

Administrative Innovations in Capital Budgeting at the State Level in the USA during the Great Recession

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Abstract: In this investigation administrative innovations in capital planning and budgeting were considered to be responses to the environmental change (economic decline). Three sets of factors frequently used in studies of organizational innovation are considered: performance gap, necessity of adoption innovation, and environmental influences. Using information provided by a survey designed by the author entitled “The Variety of State Capital Budgeting Survey”, this study employs a Logit model to empirically examine how the impact of the scarcity of financial resources and the performance gap are related to the probability of the adoption of administration innovation in capital budgeting during or as a consequence of the economic downturn. States with shorter-term capital budgets exhibited a higher probability of adopting administration innovations in their capital budgeting processes in response to the economic downturn compared to states with longer-term budgets. The findings contribute to our understanding of ingested administrative innovations, indicating that performance gap relating to change influence the probability of adopting this administrative innovations in the capital budgeting processes.

Key words: administrative innovations; state budgeting; organizational change; diffusion of innovations

JEL codes: H72, G28

1. Introduction

Given the importance of capital expenditures, the scope of capital financing, the condition of capital infrastructure on state level, and the shortage of knowledge about implementing of the administrative innovations in capital budgeting among state governments, exploration of this area is important.

Capital management is a critical component of financial management and strategic planning at the state government level. This paper is written in response to the suggestion by Halachmi and Sekwat (1997), Ammar, Duncombe, and Wright (2001, p. 48), and Srithongrung (2008, p. 83) that well-crafted evaluations of capital management practices and infrastructure planning in state and local governments are limited in number. Srithongrung (2008, p. 91) pointed out that “capital management processes based on systematic and strategic practices should result in an effective infrastructure system that can attract private investment and new residents.” Capital budgeting is therefore an important tool not only for critical public policy decision making, but also for the management of limited resources. According to Ammar, Duncombe, and Wright (2001, p. 48), well-crafted evaluations of capital management practices in state and local governments are limited in number. Much less attention has been paid to the changes in the planning and project selection processes, maintenance planning and

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funding during or as consequences of the economic downturn. Vigoda-Gabot, Shoham, Schwabsky, and Ruvio (2008) demonstrate, both theoretically and empirically, the importance of an innovative public administration and its usefulness to the explanation of citizenry-oriented outcomes, such as administrative public sector image, trust in governance and citizens' satisfaction. In this investigation, administrative innovations in capital budgeting were considered to be responses to environmental change (economic decline).

For the purpose of this research, data were gathered from multiple sources. First, several primary sources of information were collected. Several senior executives, budget analytics, and debt managers from the States' Budget Departments were interviewed for this study. Secondly, to collect data for the research was created the "The Variety of State Capital Budgeting Survey". The budget officers from 50 state's state budget offices were asked the series of questions about capital budgeting practice from Great Recession to the present; about capital planning, financing; about administrative innovations in capital budgeting. Third, secondary sources of information were mobilized including data from 50 states' web-sites of capital budgets, National Association of Budget Officers (NASBO) reports, Standard & Poor, Moody's reports.

The goal of this work is to improve the understanding of the factors that explain the adoption of administration innovations in capital budgeting at the state level from the economic downturn to the present (2007-2012). This study explores the following research questions: (1) During or as consequences of the economic downturn of 2007-2009, were any administrative innovations initiated in the capital budgeting process employed by the states? (2) Does the current capital budgeting process within the state employ any "best practices" that were adopted as a consequences observing what other states are doing? (3) What factors explain the adoption of administration innovation in capital budgeting at the state level?

This paper seeks to contribute to the literature of public administration in two ways. First, this research empirically examines the adoption of administrative innovations in the capital budgeting during or as consequences of the economic downturn (2007-2012). Second, this paper will propose that the duration of capital budget are related on the probability of the adoption of administration innovation in capital budgeting during the economic downturn (2007-2009) through present.

2. Conceptual Background and Hypotheses

Jacobs (2008) shows that governments have introduced capital budgets to serve all these objectives, singly or collectively, depending on the context. "In some cases, more attention has been paid to capital budgets as a way to reduce deficits caused by an excess of recurrent expenditures versus revenues" (Jacobs, 2008, p. 2). The normative literature on public capital recommends rational capital management practices, including long-range capital planning, multi-year fiscal planning, project management, and infrastructure assessment programs to enhance efficiency and effectiveness in public investment (Government Finance Research Center, 1983; NASBO, 1999; Aronson & Schwartz, 2004).

The increased volatility of the environment makes systematic strategic planning more difficult. Rapid change requires strategies that are flexible and creative—characteristics which, according to Hamel and Prahalad (1989, p. 66), are seldom associated with formalized planning. Changes in the environment have reinforced the case against formal strategic planning. Over the last twenty years there has been macroeconomic disequilibrium, exchange rate volatility, a revolution in microelectronics, and the emergence of newly industrializing countries. Hamel and Prahalad (1989, pp. 67-68) proposed that "uncertainty requires that strategy is concerned less with specific actions

and the more with establishing clarity of direction within which short-term flexibility can be reconciled with overall coordination of strategic decisions.” This requires that long-term strategic goals are committed to through “strategic intent” (Hamel & Prahalad, 1989). There has been some rapprochement of planning and budgeting. According to Schick (2008, p. 40), “the multiyear projections inaugurated several years ago were a partial response to this problem. Another factor has been the diversity of government agencies involved in related functions. This has given rise to various ad hoc coordinating devices, but it also has pointed to the need for permanent machinery to integrate dispersed activities.”

According to Fernandez and Wise (2010, p. 979), “organizational change sometimes occurs as organizations ‘ingest’ innovations from without. This process represents a vital form of organizational learning and adaptation to the external environment. The ‘invented’ innovation involves the discovery of an entirely new process, technology, or product by an organization.” (Barnett, 1953; Becker & Whisler, 1967). The emphasis here is on the “newness” of the innovation, indicating that no other organization has generated the idea before (Fernandez, Wise, 2010). Adopted or “ingested” innovations are processes, technologies, and products that are learned about, adopted and implemented for the first time in an organization; they are new only to the focal organization, having been invented or generated somewhere else (Pierce & Delbecq, 1977; Lewis & Seibold, 1993; Mohr, 1969; Knight, 1967). According to Fernandez and Wise (2010, p. 979), organizations “ingest” innovations, which represents a vital form of organizational learning and adaptation to the external environment.” Simon (1997) coined the term “ingested” innovations for this type of innovation, which has its origins beyond the boundaries of the organization. From Walker’s (1969, p. 881) perspective, “an innovation will be defined simply as a program or policy which is new to the states adopting it, no matter how old the program may be or how many other states may have adopted it.” According to March and Simon (1993, p. 209), “most innovations in an organization are a result of borrowing rather than invention.” They propose that borrowing saves following organizational costs: (1) the cost of invention, (2) the cost of testing, (3) the risk of evaluation’s risks.

Empirical studies have distinguished between administrative and technical innovations (Evan & Black, 1967; Daft & Becker, 1978; Aiken, Bacharach, & French, 1980; Kimberly & Evanisko, 1981). Damanpour and Evan (1984) compared the rate of adoption of two or more categories of innovations with each other and measured their impact on organizational performance. An administrative innovation was defined as the implementation of an internally generated or a borrowed idea—whether pertaining to a product, system, process, policy, program, or service—that was new to the organization at the time of adoption (Thompson, 1965; Zaltman, Duncan, & Holbek, 1973). Damanpour (1996) defined administrative innovations as innovations in organizational structure, administrative practices, and human resources, whereas technical innovations were defined as innovations in products, services, and the technology used to produce them. Administrative innovations are defined as those that occur in the relationships among people who interact in order to accomplish a particular goal or task in an organization (Cummings & Srivastva, 1977, Damanpour & Evan, 1984, p. 393). It includes those rules, roles, procedures, and structures that are related to the communication and exchange among people and between the environment and people (Cummings & Srivastva, 1977). An administrative innovation can be the implementation of a new way to recruit personnel, allocate resources, and structure tasks, authority, and rewards (Evan, 1966, pp. 51-52). It comprises innovations in organizational structure and in the management of people (Knight, 1967). Cyert and March (1963, p. 169) gave the definition of problem-oriented innovation—“search, like decision making, is problem oriented....search is stimulated by a problem...and is directed toward finding a solution to that problem.” The administrative innovations in capital budgeting can be defined as problem-oriented innovations.

According to Rogers (2005, p. 1), “getting a new idea adopted, even when it has obvious advantages, is difficult. Many innovations require a lengthy period of many years from the time when they become available to the time when they are widely adopted.” The rate of diffusion of innovation is a common problem for public organizations, in particular the budgeting system.

The importance of the external environment has long been emphasized in the corporate management literature and public management literature. Organizational actions need to fit with the external environment (Wan & Yiu, 2009), and when the environment changes, organizations have to change (Chattopadhyay, Glick, & Huber, 2001; Wise, 1999, 2002) because existing strategies may become suboptimal when the opportunities and threats associated with those strategies become redefined and the performance outcomes are altered (Audia et al., 2000).

The transformation process is even more rapid and drastic in the case of an environmental jolt (Park & Mezias, 2005, Meyer & Goes, 1988). Meyer (1982, p. 515) defined environmental jolts as “transient perturbations whose occurrences are difficult to foresee and whose impact on organizations are disruptive and often inimical.” Unlike Meyer, however, Tushman and Anderson (1986); Kraatz and Zajac (1996); Haveman and Rao (1997); Hoffman (1999); Sine and David (2003) investigated the influence of environmental jolts on entire fields of organizational activity. Sine and David (2003, p. 186) argued that “jolts prompt search processes that erode the taken-for-granted nature of institutions, resulting in the re-evaluation of the costs and benefits of existing institutional structures and the creation of new entrepreneurial opportunities.” Meyer, Brooks, and Goes (1990) wrote that in an environmental jolt, new opportunities are concomitantly created as the environment redefines attractive market positions. Rather than viewing an environmental jolt as a crisis that is dangerous or destructive, firms can perceive it largely as changes in the opportunity set within the external environment (Haveman, 1992; Haveman & Rao, 1997; Meyer, 1982). According to Wan and Yiu (2009, p. 793) “to thrive in an environmental jolt, firms have to act more aggressively in order to capitalize on the new opportunity set.” Viewed in this light, firms can reap significant benefits from an environmental jolt by seizing new opportunities (Chattopadhyay, Glick, & Huber, 2001; Meyer, 1982). The Great Recession and the resultant budget deficits that states experienced served as an environmental jolt for states’ central budget offices. Environmental jolts can prompt financial crisis; that is, perceptions by field actors (public organizations, legislators, citizen, etc.) that fundamental outcomes are in contrast to expectations, and thus precipitate action intended to avoid dramatic negative outcomes. Public organizations can also obtain significant benefits from an environmental jolt by improving their forecasting, coordination process, capital budgeting, and financing in order withstand budget gaps during economic decline. “The Chinese symbol for crisis combines two simpler symbols, the symbol for danger and the one for opportunity. Crises are times of danger, but they are also times of opportunity” (Starbuck, Greve, & Hedberg, 1978, p. 135).

Public organizations undergo rational adaptive changes in response to their task environment in order to improve their effectiveness and efficiency (Zaltman, Duncan, & Holbek, 1973; Halligan, 1999; March & Olsen, 1989; Lane, 1999; Kaufman, 1969, 1981, 1991; Lindquist, 1997; Light, 1997, 1998; Wise, 2002; Scott, 2001, 2003; Fernandez & Rainey, 2006). Formal policy changes or other pressures from the institutional environment, as well as progression through stages of their life cycle, also help to account for why organizations undergo change (Kaufman, 1991; Downs, 1967; Kimberly & Miles, 1980; Quinn & Cameron, 1983).

Moreover, change occurs as organizations either internally generate innovations or adopt them, which is a vital form of organizational learning and adaptation to the external environment (Simon, 1997). Institutional leadership is particularly needed for organizational innovation, which represents key periods of development and transition when the organization is open to or forced to consider alternative ways of doing things (Selznick, 1957,

p. 602). During these periods, Selznick emphasized that “a set of beliefs, values and guiding principles may emerge in the organization that are counterproductive to the organization’s mission or distinctive competence.” (Selznick, 1957, p. 139). According to Damanpour and Evan (1984, p. 406), “environmental change or uncertainty stimulates changes in the strategy and/or structure of an organization, which in turn lead to the implementation of innovations.” According to Fernandez and Wise (2010, p. 985), “theoretical approaches to the study of organizations have focused on the influence of the external environment on organizational structure, strategy, and decision making. This includes contingency theory, resource dependence theory, population ecology, new institutional economics, and neo-institutional theory.” Organization theory provides concepts of environmental dynamism, complexity, and munificence. These concepts are applied to the relationships between strategies and performance (Hofer & Schendel, 1978; Pfeffer & Salancik, 1978; Porter, 1980; Scherer, 1970). The organization-adapting function requires that as the environment changes, the structure or processes of the organization undergo change to meet these new environmental conditions (Damanpour & Evan, 1984, p. 395). Paine and Anderson (1977) suggest that firms in uncertain environments utilize more innovative strategies. Mensch (1979) and Kleinknecht (1987) wrote that economic decline is the trigger for innovations. According to March and Simon (1993, p. 205), “the ‘natural’ stimuli to innovation—the failure of the existing program to attain satisfactory levels of the criteria—can be supplemented by additional programmed stimuli.” The rate of innovation is likely to increase when changes in the internal or external environment make existing programs unsatisfactory. March and Simon (1993, p. 205) propose two criteria for satisfaction: (1) rates of change of performance, where innovative activity would be induced in just the same way as by unfavorable environmental changes if the existing program did not bring about such a rate of change; and (2) rates of innovation (for example, rates of introduction of new programs into the organization).

2.1 Performance and Adoption of Administrative Innovations

Williamson (1975), Chandler (1977), and March and Simon (1993) argue that substandard performance stimulates innovations, particularly in organizational structure. Cyert and March (1963) wrote that negative relationships between performance and innovation primarily apply to problem-oriented innovations, which are justifiable in the short term and are linked directly to a problem. Mann and March (1978, p. 543) highlight that some organizations are more dependent on changes in the environment (i.e., dependent on environmental scarcity), and thus are more likely to make changes in time of adversity. Fernandez and Wise (2010, p. 983) emphasize that “If necessity is the mother of invention, poor or substandard performance should kindle creative and innovative thinking aimed at reducing the performance gap.” It is apparent that many states’ budget agencies have increased their reliance on administrative innovations as a result of the economic downturn.

Conceptual proposition 1: A performance gap is positively related to the probability of the adoption of administrative innovations in capital budgeting processes in response to the economic downturn.

Conceptual proposition 2: Necessity of improvements is positively related to the probability of the adoption of administrative innovations in capital budgeting processes in response to the economic downturn.

Performance gaps provide an incentive to search for administrative innovations that directly address the problem of underperformance. There are several different indicators of performance: (1) economic performance; (2) managerial performance; (3) performance in capital budgeting processes; and (4) financial performance.

A set of research hypotheses are formulated based on the existing literature and on the results of the survey presented in the preceding chapter. These hypotheses consider the impact of performance gaps on the probability of the adoption of administrative innovations to capital budgeting processes in response to the economic downturn.

2.2 Economic Performance

Hypothesis 1: States with lower GSP per capita exhibit a higher probability of adoption of administrative innovations in capital budgeting processes in response to the economic downturn compared to states with higher GSP per capita.

Walker (1969, p. 884) shows that “the larger, wealthier, more industrialized states adopt new programs somewhat more rapidly than their smaller, less well-developed neighbors.” Walker (1969, p. 887) concludes that “New York, California and Michigan adopt new programs more rapidly than Mississippi, Wyoming, and South Dakota primarily because they are bigger, richer, more urban, more industrial, have more fluidity and turnover in their political systems, and have legislatures which more adequately represent their cities.” Walker (1969, p. 893) finds that “states like New York, Massachusetts, California, and Michigan should be seen as regional pace setters, each of which has a group of followers, usually within their own region of the country, that tend to adopt programs only after the pioneers have led the way.”

The survey results discussed in the preceding chapter indicate that California, Colorado, Indiana, Kentucky, Massachusetts, Montana, Mississippi, Missouri, North Carolina, Pennsylvania, Tennessee, Vermont, Washington, and Wisconsin implemented improvements in capital planning systems during the economic downturn. In contrast to the economic situation in 1960-1970, during the most recent downturn, it was not only the bigger, richer, more urban, and more industrial states that implemented administrative innovations in capital planning and budgeting, but less industrial states also implemented these innovations.

Because improving GSP per capita is a goal of state governments, it is a good measure of overall economic performance. GSP per capita should be negatively associated with the probability of implementing administration innovations to the capital budgeting processes due to the fact that low GSP per capita should induce a search for innovations to improve performance.

2.3 Managerial Performance

The Government Performance Project (GPP) report focuses on four fundamental areas of government management: Overall, Information, People, Money, and Infrastructure. This project systematically evaluates how well states manage employees, information, and budgets and finance. The GPP evaluates state governments’ performance in regard to their basic management functions (Barrett & Greene, 2008) and thus provides a great opportunity to study state governments’ management performance. In this study, states’ managerial performance is estimated by using these three managerial performance indicators: (1) Overall GPP; (2) GPP Infrastructure; and (3) GPP Money.

Hypothesis 2a: States with lower Overall GPP exhibit a higher probability of adoption of administrative innovations in capital budgeting processes in response to the economic downturn compared to states with higher Overall GPP.

Hypothesis 2b: States with lower GPP Money exhibit a higher probability of adoption administrative innovations in capital budgeting processes in response to the economic downturn compared to states with higher GPP Money.

Hypothesis 2c: States with lower GPP Infrastructure exhibit a higher probability of adoption administrative innovations in capital budgeting processes in response to the economic downturn compare to states with higher GPP Infrastructure.

Srithongrung (2008, p. 92) found that “forward-looking management approaches should lead administrators to invest and manage capital stocks so as to enhance productivity levels in response to external and internal

economic, social, and environmental changes.” According to Zhao and Guo (2011, p. 562), state governments’ performance grades assigned by the Government Performance Project (GPP) provide a great opportunity to study how people perceive and respond to state governments’ management capacity. According to the Government Performance Project report (2008, p. 33), states with Overall GPP “[have] to have excellent statewide and agency planning, be a leader in performance auditing, have outcome data for almost all government functions, show substantial use of performance information by the executive branch and some use by the legislature.”

GPP Infrastructure evaluates: (1) how well the state manages its roads, bridges and buildings? (2) how efficient the capital planning and project monitoring processes are? (3) how effectively the state maintains its assets? and (4) how efficiently the state coordinates this work within the state and with other jurisdictions?

GPP Money evaluates: (1) whether the state uses a long-term perspective to make budget decisions? (2) whether the state’s budget process is transparent? (3) whether the state’s financial management activities support structural balance between ongoing revenues and expenditures? (4) how efficient the state’s procurement activities are? and (5) whether the state systematically assesses the effectiveness of its financial operations and management?

Overall GPP, GPP Infrastructure, and GPP Money should be negatively associated with the probability of implementing administration innovations to the capital budgeting processes due to the fact that low overall GPP, GPP Infrastructure, and GPP Money should induce a search for innovations to improve performance.

2.4 Performance in Capital Budgeting Processes

Hypothesis 3: States with shorter-term capital budgets exhibit a higher probability of adopting administrative innovations in the capital budgeting processes in response to the economic downturn compared to states with longer-term budgets.

Mid-term and long-term budgets are more efficient for evaluating the needs of capital improvement, stimulating economic growth and development, analyzing capital infrastructure’s condition, and maintaining economic stability during an economic downturn. Jacobs (2008, p. 22) proposes, “good multi-year planning furthermore supports overall fiscal balance, with more stable spending patterns for programs, and for their capital planning and execution. Good budget execution and procurement will enable timely, within-budget completion of projects (assuming good program and project management).”

According to Hou (2006, p. 732), “with only one year’s span, the annual budgeting cycle cannot guarantee a balanced budget and makes it more difficult for state and local governments to ensure balanced budgets in the long run or maintain stable spending for necessary service levels during lean years.” For example, the Minnesota Management and Budget Office (MMB) reported in its response to the survey (“The Variety of the State Capital Budgeting”, 2012) that the MMB tends to take a long view because most of the state’s capital projects are financed by 20-year general obligation bonds. It follows that a good measure of capital management performance is the use of a multi-year horizon for the capital budget. Therefore, it is logical that a state with a short capital budget time horizon may choose to lengthen the budget’s time horizon in its search for innovations to improve performance. As a result, the duration of the capital budget should be negatively associated with the probability of implementing administration innovations to the capital budgeting processes.

2.5 Necessity of Changes in Financial Performance

The necessity of changes in financial performance can be estimated using the following measurements: (1) objective estimation (i.e., the budget gap as a measure of a state’s financial resource scarcity); and (2) subjective estimation (i.e., perceptual measurement of financial resource scarcity by the state’s budget director or budget

analyst). It follows that the impact of a gap in financial performance on the probability of adoption administrative innovations in capital budgeting process can be captured by the following hypotheses:

Hypotheses 4a: A state's scarcity in financial resources due to the economic downturn is positively related to the probability that it will adopt administrative innovations in its capital budgeting processes.

Hypotheses 4b: The perceived scarcity of a state's financial resources due to the economic downturn is positively related to the probability that it will adopt administrative innovations in its capital budgeting processes.

State governments faced extraordinary fiscal challenges during the recent economic downturn. Since the beginning of the recession, multi-year budget shortfalls of historic proportions have been a challenge for many states. According to McNichol, Oliff, and Johnson (2011), budget shortfalls are the extent to which states' revenues fall short of the costs of providing services. Total balances—ending balances and the amounts in budget stabilization “rainy day” funds—are a crucial tool on which states rely heavily during fiscal downturns and budget shortfalls. Shortfall estimates for a fiscal year estimate the gap between projected revenues and spending before adoption of the budget for 2010 year as reported by the states.

The perceived scarcity of states' financial resources was revealed by the answers given by 40 states' budget directors and budget analysts to the following question, posed in interviews and correspondence from 2011 through 2012: “What impact has the recession had on the availability of funding resources for capital projects?”

Figure 1 illustrates the study's conceptual framework based on the aforementioned hypotheses. The theoretical model in Figure 1 demonstrates the impact of the different performance indicators on the probability of the adoption of administrative innovations in the capital budgeting process.

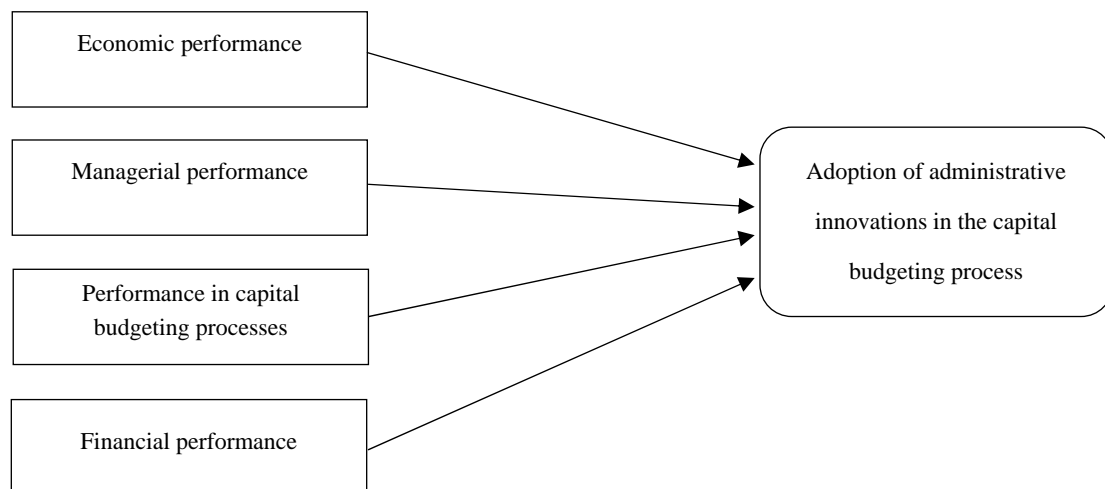


Figure 1 The Impact of Performance on the Adoption of Administrative Innovations in Capital Budgeting

3. Analysis

3.1 Sample and Data Collection

Data were gathered from multiple sources. First, several primary sources of information were used. The study is based on a series of in-depth personal interviews, as well as on correspondence with executives from forty states. The specific titles of the interviewees varied from state to state, although most of them held positions as budget directors or budget analysts.

An “enquiring” qualitative analysis was employed when conducting the interviews (Savage & Black, 1995).

This procedure involved the initial use of broad, thematic questions followed by more detailed, probing questions that directed the interview along paths thought to be most helpful or intriguing (Miles & Covin, 2002; 2007). Interviewee responses were transcribed and then e-mailed back to the interviewees to ensure accuracy.

Secondary sources of information were mobilized, including data from states' web-sites, BEA data, and NASBO reports. Third, a survey entitled "The Variety of State Capital Budgeting Survey" was created to investigate capital planning and budgeting at the state level. Two surveys serve as a basis for this survey: (1) the survey of the U.S. Office of Management and Budget (1986) and (2) National Association of State Budget Officers (NASBO) report "Capital Budgeting in the States" (1999); some questions from these surveys were used "as is", other questions were modified, and some additional questions were added.

The survey covers the content of the capital plan, the capital project selection processes, the project management system, maintenance planning, and funding (Appendix). The survey was sent to budget officers in all 50 states' budget offices to collect the information for their respective states about capital budgeting practice before and during the Great Recession, about capital planning, financing, and about budget innovations. The survey was initially sent on October 29, 2011 and by July 1, 2012, 40 states had responded, a response rate of 80%.

After receiving completed surveys from those 40 states, in-depth personal interviews and correspondence were initiated with the respondents.

Eight Logit models and a Probit model are employed to test the aforementioned hypotheses. Multiple data sources are used: (1) in-depth interviews and correspondence with senior executives from the Budget Departments of the 40 states that responded to survey; (2) states' web-sites, the U.S. Bureau of Economic Analysis (BEA), and the Center of Budget and Policy Priorities, the 2010 Annual Survey of State Government Finances, the 2010 Population Estimates Program of US Census Bureau, and the 2011 State Expenditure Report of National Association of State Budget Officers for these 40 states.

3.2 Dependent Variables

The dependent variables for the models are the adoption of administration innovations in the capital budgeting process from the recent economic downturn until the present.

The dependent variable is *changecapplan*—the adoption of administration innovations in capital budgeting processes from the economic downturn of 2007-2009 and through the present.

The dependent variable *changecapplan* is measured by the coding of answers to the following question, which was posed in interviews and communication conducted from 2011 through 2012:

During or as consequences of the economic downturn of 2007-2009, were any administrative innovations initiated in the capital budgeting process employed by the states (e.g., did new procedures follow new coordination mechanisms between agencies, changes in documentation or the planning/control functions)?

The dependent variable *changecapplan* has a value of zero when the state did not adopt the administrative innovations to the capital budgeting processes. The dependent variable *changecapplan* has a value of one when the state adopts administrative innovations to the capital budgeting processes.

3.3 Independent Variables

The first independent variable, *gdppc*, —GSP per capita in the year 2010—measures a state's economic condition or economic performance.

A second group of independent variables is used to measure managerial performance. Managerial performance is measured in three ways: GPP Overall, GPP Money, and GPP Infrastructure (Government Performance Project, 2008).

The independent variable GPP Overall estimates: (1) the structure of state policies and programs; (2) the relationships among elements of the state government, and (3) the relationship between the government and its citizens.

The independent variable GPP Infrastructure estimates: (1) the analysis of the state's infrastructure needs, the transparency of the process for selecting infrastructure projects; (2) process for monitoring infrastructure projects throughout their design and construction; (3) the condition of maintenance of state's infrastructure according to generally recognized engineering practices; (4) comprehensiveness of infrastructure management; (5) intergovernmental and interstate infrastructure coordination networks.

The independent variable GPP Money estimates: (1) long-term outlook that the state uses to make budget decisions; (2) analysis of budget transparency; (3) the efficiency of procurement activities; (4) the structural balance between ongoing revenues and expenditures; and (5) analysis of its financial operations' and management practices' effectiveness.

This study uses GPP Overall, GPP Money, and GPP Infrastructure as the primary independent variables. GPP Overall, GPP Money, and GPP Infrastructure ratings are converted into numeric values using the following conversion scale: ratings of A, A-, B+, B, B-, C+, C, C-, and D+ translate into numeric values of 1, 2, 3, 4, 5, 6, 7, 8 and 9, respectively.

A third independent variable, capbudg, measures the capital budget's duration (i.e., the time period over which the capital budget applies) to estimate performance in the capital budgeting processes.

A fourth group of independent variables measures real and perceived financial performance (objective and perceived scarcity of financial resources).

The objective scarcity of financial resources is measured by the following independent variables: (1) balance is the ending balance of General Fund per capita in 2010; (2) balgenfundpc is the balance of the General Fund as a percent of expenditure in 2010. These data were obtained from Center of Budget and Policy Priorities' data, the 2010 Annual Survey of State Government Finances, the 2010 Population Estimates Program of US Census Bureau, and the 2011 State Expenditure Report of National Association of State Budget Officers, and NASBO Report 2011 "Fiscal Survey of States."

The perceived states' financial resources scarcity—impactreces—is measured by the coding of answers to the following question, which was posed in interviews and communication conducted from 2011 through 2012:

What impact has the recession had on the availability of funding resources for capital projects?

- (1) Strong negative impact
- (2) Weak negative impact
- (3) No impact
- (4) Weak positive impact
- (5) Strong positive impact.

Table 1 Coding of the Variable Impact of the Great Recession

Impact of the Great Recession on the availability of financial resources for capital financing	Code
Strong negative	1
Weak negative	2
No impact	3
Positive	4

4. Results

Table 2 presents descriptive statistics for all of the variables used in the study.

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
gppoverall	40	5.05	1.5	2	8
gppinfrastr	40	4.9	1.78	1	9
gppm	40	4.72	2.03	1	9
impactreces	40	1.94	0.85	1	4
capitalbudg	40	3.8	1.89	0	9
balance	40	7.1	9.11	-4.2	40.3
balgenfundpc	40	0.015	0.32	-0.94	0.79

Table 3 provides the correlations that are associated with the variables in the model.

Table 3 Correlation of Variables

	changcapplan	gdppc	capbudg	gppoverall	gppm	gppinfrastr	impactreces
changcapplan	1						
gdppc	-0.22	1					
capbudg	-0.36	0.05	1				
gppoverall	-0.13	-0.15	0.37	1			
gppm	-0.18	-0.06	0.37	0.77	1		
gppinfrastr	-0.12	-0.14	0.46	0.69	0.61	1	
impactreces	-0.01	-0.04	0.11	0.07	-0.02	0.29	1

The results show high correlations for the variables GPP Overall, GPP Money, and GPP Infrastructure. The correlations show that pairs of variables the variables GPP Overall and GPP Money; GPP Overall and GPP Infrastructure are strongly related. A value of 0.77 for variables GPP Overall and GPP Infrastructure means that 59% of the variance is related. In this case, these variables are analyzed in three different models (Model 2, Model 3, and Model 4) to avoid high correlation between the variables GPP Overall and GPP Money and GPP Overall and GPP Infrastructure.

Table 4 presents the Logit estimates of the determinants of the adoption of administrative innovations in capital budgeting (Models 1-8) and Probit estimates (Model 9). The first model analyzed the impact of performance in capital budgeting processes (the duration of capital budget) to the probability that the state will adopt administrative innovations in its capital budgeting processes. The second model estimates the impact of performance on capital budgeting processes, economic performance (the state's economic condition), and managerial performance (GPP Overall) to the probability that the state will adopt administrative innovations in its capital budgeting processes. The differences among the second, third, and fourth models are that they use different managerial performance independent variables: GPP Overall (Model 2), GPP Money (Model 3), and GPP Infrastructure (Model 4). The fifth model analyzed the impact of performance on capital budgeting processes and the perception of the scarcity of states' financial resources to the probability that the state will adopt administrative innovations in its capital budgeting processes. The sixth model estimates the impact of performance on capital budgeting processes, economic performance (the state's economic condition), managerial performance (GPP Overall), and the perception of the scarcity of states' financial resources on the probability that the state will adopt

administrative innovations in its capital budgeting processes. The seventh and eighth models included the impact of objective scarcity of financial resources that are measured by following independent variables (1) *balgenfundpc*—balances of the General Fund as percent of expenditures in 2010; (2) *balance*—the ending balance of the General Fund per capita in 2010 in Model 8. The Probit Model estimates the impact of performance on the capital budgeting processes, economic performance (the state's economic condition), and the perception of the scarcity of states' financial resources on the probability that the state will adopt administrative innovations in its capital budgeting processes.

Table 4 Results of Logit and Probit Model

Variable	Model 1: Logit	Model 2: Logit	Model 3: Logit	Model 4: Logit	Model 5: Logit	Model 6: Logit	Model 7: Logit	Model 8: Logit	Model 9: Logit
The duration of capital budget	-0.47**	-0.46**	-0.45**	-0.5**	-0.48**	-0.48**	-0.52**	-0.52**	-0.31**
Economic condition (GDP per capita)		-0.06	-0.07	-0.06		-0.07	-0.06	-0.06	-0.04
GPP overall		-0.07				-0.08			
GPP Money			-0.11						
GPP Infrastructure				0.02					
Impact of economic downturn on availability of financial resources for capital projects					0.42	0.19	0.17	0.2	0.11
Ending Balance of General Fund per capita								-0.43	
Balances as percent of expenditure							-0.04		
Capital outlay per capita									
LR chi2	5.59	7.82	8.06	7.74	6.05	8	8.82	8.1	7.85
Prob>chi2	0.018	0.04	0.04	0.05	0.19	0.09	0.06	0.08	0.04
McFadden's R2	0.102	0.143	0.15	0.14	0.11	0.15	0.16	0.15	0.14
ML R2	0.13	0.18	0.18	0.18	0.14	0.18	0.19	0.18	0.18
AIC	1.32	1.36	1.36	1.37	1.46	1.41	1.39	1.41	1.36
BIC	-91.22	-86.06	-86.31	-85.99	-80.61	-82.56	-83.38	-82.62	-86.09
* p < 0.10 ** p < 0.05 ***p < 0.01									

The results in all nine models provide support for effect of the impact of performance on capital budgeting processes (the duration of capital budget) to the probability that the state will adopt administrative innovations in its capital budgeting processes. This study proves that a performance gap in the capital budgeting process is positively related to the probability of the adoption of administrative innovations to capital budgeting processes in response to economic downturn.

The results in all models fail to provide support for the effect of economic performance on the probability of the adoption of administration innovations in the capital budgeting processes at the state level during economic downturns. The impact of GP Overall, GPP Money, and GPP Infrastructure does not have a statistically significant effect on the probability of states adopting administrative innovations in the area of capital budgeting.

A hypothesis that the objective situation of the state's resources and the perception of the scarcity of states' financial resources in response to the economic downturn is positively related to the probability of the adoption of administrative innovations in the capital budgeting processes at the state level is not supported.

The results in Models 1-9 prove Cyert and March's proposition (1963) that a negative relationship between performance and innovation applies primarily to problem-oriented innovations, which are justifiable in the short term and are directly linked to a problem. The study suggests that states with shorter-term capital budgets exhibit a higher probability of adopting administrative innovations in their capital budgeting processes in response to economic downturns compared to states with longer-term budgets.

5. Conclusion

The consequences of capital investments extend far into the future, are usually irreversible, and affect future growth and development (Moak & Hillhouse, 1975, p. 98). There are almost unlimited opportunities to invest capital; without a sound plan for capital decision making, the likelihood of the future fiscal crisis as the result of malpractice during the project selection process is increased (Mayer, 1978).

Many states across the country have faced significant budgetary challenges. Due to the recession and declining revenues, the state has faced fiscal stress. Purely cutback management can lead to ad hoc and non-purposeful strategies. My research consistent with this proposition by Premchand (2006, p. 27) that "the nature and dimensions of the fiscal stress was such that it became abundantly clear that the traditional methods of nip and tuck, or a cut here or there in the sectoral allocations, would not serve the purpose". This cutback management had to be combined with improvements in capital budgeting and financing processes. This research analyzes the administrative innovation in capital planning and infrastructure's financing that were implemented in many states during the economic downturn (2007-2009) through present.

This study found that many states increase the duration of capital plan; use the medium term capital expenditure planning or master plan; highlight the prioritization and selection process; put the emphasis on improved governance through greater fiscal transparency and enhanced framework of financial and program accountability; improve budget making through the special computer database; develop the comprehensive analysis of the capital budget needs; improve coordination with operating budget; emphasize the planning and execution of preventive maintenance; and improve cash-monitoring controls during economic downturn.

These propositions are derived from consideration of those capital budgeting practices that were presented to us during our interviews as representing effective strategic approaches to capital budgeting. Actions consistent with these hypotheses, the author believes, will have a positive and significant impact on capital budgeting improvement over the long term. Important factors affecting the probability of adoption administration innovations in the capital budgeting processes include performance gap in capital budgeting process. If states used long-range fiscal budgeting and implement administrative innovations in the capital budgeting processes, prospects would likely be improved for continued budgetary balance.

Actions consistent with these hypotheses will have a positive and significant impact on capital budgeting improvement over the long term. If states use long-range fiscal budgeting and implement administrative innovations in the capital budgeting processes, prospects will likely improve to move toward continued budgetary balance. It would be more effective to use the strategic intent planning than short term planning in capital budgeting at the state level. The strategic intent planning can use the advantages of both sides. The sense of direction includes an understanding of the long-term perspectives over the next decade. Analysts must employ specific strategies to be successful in the budgeting process. States must understand how to effectively navigate a decision through a "window of opportunity", with the goal being acceptance of their decision by those higher up

and the final decision being an appropriation. In my opinion, there is a necessity for strategic capital management in the public sector that will include: long-range objective setting (LROS), forecasting, capital budgeting, capital planning, implementation, audit and control. LROS refers to organizations creating goals and objectives for state agencies to achieve in the future; in this case, the prioritization section of the capital plan is very important. Forecasting refers to predicting the fiscal condition, the political situation, and environmental changes and trends.

This study has several limitations. First, this study analyzes the capital budgeting process at the state level. The research on states' capital budgeting can be combined with the research at the county and city level. Many of the capital budget systems now in operation in American cities were established in the 1940's. Many cities have improved their financial planning and budgetary decision-making. It will be possible to use the Multilevel Model for Change in future research on the implementation of administrative innovations in capital budgeting at the city and county levels. Research on capital budgeting at the city and county level, in combination with state capital budgeting, would be fruitful.

The second limitation regards the applicability of its results to other areas, i.e., external validity. This study's area is restricted to states in the United States of America. However, the states in the USA have many specific and unique characteristics. These characteristics may not hold in regions of other countries. However, this study's findings can provide some insights into the implementation of administrative innovations in capital budgeting.

This research will contribute to the field of administrative innovations in capital budgeting in three important ways. First, it contributes to the short literature on the administrative innovations in public sector and examining how these administrative innovations vary over the economic cycle. It is the first to look specifically at the administrative innovations in capital budgeting processes. Second, understanding the best practice of capital planning, budgeting, and financing can help state policy makers design the expenditure policy. The diffusion of administrative innovations in capital budgeting at the state level is very low. Surprisingly, the results of survey show that diffusion of innovation in capital budgeting is very low. All 40 states' Budget Directors, budget analytics, and debt managers answered that they don't adopt another state's procedural practice for capital project prioritization, capital financing, investment analysis, that they use own practice and the advices of consulting firms. Moreover, many interviewees identified the importance of using the best practice of other states in capital budgeting. The collaboration initiatives and improvements in capital management are expected to contribute to a moderation in the rate of expenditure growth, to greater efficiency in capital spending, and to improved accountability in governments. This research improves the knowledge about best practice in capital planning and budgeting in CBO at the state level. By making the best practices of other states available to Executive Budget Directors, my research will contribute to greater efficiency in capital spending at the state level, and to improve collaboration process at the state level across the USA. This research will expend knowledge of capital budgeting for practicing planners, developers, budget analytics, debt managers, and policy makers in the areas of regional collaboration, capital planning, and capital budgeting. Finally, the findings from this research will contribute to the theories that economic decline can be trigger for administrative innovation in capital budgeting in the budget agencies of governments at the state level.

References:

- Ammar A., Duncombe R. and Wright A. (2001). "Evaluating capital management: A new approach", *Public Budgeting & Finance*, Vol. 2, No. 1, pp. 47-69.
- Chattopadhyay P., Glick W. H. and Huber G. P. (2001). "Organizational actions in response to threats and opportunities", *Academy of Management Journal*, Vol. 44, pp. 937-955.

- Cummings T. G. and Srivastva S. (1977). *Management of Work: A Socio-Technical Systems Approach*, Kent, OH: Kent State University Press.
- Cyert R. M. and March J. C. (1964). "A behavioral theory of organizations", in: Faris R. E. (ed.), *Handbook of Modern Sociology*, Chicago, IL: Prentice Hall, pp. 485-529.
- Damanpour F. and Evan W. M. (1984). "Organizational innovation and performance: The problem of 'Organizational Lag'", *Administrative Science Quarterly*, Vol. 29, No. 3, pp. 392-409.
- Downs A. (1967). *Inside Bureaucracy*, New York: Little, Brown.
- Evan W. M. (1966). "Organizational lag", *Human Organizations*, Vol. 25, pp. 51-59.
- Fernandez S. and Rainey H. G. (2006). "Managing successful organizational change in the public sector: An agenda for research and practice", *Public Administration Review*, Vol. 66, pp. 168-176.
- Fernandez S. and Wise L. (2010). "An exploration of why public organizations 'ingest' innovations", *Public Administration*, Vol. 88, No. 4, pp. 979-998.
- Halachmi A. and Sekwat A. (1997). "Strategic capital budgeting and planning: Prospects at the county level", *Public Budgeting and Financial Management*, Vol. 1, pp. 578-596.
- Halligan J. (1999). "New public sector models: Reform in Australia and New Zealand", in: J. Lane (Ed.), *Public Sector Reform: Rationale, Trends and Problems*, Thousand Oaks, CA: Sage, pp. 17-46.
- Haveman H. A. (1992). "Between a rock and a hard place: organizational change and performance under conditions of fundamental environmental transformation", *Administrative Science Quarterly*, Vol. 37, pp. 48-75.
- Haveman H. A. and Rao, H. (1997). "Structuring a theory of moral sentiments: institutional and coevolution in the early thrift industry", *American Journal of Sociology*, Vol. 102, No. 6, pp. 1606-1651.
- Kaufman H. (1969). "Administrative decentralization and political power", *Public Administration Review*, Vol. 29, No. 1, pp. 3-15.
- Kaufman H. (1981). *The Administrative Behavior of Federal Bureau Chiefs*, Washington, DC: Brookings Institution.
- Kaufman H. (1991). *Time, Chance, and Organizations* (2nd ed.), Chatham, NJ: Chatham House.
- Knight K. E. (1967). "A descriptive model of the intra-firm innovation process", *The Journal of Business*, Vol. 40, pp. 478-496.
- Lane J. (Ed.) (1997). *Public Sector Reform: Rationale, Trends and Problems*, Thousand Oaks, CA: Sage, pp. 17-46.
- Lewis L. K. and Seibold D. R. (1993). "Innovation modification during intraorganizational adoption", *Academy of Management Review*, Vol. 18, pp. 322-354.
- Light P. (1997). *The Tides of Reform*, New Haven, CT: Yale University Press.
- Light P. (1998). *Sustaining Innovation: Creating Nonprofit and Government Organizations that Innovate Naturally*, San Francisco, CA: Jossey-Bass.
- Lindquist E. A. (1997). "The bewildering pace of public sector reform in Canada", in: J. Lane (Ed.), *Public Sector Reform: Rationale, Trends and Problems*, Thousand Oaks, CA: Sage, pp. 47-63.
- Mann C. L. and March J. (1978). "Financial adversity, internal competition, and curriculum change in a university", *Administrative Science Quarterly*, Vol. 23, No. 4, pp. 541-552.
- March J. (1978). "Bounded rationality, ambiguity, and the engineering of choice", *The Bell Journal of Economics*, Vol. 9, No. 2, pp. 587-608.
- March J. G. and Olsen J. P. (1989). *Rediscovering Institutions*, New York: The Free Press.
- March J. and Simon H. (1993). *Organizations* (2nd ed.), New York: The Free Press.
- Meyer A. D., Brooks G. R. and Goes J. B. (1990). "Environmental jolts and industry revolutions: organizational responses to discontinuous change", *Strategic Management Journal*, summer special Issue 11, pp. 93-110.
- Meyer A. D. and Goes J. B. (1988). "Organizational assimilations and innovation: A multilevel contextual analysis", *Academy of Management Journal*, Vol. 31, pp. 897-923.
- Mohr L. B. (1969). "Determinants of innovation in organizations", *American Political Science Review*, Vol. 63, pp. 111-126.
- National Association of State Budget Officers (1999). "Budget process in the states", available online at: <http://www.nasbo.org/publications.php>.
- National Association of State Budget Officers (2000). "Capital budgeting in the states—Path to success: A comparative analysis of capital budgeting practices in the states", available online at: <http://www.nasbo.org/publications.php>.
- National Association of State Budget Officers (2002). "Budget process in the states", available online at: <http://www.nasbo.org/publications.php>.
- National Association of State Budget Officers (2009). "Budget process in the states", available online at: <http://www.nasbo.org/publications.php>.

- National Association of State Budget Officers (2010). "State expenditure report", available online at: <http://www.nasbo.org/publications.php>.
- Pfeffer J. and Salancik G. R. (1978). *The External Control of Organizations*, New York: Harper & Row.
- PEW Center (2008). "Government performance project—Grading the states in 2008: A look inside", available online at: http://www.pewcenteronthestates.org/report_detail.aspx?id=32742.
- PEW Center (2008). "Governing measuring performance The State Management Report Card for 2008 GPP", available online at: http://www.pewstates.org/uploadedFiles/PCS_Assets/2008/Grading-the-States-2008.pdf.
- Pierce J. L. and Delbecq A. L. (1977). "Organization structure, individual attitudes and innovation", *Academy of Management Review*, Vol. 2, No. 1, pp. 27-37.
- Porter M. E. (1980). *Competitive Strategy*, New York, NY: Free Press.
- Quinn R. E. and Cameron K. (1983). "Organizational life cycles and shifting criteria of effectiveness: Some preliminary evidence", *Management Science*, Vol. 29, No. 1, pp. 33-51.
- Rogers E. M. (2005). *Diffusion of Innovations* (5th ed.), New York: The Free Press.
- Thompson V. A. (1965). "Bureaucracy and innovation", *Administrative Science Quarterly*, Vol. 10, No. 1, pp. 1-20.
- Scott W. R. (2001). *Institutions and Organizations* (2nd ed.), Thousand Oaks, CA: Sage.
- Scott W. R. (2003). *Organizations: Rational, Natural, and Open Systems* (5th ed.), Upper Saddle River, NJ: Prentice Hall.
- Sine W. D. and David R. (2003). "Environmental jolts, institutional change, and the creation of entrepreneurial opportunity in the US electric power industry", *Research Policy*, Vol. 32, pp. 185-207.
- Strithongrung A. (2008). "Impacts of state capital management programs on state economic performance", *Public Budgeting & Finance*, Vol. 28, No. 3, pp. 83-107.
- Walker J. L. (1969). "The diffusion of innovations among the American states", *The American Political Science Review*, Vol. 63, No. 3, pp. 880-899.
- Wise L. R. (1999). "The use of innovative practices in the public and private sectors: The role of organizational and individual factors", *Public Productivity and Management Review*, Vol. 23, pp. 150-168.
- Wise L. R. (2002). "Public management reform: Competing drivers of change", *Public Administration Review*, Vol. 62, pp. 543-554.
- Vigoda-Gabot E., Shoham A., Schwabsky N. and Ruvio A. (2008). "Public sector innovation for Europe: A multinational eight-country exploration of citizen's perspectives", *Public Administration*, Vol. 86, No. 2, pp. 307-329.
- Zaltman G., Duncan R. and Holbek J. (1973). *Innovations and Organizations*, New York: Wiley.
- Zhao H. and Guo W. (2011). "Management capacity and state municipal bond ratings: Evidence with the GPP grades", *The American Review of Public Administration*, Vol. 41, pp. 554-568.