely on nonquantitative procedures in the analysis of risk. Consequently, the authors found highly subjective and unsophisticated methods of risk analysis and capital project selection to be employed more frequently than such sophisticated approaches as net present value (NPV) or internal rate of return (IRR). It seems reasonable to presume that smaller local governments than

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Kee, et al. [1987] randomly selected and surveyed 200 municipal finance officers of cities having populations of at least 50,000. The authors achieved a 49% response rate. These cities were found to have reasonably well-educated and experienced officers and perhaps more structured budgeting approaches than might be found in smaller governments.
those surveyed by Kee et al. are employing methods of even
less sophistication and objectivity. As Cothran [1986, p. 31] notes:

Small governments often lack strong chief executives such as city or county managers to prepare and review
the budget. Therefore, several officials in small communities divide the tasks usually performed by a
strong chief executive in larger systems, although one official—usually the elected clerk—coordinates the
process and compiles departmental requests for presentation to the local legislature.

Using the standards of larger and more sophisticated
governments, Sokolow and Hondale [1984, p. 377] failed to
identify a single administrator of rural jurisdictions as a "professional" budget officer. This may be considered a
major problem in local government. Small governments are
the primary provider of domestic services and are under the
increasing scrutiny of their citizenry regarding the
allocation of scarce resources to those services. Yet,
small governments are most susceptible to constraints
imposed by limited resources (both monetary and human),
which aid in the accomplishment of such an arduous task.

One of the major problems emphasized above is that very
little empirical research has been directed at the local
government level. Most state and federal level research has
simply been projected onto local governments. This practice
is seemingly unjustified. Similarly, the little research
which does exist regarding local government activity,
perhaps unjustifiably, has been generalized to smaller local
governments, which are probably profoundly less
sophisticated than the larger local governments studied to date.\textsuperscript{6}

EFFECTS OF FRAMING ON DECISION MAKING UNDER UNCERTAINTY

Local government resource allocation decisions are becoming increasingly difficult in light of decreased federal support and increased public activism. Such decisions may be classified as decisions involving uncertainty, given the political and social ramifications everpresent in the public sector and the diversity of interest groups demanding satisfaction of their specific needs. However, Gibbins [1984, p. 103] states that there is insufficient knowledge of what happens when experienced people employ judgment in decision making situations of significance, "amid the pressures, constraints, dangers, and opportunities of their everyday environment." Thus, attention to the decision making process in an environment of uncertainty appears warranted.

Until the late 1970s, most literature focusing or building on the concept of rational choice in situations of uncertainty relied on the expected utility hypothesis of behavior\textsuperscript{7}, which assumes decision-makers, given new information, consistently use a Bayesian learning model and

\textsuperscript{6}See chapter 2 for a discussion of differences between state and local levels of government as well as between smaller and larger local governments.

\textsuperscript{7}Influential, early work includes Mosteller and Nogee [1951] and Davidson, Suppes, and Siegel [1957].
conditional probability information to update their beliefs.

As Arrow [1982, p. 1] notes:

In good measure, the expected-utility hypothesis provided an important starting point for these studies (regarding the capacity of human beings for perception and judgment), in the sense that it provided a refutable hypothesis and indeed one for which the testing of implications was rather straightforward.

One significant research effort testing the implications of expected-utility theory was Lichtenstein and Slovic's [1971] work with choices between pairs of gambles, resulting in the "preference-reversal" phenomenon. Lichtenstein and Slovic found that subjects often equate a lower guaranteed dollar amount with the subjects' preferred gamble, which contradicts the postulates of rationality (see Figure 1.1). Similarly, Arrow [1982] notes several research efforts which have shown that a fundamental element of rationality, extensionality, may not be applicable to choice.

Kahneman and Tversky [1979] emphasize the importance of descriptions in their development of prospect theory. They have found that significant differences exist between choices made when objectively identical situations are framed (or described) in terms of gains rather than in terms of losses. This is referred to as the "context effect".

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8Extensionality suggests that choice depends on the set of alternatives from which the choice can be made. A change in description of objectively identical alternatives should not change the decision or choice.
FIGURE 1.1
An Illustration of Preference Reversal Effects*

Subjects are told that they have the opportunity to throw a single dart. They may throw the dart at either target A or target B. The payoffs are as follows:

Target A: $4 - dart hits anywhere within target A, except on the radius line.
         $0 - dart hits the radius line of target A.

Target B: $16 - dart hits within shaded portion of target B.
         $0 - dart hits outside the shaded portion.

Subjects must choose between A or B. Once they have indicated their preference, they are asked to calculate the expected value for each target. Subjects who first choose A do tend to then calculate a higher expected value for B.

*Example was taken from Professor Charles Plott's presentation during the 1988 AAA Doctoral Student Consortium.
or "framing". For example, Tversky and Kahneman [1981] asked subjects to respond to the following objectively identical situations:

The U.S. is preparing for the outbreak of an unusual Asian disease which is expected to kill 600 people. Two alternative programs are being considered. Which would you favor? (158 subjects were given a choice between Programs A & B, and 169 subjects were given a choice between Programs C & D).

1. If Program A is adopted, 200 will be saved.
2. If Program B is adopted, there is a one-third probability that all will be saved and a two-thirds probability that none will be saved.
3. If Program C is adopted, 400 people will die.
4. If Program D is adopted, there is a one-third probability that no one will die and a two-thirds probability that 600 people will die.

Seventy-six percent of the first group of respondents chose Program A. While the expected utilities of both programs (A & B) were equal, respondents valued the sure 200 lives saved more than the risky prospect of equal expected value. However, only 13% of the respondents chose Program C (given the choice of C or D), which is equal to the preferred Program A—saving 200 lives and losing 400.

When given a choice between a sure loss of 400 lives and a two-thirds chance at losing all 600 lives, respondents tended to be risk-seeking and hoped for the long shot of not losing any lives. It was a result of noting such inconsistencies of expected utility theory, which predicts no change in response when objectively identical situations are described differently, that led Tversky and Kahneman to the development of prospect theory, which presents explanations for inconsistent responses in terms of risk-
averse and risk-seeking tendencies of individuals perceiving situations from different perspectives (or reference points). Prospect theory predicts risk-averse behavior when individuals are confronted with an evaluation of gains and risk-seeking behavior when individuals are confronted with an evaluation of losses.

This approach seems particularly appropriate for the analysis of the decision making process of local officials. As Luke [1986, p. 134] notes in his discussion of the role of the local administrator of the 1990s, "Managing strategic information is essentially a problem-setting process, where problems are identified and assessed, rather than a problem-solving process."

Bazerman et al. [1985, p. 310] extend a call for research to investigate "... how negotiators can frame the behaviors of their opponents." Given the environment of local government decision making, prospect theory appears to be a viable approach to investigating any violations of rationality made by individuals responsible for the allocation of scarce resources. If violations are present, the concepts of prospect theory may prove useful in educating governmental decision makers. As Kahneman and Tversky [1979, p. 277] claim:

Such anomalies (departures from expected utility theory) of preference are normally corrected by the decision maker when he realizes that his preferences are inconsistent, intransitive, or inadmissible. In many situations, however, the decision maker does not
have the opportunity to discover that his preferences could violate decision rules that he wishes to obey.

The reality of scarce resources and the competition for those resources among interested parties has contributed to an increasing activism among constituencies, all of whom must present their needs to the government for consideration in the allocation process. While the constituency must present a request for allocation, it does hold the power to vote for the decision makers currently in office. Thus, governmental decision makers must be careful to evaluate all needs of its constituency and justify all allocation decisions, which necessarily involves the denial of requests of some other constituencies.

The act of framing may exist in the constituency's presentation to the governmental unit—emphasizing the need for resource allocation in particular directions. Thus, governmental decision makers should be made aware of the implications of framing on the quality of their decisions. Furthermore, once resource allocation decisions have been carefully made by the governmental unit, the unit should be aware of the usefulness of framing in the presentation of its decisions to the constituency. Many times there is no right answer to problems faced by governmental decision makers, yet decisions must be made. There will always be some part of the constituency which opposes the chosen action. Awareness of the views of such individuals may help
decision makers present the same objective information to such people in the most palatable frame.

Research Objectives

RESEARCH QUESTION

Several of the works cited above have extended calls for additional research. These calls emphasize significant gaps in the current governmental budgeting literature. This study responds to the call for additional research by focusing on a managerial accounting issue within a small, local governmental entity. Kahneman and Tversky's [1979] concept of prospect theory (as discussed in the following chapter) will be employed to develop and test hypotheses. The objective of the study is to determine empirically whether local government officials' budgeting decisions are affected by altering the frame of the various resource allocation alternatives under consideration. If such an effect is found, awareness of the impact of framing may serve to improve resource allocation decisions through the development of more comprehensive budget planning systems. For example, systems may be employed which prompt budgeting managers to address all pertinent issues prior to making resource allocation decisions among alternatives.\(^9\) In other words, budget planning systems may be improved to draw attention to decisions in violation of statistically

\(^9\)Northcraft and Neale [1986] present work in this area.

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sophisticated decision models such as a Bayesian or expected utility approach. While there is often no right answer for decision makers to select, local governmental decision makers should see the importance of not being misled into selection of an inferior course of action as a result of the mere presentation of the alternatives, rather than the objective differences among the alternatives.

HYPOTHESES AND VARIABLES

Although the debate continues over the definition of rationality, there is wide acceptance of the belief that rational choice must be consistent and coherent [T&K, 1981, p. 453]. Consistency is assessed in terms of the subjects' decision preferences, which should not change as a result of alternative framing (i.e., rewording) of the same decision problem. Coherence of the subjects' decision preferences can be assessed in terms of deviations from the expected utility solutions for the decision problems. T&K have analyzed the responses of numerous different types of subjects (e.g., undergraduates, academicians, and physicians) to cases similar to the cases employed in this study (see below).\textsuperscript{10} Their results indicate that even the more sophisticated subjects, such as academicians, systematically violate the theory of rational choice. This study will

\textsuperscript{10}See chapter 3 for a detailed explanation of case selection and design. See Figure 1 of chapter 3 for the cases employed in this study.
examine the responses of local governmental unit budgeting managers (or officials) for violations of rational choice. The proposition (P) of interest is stated below:

P: Budgeting managers tend to respond inconsistently and incoherently to objectively identical resource allocation alternatives framed differently.

Thus, the null hypotheses can be stated as:

H1: The budget manager will not alter his decision preferences between different frames of the same contingency.

H2: The budget manager will not alter his decision preferences between different frames of the same outcome.

H3: The budget manager will choose the alternative which maximizes expected utility.

Rejection of these hypotheses will lend support to the claims that explanations of decision making processes require more than an assumption of rational choice behavior or an expected utility approach. That is, rejection suggests that local budgeting managers do not respond consistently (primarily related to H1 and H2) and coherently (H3).

The dependent variable is the manager's choice or preference among alternatives related to the decision problem. This variable is dichotomous for each of the decision cases used in the study. The independent variable is the frame of the decision case. Although T&K identify three separate aspects of framing: acts, outcomes and contingencies, the current study will be limited to the framing of contingencies and outcomes. This is seen as a
necessary limitation to this research attempting to keep the necessary sample size at a reasonable level. Moreover, it is believed that the increased length of the instrument which would be required to adequately test all three aspects of framing would have a negative impact on the response rate.

**Methodology**

A sample of subjects will be randomly drawn from the U.S. Bureau of Census 1987 Directory of Governments listing of local governments serving populations of no more than 10,000.

Subjects will be mailed a survey. The survey response form will be printed on bifold heavy gauge paper, which will require the subjects simply to fold the pre-addressed and stamped instrument, staple and mail. The brevity required to employ such a form, along with the convenience, should increase response rates. Accompanying the instrument will be a cover letter emphasizing the lack of attention paid to smaller local governments in the professional literature to date and the importance of their response in helping to fill that void. Subjects will be encouraged to return the instrument even if they choose not to participate in the study. To the extent this request is honored, this should eliminate doubt regarding subjects' receipt of the instrument, and thus eliminate one explanation for non-response. In addition, the survey will be sent by first
class mail rather than bulk rate in an effort to get the recipients' attention initially. The instrument will consist of a section for demographics and a few short cases.

CASE DESIGN & ANALYSES.

The cases will be designed to detect violations of expected utility theory in scenarios involving uncertainty in a resource allocation context.

The literature review served to emphasize several issues which seemingly require governmental decision makers at the local level to make decisions under conditions of uncertainty. For example, a review of the study published by the U.S. Department of Housing and Urban Development (HUD) [1981], which addressed the changing needs of the 1980's, provided some insight into the issues to be presented in the experimental cases. HUD and other sources in the current literature address the importance of maintaining infrastructure and the problems associated with such activity. Hoffman, Mister and Strawser [1988] discuss the decreasing availability of federal funds for local governments' infrastructure repair, replacement, or expansion needs. This situation of decreasing funds accompanied by increasing citizen activism (or expression of needs) makes the resource allocation decision making behavior of local officials an important issue. Similarly, the issue of unemployment and the need to layoff government employees is one of concern to many. Employment issues tend
to draw attention nationwide, and certainly are of interest to local constituencies.

Case construction is very important to the analysis of decision making behavior in this study. In their introduction of prospect theory, Kahneman and Tversky [1979] explained the use of individual cases to detect violations of rational decision making behavior. In addition, they explained the use of relationships among (or between) multiple cases to support violations found with individual cases as well as to detect further violations. The cases presented in chapter 3 have attempted to incorporate the characteristics of Kahneman and Tversky's cases in a manner which allows analysis on an individual and a multiple case level. The problems below illustrate how different frames may be used to present objectively identical options to these decision makers, invoking different responses.

Consider the following:

**Decision makers may be faced with objectively identical alternatives presented in one of the following ways (problems 1 & 2 below). Regardless of the presentation form, the decision makers would be told that they have no hopes of obtaining the federal funding in question without the aid of the federal aid coordinator's expertise.**

**PROBLEM 1:**

Your government has begun negotiations to hire a federal aid coordinator in efforts to improve your chances of obtaining federal funding for capital improvements and special programs. You know that the applicants for the coordinator position are also negotiating with other governmental units, and you estimate that you have a 25% chance of hiring one of the applicants. If you hire one of the specialists
you feel absolutely confident that the coordinator can secure $150,000 for capital improvements by focusing all energies on a specific strategy, and you are 80% confident that the coordinator can secure $200,000 by pursuing an alternative strategy. Preliminary paperwork must be submitted for approval by the council before the hiring process is expected to be completed. Which one of the coordinator strategies would you choose to present to the council?

Strategy A: ($150,000) or Strategy B: ($200,000, .80)

PROBLEM 2:

Your government's federal aid coordinator has two strategic options available for the current period's consideration. Option Z has a 20% chance of resulting in federal aid of $200,000. Option Y has a 25% chance of resulting in federal aid of $150,000. Which option would you encourage the coordinator to pursue:

Option Z: ($200,000, .2) or Option Y: ($150,000, .25)

Researchers have found that even decidedly sophisticated decision makers experience what T&K have termed the "isolation effect" when faced with similarly structured decision scenarios. That is, they ignore elements in the decision process that are shared by all alternatives. In the example case, decision makers are expected to ignore the 25% chance of securing the coordinator (as expressed in problem 1) because both actions depend on successful completion of that initial part of the process. Rational decision theory expects decision makers to integrate the stages and not ignore the initial 25% chance. Problem 2 integrates the steps for the decision maker. That is, 20% is derived from the joint probabilities (25%--chance of reaching stage 2--and 80%). When faced with
the alternatives in the integrated problem, decision makers make the rational choice of higher expected value. This study will rely on a pilot study to investigate whether subjects ignore (or isolate) either the probability or the absolute dollar amount of the options in Problem 2 when making their decisions. When faced with the alternatives in the nonintegrated problem, decision makers have been found not to choose the higher expected value of the second step. Ignoring the effect of the first step, they often select the "sure" thing over a chance for a little something more. This has been termed the "certainty effect." Remarkably, researchers have found subjects tend not to integrate even when prompted to do so. Thus, the decisions made can be significantly different for alternative presentations of objectively identical information. The isolation and certainty effects are addressed in chapter two along with a more detailed presentation of prospect theory and framing.

In addition, efforts to maximize the experimental realism of the task will include solicitation of comments from a city manager. Once the instrument has been reviewed and modified where necessary, a pilot study will be conducted using Baton Rouge area small government managers as subjects. The pilot study should allow possible sources of confusion with the task to be detected as well as indicate potential weaknesses in the methodology, in general.
Subjects will be asked to choose between alternative courses of action (such as the above example) requiring equal allocations of available resources. This is to remove budget limitations as a reason for proposal rejection.\textsuperscript{11}

Subjects' responses will be compared to the expected utility response frequencies anticipated for each set of alternatives. Deviations from expected utility solutions will be analyzed in light of the principles of prospect theory. For instance, as explained with the above example, rational decision theory assumes decision makers will choose the highest expected utility alternative based on integrated information in the case of two-stage decision problems. Prospect theory proposes that decision makers ignore the common elements among alternatives (e.g., the 25\% chance of moving on to step two of the decision problem) and base their decision on the illusory certainty (or pseudocertainty) associated with the unique elements of the alternatives. In addition to the investigation for isolation effects, the cases will investigate the effects of framing alternatives in terms of gains or losses from the decision maker's reference point. This issue is discussed in greater detail in chapter two; however, a brief description follows.

\textsuperscript{11}Kee et al. [1987] found limited funds to be the most important reason for rejecting investment proposals.
Basically, prospect theory explains risk aversion and risk seeking behavior by focusing on the decision maker's point of reference. Whereas expected utility theory assumes that decision makers will respond consistently to various framings of objectively identical information, prospect theory finds that decision makers are influenced by the perspective forced on them by the decision frame. When the decision problem is framed in terms of a gain from the decision maker's reference point prospect theory anticipates risk averse behavior in the choice among alternatives. When the objectively identical information is framed in terms of a loss from the decision maker's reference point, prospect theory anticipates risk seeking behavior.

Responses to the cases will be evaluated in terms of the consistency and coherency requirements of rational choice theory. Coherence will be analyzed by comparing the correct expected utility solutions (in applicable cases—some cases will be identical to the alternative in terms of expected utility, i.e., no "correct" solution) to the observed decision preferences. For example, the case presented earlier in this chapter has a correct response (i.e., the alternatives are not of equal expected value). Rational decision theory requires decision makers to choose alternative B in problem 1, based on integrated information regarding the two-step problem, and alternative Z in problem 2. Consistency will be analyzed by comparing the
frequencies of directional preferences (risk aversion or risk seeking) as discussed below.

Each case elicits dichotomous responses which satisfy the criteria for classification as binomial distributions [Levin, 1984, p. 215]. In testing whether the sample data support the null hypothesis that the sampled population responses do follow binomial distributions, the Chi-square goodness-of-fit test will be employed, given scenarios where the expected utility between alternatives is objectively identical. That is, the Chi-square test will be used where the expected frequencies are 50%-50% for the two alternative courses of action. According to Daniel [1978, p. 256], the goodness-of-fit test should not be used for categories with an expected frequency of less than one, such as where one alternative is objectively better. Consequently, a nonparametric binomial test will be used to analyze responses to scenarios which have alternatives of different expected utilities (e.g., the example case above).

**Expected Contribution**

Several of the works cited above have extended calls for additional research. These calls emphasize significant gaps in the current governmental budgeting and psychology of choice literatures. This study suggests that the call for additional research be answered by focusing on a managerial accounting issue within a local governmental entity. By employing prospect theory the study will attempt to
determine empirically whether local government managers' budgeting decisions are affected by altering the frame of the various resource allocation alternatives under consideration. If such an effect is found, awareness of the impact of framing may serve to improve resource allocation decisions through the development and incorporation of more comprehensive budget planning systems.

This chapter provides background information concerning the budgeting environment of local governments and some behavioral aspects of the budgeting process at the local government level. The chapter also defines the purpose and objectives of the proposed study. The research effort is viewed as a worthwhile focus in light of the numerous calls for expansion of the governmental budgeting and behavioral research knowledge base. The demographic data collected should be of significant interest, given claims of insufficient empirical focus to date on small local governmental units. For example, the literature claims that local budget managers are appointed rather than elected as in state and federal governmental units. Demographics collected by this study will provide empirical evidence to support or refute that claim.

The prospect theory approach is believed to be warranted because of its potential contributions (above those of expected utility theory) toward a more complete understanding of the decision making process under
uncertainty. A better understanding of the planning/decision making aspects of the budgetary process may have significant practical implications for the local government entity as well as its constituents. Once a weakness in a system (such as framing of resource allocation options without conscious awareness) is identified, remedial steps can be implemented. Such steps might include development of intentionally structured frames which induce sufficient consideration of all resource allocation options available to the budget manager. As Naisbett [1984] noted, the demands placed on local governmental units are growing in number and intensity. A better understanding of the status of decision making within such units may allow for improved approaches to the task and a more favorable working environment for the decision making personnel.

Summary

This chapter has been employed as an introduction to the proposed study and relevant background. The need for increased attention to the resource allocation decisions made by local governments has been addressed, and the perceived benefit of a prospect theory approach to decision making under such conditions of uncertainty has been presented. The remaining chapters will include a review of literatures relevant to local government and decision making, a detailed explanation of the proposed methodology, analysis of the data, and conclusions of the research.
CHAPTER TWO
REVIEW OF THE LITERATURE RELEVANT TO THE STUDY
OF LOCAL GOVERNMENTAL DECISION MAKING
IN THE RESOURCE ALLOCATION PROCESS

The purpose of chapter two is to provide a review and summary of literature relevant to this research. This chapter will also highlight the contributions to the literature which will be made by the current study. The relevant research areas include:

1. Literature on the theory or concepts of the budgeting function,
2. Reviews of work on local governments,
3. Empirical budgeting research at the local level,
4. The introduction and development of prospect theory, and
5. Applications of prospect theory in accounting and business.

The Budgeting Function

SCHICK

Schick's [1966] essay, "The Road to PPB: The Stages to Budget Reform," is viewed as a significant contribution to governmental budgeting theory. His presentation of the functions of budgeting has been used by academicians and practitioners interested in understanding the literature and practices of budgeting. The value of the essay is seen to be the development of the general constructs which lay a foundation (or conceptual framework) for the design and performance of empirical research in budgeting. Schick maintains that the budget and the budgetary process is a
means of (1) control - insuring legal compliance and monitoring spending; (2) management - delivering services in an efficient manner; and (3) planning - establishing goals and evaluating alternative courses of action. According to Schick, American governments' emphasis in the budgeting process has progressed over time from the former to the latter of his constructs.

COMPTROLLER GENERAL OF THE UNITED STATES

In 1978, the Comptroller General of the United States published twelve standards for internal management control, three of which validate the importance of Schick's [1966] three functions of budgeting. One additional standard (No.8) is believed to be relevant to the focus of this research effort, and is presented last. The specific standards of interest to the current study are presented as [1978, p.35]:

Standard No.1: Policies. Management policies adopted for carrying out agency functions should be clearly stated; systematically communicated throughout the organization; conformed to applicable laws and external regulations and policies; and designed to promote the carrying out of authorized activities effectively, efficiently, and economically.

Standard No.4: Planning. A system of forward planning, embracing all significant parts of the agency, is needed for determining and justifying needs for financial, property, and personnel resources and for carrying out operations effectively, efficiently, and economically.

Standard No.11: Expenditure Control. Adequate control over expenditures requires that effective procedures be devised to provide assurance that needed goods and services are acquired at the lowest possible cost; that
goods and services paid for are actually received; that quality, quantity, and prices are in accordance with the applicable contracts or other authorization; that such authorizations are consistent with applicable statutes, regulations, and policies; and that effective use is made of all acquired resources.

Standard No. 8: Accuracy, Reliability, and Materiality. In determining the degree of precision to be sought in making allocations of cost (expense) or revenue or in computing other items where judgments and estimates are employed, the materiality and relative significance of the items involved should be considered carefully. Meticulous procedures which do not produce materially more accurate results or provide other off-setting benefits should be avoided.

The Schick typology and these standards appear to lend themselves to a study of behavioral issues within the governmental sector, especially within governmental budgeting.

ERVIN

Ervin [1980] surveyed 385 chief budget administrators of 252 Illinois municipalities, which had populations of at least 100,000. Ervin elicited the administrators' perceptions of the functions served by their particular municipal budgeting system. The officials were asked to respond to 51 Likert-type items derived from Schick's essay [1966], which were then factor analyzed.

Figure 2.1 shows the three factors hypothesized from Schick's typology. Only the five highest factor-loading items which Ervin used to interpret the three factors are included in the abstraction from Ervin's table of factor
FIGURE 2.1
Ervin's [1980] Loading on Schick's Constructs of Budgeting

Hypothesized Control Indicators

1. Comparison of current expenditure estimates with actual expenditures of previous years
2. Accurate estimation of revenues
3. The work of the finance office in assuring monies are spent appropriately
4. Conformance with the legal fiscal requirements of the state
5. Inclusion of self-supporting funds in the budget of appropriations ordinance

Hypothesized Management Indicators

1. Establishment of work standards
2. Scheduling and control of work
3. Recruitment of well-trained analysts and technicians
4. Work measurement
5. Development of efficient work methods

Hypothesized Planning Indicators

1. Discussion and development of community goals
2. Evaluation of ongoing services and programs
3. Efforts to match future resources with future needs
4. Review of long-range plans
5. Anticipation of future events that might effect community finances

loadings (Figure 2.1).¹

¹Ervin used ten additional items to interpret the three factors. Together, the 25 items accounted for 86% of the total variance. Additional factors did not have high enough loadings to allow for interpretation of the underlying dimensions.
A review of Figure 2.1 indicates that while the three constructs hypothesized by Schick are, indeed, present in the orientations, practices, and activities of municipal budgeting, the management and planning constructs are not as representative of Schick's constructs. Ervin [p.126] suggests more accurate characterizations of the management and planning constructs to be "management-analysis" (concerned with day-to-day analyses and problem-solving) and "planning-futures" (concerned with futuristic projections and goals). Ervin [p.121] concludes that:

there is a need for budgetary concepts and theory that are more generic in nature, allowing a framework for description and comparison independent of the emergence and demise of particular techniques and approaches. Schick's typology of budget functions is such a theory and deserves continued testing, elaboration, and refinement.

FREEMAN, NEIMI AND WILSON

The authors [1983] present a guide for local officials in the evaluation of public expenditures. Freeman et al. state that local officials should not restrict their concerns to budgetary effects of public programs, but should also consider other important effects which may influence the community's perception of the programs. Figure 2.2 presents an illustration of the authors' steps in the analysis of public programs.

Although the valuable time of skilled personnel is required, Freeman et al. suggest the use of in-house...
analysts for program analysis of local government operations as being more efficient and effective than use of

FIGURE 2.2
Steps for Analyzing Public Programs
(from Freeman, Niemi, and Wilson, 1983)

DEFINE SITUATION

IDENTIFY, MEASURE AND VALUE PROGRAM'S COSTS
IDENTIFY, MEASURE AND VALUE PROGRAM'S BENEFITS

DISCOUNT COSTS AND BENEFITS

ASSESS EQUITY IMPACTS

INTERPRET RESULTS OF PROGRAM ANALYSIS

consultants. They suggest that studies performed in-house be considered investments in the knowledge and skill of personnel. Their views support maintaining the budgeting function within local governmental units and emphasize the need to understand its weaknesses. An identification and understanding of such weaknesses should lead toward improvement in the resource allocation process as well as greater security for employees of the governmental unit.

Freeman et al. [p.104] present a checklist for local officials to determine whether a program has been adequately analyzed. The checklist is presented in Figure 2.3, below. The importance of answering such questions cannot be denied;
however, the degree of guidance offered by such a checklist is questionable. Admittedly, a checklist of detailed and situation-specific items would prove impractical for all local governmental budgeting needs, but the items mentioned in Figure 2.3 appear to be extremely vague.

FIGURE 2.3
Analysis Review Checklist
(from Freeman, Neimi, and Wilson, 1983)

1. Have the program's objectives been clearly and completely stated?

2. Has the population affected by the program and relevant to the analysis be identified?

3. Have the program's costs been estimated correctly? Have any (budget or nonbudget) costs been overlooked or overweighted?

4. Have the program's benefits been estimated correctly? Have all of the benefits been identified, correctly counted and weighted?

5. Has the time value of money been accounted for by discounting (with an appropriate discount rate) those future costs and benefits for which dollar values can be determined?

6. Have the program's distributional impacts been considered?

7. Have the findings of the analysis been tested for their sensitivity to changes in assumptions about the magnitude of important costs or benefits?

GEORGE

George [1974] addressed the concept of "decision stress" in decision making situations such as those facing
persons responsible for formulating the budget of a governmental unit. Such persons must assess the expected utility of a variety of alternative courses of action. As mentioned in chapter one, those assessments are not made in isolation, but under the scrutiny of a multitude of parties concerned with their own interests.

George recognizes cognitive limits on rational choice, and explains that several intellectual difficulties undermine legitimate efforts of rational calculation within a political environment such as budgeting. According to George [p.180]:

1. The political decision maker often must operate with incomplete, possibly erroneous, information about the situation at hand.

2. His knowledge of ends-means relationships is generally inadequate to enable him to predict with confidence the consequences of choosing one or another course of action.

3. It is often difficult for him to formulate a single criterion of value by virtue of which to choose the "best" of alternative options.

The research efforts referred to above highlight the need for an understanding of the decision making process in situations where judgment plays a significant role in determining an outcome. As described above, the budgeting process places the governmental manager in such a situation.
EADIE AND STEINBACHER

In their recent work with the Ohio Bureau of Employment Services, Eadie and Steinbacher [1985, p.430] propose strategic agenda management as a combination of organizational development efforts with strategic planning techniques. However, they state that planning techniques are "... subordinate to the human process of painful, time consuming decision making based on the best available information (emphasis in original)." Furthermore, they believe that as human capabilities increase, the strength of formal planning mechanics used increases. Their observations and recommendations regarding the planning process are presented in a vague conceptual manner, much like George [1974] above.

Reviews of Studies at the Local Level

CORNIA AND USHER

Cornia and Usher [1981] have found the majority of budgeting literature to focus on federal and state levels of government. Lack of attention to local budgeting in the literature contributes to the extension of federal and state level research findings to local governments as well. However, the authors present several reasons why such an extension may not be warranted:

1. Constraints placed on the budget officer are different at the federal, state and local levels (e.g., federal is not required to submit a balanced budget);
2. Revenue sources at the local level are less responsive to economic change; and

3. Elected officials (e.g., President or Governor) may play a different role in the budget process than an appointed official (e.g., city manager).

The authors have noted that most of the few published works on local budgeting have used a case study approach or a very limited sample of cities. For example, Crecine [1967] focused on Pittsburgh, Detroit, and Cleveland in his development of a computer simulation of the budgeting process. One of the major conclusions of Crecine's work was that increases in external revenue sources leads to increased budget requests. He found the mayor's or city manager's budget letter to influence budget preparation. Furthermore, Crecine suggested that pre-structured budget forms may play an important role in determining expenditure policy. Meltzner [1971] is another example of a case study. Meltzner researched the budgeting process of Oakland, California, as a participant observer. He found that especially during the final stages of balancing the budget, fiscal control, rather than the expected outcome of proposed expenditures, was the main concern.

Cornia and Usher have found that budgeting studies tend to emphasize the results of the budgeting process, ignoring the decision-making process. In their review of the budget preparation manuals of 86 cities with populations of at least 100,000 in 1975, Cornia and Usher [p.89] concluded:
It seems that municipal budgeting has progressed from a tedious item-by-item examination of proposed expenditures to a more complex decision-making process. While the former process was implicitly incremental, the latter is explicitly incremental as a result of the translation of the base concept and disjointed incrementalism into practical modes of budgetary analysis. The result in either case may be incrementalism, but municipal budget decisions may now be more "rational"---at least at the margin!

HONADLE

Honadle [1983] provides a guide to the literature on public administration in rural and small jurisdictions for the period 1960 through 1981. Her review was partially in response to the perceived neglect of nonmetropolitan and small governments in the United States despite the fact that a majority of Americans are served by such governmental units. Honadle [p. xvi] cites, "Consider Public Administration Review, the leading journal in the field. Except for one special symposium in 1980, PAR has paid almost no attention to the special problems of rural public administration." Regarding the capital budgeting issue, Honadle found a single study conducted in 1973, on a rural community of approximately 20,000 people.

The literature review includes approximately 20 journals, dissertation abstracts, government documents, computerized literature searches of three databases, and selected reports. As a result of the extensive review, Honadle concludes that there is a public administration literature focusing on rural areas and smaller
jurisdictions. Not only are there distinctions to be recognized between larger, urban jurisdictions and smaller, rural jurisdictions, but there are distinctions to be recognized among the smaller, rural governments. Honadle [p. xxi] states that, "Perhaps the most crucial finding is that one should not overgeneralize about 'the rural community' or 'the small town.'" Although not universally applicable across all such jurisdictions, several common characteristics were identified. Some of Honadle's findings are presented by headings below:

Population Density. Urban areas, generally, have higher concentrations of people than rural areas. This state allows urban areas to provide both general and specialized services to its inhabitants, whereas rural areas are limited to the provision of general services which are required by the majority of its people. There appears to be an inverse relationship between population density of a jurisdiction and cost of services provided. A direct relationship seems evident between population density and service quality and availability.

Lack of Expertise and Human Resources. This situation is seen as being directly tied to the lack of fiscal resources of rural jurisdictions and training opportunities for rural personnel. This common characteristic has significant implications for rural governments.

Understaffing and inadequate job performance generally
contribute to a low quality and quantity of services provided by rural units as well as neglect of most (if not all) long-range planning. Many jurisdictions have been found to use personnel in multiple roles and/or employ a shared or "circuit riding" manager in attempts to lessen the squeeze of tight fiscal constraints.

Resistance to Innovation. There appears to be a resistance to innovation among rural citizens and agencies. Cited reasons for such attitudes include perceived excessive costs, ineffectiveness, and views that governmental units are not as capable of providing the innovative services as are individuals and private enterprise. Honadle and others suggest the need to show quick results as well as the merit of innovation in order to lessen such resistance.

STALLINGS AND FERRIS

Stallings and Ferris [1988] provide an analysis of actual data for five-year intervals on characteristics of research reported in Public Administration Review (PAR). The review covers the 45 year period from 1940 through 1984. The authors chose to focus on PAR because it is "... the official journal of the main professional organization, it is most representative of research of general interest to the field over a long time period."

A random sample of 176 articles from the period 1940 through 1974 was taken and the title, abstract, acknowledgements, section headings, and all tables and
figures were examined. The entire text was read only when the initial screening was inadequate for coding. Stallings and Ferris added their review of 176 articles to 289 articles from the period 1975 through 1984 reviewed by Perry and Kraemer [1986]. One of the major interests during the review was any trend in research attention across federal, state, and local levels of government. Stallings and Ferris note that local government studies have never been a major research focus. Table 2.1 shows that local government research has always represented less than one-fourth of the published work in PAR.

The conclusions drawn from their review include Stallings' and Ferris' belief that characteristics of recent work in PAR differ very little from published work of nearly fifty years prior. According to Stallings and Ferris [p.583]:

Research is still dominated by efforts to conceptualize researchable problems, delineate possible areas of inquiry, and describe objects for study. Little causal analysis or theory testing has taken place over the years, and causal analyses, while significantly more frequent now than in previous decades, comprise only a small proportion of current research.

While Stallings and Ferris believe PAR provides a good indication of the profession's views of research, they offer three reasons why article-length research may be underrepresented in PAR:

1. Researchers may submit elsewhere,
2. PAR editors may be opposed to publishing results of individual research efforts, and
3. The peer review process may eliminate a majority of submitted research efforts due to questionably sound methodology.

Furthermore, the authors believe that public administration has been clinging to its practitioner focus too long. They suggest that fundamental questions must be asked about the nature of the public sector and its relationships with society in order to bring about new directions in public administration research.

<table>
<thead>
<tr>
<th>Interval</th>
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</tr>
<tr>
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<tr>
<td>1980-84</td>
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</table>

\[X^2 = 11.41\]

\[df = 6\]

\[p = 0.08\]

\[Cramer's V = 0.20\]

*Due to the type of coding technique used by Perry and Kraemer [1986] (authors reviewing this time interval), these values are too small to report.
Empirical Capital Budgeting Research at the Local Level

SOKOLOW AND HONADLE

Based on available studies, Sokolow and Honadle [1984, p.373] state that a "centralized executive budget is widely viewed as the predominant form of local government budgeting in the United States. However, the authors noted that the studies, almost exclusively, focused on larger local governmental units. Moreover, the few studies to be found on smaller governmental unit practices "... offer the obvious generalization that expertise and professionalism are in short supply."

Sokolow and Honadle use a case study approach to investigate the annual budgeting process of small and rural governments. Their work is an addition to the literature as a result of their definition of "small" government. Sokolow and Honadle believe that units with populations of 50,000 or more (the lower limit for most small government research) may not be comparable to units of much smaller size. Thus, they examine the practices of eight


3The MFOA defines "small" as governments serving less than 100,000.
municipalities (with populations between 1,600 and 4,000) and four counties (with populations between 11,000 and 21,000). All twelve governments were located in Illinois or California.

The authors used a simplified version of the executive budgeting process (see Figure 2.4) in reviewing the budgeting process of the twelve governments. They noted only three of the stages shown in Figure 2.4 in all twelve governments: compilation (stage 4), approval (stage 7), and execution (stage 8). Four major deviations from the executive process were noted and are described below.

**Executive Policy.** The most formal governments provided guidance (procedural steps) by establishing calendars and standard worksheets, but only a few of the governments had administrators who offered advice and suggestions at the outset. Sokolow and Honadle did not consider those administrators as providing executive policy because they did not control later action.

**Department Proposals.** This aspect ranged from elaborate proposals accompanied by background material to simple statements with a few figures typed on a single paper. At this stage, much was based on the clerks' personal knowledge, estimates and informal consultations with others.

**Revenue Estimates.** This stage varied widely in the amount of attention it received during the budgeting
process. The California governments emphasized this stage and the importance of such information. The authors feel this was a result of tax-cutting activism (e.g., Proposition
13) in that state. In contrast to the California governments, the Illinois governments gave the revenue estimation stage far less attention. Many municipalities did not even require this information.

Executive Review and Recommendations. Sokolow and Honadle found this to be the area where the executive budget model was most violated by the twelve governments under study. They found the following condition [p.376]:

No budget in the 12 rural communities was presented to the legislative body as a product of an executive's priorities and revisions. In most cases the spending proposals considered by the governing board were merely collections of original departmental requests. No executive "messages" were forwarded along with the budget or appropriations documents. Entirely absent in the process was the extensive analysis, review, and revision considered to be the responsibility of a strong manager or other official in an executive budget process. Some administrative manipulation or revision of spending requests and other information did occur before legislative review. City clerks, county auditors, and other officials who compiled departmental requests or drafted appropriation ordinances were in a position to suggest or actually make changes.

As described above, the executive budget process was not as extensive as the model (Figure 2.4). Consequently, legislative actions played a much larger part in the budget process. Because of the lack of executive-originated recommendations regarding expenditure priorities, etc., the majority of the budget deliberations were conducted by the city council and county boards of supervisors. In one city, advisory commissions (one council member and several
citizens appointed by the council) consulted with department heads in the request for funds.

Sokolow and Honadle found that a single official sometimes dominated the entire budget process by not only controlling the procedural work but also exercising influence over others involved in the process. The influence was found to be both formal and informal in nature. Because the city clerks were the only full-time generalist officials for their communities, they were often the central figures in preparation of the budget. For example, consider the difference between the roles of the following two clerks studied by the authors [p.379-380]:

In the first city the clerk estimated revenues, compiled expenditure requests from other officials, and prepared all budget materials for the council. She served also as the principal supplier of factual information (comparisons with past expenditures, state legislative developments, and so on) to the council during its budget deliberations.

The clerk in the second city, by contrast, did not hesitate to offer opinions and intervene in other parts of the process, in addition to coordinating and compiling the budget. Her influence was exercised in two ways--by aggressively advising department heads about the contents of their proposals and the strategies of dealing with the council, and by offering suggestions to individual legislators or to the entire council at their budget sessions.

In conclusion of their field research, the authors feel many improvements are possible regarding budgetary procedures of small governments (populations well under 50,000). As Sokolow and Honadle [p.382] state:

Certainly this cannot be accomplished with lasting effect by giving small governments advice and
techniques that require full-time chief executives with finance staffs to implement fully. . . A more meaningful approach to the improvement of budgetary practices in rural local governments is to work with existing resources and arrangements--to offer advice and training to elected administrators and members of legislative bodies that is consistent with their multiple responsibilities and time limitations.

KEE, ROBBINS AND APOSTOLOU

In an attempt to fill the void in the literature regarding any assessment of the current budgeting practices of municipal governments, Kee et al. [1987] surveyed 200 municipal finance officers of cities having populations of 50,000 or more. The officers were randomly selected from the Directory: Municipal Officers of U.S. Cities, and a response rate of 49% was achieved.

Figure 2.5 provides a profile of the respondents. It is interesting to note that 26% had only baccalaureate degrees and 5% had no formal education at all. It is also interesting to see that 58% of the respondents majored in accounting and finance, but preferred capital budgeting techniques less sophisticated than the net present value (NPV) or internal rate of return (IRR) techniques, which are considered optimal in finance literature. In asking why NPV or IRR were not used, the authors found the two most frequent responses to be (1) the inability to incorporate qualitative aspects, and (2) political factors. Both of these reasons may allow for a capital budgeting process
FIGURE 2.5
Characteristics of Respondents to the Kee, et al., [1987] Survey of Municipal Finance Officers

FORMAL EDUCATION:

<table>
<thead>
<tr>
<th>Highest Level of Study</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>Graduate</td>
<td>63</td>
<td>69</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>92*</td>
<td>100</td>
</tr>
</tbody>
</table>

ACADEMIC SPECIALIZATION:

<table>
<thead>
<tr>
<th>Area</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>35</td>
<td>43</td>
</tr>
<tr>
<td>Public Administration</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>TOTAL</td>
<td>81</td>
<td>100</td>
</tr>
</tbody>
</table>

PROFESSIONAL EXPERIENCE:

<table>
<thead>
<tr>
<th>Governmental Financial Affairs</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1 to 4 years</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>5 to 9 years</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>55</td>
<td>58</td>
</tr>
<tr>
<td>TOTAL</td>
<td>95</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Budgeting Capital Projects</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1 to 4 years</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>5 to 9 years</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>TOTAL</td>
<td>95</td>
<td>100</td>
</tr>
</tbody>
</table>

*Questionnaires with blank responses were not included in the number (percent) responding to the Kee, et al., survey. Consequently, the total responses for certain questions may be less than 97.
which may be influenced by the presentation or discussion of issues (i.e., framing).

One other aspect of the Kee et al. study which may create an environment best tested with prospect theory is the analysis of risk. Seventy-nine percent of the respondents claimed risk to be a primary concern in capital budgeting. Surprisingly, 39% of the respondents rely solely on nonquantitative procedures for analyzing risk. Thus, perhaps due to the significant role political and social considerations play in municipal asset selection, risk analysis by many municipal managers (of cities with populations greater than 50,000) is "highly subjective and unsophisticated." Consequently, Kee et al. [p.22] conclude that "... considerable room exists for improving municipal capital budgeting decisions."

Introduction and Development of Prospect Theory

As mentioned in chapter one, most of the literature through the 1970s which focused on decision making under risk relied on expected utility theory. John von Neumann and Oskar Morgenstern [1944] developed the theory as a formal decision criterion which served two important purposes: (1) it provided an axiomatic basis for a theory of decision making under uncertainty and (2) it incorporated attitudes toward risk in the utility function. Expected utility theory was developed to suggest how individuals should behave under conditions of uncertainty (i.e.,
Normative). However, researchers have relied on expected utility theory as an accurate predictive model of how people will act. Among the arguments for the use of utility theory in normative analysis is the fact that optimal decisions increase the chances for survival among competitors.

One of the axioms of expected utility theory is transitivity. The theory holds that decision makers identify all possible states of the environment as well as the outcomes associated with each state. Once the identification is accomplished, individuals' preferences are assumed to be transitive over the set of outcomes. That is, if an individual chooses outcome #1 over outcome #2 and outcome #2 over outcome #3, then the individual must choose outcome #1 over outcome #3.

Moreover, expected utility theory requires decision makers to not only choose the appropriate probabilities for each of the possible states of a decision, but to apply the rules of probability theory in determining the probability of compound events as well. For example, a basic law of probability, the extension rule, states that if A contains B, then \( P(A) > P(B) \). Kahneman and Tversky [K&T, 1979; T&K, 1974, 1982 and 1986] note that decision makers often violate such rules of probability and requirements of expected utility theory. A part of their argument is based on the use of heuristics, which is not the focus of the current study. However, much of their argument is presented in
terms of prospect theory. Thus, the fundamentals of their theory are discussed below.

KAHNEMAN AND TVERSKY

In 1979, Kahneman and Tversky published a critique of expected utility theory and presented their alternative model of decision making under risk, prospect theory. They found two significant behaviors to be present in choices among risky prospects: (1) certainty effect and (2) isolation effect. The two stage decision process assumed by prospect theory and the way they relate to the certainty and isolation effects are discussed below.

Certainty Effect. This term is used to describe the overweighting of outcomes that are guaranteed (or viewed as certain), relative to outcomes viewed as less than certain (or probable). Kahneman and Tversky [p.265] use a variation of Allais' [1953] counter-example to expected utility theory as a very simple illustration of the use of their term:

Choose between

A: 2,500 with probability 0.33
   2,400 with probability 0.66
   0 with probability 0.01

B: 2,400 with certainty

Only 18% chose A, which has the higher expected utility.

Isolation Effect. Kahneman and Tversky note that decision makers often simplify their task by ignoring elements that all of the alternatives have in common. The problem with such behavior is that the alternatives can be decomposed in common and uncommon elements in numerous ways,
leading to different preferences. The authors [p.271] make their point with the following problem:

Consider the following 2-stage game. In the first stage, there is a probability of 0.75 to end the game without winning anything, and a probability of 0.25 to move into the second stage. If you reach the second stage, you have a choice between

\[(4,000, 0.80) \quad \text{and} \quad (3000)\]

Your choice must be made before the game starts, i.e., before the outcome of the first stage is known.

In terms of the final outcomes, the choices are \((4,000, 0.20)\) and \((3,000, 0.25)\) due to the 25% chance of getting to stage two.

Figure 2.6 shows how decomposition of the problem may lead to different decisions. The standard formulation shows the appropriate composition of the two-stage game. The 25% chance of reaching stage 2 is incorporated into the alternatives available at stage 2. For example, there is a 25% chance of reaching stage 2 and if reached there is an 80% chance to obtain 4000. Thus, there is a \((80\% \times 25\%)\) 20% chance to obtain 4000. This is a notable contrast to the perceived 80% chance for 4000 when a sequential process is applied. By processing the stages of the game in sequence, the 25% chance of reaching stage two is ignored in the consideration of choices available once stage two is reached because both alternatives of stage 2 depend on reaching stage 2. In other words, the alternatives at stage 2 are evaluated as if stage 2 exists in isolation of stage one.
FIGURE 2.6
Sequential and Standard Formulation for Problem Evaluation

Coding - outcomes may be coded as gains or losses in relation to the reference point;
Combination - probabilities associated with identical outcomes may be combined;
Segregation - riskless components of a prospect are set apart;
Cancellation - components shared by prospects may be discarded;
Simplification - probabilities and outcomes are rounded;
Dominance - clearly dominated prospects are discarded.

FIGURE 2.7
Editing Operations of Prospect Theory
(from Kahneman & Tversky, 1979)
Thus, the sequential formulation has a certainty advantage associated with the 3,000. Kahneman and Tversky note that the reversal of preferences due to the dependency among events is particularly significant because it violated the basic supposition of a decision-theoretical analysis, that choice between prospects is determined solely by the probabilities of final states.

The same behavior was found regarding representations of outcomes rather than probabilities. When given 1000 and a choice between a sure 500 or a 50% chance for 1000, 84% of the subjects chose the sure 500. However, when given 2000 and a choice between a sure reduction of 500 or a 50% chance of a reduction of 1000, 69% of the subjects chose the gamble. The two problems have identical final states.

The Phases. The departures from expected utility theory (like those presented above) are addressed by Kahneman and Tversky's explanation of the decision making process. There are two stages in the choice process, according to prospect theory: editing and evaluation. Editing is the process of simplifying the task of choosing among alternatives of uncertainty (see Figure 2.7 for a list of editing operations). Evaluation is the process of comparing edited prospects and choosing the one with the highest value. Prospect theory assumes that editing operations are not mutually exclusive and are performed whenever possible. Furthermore, Kahneman and Tversky
The evaluation phase can be explained in terms of the modifications to the underlying general linear form of expected utility theory. Prospect theory assumes that values attach to changes. In contrast, expected utility theory assumes values attach to final states. The effect of these different assumptions can at least partially be seen in Figure 2.6 (sequential and standard processes). Prospect theory also departs from expected utility theory by assuming that decision weights are not equal to stated probabilities. The value function and decision weights of prospect theory are described below.

The Value Function. Kahneman and Tversky claim that an essential aspect of prospect theory is the idea that changes in wealth or welfare, rather than final states, carry value. They state [p.277], "Our perceptual apparatus is attuned to the evaluation of changes or differences rather than to the evaluation of absolute magnitudes." The evaluation of change is dependent on the reference point (initial position), which is typically status quo. Prospect theory,

4This refers to the "context effect" or framing.

5The reference point can also be an adaptation level, expected future wealth position, or targeted return level [Fishburn, 1977; Payne et al., 1980].
then, assumes the value function for changes to be concave above the reference point, but convex below (see Figure 2.8). In other words, "the marginal value of both gains and losses generally decreases with their magnitude [K&T, p.278]." However, based on attitudes regarding changes in wealth, the value function reflects the notion that the pleasure of gaining an amount of money is not as great as the displeasure of losing the same amount. Thus, the S-shaped value function of Figure 2.8 depicts the "reflection effect" which implies risk aversion in potential gain situations and risk seeking in potential loss situations.

**Decision Weights.** Prospect theory requires that the value of each outcome be multiplied by a decision weight. Thus, it is important to understand the nature of decision weights, as introduced by Fellner [1961]. They are not simply the perceived likelihood of events, rather they are measures of the affect events have on the desirability of the outcome. It is important to understand that decision weights do not measure degree or belief, nor do they follow the axioms of probability. However, decision weights can be related to probabilities. Identified properties are illustrated in Figure 2.9 and are listed below:

1. "d" (subjective decision weight associated with the probability) is an increasing function of "p" (probability of prospect occurring) with d(0) = 0 and d(1) = 1; impossible events are ignored and the

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*See Sanders [1986, pp. 35-36] and Kahneman and Tversky [1979].*
FIGURE 2.8
S-shaped Value Function of Prospect Theory

FIGURE 2.9
Weighting Function of Prospect Theory

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Individuals' difficulty in cognizing extreme probabilities results in highly unlikely events being edited as impossible outcomes and extremely likely events being edited as certain outcomes. Such editing produces discontinuities of "d" toward the endpoints of the 0 to 1 interval.

2. Decision makers tend to overweight low probabilities, (d(p)>p), while tending to underweight moderate to high probabilities, (d(p)<p).

3. The sum of complementary decision weights is less than one [d(p)+d(p-1)<1 for 0<p<1] due to the underweighting effect being more pronounced than the overweighting. Because of this "subcertainty effect," preferences are generally less sensitive to probability variations than the expectation principle would suggest.

4. A "subadditivity effect" occurs only for small probabilities, and low probabilities are not accurately differentiated. The decision maker assigns decision weights, which diminish the comparative differences between probabilities, to low probabilities. Then, the decision makers will emphasize the comparative magnitudes of the outcomes [d(rp)>rd(p) for 0<r<1].

5. For a fixed probability ratio, the ratio of the associated decision weights "d" are closer to one when the probabilities are low than when they are high [d(pq)/d(p)<d(pqr)/d(pr) for 0<p,q,r<1]. For example, the ratio of "d" in d(.1)/d(.3) is closer to one than the ratio of "d" in d(.3)/d(.9). This "subproportionality" effect holds only if the log of "d" is a convex function of the log of "p".

6. In 1953, Allais first introduced the "certainty effect," where outcomes that are certain loom larger than those which are merely probable. That is, certainty prospects are overweighted relative to probable ones. Reducing the probabilities of a prospect by a constant factor will have more impact on the preference ordering when the outcomes are initially certain than when they are merely probable.

7. The slope of "d" can be interpreted as measuring the sensitivity of preference to changes in probabilities.
Tversky and Kahneman

In their 1986 publication, Tversky & Kahneman (T&K) explicitly address four of the major assumptions of expected utility theory and illustrate that decision makers frequently violate the assumptions. As a result of their research, T&K conclude that normative and descriptive analyses of decision making cannot be reconciled.

T&K address the assumptions of cancellation, transitivity, dominance, and invariance. The assumption of cancellation, which is widely challenged, is required to represent preferences between prospects as the maximization of expected utility. According to T&K [p. S252]:

"The main argument for cancellation is that only one state will actually be realized, which makes it reasonable to evaluate the outcomes of options separately for each state. The choice between options should therefore depend only on states in which they yield different outcomes."

T&K find the empirical validity of this assumption to be dependent on framing.

The assumption of transitivity, mentioned earlier, is satisfied if each option can be assigned a value which is independent of other available options. Again, framing has been found to affect this assumption. T&K see dominance as one of the more obvious principles of rational choice. Dominance requires that the preferred option be the one which is at least as good as all other options in all states and better than all options in one state. Invariance is the fourth assumption, and has been widely accepted for its...
normative appeal. This assumption requires that the preference between options is not dependent on their descriptions. Their observations suggest that people do not "... spontaneously aggregate concurrent prospects or transform all outcomes into a common frame," and thus violate the assumption of invariance. T&K [p. S254] state that "Because invariance and dominance are normatively essential and descriptively invalid, a theory of rational decision behavior cannot provide an adequate description of choice behavior." Another point of difference between expected utility and prospect theory is found in T&K's discussion of the effects of framing outcomes. They have found that people are more sensitive to changes in wealth (prospect theory's preferences for gains and losses) than states of wealth (as implied by expected utility theory). That is, people tend to have a risk-averse preference for equal states of wealth framed as gains and risk-seeking preference for equal states of wealth framed as losses. A potentially significant implication of this finding for the current study is the following [p. S261]:

... a difference that favors outcome A over outcome B can sometimes be framed either as an advantage of A or as a disadvantage of B by suggesting either B or A as the neutral reference point. Because of loss aversion, the difference will loom larger when A is neutral and B-A is evaluated as a loss than when B is neutral and A-B is evaluated as a gain. The significance of such variations of framing has been noted in several contexts. ... Framing the consequences of a public policy in positive or in negative terms can greatly alter its appeal.
T&K present one of the major findings of their study to be that people tend to violate the axioms of rational choice when the situations are nontransparent. Furthermore, they conclude the normative analysis of choice should be separate from the descriptive.

Readers familiar with budgeting literature in public administration and political science might also be familiar with the incremental theory of budgeting. Incrementalism, much like prospect theory, resulted from recognition of weaknesses associated with rational decision makers. It is important to note that the use of prospect theory in this work is not considered a competing theory in the explanation of budgetary decision making. Rather, it is believed that, if combined, the theories might provide a more complete explanation. Future research should address such a combined approach.

Research Employing Prospect Theory

Since Kahneman and Tversky first introduced their concepts of prospect theory in 1979, several research efforts have been conducted which lend support to this theory of decision making behavior under uncertainty. A few of the more recent of such works are briefly discussed below.

7See Wildavsky [1964 & 1979] for more detail regarding the incremental theories of the budgetary process.
KNOX

Knox [1987] compared the capabilities of the prospect theory model and the expected utility theory model in accommodating observed behavior of decision making under uncertainty. She employed two scenarios of uncertainty — illegal returns and plea bargaining — using 70 convicted criminals as subjects. She found prospect theory to provide a more appropriate model of decision making under uncertainty than expected utility theory. Knox shows the appropriateness of prospect theory to stem from the theory's allowing probabilities to be transformed.

PUTO

Puto [1985] modelled the reference point of industrial buyers. He used 372 industrial buyers in a controlled experiment, and found that industrial buyers' choices conform to patterns predicted by prospect theory. A higher proportion of subjects who framed choices as gains preferred the riskless alternative over the gamble than did subjects who framed choices as losses. Based on his findings, Puto suggests methods of increasing effectiveness of marketing managers' sales and marketing communication efforts.

CHANG

Chang [1984] investigated the taxpayer's inclination to play the tax audit lottery, assuming the decision to be a choice problem under uncertainty. The experiment used 81
students enrolled in an executive MBA program, and found the prospect theory model to be descriptive of the subjects' choices under uncertainty in the tax audit setting. As predicted by prospect theory, underwithheld taxpayers were more inclined to play the lottery than overwithheld taxpayers and taxpayers were very sensitive to changes in the probability of successful avoidance.

SANDERS

Sanders [1986] used tax practitioners from a national CPA firm to test four specific hypotheses based on prospect theory:

(1) Subjects' decision choices will differ for decisions framed as gains from those framed as losses;
(2) Reducing the probability of a certain and probable prospect by a constant factor will affect subjects' decision choices;
(3) Subjects' decision choices will be similar for individual and concurrent decisions; and
(4) A concurrent and a combined decision frame will evoke different decision choices.

The task involved reviewing two scenarios of tax issues affecting the "client's" current tax return, and suggesting to the client an appropriate tax treatment for each of the issues. Sanders found support for the choice preferences for gains versus losses and found that responses differed, as expected, for scenarios framed with certainty rather than probability. However, Sanders did not find support that individuals are risk averse in gain situations and risk seeking in loss situations. This may suggest the need to
present framed scenarios in a way that puts the decision maker at risk more directly in order to more effectively test this assumption of prospect theory.

CROSBY, MOSKOWITZ, AND MAHESH

This study appears to have a finding similar to one found by Sanders [1986], above. Crosby et al. [1986], used 14 practicing auditors (7 seniors and 7 partners) from seven Big-8 firms in their examination of the degree of individual differences in auditor behavior as suggested by differences in utility functions. The auditors were asked to act in their capacity as auditors rather than their capacity as individuals managing their own personal funds. The task involved stating the dollar amount of a certain sum which would leave the auditor indifferent between a 50-50 gamble and their stated certainty amount. The study does not indicate whether the scenarios relate to client-related uncertainty or audit firm-related uncertainty issues. Crosby et al., did find all subjects to show a significant shift in risk behavior over the entire region of the function. Most of the subjects were risk averse above their target (or reference) point and risk seeking below. However, seniors were found to be less risk-averse to losses than partners. As with Sanders [1986], this may be due to the nature of the task and the subjects' role or relationship to the scenarios employed.
FIEGENBAUM AND THOMAS

Fiegenbaum and Thomas [1988] appear to be one of the first to apply the concepts of prospect theory at the organizational level. Their study developed a research methodology to determine whether prospect theory's concepts regarding individuals' risk attitudes provide explanations of risk behavior at the firm level. The study used U. S. industrial firms from COMPUSTAT from the period 1960 through 1979. Each firm's average performance level was used as a proxy for its reference point in the analysis of relationships between risk and return both across firms and within industries. The study found strong support for the assumptions of prospect theory when applied at the organizational level. Findings suggest "that most firms may be risk seeking when they are suffering losses or are below targeted aspiration levels (their reference point). Conversely, they will tend to be risk averse following achievement of aspirations and targets [p. 97]."

LEVIN, JOHNSON, DELDIN, CARSTENS, CRESSY, AND DAVIS

This study focused on two issues. First, Levin et al. [1986] were concerned with isolating the locus of the framing effect. Second, they were interested in analyzing framing effects under complete and incomplete information for evidence of predictive ability regarding discrete
choices. The subjects' behavior supported the basic assumptions of prospect theory. In addition, subjects in a positive condition were more risk averse than subjects in a negative condition when the gamble was missing probability information. As stated by Levin et al. [p.63]:

A parsimonious interpretation of the complete set of results of this study . . . is that information frame affects the relative scale values associated with the likelihood of winning and losing . . . as shown in the present study, the occurrence of framing effects when probability information is alternatively expressed in positive or negative terms can cause reversals of preference between alternatives with complete and incomplete information.

NORTHCRAFT AND NEALE

Northcraft and Neale [1986] used twenty undergraduate business students assuming the role of investment advisors in their analysis of the role of opportunity costs in resource allocation decisions. Their scenarios focused on the issue of long-term resource allocation decisions meeting with a setback which may lead to unanticipated unfavorable long-term outcomes. Northcraft and Neale found support for prospect theory's descriptions of decision behavior when framing options as gains and losses. They also found that inclusion of opportunity cost in the decision frames changes the total gains and losses evaluated by the decision maker

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The study does not identify its subjects. It is assumed that the study employed undergraduate psychology students.
and changes the preference. Each of their research hypotheses were confirmed:

1. Opportunity costs were less likely than out-of-pocket costs to be considered in deciding whether to abandon or continue a project experiencing a setback;
2. By heightening the salience of opportunity costs, persistence was viewed more negative an option and abandonment more positive an option; and
3. By heightening the salience of opportunity costs, there was a decrease in persistence in light of a major setback.

BAZERMAN

In 1984, Bazerman applied Kahneman and Tversky's concepts of framing to an organizational behavior setting. He used framing to address three specific issues: (1) literature on the escalation of commitment to a previous course of action; (2) concessionary behavior by negotiators; and (3) the risky shift paradigm. Bazerman argues that currently accepted views on these issues must be reconsidered. More specifically, he concludes:

1. The frame used influences decision makers and its impact must be separated from the impact of the escalation paradigm's objective state;
2. The paradoxical state of arbitration being a risk-seeking alternative yet increasingly being employed by risk-averse parties can be explained by considering the positive (or at least neutral) framing behavior of successful negotiators; and
3. The Choice Dilemma Questionnaire used to operationalize risk in risky shift research was generally positively framed, leading to an entire body of biased research.

Bazerman believes that prospect theory is relevant to even the most powerful of organizational behavior theories as well as to an increased understanding of applied
managerial problems. In conclusion, he makes an important observation concerning the fact that decision makers must often frame the problems they face within their environment because many actual problems are not already framed as completely negative or positive.

BAZERMAN, MAGLIOZZI, AND NEALE

This 1985 study focused on the implications of prospect theory in integrative bargaining and the free-market. Using Tversky and Kahneman's explanation of how people respond differently to questions framed as losses versus questions framed as gains, Bazerman et al. analyzed the behavior of 178 graduate and undergraduate students randomly assigned to either positively or negatively framed buyer or seller roles. According to Bazerman et al. [p. 310]:

The results found that positively framed negotiators completed significantly more transactions than negatively framed negotiators. This result is consistent with Kahneman and Tversky's prospect theory and contradicts the form of rationality suggested by the utility theory. That is, negotiators with the same objective information may compromise to very different degrees depending on the frame (gain versus loss) in which they view the transaction.

UECKER, SCHEPANSKI, AND SHIN

Uecker et al. [1985] tested the prospect theory model, along with three other models, of the principals' information evaluation behavior in a private, pre-decision, principal-agency setting. The tests were "designed to disconfirm the models' predictions without assuming initial
conditions [p. 430]." They found that the use of prospect theory can be extended from its information evaluator-decision maker setting to the principal-agency setting. Furthermore, they found support for the use of prospect theory over expected utility theory, based on their experimentation with 32 M.A. and Ph.D. students in accounting.

**Summary of Chapter Two**

This chapter has presented a review and summary of two general areas of research: governmental budgeting at the local level and decision making behavior under uncertainty. Relevant theories and concepts of the governmental budgeting function were identified. In addition, the body of literature on local governmental units and their budgeting practices was discussed. Perhaps most importantly, the literature on small and rural governments was reviewed and the need for a greater understanding of that form of government was emphasized.

An area seemingly worthy of research in light of increasing public activism is the area of decision making behavior in the resource allocation process of small local governments. Because this is viewed as an issue of decision making under uncertainty, prospect theory is believed to be an appropriate approach to the study of such behavior. Chapter three explains the methodology employed in the extension of this literature.
CHAPTER THREE
METHODOLOGY

The current administration of the United States government and many state governments have shifted much of their decision making authority and responsibility to the local governmental unit. In addition, the citizenry has become more active in monitoring governmental activity and pursuing specific causes for governmental action, especially at the local level. Thus, local government decision makers are forced to make more decisions and under the increasing scrutiny of their constituency.

Little is currently known about the resource allocation decision making behavior of local government decision makers (of any size).\(^1\) Without knowledge of the current status, a claim of the need for improvement may appear to be unfounded. Given the results of the little research that is available on larger local governments' budgeting behavior; however, it is difficult to accept the notion that smaller local governments' behavior does not warrant attention. It seems reasonable to expect even greater subjectivity and less sophistication to be present in the resource allocation decision making process of smaller local governments in

\(^1\)As mentioned in chapter two, more research is available regarding local governments of greater than 50,000. A few case studies have been published on smaller units. See chapter two for a literature review of this area.
comparison with larger local governments. In this time of increasing attention to government action, these decision makers should be aware of their behavior and of the influences on that behavior. This is the focus of the proposed study.

As stated in the first two chapters, the objective of the study is to determine empirically whether the resource allocation decisions of managers (or appropriate officials) of small local governments are affected by altering the frame of the various resource allocation alternatives under consideration. If such an effect is found, awareness of the impact of framing may serve to improve resource allocation decisions through the development and incorporation of more comprehensive budget planning (and perhaps approval) systems. The objectives of this chapter are to identify specific decision making behaviors deserving of investigation at the small local government level and to discuss the design and implementation of the appropriate methodology for use in the investigation of these behaviors. The chapter is composed of the following sections: (1) statement of the research question and hypotheses, (2) case development, (3) justification of the research strategy, (4) explanation of the experimental variables, (5) discussion of the statistical analyses to be employed, (6) a description

2Authorities on small governments have suggested numerous reasons for the difference in behavior. See Honadle [1983] for a review of the literature.
of the pilot study, and (7) brief summary of the study and expected results.

**General Research Question**

Many violations of rational decision theory (expected utility theory) have been identified in the decision making under uncertainty literature, and over the last decade research has found support for the explanations of such violations proposed by prospect theory. Prospect theory has been presented as descriptive of the process of evaluating risky prospects. It is based on the idea that preferences are dependent on the formulation of the decision problem, with the problem formulation being at least partially dependent on the decision maker's perspective or frame of reference. Because of the nonlinearity of the value weights and decision weights\(^3\) associated with risky prospects, preferences among choices are dependent on the decision's context. If the weights were linear, the context would not affect the preference order among risky prospects.

In contrast to expected utility theory, prospect theory assumes nonlinearity to exist and decision problems to be affected by altering the decision frames in terms of acts, outcomes, or contingencies. This proposed study will focus on the latter two, and their effects on rational choice. Decision acts can be framed in numerous ways which affect

---

\(^3\)See Figures 8 and 9 of chapter 2.
the desirability among alternatives of the decision problem. For example, decision acts may be framed as judgments or as choices, and as sets of either concurrent or independent decisions. Research has shown subjects tend not to integrate choices even when monetarily rewarded for integrating [Tversky and Kahneman, 1982]. Thus, by framing acts as choices to be integrated rather than as preintegrated choices, the presenter of information (or context) can affect decision behavior. Similarly, framing of decision problems in terms of their outcomes is expected to affect preferences among alternatives.

Prospect theory sees decision makers as evaluating outcomes (alternatives) not in terms of ultimate positions of wealth, but as changes in wealth from a neutral reference point. Thus, by presenting a reference point along with the decision problem, the alternatives will be evaluated as possible gains or losses from that point. By changing the reference point, preferences among alternatives may be affected even when the alternatives are identical with regard to ultimate positions of wealth (or welfare). That is, the value differences among prospects can be changed by manipulating the reference point. This aspect of prospect theory is most closely related to the S-shaped value function and the reflection effect discussed in chapter two. With regard to the framing of contingencies, the

---

^4 See Figure 8 of chapter 2.
nolinearity of the decision weights\(^5\), again, affects the preference order of decision alternatives. Tversky and Kahneman [1981] have found changes from impossible to probable and from probable to certain to have greater effects on decision preferences than similar changes in probability which do not include the endpoints of impossibility and certainty.

The framing of outcomes and contingencies effects are to be tested by the current study and are discussed below, following the statement of hypotheses. The general research question may be stated as follows:

Do budgeting managers of small local governments tend to violate rational choice theory as a result of the framing of the resource allocation problem?

The two previous chapters identified consistency and coherence as requirements for rationality. Thus, the research question may be stated more precisely as:

Do budgeting managers of small local governments tend to respond inconsistently or incoherently to objectively identical resource allocation problems framed differently?

**Statement of Hypotheses**

The general research question stated above may be translated into three statistically testable hypotheses. The hypotheses are stated in their null forms, and a discussion of their expected results or alternative forms

\(^5\) See Figure 9 of chapter 2.
The hypotheses to be evaluated in this research are:

H1: subjects will not alter their decision preferences among different frames of the same contingency in a resource allocation problem.

H2: subjects will not alter their decision preferences between different frames of the same outcome of a resource allocation problem.

H3: subjects will choose the alternative which maximizes expected utility.

EXPECTED RESULTS OF H1

Prospect theory expects decision makers to change preferences among alternatives as a result of a change in the decision maker's point of reference regarding the contingency present in a decision problem. Thus, by altering the frame of the resource allocation problem's contingency this study should find that budget managers of small local governments do violate rational decision theory.

In order to more fully explain the expectations regarding this first hypothesis, the subjects' expected decision behavior for three cases will be discussed. Figure 3.1 lists the proposed cases to be employed in this research, and these cases are referred to in the following explanation of expected decision behavior.6

Cases 1, 2 and 3 relate to the first hypothesis. The responses to these three cases must be considered jointly in

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6 An explanation of case development and selection is addressed in the following section of this chapter.
the analysis of rational behavior. Cases 2 and 3 are identical as to probabilities and outcomes. Thus, consistency requires the same choice be made for the two cases. Furthermore, expected utility requires a preference for choices B (case 2) and Z (case 3). Assuming rational decision makers, the frequencies for these choices should be 100%. T&K have found that in case 2 subjects favor a sure win (assuming the second level of the problem was reached, which makes case 2 identical to case 1), even though the expected utility was lower than the less certain alternative. The comparison of responses to cases 1, 2, and 3 serves as a test of the "isolation effect." Subjects' responses should be identical for cases 2 and 3, unless subjects tend to isolate the two stages in case 2, responding to the probabilities of stage 2 only. In such a case, the responses to case 1 and case 2 should be identical. Case 1 has been used in prior research to emphasize the tendency for subjects to select the certain alternative (demonstrate the "certainty effect") rather than the alternative with the highest expected utility. The expected utility response frequencies for case 1 are 0% A and 100% B. The violations of expected utility theory described above are expected to be evidenced in the decision responses of the subjects of this proposed study.
EXPECTED RESULTS OF H2.

Cases 4 and 5 (Figure 3.1) are representative of the cases used to investigate and explain violations of expected utility theory caused by alternative framings of objectively identical outcomes for a decision problem. These cases have identical expected values, that is, each alternative represents 20 jobs kept and 40 jobs lost. Expected utility theory would expect the response frequencies to be 50%-50% between the two plans of case 4 as well as for case 5. However, according to Tversky and Kahneman's work with similarly structured cases [K&T, 1979; T&K 1981], subjects are expected to prefer Plan A of case 4 and Plan D of case 5. These expectations are based on prospect theory's assertions that decision makers are risk averse when evaluating among gain alternatives (as in case 4 as a result of the "saving" of jobs approach) and risk seeking when evaluating among loss alternatives (as in case 5 as a result of the "loss" of jobs approach). Alternatives for cases 4 and 5 all follow the same scenario of projected loss of government employees' positions; however, the two different approaches to wording the alternatives are expected to lead to different decision behavior.

EXPECTED RESULTS OF H3.

Cases 1 through 5 will be used to test the third hypothesis. The expected results regarding H3 have been

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indirectly presented through the explanation of the expected results of hypotheses 1 and 2. The certainty, isolation,

FIGURE 3.1
Cases of Framing Alternatives

FRAMING OF CONTINGENCIES
Case 1: Which of the following options do you prefer?

A. a sure receipt of $150,000 in federal funding for capital improvements
B. 80% chance of receiving $200,000 in federal funding for capital improvements

Case 2: Without the expertise of a federal aid coordinator, you feel it is extremely unlikely that your government will secure any federal funding. Thus, your government has begun negotiations to hire a federal aid coordinator in efforts to improve your chances of obtaining federal funding for capital improvements and special programs. You know that the applicants for the coordinator position are also negotiating with other governmental units, and you estimate that you have a 25% chance of hiring one of the applicants. If you hire one of the specialists you feel absolutely confident that the coordinator can secure $150,000 for capital improvements by focusing all energies on a specific strategy, and you are 80% confident that the coordinator can secure $200,000 by pursuing an alternative strategy. Preliminary paperwork must be submitted for approval by the council before the hiring process is expected to be completed. Which one of the coordinator strategies would you choose to present to the council?

A: ($150,000) or B: ($200,000, .80)

Case 3: Your government's federal aid coordinator has two strategic options available for the current period's consideration. Option Z has a 20% chance of resulting in federal aid of $200,000. Option Y has a 25% chance of resulting in federal aid of $150,000. Which option would you encourage the coordinator to pursue:

Z: ($200,000, .2) or Y: ($150,000, .25)
FRAMING OF OUTCOMES

Based on their research indicating a trend in decreasing federal aid and an increasing demand for total governmental expenditures, your budget office projects the need to layoff 60 government employees. However, two plans to alleviate this need for layoffs were submitted along with the budget staff's projection. Which plan would you favor? [This will be accompanied by either case 4 or case 5].

Case 4: Plan A is guaranteed to save 20 employees from the layoff.

Plan B has a 1/3 probability of saving all employees from the layoff and a 2/3 probability of saving none of the employees from the layoff.

Case 5: Plan C is guaranteed to result in a loss of 40 government employee jobs.

Plan D has a 1/3 probability that no government employee jobs will be lost and a 2/3 probability that 60 government employee jobs will be lost.

and reflection effects are all expected to contribute toward the rejection of H3. Because of the alternative presentations of objectively identical information, subjects are not expected to consistently choose the alternative of higher expected value.

Case Development

As seen in Figure 3.1, this study will employ five cases. This section describes the rationale for inclusion of these particular cases. Topic selection and case design are described below.
TOPIC SELECTION.

During the literature review process, several issues regarding local government activity were identified. Resource allocation activities (e.g., capital budgeting) which appeared to rely on a decision making under uncertainty process were collected and considered for incorporation into this study. Of the issues collected, those seemingly applicable across the population of small local governments were given further consideration. For example, it is highly likely that all local governments within this study's population must consider issues of pollution control and water treatment. Thus, these issues were given additional consideration for inclusion in the study.

Issues dropped from further consideration were those which seemed to rely on decision making under uncertainty, but which did not seem likely to relate to the entire population of small governments. For example, while the allocation of resources to the development of recreational facilities is a decision making under uncertainty issue, many very small local governments may not have the luxury of considering the issue at all. Thus, the recreational facilities issue was dropped from further case consideration.

Two fundamental issues were chosen for incorporation into the experimental cases. The issues are discussed below.
with reference to the related hypotheses and cases.
Hypothesis 3 will be tested with all five cases. Therefore, the discussion of selected case topics for H1 and H2 each apply to H3 as well.

Hypothesis 1 will be tested with the first three cases of Figure 3.1, which represent a gain contingency inasmuch as they refer only to possible inflows of resources. The issue addressed in these cases is federal funding for capital improvements. Capital budgeting is included among the fundamental issues confronting governmental decision makers of any size of governmental unit. Thus, subjects are expected to be familiar with the issue and the issue is expected to be relevant to all subjects. Because of the expected diversity among the subjects, the capital improvements issue is left in a generic form rather than more specific types and degrees of capital improvements. This approach is believed to present the cases in a form to which all subjects can relate. The incorporation of a federal aid coordinator is believed to be applicable across the population inasmuch as small governmental units can obtain the services of a circuit-riding federal aid coordinator (or perhaps consulting services from a local university, etc.) or hire a permanent coordinator. Whether part-time or full-time help is obtained, professional help is considered to be necessary in negotiating with the
federal government in light of the trend of decreasing amounts of federal funding to the local level of government.

Hypothesis 2 will be tested with cases 4 and 5 of Figure 3.1. Subjects will receive only one of these two cases. Similar to the topic of cases 1 through 3, the topic of cases 4 and 5 are expected to be highly relevant to the population being studied. Issues of employment are of concern to most of America on an aggregate or nationwide level but concern seems to grow stronger as the employment issues strike at the local level (i.e., "closer to home"). Moreover, those persons responsible for the budgeting process confront the issue repeatedly, whether in a line-item budget as wages and salaries are reviewed or in some other approach to budget preparation. The question of sufficient manpower is fundamental to any organization. The census will be a source of information for incorporating meaningful numbers into the cases, for example, regarding the size of the governmental labor force and federal capital improvements dollars received for units within the population of study.

CASE DESIGN

The study consists of two sets of cases (cases 1-3 & cases 4-5). Each set is designed to be a test of different implications of framing. The first three cases are designed to detect the isolation effect, the certainty effect and the pseudo-certainty effect. Case 1 is a test of the certainty
effect. Prospect theory suggests that subjects will select the risk averse alternative when alternatives are framed as gains from their reference point, as in case 1. The case is designed so that the option of certainty is not the option of higher expected value. If expected utility theory holds true, subjects should prefer the $10,000 higher expected value of option B.

Case 2 is designed to test the isolation and pseudo-certainty effects. Subjects who choose option A over option B are assumed to isolate stage 1 (hiring a coordinator) from stage 2 (choosing an option or strategy) of the decision problem. They do not perceive two risky prospects resulting from the conditions of the first stage. Subjects who isolate these stages are expected to select the option they consider to be a certainty (option A) even though option B has a higher expected value. Isolation of the stages results in cases 1 and 2 being identical as to probabilities and outcomes. However, if the subjects integrate stages 1 and 2 of case 2, the probabilities and outcomes are identical to those of case 3. The interrelated structure of the three cases was designed to detect violations of the two accepted characteristics of rational decision behavior -- coherence and consistency.

Cases 4 and 5, focusing on government layoffs, are designed to test the reflection effect and the certainty effect. That is, the framing of objectively identical
alternatives as gains in case 4 and as losses in case 5 should result in different behavior. Subjects are expected to apply different value weights in evaluating options on the gain side of their reference point than when evaluating objectively identical options on the loss side of their reference point. The cases were designed to include an option of sure gain in case 4 and of sure loss in case 5, which will aid in detecting the presence of a certainty effect. If expected utility theory holds, subjects should be indifferent among the four options (A through D) and subject preferences should be evenly distributed among the options. However, if the reflection and certainty effects hold, (1) subjects should prefer the certain gain of case 4, which suggests risk averse behavior in light of gains; and (2) subjects should prefer the gamble of case 5, which suggests risk seeking behavior in light of losses.

Justification of the Research Strategy

The research strategy proposed for this study is a quasi-field experiment. This strategy is proposed as an attempt to maximize both internal and external validity to the extent possible. Several threats to both internal and external validity will not be controlled for, however, due


8See Campbell and Stanley [1963] for a discussion of the concepts of internal and external validity.
to the necessary trade off of controls over one type of validity for controls over the other. For example, external validity is increased by securing responses from actual managers or budget officials rather than using some surrogate subject group. However, the survey approach necessary to obtain a sufficient number of responses representative of the population of small local governmental units forces the experimenter to relinquish some of the control over internal validity available in a true lab experiment. Given the lack of information available on the target population for this study as well as the costs and time required for a more controlled approach, the survey approach seems justified. Furthermore, use of a pilot study (see the penultimate section of this chapter) and consultation with a city manager regarding the case scenario mundane and experimental realism, should reduce many threats to the validity of the study.

A review of Figure 3.1 might lead one to another limitation in the ability of this study to explain decision making behavior of the subjects. First, cases 1 through 3 form a set of decisions providing insight with regard to gain contingencies only. Different behaviors may be associated with a similar set of decisions framed as loss contingencies. Investigation of this question is not considered feasible for practical reasons. Adding another case to each instrument would likely reduce the response
rate and possibly sensitize subjects to the objectives of the study. The alternative to lengthening the instrument would double the subjects required for the study. Similarly, the scenario for cases 4 and 5 employed a loss outcome (projected 60 employees laid off) and framed alternatives as gains (case 4) or losses (case 5). Differences in decision behavior might have been noted had the scenario employed a gain outcome (e.g., jobs created) and framed alternatives as gains or losses. These framing limitations are left to be addressed as an extension of the current study.

Explanation of the Experimental Variables

DEPENDENT VARIABLE

The dependent variable is the manager's choice or preference of outcomes and contingencies related to the decision problem. This variable is dichotomous for each of the decision cases used in the study (see Figure 3.1).

INDEPENDENT VARIABLES

There are two independent variables of framing included in this study: (1) framing of contingencies, and (2) framing of outcomes. The first will be operationalized by employing the first three cases in Figure 3.1. Each subject

\[9\] Harwood, Pate, and Schneider [unpublished, 1988] have done some work in this area, however, no published cites are currently available.
will be randomly assigned to one of the three cases. The second independent variable will be operationalized by employing cases 4 and 5 of Figure 3.1. Each subject will be randomly assigned to one of either case 4 or 5. Thus, each subject will be randomly assigned to two cases which operationalize the two independent variables (see Figure 3.2). Following consultation with a city manager, the pilot study (described below) will investigate the effectiveness of the manipulation, or the impact of these independent variables on the dependent variable.

![Figure 3.2](versions_of_the_test_instrument.png)

**FIGURE 3.2**
Versions of the Test Instrument

<table>
<thead>
<tr>
<th>VERSION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
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<tr>
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<td>X</td>
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<td>X</td>
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<tr>
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<td>2</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Statistical Analyses**

Responses to the five cases will be evaluated in terms of the consistency and coherency requirements of rational choice theory, as discussed above. Each case elicits dichotomous responses which are mutually exclusive, and employs a nominal measurement scale. Therefore, a nonparametric test is appropriate. A binomial test may be used to draw inferences about the population proportion.

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The expected frequencies (hypothesized population proportions) will be based on the well-accepted expected utility theory.

Three assumptions must be addressed in order to justify use of the binomial test. The first assumption is that the data consist of the outcomes of n repeated Bernoulli trials (i.e., each outcome consists of either of two possible responses). The second assumption is that the n trials are independent. The third assumption is that the probabilities associated with the response categories remain constant from trial to trial. This assumption is dependent on expected utility theory and rational decision behavior. It is believed that the necessary assumptions will be reasonably satisfied by the current study, and the use of a binomial test may be deemed appropriate for the data analyses.

Given scenarios where the expected utility between alternatives is objectively identical, the Chi-square test will be used to test the null hypothesis that the sampled population responses do follow binomial distributions.\textsuperscript{10} If the null is true, the expected frequency can be computed as the product of the sample size and the corresponding category probability. Once the expected frequencies have

been calculated, the Chi-square test statistic below can be used for each applicable scenario.

\[ x^2 = \frac{(O_i - E_i)^2}{E_i} \]

The decision rule is to reject the null at the alpha significance level if \( x^2 \geq x^2_{r-g-1,a} \), where \( r \) is the number of categories and \( g \) represents the number of parameters (expected frequency in this case) which must be estimated. In the cases where uniform distribution is expected, no expected frequency calculation using sample data is necessary. Thus, the degrees of freedom would simply be \( r-1 \). The test statistic and decision rule will be identical to those for the binomial distribution situation [Daniel, 1978, ch. 8].

**Pilot Study**

As mentioned several times throughout this chapter, a pilot study will be administered as an aid in preparation of the survey instrument to be used in the study of local governmental decision makers' decision behavior. Officials of small local governments around the Baton Rouge area will be randomly assigned to one of the versions of the test instrument presented in Figure 3.2. They will be mailed a cover letter accompanied by a pre-addressed and stamped bi-fold questionnaire (see Appendix A). They will be asked to consider and respond to two cases by assuming their role of budget manager for their small local government. In
addition, they will be asked to answer several demographic questions which are planned to appear on the test instrument of the actual study. By administering the entire test instrument (including demographics), some awareness of the response rate should be obtained even though the demographics on the test instrument will not be relevant in the pilot study. Subjects of the pilot study will be asked to write any comments or constructive criticisms on a blank piece of paper. These experienced managers should provide valuable comments, particularly with regard to the reasonableness of the case scenario topics. Once all comments have been considered and the data collected from the pilot study has been analyzed, any noted weaknesses in the test instrument will be adjusted to the extent possible.

Summary

This chapter presented the methodology chosen for the analysis of local governmental decision making behavior in situations of uncertainty. Issues of reduced federal funding and governmental employee layoffs were presented as the uncertainty situations to be used in the assessment of rational decision making behavior. Although expected utility theory has been widely accepted as an explanation of decision making under uncertainty, elements of prospect theory, such as the reflection effect and the certainty effect, were explained as being potentially more descriptive of the subjects' decision making behavior.
CHAPTER FOUR
RESULTS AND ANALYSES

The purpose of this chapter is to present and explain the results of the study described in the previous chapter. The chapter is divided into the following sections for discussion:

1. Review of the research methodology,
2. Review of the sampling procedure,
3. Demographics,
4. General case results,
5. Analyses of hypotheses,
6. Personal interviews,
7. Summary and conclusions.

Review of the Research Methodology

A quasi-field experiment was conducted and data was collected by means of a mail survey. Six hundred governmental units throughout the United States were randomly selected to participate in this study. The study examines the responses of the local governmental units' budgeting managers for violations of rational choice.¹ The research proposition of interest is as follows:

Budgeting managers tend to respond inconsistently and incoherently to objectively identical resource allocation alternatives framed differently.

In order to investigate this proposition, three specific research hypotheses were developed and tested.

¹Recall from previous chapters that researchers have accepted consistent and coherent choice behavior as rational choice behavior, and expected utility theory as the predominant theory of decision making under uncertainty.
The study measures a single dependent variable, which is the subject's preference among alternatives related to the decision problem confronting the subject. Subject responses to five cases were used to assess the concepts of consistency and coherency, which serve as measures of rational decision behavior. For each case employed, the dependent variable is a dichotomous decision choice.

The independent variables are the frames of the decision problems (or cases). A brief description of the five cases used in this study is presented in Table 4.1. Cases one through three are framed as a gain. The factor that is experimentally manipulated is the framing of contingencies (i.e., probabilities). The manipulation is operationalized by providing information in non-preintegrated (case 2) or preintegrated (case 3) form. Case one serves, mainly, in the assessment of subjects' decision processing strategy, which aids in the interpretation of cases two and three.² Cases four and five assess the impact of the framing of outcomes by presenting objectively identical information in either a gain frame (case 4) or a loss frame (case 5). In both of these cases, the expected outcomes of the decision alternatives are identical. Of interest is the effect of varying the frame on subjects' preference for (or tolerance of) uncertainty.

²The interrelationships among cases one through three are discussed along with the survey's results in a later section of this chapter.
Review of the Sampling Procedure

Above, it was mentioned that 600 local governments were selected to participate in this study by responding to some of the cases listed in Table 4.1 as well as several demographic items. This section of chapter four reviews the sampling procedure employed in obtaining the list of 600 governmental units surveyed.

<table>
<thead>
<tr>
<th>Case</th>
<th>Frame</th>
<th>Topic</th>
<th>Alternatives</th>
</tr>
</thead>
</table>
| 1    | Gain        | Federal Funding   | 1. Receive $150,000  
                      |              |                                  | 2. 80% probability of receiving $200,000 |
| 2    | Gain        | Federal Funding   | 1. 25% probability of opportunity to receive $150,000  
                      | (not pre-   |                                  | 2. 25% probability of opportunity for 80% probability of receiving $200,000 |
                      | integrated)  |                                  |                                                   |
| 3    | Gain        | Federal Funding   | 1. 25% probability of receiving $150,000  
                      | (pre-       |                                  | 2. 20% probability of receiving $200,000 |
                      | integrated)  |                                  |                                                   |
| 4    | Gain        | Status of 60 jobs | 1. Save 20 jobs  
                      |              |                                  | 2. 1/3 probability of saving 60 jobs; 2/3 probability of saving no jobs. |
| 5    | Loss        | Status of 60 jobs | 1. Lose 40 jobs  
                      |              |                                  | 2. 1/3 probability of losing no jobs; 2/3 probability of losing all jobs. |
The purpose of this study was to research the decision making behavior of the individuals responsible for the allocation of resources (budgeting) within small local governments. "Small" government is defined as local levels of government serving no more than 10,000 people. In the interest of external validity, a random sampling procedure was used. The Bureau of the Census publishes a directory of U.S. governmental units. The population of interest for this study was a subset of that directory. Governments serving 10,000 people or less were identified within the 1987 directory of all active governmental units in the U.S. Then, a random number generator provided a list of 600 numbers which were matched with the directory's observation numbers. The governments corresponding to the matching observation numbers were included in the sample.

SAMPLE SIZE

Fleiss [1981] provides a table identifying the sample sizes required per group for a two-tailed test on proportions, given anticipated proportions, alpha and power levels. Tversky and Kahneman's [1981 & K&T, 1979] research findings were used as a priori proportions for each of the five cases. Also, for purposes of determining an adequate sample size for each case from Fleiss' table, the alpha and power levels were set at .05 and .8, respectively. Having set those criteria, the appropriate number of subjects required for analysis of particular cases is thirty-six.
subjects for comparison of cases two and three. Thus, the sample size is based on eighteen subjects per version of the survey (see Table 4.2). As can be seen in Table 4.2, each version contains two different cases. Because there was no response rate information available in the literature regarding surveys of local governmental units, the pilot study response rate of 20% was incorporated in the sample size calculation. Thus, it was believed that the necessary eighteen responses per version would be obtained by mailing one hundred surveys per version (or six hundred surveys).

<table>
<thead>
<tr>
<th>Case</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
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<td></td>
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<td>18</td>
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<td>54</td>
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</table>

**FIRST MAILING**

Each subject received a one-page letter with two cases printed on the back and a self-addressed, postage-paid
response form. The letter solicited subject participation and asked subjects to use the accompanying response form to indicate their preferences to the cases. Thus, only the response form was returned by the subjects. Because the subject mailing list was in alphabetical order by state, the six versions were assigned to the specific subjects by an orderly rotation of versions from the top to the bottom of the mailing list. That is, every sixth subject on the list received the same version of the survey and accompanying response form.

The first mailing consisted of six hundred surveys, mailed by first class mail. Of those six hundred survey packets, ten were returned as undeliverable and one response form was returned indicating that the subject was not a governmental unit. The majority of the undeliverable packets indicated that the subject (government) left no forwarding address. These units may have become inactive since the compilation of the directory. In addition, a few of the undeliverable packets were returned marked insufficient address. Because the surveys were mailed first class, it was assumed that the eleven returns were the only problems with the mailing. Thus, the eleven problem subjects were removed from the denominator for the response rate calculation. As a result of the first mailing, the

3 See Appendix A for a copy of the letters and response form.
response rate was 32.1%, which exceeds the targeted response rate of 20%. Table 4.3 shows the number of responses per version for both the initial and follow up mailing.

SECOND MAILING

A second mailing was sent to those subjects who had not responded by the third week following the initial mailing. Each subject was mailed the same version in both mailings. Surprisingly, one of the survey packets was returned "undeliverable—attempted unknown" from the second mailing. Thus, although the use of first class mail provides greater assurance that all packets were received by the addressee government or returned to sender, there is no guarantee of receipt. As a result of the second mailing, the response rate increased to 47.4% (see Table 4.3). A chi-square comparison showed no significant difference in response rates among the versions.

| TABLE 4.3 |
| NUMBER OF RESPONSES PER VERSION |

<table>
<thead>
<tr>
<th>VERSIONS</th>
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<th>2</th>
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</tr>
<tr>
<td>Second Mailing</td>
<td>18</td>
<td>17</td>
<td>13</td>
<td>17</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Combined</td>
<td>52</td>
<td>46</td>
<td>46</td>
<td>51</td>
<td>47</td>
<td>37</td>
</tr>
</tbody>
</table>

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Demographics

The survey instrument served to collect ten pieces of demographic information from each subject in the sample. Five items focused on the individual, the governmental official, who responded to the survey. The other five items focused on the governmental unit with which the individual is associated. Table 4.4 summarizes all demographic information collected regarding the individual survey respondent. Similarly, Table 4.5 is devoted to the demographic information regarding the governmental unit represented by the individual survey respondent. The empirical evidence provided by this survey will help to support or refute statements regarding small governmental units which have been merely conjecture to date. The implications of these demographics are discussed in a later section of this chapter.

SURVEY RESPONDENT DEMOGRAPHICS

As shown in Table 4.4, the five demographic items focusing on the individual can be grouped into three topic areas for discussion: (1) education, (2) governmental experience, and (3) selection procedure for current position. Each of these areas are briefly discussed below.

Education. Completion of high school was the highest level of education achieved by 44% of the respondents. However, approximately 54% of the respondents earned at least a two-year (associates) college degree. Moreover,
### TABLE 4.4
SURVEY RESPONDENT DEMOGRAPHICS

#### Education

<table>
<thead>
<tr>
<th>Highest Degree Obtained:</th>
<th>Number</th>
<th>Percent*</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>123</td>
<td>44.1</td>
</tr>
<tr>
<td>Associates</td>
<td>33</td>
<td>11.8</td>
</tr>
<tr>
<td>Bachelors</td>
<td>71</td>
<td>25.4</td>
</tr>
<tr>
<td>Masters</td>
<td>47</td>
<td>16.8</td>
</tr>
<tr>
<td>Doctorate</td>
<td>1</td>
<td>.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>275</strong></td>
<td><strong>98.5</strong></td>
</tr>
</tbody>
</table>

*Four subjects did not respond to this item.

#### Area of Study

(for highest degree)

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Number</th>
<th>Percent*</th>
</tr>
</thead>
<tbody>
<tr>
<td>General High School</td>
<td>123</td>
<td>44.1</td>
</tr>
<tr>
<td>Governmental</td>
<td>34</td>
<td>12.2</td>
</tr>
<tr>
<td>Business</td>
<td>46</td>
<td>16.5</td>
</tr>
<tr>
<td>Other</td>
<td>60</td>
<td>21.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>263</strong></td>
<td><strong>94.3</strong></td>
</tr>
</tbody>
</table>

*Sixteen subjects did not respond to this item.

#### Governmental Experience

<table>
<thead>
<tr>
<th>Years (Y)</th>
<th>Number</th>
<th>Percent</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &lt; Y &lt; 1</td>
<td>29</td>
<td>10.4</td>
<td>41</td>
<td>14.7</td>
</tr>
<tr>
<td>1 &lt; Y &lt; 5</td>
<td>72</td>
<td>25.8</td>
<td>100</td>
<td>35.8</td>
</tr>
<tr>
<td>5 &lt; Y &lt; 10</td>
<td>74</td>
<td>26.5</td>
<td>60</td>
<td>21.5</td>
</tr>
<tr>
<td>10 &lt; Y &lt; 20</td>
<td>80</td>
<td>28.7</td>
<td>61</td>
<td>21.9</td>
</tr>
<tr>
<td>20 &lt; Y</td>
<td>24</td>
<td>8.6</td>
<td>17</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>279</td>
<td>100</td>
<td>279</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Includes subjects who did not respond to this item.

#### Selection Procedure For Current Position

<table>
<thead>
<tr>
<th>Selection Procedure For Current Position</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elected</td>
<td>116</td>
<td>42</td>
</tr>
<tr>
<td>Appointed</td>
<td>163</td>
<td>58</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>279</td>
<td>100</td>
</tr>
</tbody>
</table>

approximately 17% of the respondents earned advanced (post baccalaureate) degrees, including one doctorate.
Most respondents who indicated attainment of degrees beyond high school also indicated the area of study in their college programs. Of that 54% of the survey respondents earning at least a two-year college degree, 24% indicated a program concentrating on some form of governmental administration, and 33% indicated a program which would appropriately be classified as a business program. The remaining respondents indicated a variety of education and science degrees.

Experience. Two demographic items focused on experience. One question asked respondents to indicate how many years of governmental budgeting experience they possess. The category of highest frequency was that for between 10 and 20 years of such budgeting experience, with approximately 29% of the respondents. The average number of years of budgeting experience for the survey respondents was 9.8 years. The second question regarding experience asked respondents to indicate how many years they have held their current position within their governmental unit. Table 4.4 shows that approximately 36% of the respondents have held their positions for some period of time between one and five years. The average number of years of respondents' experience in their current position was 7.8 years. With regard to both the respondents' experience in their current position and their governmental budgeting experience, the lowest level of experience was associated with respondents.
who had been positioned just prior to the survey (0 years). The highest level of experience for both demographic items was thirty-seven years.

Selection. The fifth demographic item to be discussed asked respondents how they were selected to serve in their current position. Fifty-eight percent of the respondents indicated that they had been appointed rather than elected to their current position. Governmental budgeting literature suggests that appointees may behave differently from elected officials. Results from this demographic item will help to support or refute that notion, and are discussed in the hypotheses analysis section of this chapter.

GOVERNMENTAL UNIT DEMOGRAPHICS

Half of the demographic questions included within the survey instrument focused on the governmental unit represented by the respondent. Each of those five items is briefly discussed below and summarized in Table 4.5. These demographics were intended to contribute to the interpretation of case responses by providing some insight as to the actual characteristics of responding governmental units, which might have influenced the way that the respondent related to the case scenarios. In addition, this information contributes to a foundation for future research focusing on small governmental units.

Population. The instrument was intended to survey a
TABLE 4.5
GOVERNMENTAL UNIT DEMOGRAPHICS

<table>
<thead>
<tr>
<th>Population Size (P)</th>
<th>Number of Units</th>
<th>Percent* of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P &lt; 100</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>100 &lt; P ≤ 500</td>
<td>12</td>
<td>4.3</td>
</tr>
<tr>
<td>500 &lt; P ≤ 1000</td>
<td>28</td>
<td>10.0</td>
</tr>
<tr>
<td>1000 &lt; P ≤ 3000</td>
<td>111</td>
<td>39.8</td>
</tr>
<tr>
<td>3000 &lt; P ≤ 5000</td>
<td>62</td>
<td>22.2</td>
</tr>
<tr>
<td>5000 &lt; P ≤ 7000</td>
<td>20</td>
<td>7.2</td>
</tr>
<tr>
<td>7000 &lt; P ≤ 1000</td>
<td>35</td>
<td>12.5</td>
</tr>
<tr>
<td>10000 &lt; P</td>
<td>7</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>277</strong></td>
<td><strong>99.2</strong></td>
</tr>
</tbody>
</table>

*Two subjects did not indicate size.

<table>
<thead>
<tr>
<th>Type of Government</th>
<th>Number of Units</th>
<th>Percent of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipality</td>
<td>192</td>
<td>68.8</td>
</tr>
<tr>
<td>Township</td>
<td>82</td>
<td>29.4</td>
</tr>
<tr>
<td>Village</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>County</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>279</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Employees (E)</th>
<th>Number of Units</th>
<th>Percent of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E &lt; 10</td>
<td>121</td>
<td>43.4</td>
</tr>
<tr>
<td>10 &lt; E ≤ 50</td>
<td>112</td>
<td>40.1</td>
</tr>
<tr>
<td>50 &lt; E ≤ 100</td>
<td>36</td>
<td>12.9</td>
</tr>
<tr>
<td>100 &lt; E</td>
<td>10</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>279</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employs A Full-time Budget Officer</th>
<th>Number of Units</th>
<th>Percent of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>53</td>
<td>19.0</td>
</tr>
<tr>
<td>No</td>
<td>226</td>
<td>81.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>279</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1987 Federal Funding For Capital Improvements (F)</th>
<th>Number of Units</th>
<th>Percent of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds (000s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F &lt; 100</td>
<td>28</td>
<td>10.0</td>
</tr>
<tr>
<td>100 &lt; F ≤ 400</td>
<td>24</td>
<td>8.6</td>
</tr>
<tr>
<td>400 &lt; F ≤ 1000</td>
<td>11</td>
<td>3.9</td>
</tr>
<tr>
<td>1000 &lt; F</td>
<td>7</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>25.0</strong></td>
</tr>
</tbody>
</table>
random sample of governmental units ranging in size from a population of less than one hundred people to approximately ten thousand people. Table 4.5 indicates that the sample surveyed was within the range of sizes intended. However, one of the respondent units had grown significantly from the time of the 1980 census count. Based on the 1980 census, the particular governmental unit had a population of no more than ten thousand people, but by the survey date the unit's size had grown to approximately twenty-five thousand. Because this unit was viewed as an outlier (and substantially outside this study's definition of small government), the unit was not included in the calculation of the average population size of governmental units responding. The average population for respondents meeting the definition of small government employed by this study was 3,605 people. The largest and smallest population of responding units was 12,500 and thirty-five, respectively.

**Type of Government.** The survey asked respondents to indicate whether their unit fell into one of five specified categories or some other (nonspecified) category. Approximately 98% of the responding governmental units fell into just two categories of government type. Municipalities comprise 69% of all responding units. It is interesting to note that, based on the other demographics, there did not appear to be any pattern or rule for units earning any particular status (e.g., municipality versus township).
Such status appears to be dictated by the state in which the governmental unit operates. Based on population, the data suggests no uniformity in classification of the subject units, taken as a whole. For example, all respondents located in Arizona, California and Texas indicated that their units are classified as municipalities, regardless of size. Respondents of many other states indicated a split between township and municipality status, which is apparently based on something other than population size. That is, either classification is used for units of any particular size.

Employees. Two demographic items addressed issues regarding the governmental units' employees. One item asks respondents to indicate the number of employees employed by the respondents' unit. Approximately 83% of the responding units employed no more than fifty employees. The average number of employees for all responding units was twenty-seven. The number of employees ranged from none to 206 being employed by a single unit.

Upon review of the responses received, it is evident that this demographic item should be interpreted and used cautiously. It appears that some of the respondents considered part-time employees to be different from full-time employees for the purpose of answering this survey item. Thus, respondents who did not identify the number of full- and part-time employees within their units might have
responded with the total number of employees. Alternatively, they might have responded just with the number of full-time employees. Elected and contracted positions did not appear to be viewed by any of the respondents as being positions of employment within the governmental units.

The second demographic item addressing the governmental units' employees is related to the amount of time and attention devoted to the units' budgeting process. Eighty-one percent of the respondents indicated that their unit does not employ a full-time budget officer. This finding is consistent with findings of case studies published to date. Of the 19% of the units that do employ such an employee, 79% stated that their budget officers were appointed rather than elected. A comparison of responses to the question of whether or not the individual respondent was elected or appointed and the question of whether or not the budget officer was appointed or elected suggests that, in almost every instance where it was indicated that the unit employs a full-time budget officer, the respondent was the budget officer. Results of the comparison lend support to the belief that the subjects responding to the survey were the subjects intended.

\[\text{For example, see Honadle [1983].}\]

\[\text{Recall that the survey instrument was addressed to the subject governmental unit to the attention of the budget preparer.}\]
Funding. Current business and public administration literature suggests that state and local governments are receiving less support for capital improvements in the form of federal funds. For example, Hoffman, Mister and Strawser [1988, p. 105] state that such funding has decreased 19% over the period from 1960 to 1986. Seventy-five percent of the respondents received no federal funds for capital improvements in 1987. Federal support averaged $432,807 for the 25% of the governmental units receiving funding in 1987. The lowest and highest funding amounts were $325 and $3,666,000, respectively, with a median of $115,000.

General Case Results

The results of this study are analyzed from two perspectives. Because the objective of the study is to assess the decision making behavior of the subjects with regard to rationality, the study's null hypotheses are tested in terms of expected utility theory. However, prospect theory is also employed in the analysis. As discussed in chapter two, prospect theory offers explanations for deviations in decision making behavior from that predicted by expected utility theory. Thus, a

---

6The significance of this decrease in funding might be more clearly expressed in constant dollar terms. The Office of Management and Budget [1983] used 1982 as the base year, to estimate that federal funding to state and local governments for capital improvements has decreased approximately $3,900,000,000 over the ten year period from 1977 to 1987.
combination of the two theories may be used to predict
decision making behavior in light of the presentation of
information to the decision maker. Before analyzing
respondents' decisions in terms of the three hypotheses of
this study, it is interesting to note the degree of
similarity among (1) the respondents' choices in this study,
(2) the choices made by respondents of prior research, and
(3) the choices predicted by expected utility theory.
Choices were made between decision alternatives for each of
five cases. Table 4.1 summarizes the five cases for
reference throughout this chapter. As illustrated in Table
4.2, each subject received only two cases (one version).
Chi-square tests show that the subjects' preferences were
not significantly influenced by the combination of cases
(the particular version) confronting them. Similarly, there
were no significant differences in results of the first
mailing when compared to the results of the second mailing.

Table 4.6 shows that, for three of the five cases,
respondents of the current study have response frequencies
very similar to those of respondents of prior research. For
each of the three cases (cases 1, 2, & 4), current and prior
research vary greatly from expected utility frequencies.
Similarly, response frequencies for case 3 of the current
study differ from expected utility theory. However, the
results of that case do not confirm prior research response
frequencies. As will be discussed later in this chapter, it
is interesting to note a greater divergence between expected utility theory and the current study's response frequencies than between expected utility theory and prior research with regard to case 3 responses. Case 5 of the current study also differs from prior research, but the response frequencies of the current study are very similar to those predicted by expected utility theory. Thus, four of the five cases differ from expected utility theory; three of the five cases confirm prior research as to deviations of response frequencies from expected utility theory; two of the five cases differ from prior research response frequencies, with the response frequencies of one of those two being very similar to that predicted by expected utility

<table>
<thead>
<tr>
<th>CASE 1</th>
<th>CASE 2</th>
<th>CASE 3</th>
<th>CASE 4</th>
<th>CASE 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>Z</td>
</tr>
<tr>
<td>C</td>
<td>87%</td>
<td>13%</td>
<td>76%</td>
<td>24%</td>
</tr>
<tr>
<td>n=100</td>
<td></td>
<td>n=89</td>
<td></td>
<td>n=82</td>
</tr>
<tr>
<td>P</td>
<td>80%</td>
<td>20%</td>
<td>78%</td>
<td>22%</td>
</tr>
<tr>
<td>n=95</td>
<td></td>
<td>n=141</td>
<td></td>
<td>n=95</td>
</tr>
<tr>
<td>E</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Prior research results taken from Tversky and Kahneman [1986] and Kahneman and Tversky [1979].

The table reflects percentages of case responses. The sample size of each case is indicated by the notation, "n=," appearing below each set of percentages.
theory. Again, implications of these similarities and differences are presented in the following sections of this chapter.

Survey Results and the Hypotheses

Each of the three research hypotheses are discussed individually below. First, the purpose of each hypothesis as well as the expected results of the survey cases, with regard to each hypothesis, are presented. Then, actual survey results and analyses, in terms of both prior research and expected utility theory, follow.

HYPOTHESIS 1

H1: subjects will not alter their decision preferences among different frames of the same contingency in a resource allocation problem.

The null form of hypothesis one is based on expected utility theory, and is tested using cases one, two, and three of the current study (see Table 4.1). The alternative hypothesis is based on prior research in prospect theory, and states that decision preferences will change direction among alternatives as a result of changing the reference point regarding the contingency present in a decision problem.

Case 1. Case one puts decision makers at the start of a single stage decision where they must choose between a sure gain and a probable gain of higher expected value ($150,000 vs $160,000). Prospect theory expects risk averse behavior in a gain-framed situation, thus, decision makers
are expected to prefer the sure $150,000 over the 80% probable $200,000. Kahneman and Tversky [1979] describe subjects as experiencing a "certainty effect" in their preference for a sure payoff of lower expected value over a probable payoff of greater expected value. Expected utility theory predicts that the decision maker choose the alternative with the higher expected value (i.e., $200,000 x 80% = $160,000).

A chi-square test shows a significant difference between the respondents' preference and the expected utility preference (see Table 4.7). Eighty-seven percent of the subjects in the current study chose the sure gain over the risky gain of higher expected value. It is assumed that, all else being equal, subjects would prefer receiving more money than less. If subjects had focused on the dollar amounts, they would have compared $150,000 to $200,000, and chosen the latter. Results indicate that this was not done. Thus, subjects appear to have experienced the "certainty effect" by considering the probabilities, and violating expected utility theory.

Case 2. Case two presents a two-stage decision situation, and gives subjects a choice of placing themselves at the start of either one of the two stages (again, refer to Table 4.1 for case summaries). According to prospect theory [K&T, 1979], subjects view themselves at
one or the other of the two stages depending on their
decision processing strategy. If subjects are what Tversky

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**TABLE 4.7**
STATISTICAL SIGNIFICANCE OF CASES ONE, TWO AND THREE
BASED ON CHI-SQUARE STATISTIC

<table>
<thead>
<tr>
<th>Comparison to Expected Utility Theory</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case</strong></td>
<td><strong>Chi-square</strong></td>
<td><strong>Significance</strong></td>
</tr>
<tr>
<td>1</td>
<td>1415.58</td>
<td>.005</td>
</tr>
<tr>
<td>2</td>
<td>841.05</td>
<td>.005</td>
</tr>
<tr>
<td>3</td>
<td>375.71</td>
<td>.005</td>
</tr>
</tbody>
</table>

*These test statistics are conservative as a result of forcing the category of smaller expected frequency from a frequency of zero to a frequency of five (minimum expected frequency allowed for chi-square).

<table>
<thead>
<tr>
<th>Comparison Between Current Study Cases</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cases</strong></td>
<td><strong>Statistic</strong></td>
<td><strong>Significance</strong></td>
</tr>
<tr>
<td>1-2</td>
<td>6.63</td>
<td>.010</td>
</tr>
<tr>
<td>2-3</td>
<td>14.88</td>
<td>.005</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparison of Current Study to Prior Research*</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case</strong></td>
<td><strong>Statistic</strong></td>
<td><strong>Significance</strong></td>
</tr>
<tr>
<td>1</td>
<td>3.06</td>
<td>.100</td>
</tr>
<tr>
<td>2</td>
<td>.06</td>
<td>**</td>
</tr>
<tr>
<td>3</td>
<td>7.04</td>
<td>.010</td>
</tr>
</tbody>
</table>

results represent the expected frequencies for comparison to those observed in current study.

** Not significant.

and Kahneman refer to as "standard formulation" information processors, the decision maker will consider themselves at
the start of the first of two stages. These subjects will not perceive a certain option and a risky option in case two. Rather, both options will be viewed as only probable. Thus, they should choose the option of higher expected value (\((20\% \text{ or } 25\% \times 80\%) \times $200,000\)) rather than the other option of \((25\% \times $150,000)\).

However, subjects may be what Tversky and Kahneman refer to as "sequential formulation" information processors. If so, the decision maker will consider themselves at the start of the second of the two stages. That is, they experience what Kahneman and Tversky [1979] refer to as the "isolation effect," isolating stage one from stage two of the decision problem. These subjects ignore the first stage, seeing it as necessary to both options of the second stage. Thus, as in case one, the decision makers are choosing between what is perceived as a certain $150,000 and a risky $200,000 ($160,000 expected value). Kahneman and Tversky [1979] refer to the perceived certainty as "pseudocertainty" inasmuch as there is no certain option for the decision problem as a whole.

Subjects of the current study appear to have processed the information in a sequential manner, ignoring the 25% chance of reaching the second stage of the two-stage problem. As mentioned above, ignoring the first stage leads the subjects to perceive one certain option and one risky option, which should lead to response frequencies similar to
those of case one. Seventy-six percent of the subjects in the current study chose the option of $150,000 (expected value $37,500). Only 24% of the subjects chose the option of $200,000 (expected value $40,000). As Table 4.7 indicates, there is a significant difference between respondents' preferences and that predicted by expected utility theory. As expected, this is consistent with the "certainty effect" found in case one.

A comparison of case one and case two shows a significant difference (at the .01 level) in subject preference between these cases in the current study (see Table 4.7). This difference may be explained by a dilution of the "pseudocertainty effect" of case two as a result of the case two respondent group being a combination of both sequential and standard type formulators. However, a review of Table 4.6 shows that, for both cases one and two, subjects' preferences for the certain alternative was significantly greater than their preference for the higher expected value alternative.

**Case 3.** Case three gives subjects the same information that was available in case two, but presents it in preintegrated form. That is, the subjects have no choice between sequential or standard formulation of information. Thus, subjects must choose between two risky alternatives and are expected to maximize their utility (i.e., neither certainty nor pseudocertainty is expected to be perceived).
Forty-three percent of the subjects in the current study chose the option with a $40,000 (20% x $200,000) expected value, and 57% chose the option with a $37,500 (25% x 150,000) expected value. This is significantly different (at the .01 level) from the findings of prior research (see Table 4.7). If subjects behaved according to expected utility theory, they would have calculated the expected values of the two options and would have chosen the higher value option (i.e., the $40,000 option). Since subjects did not behave in total accordance with expected utility theory (see Table 4.7), they might have focused on the absolute dollar amounts or the probabilities associated with each option. A focus on the dollar amounts of the options would lead subjects to select the option with the higher absolute dollar amount (i.e., the $200,000 option). Again, subjects did not prefer that option. Thus, a significant number of subjects appear to have focused on the probabilities of the options and, accordingly, chose the option with the greatest probability of payoff (i.e., the 25% option). This interpretation implies that the dollar amounts ($150,000 versus $200,000) were viewed as roughly equivalent.

The results of cases two and three in the current study are of further interest when their preferences are compared. By presenting the same contingency information to subjects in preintegrated (case three) or non-preintegrated (case two) form, subject preference between alternatives is
altered. The results of case three are more in the direction of expected utility results than those of case two (see Table 4.6). However, this shift may have resulted from an inappropriate focus on the magnitude of the probabilities, rather than rational decision making. Subject preferences in these two cases are significantly different (see Table 4.7). That is, subjects' preferences were altered by presenting contingency information in preintegrated versus non-preintegrated form.

Hypothesis 1 Summary. The results of each case used to test hypothesis one refute expected utility theory and reject the null hypothesis at the .005 level of significance. A review of individual case results shows that subjects did not respond coherently to the individual decision problems. Furthermore, the difference in subject preferences between cases two and three lends support to prospect theory's contention that the framing of contingencies affects decision making. Subject responses to cases two and three provide evidence of inconsistent decision making behavior, a violation of rationality.

HYPOTHESIS 2

H2: subjects will not alter their decision preferences between different frames of the same outcome of a resource allocation problem.

Like hypothesis one, the null form of hypothesis two is based on expected utility theory. The current study uses cases four and five to test this hypothesis. The four
alternatives available in cases four and five all have identical expected values. Therefore, subjects should perceive no difference between the options of the individual cases. Furthermore, subjects should respond similarly in their decision preferences between cases.

Prospect theory offers an alternative hypothesis. According to prospect theory, decision preferences will change among alternatives as a result of changing the reference point regarding the outcome present in a decision problem. The theory predicts risk seeking preferences in situations framed as a loss and risk averse preferences in situations framed as a gain. In contrast to expected utility theory, therefore, there should be a significant difference between case four's preferred alternative and case 5's preferred alternative.

Case 4. As just mentioned, the expected utilities of the two alternatives of case four are objectively identical. However, the first alternative is presented as a guaranteed saving of jobs whereas the second alternative is presented as a probable saving of jobs. If subjects are "rational" decision makers as described by expected utility theory, they should be indifferent between the two alternatives. If subjects behave as predicted by prospect theory they should be risk averse and prefer the certainty of the first alternative over the probability of the second. Table 4.8 shows that subjects did have a significant preference
between alternatives. Subjects of the current study violated expected utility theory and supported prospect theory by showing a preference for the "certain" alternative rather than indifference between the two alternatives. Rather than 50% of the subjects preferring one of the two alternatives and the remaining 50% preferring the other, 79% of the subjects of the current study preferred the alternative framed as a guarantee of saving jobs, which is evidence of risk averse behavior in a gain-frame scenario.

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**TABLE 4.8**

**STATISTICAL SIGNIFICANCE OF CASES FOUR AND FIVE BASED ON CHI-SQUARE**

<table>
<thead>
<tr>
<th>Comparison to Expected Utility Theory</th>
<th>Test Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Statistic</td>
</tr>
<tr>
<td>4</td>
<td>48.02</td>
</tr>
<tr>
<td>5</td>
<td>.19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparison Between Current Study Cases</th>
<th>Test Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>Statistic</td>
</tr>
<tr>
<td>4-5</td>
<td>12.16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparison of Current Study to Prior Research*</th>
<th>Test Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Statistic</td>
</tr>
<tr>
<td>4</td>
<td>3.55</td>
</tr>
<tr>
<td>5</td>
<td>69.38</td>
</tr>
</tbody>
</table>

*Tversky & Kahneman [K&T, 1979 & T&K, 1981] results represent the expected frequencies for comparison to those observed in current study.

** Not significant.
This deviation from expected utility theory is significant at the 0.005 level.

Case 5. Case five presents information objectively identical to the information in case four. However, the first alternative is presented as a guaranteed loss of jobs whereas the second alternative is presented as a probable loss of jobs. That is, the decision alternatives are framed as losses, rather than gains (as in case 4). If subjects are "rational" decision makers as described by expected utility theory, they should be indifferent between the two alternatives. If subjects behave as predicted by prospect theory, they should be risk seeking and prefer the probable loss of the second alternative over the certain loss of the first.

Fifty-two percent of the subjects in the current study preferred the certain loss of the first alternative, and forty-eight percent of the subjects preferred the probable loss of jobs offered by the second alternative. Although there is a significant difference between cases four and five, these percentages are not entirely in agreement with the results suggested by prospect theory. Rather they tend to agree with results dictated by expected utility theory (see Table 4.8). One possible explanation for the significant difference between subject response to case five and Tversky and Kahneman's prior research results is the emotional impact of the issue presented. The subjects in
that prior research were faced with loss of human lives and were more risk seeking (perhaps optimistic for the loss of no lives). Subjects in the current study seemed to accept the loss of some jobs and chose to minimize potential loss of jobs rather than gamble on losing all jobs.

**Hypothesis 2 Summary.** In summary, case five, viewed alone, cannot refute expected utility theory and hypothesis two. However, case four provides evidence of incoherent decision making behavior. While the results of the two cases discussed above are interesting in and of themselves, hypothesis two is tested best by comparing the subjects' preferences for the alternatives of the two cases. When objectively identical information was presented in a gain frame as in case 4, 79% of the subjects preferred the alternative offering certainty. When the information was presented in a loss frame as in case 5, only 52% of the subjects preferred the alternative offering certainty. The direction of this shift in risk preference is consistent with prospect theory. As shown in Table 4.8, the preference difference is significant. Thus, there is evidence of preference reversal among alternatives of objectively identical problems framed differently, and hypothesis two is rejected. Moreover, this is additional evidence of inconsistent (i.e., irrational) decision making behavior.
HYPOTHESIS 3

H3: subjects will choose the alternative which maximizes expected utility.

Expected utility theory requires that rational decision makers choose the alternative of higher expected value and be indifferent between alternatives of equal expected value. By reviewing cases one through five, it is evident that subjects of the current study violated expected utility theory by choosing alternatives with lower expected values (as discussed above) and by changing preference between alternatives of equal expected value framed as gains rather than losses. Thus, hypothesis three is rejected, and subjects of the current study cannot be viewed as rational by the standards of expected utility theory.

SELECTION PROCEDURE AND THE HYPOTHESES

Governmental budgeting literature suggests that elected officials may behave differently from appointed officials.\(^7\) Thus, a separate analysis of the behaviors of these two subject groups seemed warranted. Survey results were analyzed to determine whether elected subjects responded in any significantly different ways than appointed subjects responded.

Chi-square comparisons of the response frequencies of subjects who indicated they were elected to those of subjects who indicated they were appointed to their current

\(^7\)See Cornia and Usher [1981], for example.
governmental positions show significant differences for two of the five cases. With regard to case two, both subject groups exhibited preferences consistent with the preferences described by prospect theory. However, the appointed subjects exhibited stronger preferences in that direction (70% of the elected and 81% of the appointed chose the lower expected value alternative).®

With regard to case three, the two subject groups exhibited preferences in opposite directions from one another. Based on expected utility theory, elected subjects behaved more irrationally than appointed subjects by preferring the alternative of lower expected value (75% chose $37,500). Appointed subjects behaved more in accordance with expected utility theory inasmuch as significantly less of the appointed subjects preferred the alternative of lower expected value (45% chose $37,500). However, appointed subjects (like elected subjects) behaved incoherently by not exhibiting a significant preference for the alternative of higher expected value.

**Personal Interviews**

The three research hypotheses tested by the survey are based on contentions of the well accepted expected utility theory with regard to decision making under uncertainty.

®Appointee responses were significantly stronger than the overall subject group responses at the 0.10 significance level.
However, the survey cases were designed to test for violations of expected utility theory as described in prospect theory literature. As a means of assessing the applicability of the type (form) of decision problems incorporated in the survey's test cases, personal interviews of small government officials within the Baton Rouge area were conducted. The primary focus of the interviews, regarding prospect theory, was on the theory's explanations for inconsistent responses in terms of risk averse and risk seeking tendencies of individuals perceiving situations from different points of reference. An objective of the interviews was to determine whether or not local governmental unit budgeting personnel (or officials) perceive part of their job to include decision making under uncertainty. Assuming that decision making under uncertainty is perceived to be a part of the budget process, an additional objective of the interviews was to assess the evaluation of gains and losses in allocating resources throughout the governmental unit.\(^9\) The interview format and examples of the responses follow the description of the interviewees (participants) below.

Twelve individuals agreed to participate in the interviewing process. All of the participants are

\(^9\)Prospect theory predicts risk averse behavior when individuals are confronted with an evaluation of gains and risk seeking behavior when individuals are confronted with an evaluation of losses.
associated with small local governments, which serve populations of less than 10,000 people, surrounding the Louisiana State University (LSU) area. The smallest and largest governmental units represented by the participants serve populations of 800 and 8000, respectively. All of the participants have budget preparation responsibilities within their governmental unit, and most had over five years of experience. The official titles of individuals interviewed varied, but included the titles of clerk, financial director, treasurer, manager, and mayor. Regardless of title, each interviewee indicated that the legislative council seeks the interviewee's input in the budgeting process.

Format. In an effort to maintain some uniformity across the individual interviews, each interview began by following a standard format. First, the interviewer introduced herself as an accounting doctoral student at LSU, and identified her dissertation interests to be in the budgeting process and decision making needs of small governmental units. Then, the interviewer explained the objective of the interview to be obtaining insight into the actual budgeting environment faced by individuals responsible for budget preparation in small governmental units. Participants were told that they were helping the interviewer design a meaningful survey, providing information not currently available in the literature, and
helping to increase the quality of research focusing on small governmental units. Once participants were informed of their role, they were asked to respond to each of three questions:

1. What are some of the major constraints faced in serving the public?

2. Can you recall a resource allocation decision having to be made between alternatives with expected positive outcomes but some degree of uncertainty regarding those outcomes?; and

3. Can you recall a resource allocation decision having to be made between alternatives with expected negative outcomes but some degree of uncertainty regarding those outcomes?

To aid in answering the last two questions, the interviewer provided two examples of each type (i.e., positive and negative) of decision. Responses to the three questions as well as general input from the participants are discussed below.

**Interviewee Input.** None of the interviewees hesitated in responding to the first question. All of them stated that there is a great deal of time pressure associated with the budgeting process. In order to meet the budgeting schedule, most participants expressed feeling time pressure in gathering information. In addition, each of the interviewees identified money to be a major budgeting constraint, and all made similar comments about there never being enough money to satisfy all of their constituents. Each interviewee mentioned that cuts in state and federal funding have had a significant impact on the budgeting
process. Their governmental units have recently been forced to cut back in providing services or raise tax revenues. Surprisingly, one community recently passed a $0.005 sales tax with a 93% yes vote of the public. The interviewee associated with that community claims the sales tax success to be a result of "informing the people."

The second and third questions asked of the participants were asked together, and examples of each were provided to help trigger memories of similar situations participants had experienced in their current positions (see appendix B for the examples used during the interview process). Because the questions are identical, except for the gain or loss perspectives, responses to these questions are discussed simultaneously.

With the limited time allotted to the interview, most interviewees could only address one of the two questions, or an unresolved issue which ultimately may be perceived as either negative or positive. The participants had a tendency to recall a single situation of uncertainty and devote the entire interview to that issue.

One example of responses to the last two questions is the description of one governmental unit's laying off of one-fourth of their existing firemen. The interviewee explained the issue in terms of saving the taxpayers money. As long as the proposed volunteer firemen program could provide adequate coverage to replace the laid off firemen,
the government's fire ratings were not expected to change except, perhaps, positively. That meant the government could save approximately $200,000 per year of the taxpayers' money because there would be a lower total salary figure for the fire department without an increased amount of fire insurance required for the government. Alternatively, the program could have been viewed as costing the government. The government could have perceived a sure cost of $200,000 per year in firemen salaries by retaining the firemen. The alternative could have been perceived as a probability of lower costs which might result by successfully replacing one-fourth of their firemen with volunteers, and a probability for higher costs if the volunteer program is unsuccessful, insurance costs increase and the firemen must be replaced.

When asked about the alternative view, the participant stressed that the government was sure the volunteer program would work and that it was highly likely that their fire rating would improve and there would be no increase in insurance costs to be born by the taxpayers. After a number of interviews, a pattern seemed apparent. It seemed that interviewees always presented and discussed situations in gain frame and near or absolute certainty terms when they were recalling a situation where the decision had already been made and the governmental unit was committed to that decision. This is an area for future research. However,
for purposes of this study it must be noted that interviewees describing budgeting decision making situations of apparent uncertainty (as to outcome) could not express degrees of uncertainty or probabilities of alternative outcomes. They supported their decision as positive and most certain.

Two recurring issues among interviewees were electricity and water treatment (and sewer). None of the interviewees who discussed these topics had made any decision as of the interview date, but were in the process of weighing alternatives. Discussions of two of the participants are summarized below.\(^{10}\)

The electricity issue was one of the decision problem situations that a number of the participants were in the process of solving. To summarize the issues, the governmental units were weighing the following alternatives: (1) contract for electrical service with private companies, or (2) become a member of (or maintain membership in) a utility co-op. The private companies were offering competitive rates, but no long-term guarantees. The co-op offers competitive rates and gives member units some control through member representation on the co-op board of directors. Most participants describing this issue and its alternatives saw all options to be relatively equivalent in

\(^{10}\)These discussions are fairly representative of the interviewees who discussed these issues.
the short-run. However, when considering the long-run, the co-op alternative was described as guaranteeing reasonable rates into the future. The private companies were described as being more uncertain. There was a probability that the private companies could provide the additional savings they alluded to in negotiations, but there was also a probability that the private companies would increase their rates and provide no additional savings (or perhaps no savings at all) beyond those of the co-op. Participants indicated that they had sought expert advice regarding the options; however, they did not trust that advice beyond a five year horizon.

Although the legislative councils of the governmental units involved had not voted on the issue, the participants expressed their opinions on the alternatives. In every instance, the participant felt the co-op would provide the highest degree of certainty as a result of the representation on the board, and preferred that alternative. Even though there was a probability that the private companies could offer substantial additional savings in the long-run, the participants also perceived a high probability of no such savings.

The second unresolved issue discussed by many of the participants was the issue of water and sewer treatment. An example of the decision problem is the situation described below, which is currently being addressed by one of the interviewees. The example government is relying on the
expert opinion of an engineering firm in the weighing of alternatives.

The decision problem to be solved is the satisfaction of Environmental Protection Agency (E.P.A.) requirements regarding the government's current sewer system. The governmental unit perceives no choice as to whether or not to improve the system because the penalties associated with noncompliance are sufficiently high to prohibit noncompliance. Thus, the decision problem is how to improve the system. Four courses of action (alternatives) are being considered. The first alternative is to upgrade the existing system, which would guarantee satisfaction of the existing requirements. However, this alternative would not satisfy more stringent requirements proposed by the state. The second alternative would be an upgrade like the first alternative, but would include additional filters. This has a high probability of consistently meeting the state's more stringent proposed requirements. The third alternative would abandon the existing system for a new plant, which guarantees to meet the proposed more stringent requirements. The fourth alternative also abandons the existing system and requires the construction of a plant on or near the river, where the E.P.A. and state apply less stringent requirements. The costs per alternative increase from $450,000 for alternative one to $1.2 million for alternative four.
The governmental unit was not focusing on the immediate costs of the alternatives. Rather it was concerned with meeting E.P.A. standards for the longest period of time. The engineering firm emphasized that requirements for systems other than those discharging into the river have become more stringent over time. Moreover, the experts suggest that the probability is high that the trend for increasing stringency will continue. Thus, it is expected that the preferred alternative will be alternative four, which provides the highest probability of satisfying all requirements into the future. All of the alternatives would satisfy current requirements. Alternatives three and four would satisfy the proposed requirements. However, only alternative four offers some assurance of satisfying future requirement levels.

Summary of Insights. Although the interview process was limited to interviews of small governmental unit officials (personnel) within one specific area of the United States, the process served to provide additional insight (beyond that obtained by the mail survey) regarding the resource allocation decision making environment of small governments. Each of the interviewees confirmed the idea that time pressure and limited funds make budgeting a challenge. Even though expert advice regarding specific decision problems is often available, many of the participants indicated that their government often does not
have the time or money to seek the advise. Participants who indicated that their government had contracted for expert advise also suggested that they tended to alter the probabilities experts express regarding alternative courses of action for a decision problem.

The interviews also confirmed the idea that the constituency of small local governments seem to be more aware of (concerned with) the actions of their governments. With regard to the actions of the governmental units, the interviews assessed the applicability of case decision problems (similar to those used on the mail survey) within the resource allocation process. The interviewees expressed no trouble relating to the example cases used to start the discussion of uncertainty in budgeting (see appendix B). However, most participants experienced difficulty in recalling the perceived probabilities of alternatives associated with decisions that already had been made. In discussions of uncertain outcomes, participants attached certainty (or near certainty) to the alternative course of action chosen, and presented the issue in a gain frame. The selection of the certain gain is in accordance with prospect theory; however, the fact that the decision had already been made and the government was committed to a particular course of action seemed to affect the presentation of the issue. This is an area for future research.
The interviews of participants who were in the process of evaluating alternatives of a decision problem also suggested a tendency to employ a gain frame in their presentation of the alternatives. Again, the participants evaluating the alternatives from a gain reference point indicated preferences for the most certain outcome alternative (even when the expected value of costs was higher). One interesting observation was that participants used a gain frame almost exclusively. An interesting follow up study would be to determine which alternative was ultimately selected, how that selection is rationalized by the governmental unit, and how the other alternatives are perceived once the choice has been made.

Summary

This chapter presented the results and analysis of the mail survey used to investigate local governmental decision making behavior in situations of uncertainty. In addition, the chapter presented a summary of personal interview findings with regard to the budgeting environment of small local governments and their resource allocation decision problems. As suggested in previous chapters, prospect theory rather than the well accepted expected utility theory was found to be more descriptive of respondents' behavior in decision situations of uncertainty.
CHAPTER FIVE
SUMMARY OF THE STUDY

The purposes of this chapter are to (1) provide a brief summary of the research study which was undertaken, (2) discuss the implications of the results of the study in the context of the current body of literature in the areas of small local government resource allocation and decision making under uncertainty, (3) discuss the limitations of the study, and (4) discuss the implications of this study for future research.

Summary of Study

A behavioral study was conducted to examine the decision making behavior of individuals responsible for resource allocation (budget preparation) within small local governmental units. Six hundred governmental units, serving no more than 10,000 people each, were randomly selected from the 1987 directory of United States government names and addresses, which is published by the Census Bureau. Approximately 47% of these governments returned usable replies. The budget preparer of each government received a survey consisting of two short cases. Each case was designed to represent a resource allocation decision making problem under conditions of uncertainty. One of the cases focused on employee lay offs. Each subject received this case in the form of either a gain or a loss frame. The other case focused on federal funding for capital
improvements. Each subject received one of three possible federal funding cases. All three of the cases were presented in a gain frame, and were designed to detect the certainty and pseudocertainty effects. All five cases used in the study were designed to detect risk averse and risk seeking tendencies within the population of small local government resource allocators.

Two independent variables were used in the experimental design. The first independent variable was the frame of the decision problem outcome. Half of the subjects received the employee lay off decision problem with the two alternative courses of action framed as gains. The other half received the same decision problem with the two alternatives framed as losses. The second independent variable was the frame of the decision problem contingency. One-third of the subjects received the federal funding decision problem framed as a one-stage decision problem with one certain alternative and one probable alternative of higher expected value. A second one-third of the subjects received the federal funding decision problem framed as a two-stage decision problem, where the chance of reaching the second stage was 25% and there is no pay off unless the second stage is reached. Once at the second stage, the decision problem presents one certain alternative and one probable alternative of higher expected value. The remaining one-third of the subjects received the two-stage federal funding decision problem in
preintegrated form. That is, the 25% chance of reaching the second stage was incorporated into the alternatives so that the subjects' decision was made between two probable payoffs. The experimental design described above is illustrated in Table 5.1.

<table>
<thead>
<tr>
<th>Frame of Federal Funding Contingency</th>
<th>One-stage certainty alternative</th>
<th>Two-stage certainty alternative</th>
<th>One-stage probable alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain Outcome</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Loss Outcome</td>
<td>D</td>
<td>E</td>
<td>F</td>
</tr>
</tbody>
</table>

The research question examined in the course of the study was concerned with the effect of presentation (or framing) of decision problem alternatives on the rational choice behavior of budget preparers representing small local governmental units. Three statistically testable hypotheses were formulated to address the research question. The hypotheses (expressed in their null forms) were as follows:

- **H1**: The budget manager will not alter his decision preferences between different frames of the same contingency.
- **H2**: The budget manager will not alter his decision
preferences between different frames of the same outcome.

H3: The budget manager will choose the alternative which maximizes expected utility.

Hypothesis one was rejected by the data. The results for each of the three cases indicate incoherent decision behavior. In addition, a comparison of responses to cases two and three indicates inconsistent decision behavior. The results support prospect theory's contention that decision makers react differently to information presented in preintegrated form than they do to the same information presented in non-preintegrated form, where one of the decision alternatives may be perceived as being certain. Table 4.7 summarizes the results of the three cases used to test hypothesis one.

Hypothesis two was rejected by a comparison of responses to two objectively identical cases framed differently as to outcomes. As Table 4.8 shows, subjects exhibited a significant preference for the alternative offering certainty when the decision problem and alternatives were presented in a gain frame (case 4) rather than in a loss frame (case 5). When the alternatives were framed as losses, the preference for the certain alternative was significantly diluted. Because each alternative of the two cases (that is, each of the four alternatives) was objectively identical, subjects' preference for one alternative over the other was incoherent behavior and in
violation of expected utility theory. Moreover, the shift in risk preference between case four and case five is evidence of inconsistent decision making behavior, which is also considered a violation of expected utility theory.

Hypothesis three was also rejected. Table 5.2 summarizes the subjects' preferences by case in terms of the expected value of the case alternatives. Subjects not only preferred alternatives of lower expected value, but also changed preferences (i.e., were not indifferent) between alternatives of equal expected value framed as gains rather than losses. These results are in violation of expected utility theory and its definition of rational decision behavior under conditions of uncertainty.

<table>
<thead>
<tr>
<th>Alternative Expected Value</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
<th>Case 4</th>
<th>Case 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>13%</td>
<td>24%</td>
<td>43%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Lower</td>
<td>87%</td>
<td>76%</td>
<td>57%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Equal</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>79%</td>
<td>52%</td>
</tr>
</tbody>
</table>

TABLE 5.2
CASE RESULTS OF CURRENT STUDY IN TERMS OF CASE ALTERNATIVE EXPECTED VALUE

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Implications of the Results of the Study

Previous research in two primary areas served as a basis for the study. Of general interest was work addressing characteristics of local governmental units. However, work of primary interest to the study was that focusing on the budgeting environment of local governmental units, especially the early decision making stage of the resource allocation process. Empirical research in both of these areas was sparse, with most findings based on case studies of single governmental units or small groups of units. Budgeting studies have tended to emphasize the results of the budgeting process, while tending to ignore the decision making process. The call for research into the decision making process of local governmental units had been made and acknowledged. Yet, the call had not been answered by empirical work with small governments prior to this study.

Although researchers have paid minimal attention to small local governments or the resource allocation activities of local governments, previous research did provide a basis for this study. The current study can be linked to previous research in several ways. As discussed in chapter two, earlier research noted (1) the important role of local governments as the primary provider of domestic services; (2) the constraints on small local governments imposed by limited resources; (3) local
government budgeters' focus on risk and their reliance on nonquantitative risk analysis procedures; and (4) an increasingly critical citizenry monitoring local governments more closely. The first and last issues were not questioned, but considered givens for the current research. Those issues provided a very basic impetus for the focus on small local governments. The second and third issues were addressed, to some extent, by the survey and the interview process of this study.

The interviews with small local government budgeting personnel support the findings of prior case studies regarding limited resources (both human and monetary). All interviewees suggested that there is never enough money to satisfy everyone in the community. They expressed a sense of pressure associated with the allocation of limited monetary resources to seemingly endless requests. Previous findings with regard to human constraints (or limited human resources) can be tied into the issue of allocating limited monetary resources among the constituency. Although small local governments have a legislative council which approves the budget, a single budget preparer often dominates the entire budget process. The current study supports the contentions of prior research that professional budget officers are rare among small local governments. Only 19% of the governmental units of this study employed a full-time

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1See Sokolow and Honadle [1984] and Cothran [1986].
budget officer. As suggested in the literature, 44% of the budget preparers responding to the current study were clerks and the majority of those clerks (52%) were elected.

Selection method (elected or appointed) had been suggested to be a potential cause of different decision making behavior within the population of local government resource allocators. This study has provided some empirical support for the contention that differences exist in decision making behavior of elected versus appointed budget preparers. Table 4.4 shows that only 42% of the budget preparers responding to this study were elected to their positions.

By comparing the case alternative preferences of elected and appointed budget preparers, this study detected only two differences in decision making behavior between the two groups. First, appointed preparers exhibited a stronger preference for the alternative associated with pseudo-certainty in the two-stage federal funding decision problem (case two). However, both groups preferred that same alternative, which was associated with the lower expected value. Second, given two probable alternatives (e.g., the preintegrated form of the federal funding problem as presented in case three), significantly more of the appointed preparers chose the alternative of higher risk and

\[2\text{Appointee responses were significantly stronger than the overall subject group responses at the 0.1 significance level.}\]
higher expected value. However, according to expected utility theory, both groups of preparers exhibited irrational decision behavior by preferring the alternatives of lower expected value.

This behavior lends support to the contentions of prospect theory. That is, this study suggests that the decision behavior of both elected and appointed resource allocators of small local governments supports prospect theory literature. As expected, the preferred decision alternative for the survey decision problems framed as gains was the alternative of perceived certainty. Insight obtained from the personal interviews is used below to expand on this finding with regard to small local government budget preparer decision behavior.

Budget preparers interviewed during this study presented decision problems in a gain frame, and supported the alternative expressed as certainty with regard to the perceived critical aspect of the decision problem. Of the twelve subjects participating in the interviews, none of them could recall a decision problem (within the limited time of the interview) in a negative (or loss) frame. It is possible that previous research findings together with this study's interviews provide an explanation for the surveyed subjects' somewhat unexpected rational behavior in response to the single decision problem (case five) presented in a
loss frame.\textsuperscript{3} It appears that small government resource allocators operate in an environment where it is more comfortable to structure resource allocation decision problems in terms of gains.

When facing a choice between a sure gain and a potentially higher gain, political and social pressures might deter resource allocators from passing up a sure gain. They may anticipate difficulty in justifying their decision should the higher (yet riskier) gain never reach fruition. When perceiving a choice between a sure loss and a potentially higher loss, surveyed resource allocators exhibited behavior that was in more accordance with expected utility theory. However, only one survey case presented a decision problem in a loss frame.

This study has provided an empirical foundation for future research. Insights from the interviews indicate that small local government officials do face decision problems accompanied by uncertain outcomes when addressing the budgeting of scarce resources. The results of the random sampling of small local governments surveyed demonstrates that these decision makers cannot be assumed to react rationally (in terms of expected utility theory) to decision 

\textsuperscript{3}Unlike the results of case four (gain frame), the results of case five (loss frame) indicate that subjects were indifferent between the two objectively identical alternatives (52\% preferred the certain alternative and 48\% preferred the risky alternative). See Bazerman [1984] and Puto [1985] for a discussion of subjects framing actual decision problems faced within their environment.
problems under conditions of uncertainty. The reaction of these small governments' budgeting personnel to varied frames (or presentations) of objectively identical information could be explained in terms of prospect theory. This issue of "rational" decision making within the resource allocation process served as the motivation for the current study. These findings provide the foundation for extended research on the budgeting systems of small local governments, and a few of those extensions are briefly described in the last section of this chapter.

Limitations of the Study

As previously indicated, this study was the first one to address the early stage of decision making in the resource allocation process of budgeting within small local governmental units. The study's findings should be generalizable as a result of using actual budgeting personnel, those with the responsibility of identifying and compiling information for the budgeting process. However, the limitations of any behavioral experiment threaten this study's validity.

 Readers should note that this study and its findings are based on responses to structured cases, which may not be representative of the subject's actual decision making environment. Further research is necessary to determine whether similar results can be associated with subjects operating within their natural budgetary decision making
environment in the absence of such structured cases. Hypothetical decision problems were abstracted from their realistic environment in an attempt to reduce experimental noise. As a result of this abstraction, experimentally manipulated differences are likely to stand out more noticeably within the decision problem than they would in a real setting. Therefore, this study's results may not be found in a more realistic setting. Alternatively, failure to control experimental noise is likely to produce at least equally misleading conclusions resulting from camouflaging and biasing effects of the noise.

It was reassuring (to some extent) to find situations of uncertainty existing in the interviewed subjects' resource allocation environment. Although interviewed subjects typically did not perceive dichotomous alternatives (as provided by the survey decision problems), they did perceive a limited number of alternatives. Moreover, they relied on their own assessment or that of an expert to assign some degree of risk (or certainty) to each alternative (regarding the critical aspect of the decision problem).

The abstraction of decision problems necessary to survey the 600 unique small local governmental units comprising the random sample are associated with another potential limitation. Subjects were asked to role play when scenarios (employment or federal funding levels) were not
representative of the subject's environment. To the extent that subjects required to role play could not project themselves into the scenario, the meaningfulness of the study's results may be questioned. While considering the subjects' reaction to abstract decision problems and their legitimate response to the cases, it is interesting to note that at least one subject indicated that he consciously considered the payoffs and perceived risks associated with each alternative (the amounts and probabilities were underscored by the subject). This subject reacted in accordance with prospect theory. This provides some assurance that the behavior of subjects, in general, was not caused by an inability to deal with the abstract nature of the cases or a refusal to consider the salient points presented.

The third limitation results from using a mail survey to collect data from the population of small governmental units. Although the sample was random and survey versions (manipulations) were randomly assigned, the sample's response rate was less than 100% and the sample size varied among survey versions. The study's response rate was

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4 The average number of employees for surveyed subjects was 27. The case scenario based on employee lay offs identified 60 jobs at risk with 20 guaranteed to be saved (40 lost) or chances of saving (losing) all or none of the 60 jobs. Average levels of 1987 federal funding was $432,807. The federal funding case scenario used alternatives of perceived certainty and risk associated with payoffs of $150,000 and $200,000. See Table 4.1 for summarized case scenarios.
approximately 50%. Therefore, the findings of the study should not be generalized to the population of small local governmental units' budgeting officials without noting that approximately half of the budgeting officials sampled did not respond. There is no reason to expect the nonrespondents to differ significantly from the respondents. A chi-square test indicated no significant differences between results of the first mailing and results of the second mailing. However, the potential for nonresponse bias does exist.

As discussed earlier, the study used five cases to address the research question. Only one of those cases was framed from a loss (or negative) perspective. Cases one through three were alternative framings of contingencies, and were each presented in a gain scenario. It should be noted that the results may be different when subjects are presented with framing of contingency problems in a loss context. While response to the single loss-frame case (case five) contributed to findings of inconsistent decision preference with regard to risk, responses were not entirely consistent with prospect theory. While there was a significant shift in the direction predicted by prospect theory, subjects did not exhibit risk seeking tendencies when faced with that loss frame decision problem. Furthermore, interviewed subjects did not readily recall or
discuss negative decision scenarios from their governmental experience.

**Suggestions for Future Research**

The limitations discussed above suggest several extensions to this study that might be undertaken. The current study did not employ a loss scenario in the framing of contingencies. One extension of this study should incorporate a loss scenario into the research design so that small government budgeting officials' decision behavior can be analyzed and compared to the gain scenario decision behavior of this study. Results of the survey, as well as the interviews, suggest a need for further investigation of the subjects' apparent fixation on gain frames.

The reliance on abstract cases which present specific payoffs and probabilities of payoffs was also mentioned in the limitations to this study. Another extension of the study might focus on this issue by varying payoffs and probabilities. Kahneman and Tversky [1979] suggest the need for such an extension in their discussion of decision makers' threshold sensitivity levels with regard to payoffs and probabilities. For example, decision makers may react more strongly to a one percent change in probability when the change is from one to zero percent than when the change is from two to one percent.

The study surveyed budget preparers, or individuals responsible for the compilation and presentation of
information ultimately to be included in the budget deliberations with the local government's legislative council. Future research could include a replication of this study employing as subjects members of the small local government's legislative council. Such a study could provide insight into the effects of presentation framing on the budget deliberations of the council and the budgeting officials. Public administration literature suggests that presentation leads to deliberations and deliberations produce results.

Each of these extensions are seemingly worthy of future research effort; however, the following extension is considered the most direct extension of practical significance to the population of small local governments. This extension is into the area of budgeting system development. Kahneman and Tversky [1979] claim that departures from expected utility theory (with regard to preference) can be corrected by decision makers once they realize preferences are inconsistent, intransitive or inadmissible. Awareness of the impact of framing (as found in the current study) should be used to improve 'resource allocation decisions.5

5Northcraft and Neale [1986] have done work in this area. Their work might prove helpful in future research devoted to the development of more comprehensive (perhaps frame neutral) budget planning systems.
Budget preparers could be trained to detect framing differences and edit the decision problem in such a way that prevents framing from having a significant influence over resource allocation. Once such a training program has been developed and tested, its implementation could result in more efficient resource allocations and confidence among budget preparers. That is, budget preparers should be more confident that they are choosing among resource allocation alternatives based on objective differences of significance to the community, rather than on manipulated perspectives of the decision problem. For example, this study suggests that budget preparers of small local governments are more comfortable with gain scenarios than loss scenarios, and prefer certain gains over risky gains. An effective training program could emphasize this tendency among small government budget preparers and show how decision preference manipulation might occur as a result of the presenter's widening or narrowing the decision problem perspective to achieve the intended decision frame. The guidance in decision making under uncertainty which could be offered by a training program would help budget preparers defend their actions (decisions) to their constituents and ease some of the pressure currently associated with the decision making process of resource allocation in small local governments.

Improved decision making in the resource allocation process should have significant practical implications for
individuals involved with the budgeting process of small local governments, including constituents as well as budgeting personnel. Constituents will likely continue to scrutinize the work of their governments and demand the most efficient and effective allocation of their resources. Small local governments which are aware of the impact of framing would have the opportunity of assessing the rationality of their own behavior throughout the budgeting process. However, two points in time during the budgeting process might be most affected by an understanding of framing: (1) the initial assessment of the decision problem and its alternatives, and (2) the justification of decision choice (or course of action) to the constituents.
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Hoffman, M., W. Mister and J. Strawser, "Financing Infra-


November 18, 1988

"F1"

Dear "F3":

Small local governmental units similar to yours represent a significant element in our U.S. governmental system. Surprisingly, smaller governmental units have not received the attention of researchers. I am attempting to lay a foundation for continuing research focusing on the needs of smaller governmental units across the United States.

Your governmental unit has been randomly selected to participate in my study. I need your response to make the results of my random sampling meaningful. I can assure you that all responses will be kept completely confidential. By taking approximately ten minutes to read the general instructions, below, and complete the enclosed survey, you will be making a significant contribution toward the successful completion of my degree. More importantly, you will be helping to expand the focus of governmental research to include the governmental units which most directly affect the daily lives of a substantial portion of U.S. citizens -- small local governments.

GENERAL INSTRUCTIONS. Please read the two short cases printed on the back of this letter. Each case should be considered separately. Please consider all decision factors not explicitly mentioned in the cases to be relatively equal among the alternatives. After reading each case, please indicate the course of action you prefer by checking the blank representing your choice on the accompanying response form. Also, make sure to complete the demographic questions presented in the first part of the response form. When complete, simply staple the form closed and drop it in the mail.

Sincere thanks,

Karen McKenzie
Ph.D. Candidate, LSU
December 7, 1988

Dear "F3":

A few weeks ago, I sent you a questionnaire regarding your small local government. I feel small local governmental units similar to yours represent a significant element in our U.S. governmental system. Thus, my survey is attempting to lay a foundation for continuing research focusing on the needs of smaller governmental units across the United States. I have already received numerous completed questionnaires, and if yours was among them, I sincerely thank you. However, if you have not yet had a chance to answer the questionnaire, I am enclosing another one in the hope that you will now have a few minutes to do so.

I have asked a very few governmental units to help me with this project, so your individual response is extremely important -- in fact, without your help, my project cannot succeed. Again, I can assure you that all responses will be kept completely confidential.

GENERAL INSTRUCTIONS. Please read the two short cases printed on the back of this letter. Each case should be considered separately. Please consider all decision factors not explicitly mentioned in the cases to be relatively equal among the alternatives. After reading each case, please indicate the course of action you prefer by checking the blank representing your choice on the accompanying response form. Also, make sure to complete the demographic questions presented in the first part of the response form. When complete, simply staple the form closed and drop it in the mail.

Sincere thanks,

Karen McKenzie
Ph.D. Candidate, LSU
The following cases have been designed to survey local governments serving from less than 100 to approximately 10,000 people. Therefore, you may find the numbers unrealistic for your government. It is important that you project yourself into the case government to respond to the two cases, and then provide the more realistic numbers for your governmental unit on the appropriate blanks in the top portion of the enclosed response form.

CASE I
Research indicates a trend decreasing federal aid and an increasing demand for total governmental expenditures. Your budget office projects a need to layoff 60 government employees. However, two plans to alleviate this need for layoffs were submitted along with the budget staff's projection. Which plan would you favor?

Plan A is guaranteed to save 20 employees from the layoff.

Plan B has a 1/3 probability of saving all employees from the layoff and a 2/3 probability of saving none of the employees from the layoff.

Please refer to the bottom of the accompanying response form and indicate your preference.

CASE II
Without the expertise of a federal aid coordinator, you feel it is extremely unlikely that your government will secure any federal funding. Thus, your government has begun negotiations to hire a federal aid coordinator to improve your chances of obtaining federal funding for capital improvements and special programs. You know that the applicants for the coordinator position are also negotiating with other governmental units, and you estimate that you have a 25% chance of hiring one of the applicants. If you hire one of the applicants you feel absolutely confident that the coordinator can secure $150,000 for capital improvements by focusing all energies on a specific strategy, and you are 80% confident that the coordinator can secure $200,000 by pursuing an alternative strategy. Preliminary paperwork must be submitted for approval by the council before the hiring process is expected to be completed. Which one of the coordinator strategies would you choose to present to the council?

A: ($150,000) or B: ($200,000, .80)

Please refer to the bottom of the accompanying response form and indicate your preference.
The following cases have been designed to survey local governments serving from less than 100 to approximately 10,000 people. Therefore, you may find the numbers unrealistic for your government. It is important that you project yourself into the case government to respond to the two cases, and then provide the more realistic numbers for your governmental unit on the appropriate blanks in the top portion of the enclosed response form.

CASE A
Without the expertise of a federal aid coordinator, you feel it is extremely unlikely that your government will secure any federal funding. Thus, your government has begun negotiations to hire a federal aid coordinator to improve your chances of obtaining federal funding for capital improvements and special programs. You know that the applicants for the coordinator position are also negotiating with other governmental units, and you estimate that you have a 25% chance of hiring one of the applicants. If you hire one of the applicants you feel absolutely confident that the coordinator can secure $150,000 for capital improvements by focusing all energies on a specific strategy, and you are 80% confident that the coordinator can secure $200,000 by pursuing an alternative strategy. Preliminary paperwork must be submitted for approval by the council before the hiring process is expected to be completed. Which one of the coordinator strategies would you choose to present to the council?

A: ($150,000) or B: ($200,000, .80)

Please refer to the bottom of the accompanying response form and indicate your preference.

CASE B
Research indicates a decreasing trend in federal aid and an increasing demand for total governmental expenditures. Your budget office projects the need to layoff 60 government employees. However, two plans to alleviate this need for layoffs were submitted along with the budget staff's projection. Which plan would you favor?

Plan C is guaranteed to result in a loss of 40 government employee jobs.

Plan D has a 1/3 probability that no government employee jobs will be lost and a 2/3 probability that 60 government employee jobs will be lost.

Please refer to the bottom of the accompanying response form and indicate your preference.
The following cases have been designed to survey local
governments serving from less than 100 to approximately
10,000 people. Therefore, you may find the numbers
unrealistic for your government. It is important that you
project yourself into the case government to respond to the
two cases, and then provide the more realistic numbers for
your governmental unit on the appropriate blanks in the top
portion of the enclosed response form.

CASE 1

Your government's federal aid coordinator has two strategic
options available for the current period's consideration.
Option Z has a 20% chance of resulting in federal aid of
$200,000. Option Y has a 25% chance of resulting in federal
aid of $150,000. Which option would you encourage the
coordinator to pursue:

Z: $200,000; .2 or Y: $150,000; .25

Please refer to the bottom of the accompanying response form
and indicate your preference.

CASE 2

Research indicates a decreasing trend in federal aid and an
increasing demand for total governmental expenditures. Your
budget office projects the need to layoff 60 government
employees. However, two plans to alleviate this need for
layoffs were submitted along with the budget staff's
projection. Which plan would you favor?

Plan A is guaranteed to save 20 employees from the
layoff.

Plan B has a 1/3 probability of saving all employees
from the layoff and a 2/3 probability of saving none of
the employees from the layoff.

Please refer to the bottom of the accompanying response form
and indicate your preference.
The following cases have been designed to survey local
governments serving from less than 100 to approximately
10,000 people. Therefore, you may find the numbers
unrealistic for your government. It is important that you
project yourself into the case government to respond to the
two cases, and then provide the more realistic numbers for
your governmental unit on the appropriate blanks in the top
portion of the enclosed response form.

CASE X

Research indicates a decreasing trend in federal aid and an
increasing demand for total governmental expenditures. Your
budget office projects the need to layoff 60 government
employees. However, two plans to alleviate this need for
layoffs were submitted along with the budget staff's
projection. Which plan would you favor?

Plan C is guaranteed to result in a loss of 40
government employee jobs.

Plan D has a 1/3 probability that no government
employee jobs will be lost and a 2/3 probability that
60 government employee jobs will be lost.

Please refer to the bottom of the accompanying response form
and indicate your preference.

CASE Y

Your government's federal aid coordinator has two strategic
options available for the current period's consideration.
Option Z has a 20% chance of resulting in federal aid of
$200,000. Option Y has a 25% chance of resulting in federal
aid of $150,000. Which option would you encourage the
coordinator to pursue:

\[
Z: \quad \$200,000; \quad 0.2 \quad \text{or} \quad Y: \quad \$150,000; \quad 0.25
\]

Please refer to the bottom of the accompanying response form
and indicate your preference.
The following cases have been designed to survey local governments serving from less than 100 to approximately 10,000 people. Therefore, you may find the numbers unrealistic for your government. It is important that you project yourself into the case government to respond to the two cases, and then provide the more realistic numbers for your governmental unit on the appropriate blanks in the top portion of the enclosed response form.

CASE E

Research indicates a trend in decreasing federal aid and an increasing demand for total governmental expenditures. Your budget office projects the need to layoff 60 government employees. However, two plans to alleviate this need for layoffs were submitted along with the budget staff's projection. Which plan would you favor?

Plan A is guaranteed to save 20 employees from the layoff.

Plan B has a 1/3 probability of saving all employees from the layoff and a 2/3 probability of saving none of the employees from the layoff.

Please refer to the bottom of the accompanying response form and indicate your preference.

CASE Z

Which of the following options do you prefer?

A. a sure receipt of $150,000 in federal funding for capital improvements

B. 80% chance of receiving $200,000 in federal funding for capital improvements

Please refer to the bottom of the accompanying response form and indicate your preference.
The following cases have been designed to survey local governments serving from less than 100 to approximately 10,000 people. Therefore, you may find the numbers unrealistic for your government. It is important that you project yourself into the case government to respond to the two cases, and then provide the more realistic numbers for your governmental unit on the appropriate blanks in the top portion of the enclosed response form.

CASE (i)
Which of the following options do you prefer?

A. a sure receipt of $150,000 in federal funding for capital improvements

B. 80% chance of receiving $200,000 in federal funding for capital improvements

Please refer to the bottom of the accompanying response form and indicate your preference.

CASE (ii)
Research indicates a decreasing trend in federal aid and an increasing demand for total governmental expenditures. Your budget office projects the need to layoff 60 government employees. However, two plans to alleviate this need for layoffs were submitted along with the budget staff's projection. Which plan would you favor?

Plan C is guaranteed to result in a loss of 40 government employee jobs.

Plan D has a 1/3 probability that no government employee jobs will be lost and a 2/3 probability that 60 government employee jobs will be lost.

Please refer to the bottom of the accompanying response form and indicate your preference.
Official title of respondent ___________________________.

Is this an ___ elected or ___ appointed position?

Educational Background.

Please indicate highest level of education completed:

<table>
<thead>
<tr>
<th>Level</th>
<th>Area of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>___________________________</td>
</tr>
<tr>
<td>Associates Degree</td>
<td>___________________</td>
</tr>
<tr>
<td>Bachelors Degree</td>
<td>___________________</td>
</tr>
<tr>
<td>Masters Degree</td>
<td>__________________________</td>
</tr>
</tbody>
</table>

Professional Experience.

Years in current position _______.

Years of local government budgeting experience _______.

Estimated population of your jurisdiction _____________.

Type of local government (check one):

<table>
<thead>
<tr>
<th>Municipality</th>
<th>School district</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>Special district</td>
<td>Other</td>
</tr>
</tbody>
</table>

Does your government have a full-time budget officer? ___

Yes ___ No.

If "yes," is this an ___ elected or ___ appointed position?

Number of local government employees ________________.

1987 federal funding received for capital improvements $____________.

Please refer to the two independent case scenarios printed on the back of the letter accompanying this form. For each case, check the plan or option you prefer [Case, Plan and Option changed to match each of the six versions].

Response to Case I:   ___ Plan A   ___ Plan B.

Response to Case II:   ___Option A  ___ Option B.
EXAMPLE #1

ISSUE: PUBLIC SAFETY

LIMITED RESOURCES: CITY FUNDS

$ INVOLVED: COST OF ONE TRAFFIC LIGHT

PERCEIVED ALTERNATIVE OUTCOMES: BASED ON A STUDY DONE BY YOUR DEPT OF PUBLIC SAFETY, WHICH ESTIMATED THE PROJECTED NUMBER OF MAJOR ACCIDENTS AT INTERSECTIONS THROUGHOUT THE CITY:

1. IF YOU HANG A TRAFFIC LIGHT AT THE INTERSECTION OF X & Y STREETS, VIRTUALLY ALL OF THE PROJECTED 50 MAJOR ACCIDENTS AT THAT INTERSECTION CAN BE AVOIDED;


WHY VIEWED AS POSITIVE: SAFETY OR AVOIDING INJURY

PROBABILITIES: 1--100%  2--1/3 & 2/3

EXAMPLE #2

ISSUE: PUBLIC TRANSPORTATION

LIMITED RESOURCE: CITY REVENUES

$ INVOLVED: COST OF OPERATING ALONG ROUTES

PERCEIVED ALTERNATIVE OUTCOMES: DUE TO BUDGET CONSTRAINTS THE CITY IS CONSIDERING CUTTING BACK ON THE NUMBER OF ROUTES NOW OFFERED BY THE CITY TRANSPORTATION SYSTEM. AFTER ESTIMATING FUTURE GROWTH ALONG THE ROUTES AND PROJECTING DEMAND FOR THE SYSTEM, YOU FEEL THE FOLLOWING ARE YOUR ALTERNATIVES:

1. IF YOU CUT ROUTE #5, YOU FEEL CERTAIN THAT 10% OF YOUR PATRONS WILL BE WITHOUT A NEEDED SERVICE;

2. IF YOU CUT ROUTE #3, YOU FEEL THERE IS A 1/3 CHANCE THAT 36% OF YOUR PATRONS WILL BE WITHOUT SERVICE AND THERE IS A 2/3 CHANCE THAT NO PATRONS WILL BE WITHOUT A NEEDED SERVICE.
WHY VIEWED AS NEGATIVE: REDUCTION OF SERVICE

PROBABILITIES: 1--100%  2--1/3 & 2/3

EXAMPLE #3

ISSUE: PRIVATIZATION OF TRASH COLLECTION

LIMITED RESOURCE: CITY FUNDS

$ INVOLVED: CONTRACT PRICE (VERY CLOSE BETWEEN BIDDERS)

PERCEIVED OUTCOMES: AFTER A REVIEW OF THE BID PROPOSALS AND PRELIMINARY NEGOTIATIONS WITH BIDDERS, THERE IS SOME CHANCE THAT CONTRACTORS CAN PROVIDE CUSTOMERS SOME SAVINGS OF CURRENT COLLECTION CHARGES. THE TWO ALTERNATIVES ARE:

1. CONTRACTOR #1 GUARANTEES A 5% SAVINGS IN ANNUAL COLLECTION CHARGES.

2. CONTRACTOR #2 IS 20% CONFIDENT IT CAN PROVIDE 30% SAVINGS AND 80% CONFIDENT IT CAN PROVIDE NO SAVINGS.

WHY PERCEIVED POSITIVE: POTENTIAL CUSTOMER SAVINGS.

PROBABILITIES: 1--100%  2--20% & 80%

EXAMPLE #4

ISSUE: ATTRACTING INDUSTRY TO THE AREA

LIMITED RESOURCE: CITY LAND

$ INVOLVED: VALUE OF LAND

PERCEIVED ALTERNATIVE OUTCOMES:

1. IF CO. A BUILDS A PLANT ON THE DONATED LAND, IT GUARANTEES 30 JOBS WILL BE AVAILABLE;

2. IF CO. B BUILDS A PLANT ON THE DONATED LAND, IT IS 20% CERTAIN NO JOBS WILL BE AVAILABLE AND IT IS 80% CERTAIN THAT 40 JOBS WILL BE AVAILABLE

WHY PERCEIVED POSITIVE: CREATING JOBS

PROBABILITIES: 1--100%  2--20% & 80%
NAME: Karen Sue McKenzie

BORN: Portsmouth, Virginia, April 7, 1961

DEGREES: Ph.D. Louisiana State University, 1989
          M.S. University of Central Florida, 1985
          B.B.A. The University of Miami, 1983

RELEVANT EXPERIENCE: ACADEMIC

1-86 to Pres. Part-Time Instructor, Department of Accounting, Louisiana State University, Baton Rouge, Louisiana

NON-ACADEMIC


8-83 to 9-84 Scuba Instructor, D & S Dive Shop, Brandon, Florida.

MEMBERSHIPS: American Accounting Association, Government and Managerial sections

Certified Public Accountant, Licensed in Florida

HONORS & RECOGNITIONS: 1985 Representative from UCF at the Federation of Schools of Accountancy Student Lyceum.

1988 Representative from LSU at the American Accounting Association Doctoral Consortium.

4-85 Assistant Editor, Proceedings of the Thirty-seventh Annual Meeting, Southeast AAA.

4-85 Assistant Academic Program Director, Southeast Regional Meeting of the AAA.
DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Karen Sue McKenzie

Major Field: Accounting

Title of Dissertation: Prospect Theory in Governmental Accounting: Implications for the Budgeting Process at the Local Level

Approved:

[Signatures of Major Professor and Chairman, Dean of the Graduate School]

EXAMINING COMMITTEE:

[Signatures of committee members]

Date of Examination: March 15, 1989