IMPACTS OF ORGANIZATIONAL RESOURCES ON AGENCY PERFORMANCE: EVIDENCE FROM FEDERAL AGENCIES

by

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(Under the Direction of ANDREW B. WHITFORD)

ABSTRACT

Resources are essential for successful organizational performance. However, scholars in public administration and public management have paid relatively little formal attention to the role and importance of resources because they have usually assumed that resources positively influence performance. Yet, in reality, we lack comprehensive empirical evidence about various resources' different roles in and impacts on a public organization's performance. To move the study of government performance in the public sector forward, this study attempts to apply the resource-based view (RBV) to understanding federal agencies' performance. Through testing the RBV, this research project focuses on identifying which resources are actual valuable, scarce, and imperfectly imitable resources that have competitive advantage for better performance in federal agencies.

To this end, this study uses the two-step approach. The first step is to identify resources with the potential for competitive advantage in federal agencies. Yet, these resources are still in the state of having the potential for competitive advantage. To confer actual competitive advantage, resources must contribute positively to organizational performance. Therefore, the second step is to investigate whether they have positive effects on agency performance.

This study offers six types of organizational resources (i.e., administrative, human, financial, physical, political, and reputation resources), which are then broken down into specific variables. In order to identify which resources are actual valuable, scarce, and imperfectly imitable resources that have positive effects on agency performance, this research tests the relationships between various resources and agency performance (i.e., managerial effectiveness, program effectiveness, and financial performance) simultaneously.

The analysis results revealed the following: Number of members in top leadership, professional employees, presidential attention, and agency's reputation had positive and significant impacts on managerial effectiveness. Term length of members in top leadership, agency's reputation, and general property, plant, and equipment had positive and significant relationships with program effectiveness. Number of members in top leadership, non-career SES, career SES, congressional attention, and agency's reputation had positive and significant impacts on financial performance. These findings can provide useful information about how to strategically use and manage which resources for which performance goal.

INDEX WORDS: Types of Organizational Resources, Agency Performance, Resource-Based View, Public Management, Public Administration, Competitive Advantage, Federal Agencies

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DEDICATION

This dissertation is dedicated to my wife, Jung-Mi Kim, to my two sons, Sung-Joon and Hyun-Joon, to my parents-in-law, to my sister, and to my parents, Chang-Suk Lee and Young-Hwa Oh, for their endless support and patience.

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CHAPTER 1

INTRODUCTION

Research on Organizational Performance

Organizational performance has become central to the study of public administration and public management because it can be considered as the ultimate goal of organizations (Rainey 2003). In addition, currently, greater emphasis is placed on the performance of public agencies and programs, as reflected in the Government Performance and Results Act (GPRA) and the Performance Assessment and Rating Tool (PART), and in other ways. Yet, we have few well-developed theories or frameworks to explain the performance of government agencies.

Research on organizational effectiveness is of two types: studies on the development of measurement criteria for effectiveness and studies that predict effectiveness using independent variables (Campbell 1977; Riccio, Bloom, and Hill 2000). The former ask what elements constitute organizational effectiveness; the latter ask what factors influence performance. A variety of studies propose models of or explanations for organizational effectiveness (e.g., Wolf 1993; Provan and Milward 1995; O'Toole and Meier 1999, 2003; Rainey and Steinbauer 1999; Brewer and Selden 2000; Ingraham and Donahue 2000; Lynn, Heinrich, and Hill 2000; Boyne 2003; Moynihan and Pandey 2005; Andrews, Boyne, and Walker 2006b; Meier, O'Toole, Boyne, and Walker 2007; Garnett, Marlowe, and Pandey 2008). Table 1.1 provides a summary of the previous studies on what factors influence performance.

Relatively few studies address in-depth the issue of how we measure government effectiveness (e.g., Brewer and Selden 2000; Provan and Milward 2001; Boyne 2002, 2003;

Knack 2002; Selden and Sowa 2004; Brewer 2006). Few questions challenge scholars more than what constitutes organizational performance or effectiveness (Selden and Sowa 2004). Ironically, while public officials and scholars emphasize measures of organizational effectiveness, scholars have yet to develop clear and conclusive ways of defining and assessing effectiveness (Rainey 2003). In other words, there is little consensus as to what organizational effectiveness means and what constitutes a valid set of measurement criteria. The literature on measuring organizational performance is summarized in table 1.2.

Importance of Resources in Organizations

This study attempts to fill one important gap in the literature on the study of modeling organizational performance. Scholars in public administration and public management have paid systematic attention to the study of the black box between resources (inputs) and results (outputs/outcomes) (Ingraham and Donahue 2000). In other words, public management scholars have studied whether management matters in public administration and management in transforming resources into results. According to O'Toole (1999), "management refers to the set of conscious efforts to concert actors and resources to carry out established collective purposes" (21). In investigating this traditional policy-performance equation, however, scholars have paid relatively little formal attention to the role and importance of resources (i.e., inputs).

One reason is that we usually assume that resources positively influence performance. Yet, we lack empirical evidence about their different roles and impacts. Kettl and Fesler (2005) and Fernandez and Rainey (2006) note sufficient resources are essential for successful organizational change and performance, but we lack comprehensive empirical knowledge about the relative roles and importance of different resources in achieving organizational goals.

Resources help public managers carry out their collective purposes strategically and effectively. Scholars include resources as a variable in general models of organizational performance (e.g., O'Toole and Meier 1999; Lynn, Heinrich, and Hill 2000; Meier and O'Toole 2001; Pitts 2005), although resources are usually treated as environmental factors or constraints rather than the main variables of interest. Most studies do not focus on the relative influence of different resources on organizational performance.

In contrast, traditional organization theorists consider resources as central to understanding performance. Schumpeter (1942) argues that rich organizations and industries in resources are better able to survive external, environmental turbulence. Simon (1947) and Thompson (1967) presume a direct relationship between resources and organizational performance. Sufficient resources lead to the successful implementation of public policy (Montjoy and O' Toole 1979; Browne and Wildavsky 1983; Mazmanian and Sabatier 1989; Goggin, Bowman, Lester, and O'Toole 1990; Matland 1995). Also, the importance of resources in organizational performance has been emphasized in the field of strategic management because resources are essential to converting strategic plans into desirable results (Drucker 1990).

Several scholars in public management have emphasized the role and the importance of resources in achieving organizational goals. According to Wilson (1989), agency effectiveness is enhanced by obtaining a measure of autonomy, gaining resources targeted on critical tasks, delegating operational decision-making authority, and promoting a strong sense of mission. Rainey and Steinbauer (1999) hypothesize that agency effectiveness depends on the utilization of technological resources and the development of human resources. Holzer and Callahan (1998) also point out the importance of technology and human resources in government performance with detailed elaboration. Boyne (2003) argues that extra resources are one of five determinants

(i.e., resources, regulation, markets, organization, and management) of public service performance. Boyne focuses on financial resources such as financial spending per capita or pupil, and on real resources such as quantity of staff or teachers.

Purpose of This Research

Recently Bryson, Ackermann, and Eden introduced one interesting approach to organizational resources and the success of organizations. In their *Public Administration Review* article, Bryson, Ackermann, and Eden (2007) suggest that public management theorists and practitioners need a deeper understanding of the important research questions and implications of the Resource-Based View (RBV) for public organizations, as well as a practical method for making use of the RBV in the practice of public strategic management. They argue that "the Resource-Based View's promise of improved public organizational performance is worth further investigation" (714).

The RBV is one of the leading efficiency-based approaches for understanding business strategy (Williamson 1991) and is one of the most widely accepted theoretical perspectives in the strategic management literature (Priem and Butler 2001; Rouse and Daellenbach 2002; Newbert 2007; Bryson, Ackermann, and Eden 2007). The RBV emphasizes the critical importance of resources for organizational growth, survival, and overall performance (Barney 1991; Wernerfelt 1984; Peteraf 1993; Bryson, Ackermann, and Eden 2007). The RBV of the firm highlights how the deployment of unique organizational resources can result in sustained superior performance (Lado, Boyd, and Wright 1992; Rouse and Daellenbach 1999); according to Williamson (1999), the main hypothesis in the RBV is that " 'more' of the resources have a positive influence on the growth and performance of the firm" (1098). Therefore, scholars have used the RBV to

investigate the relationship between firm resources and organizational performance (Hansen, Perry, and Reese 2004, 1279).

The core argument of the RBV is that "scarce, valuable, and imperfectly imitable resources are the only factors capable of creating sustained performance differences among competing firms" (Kraatz and Zajac 2001, 632) in that these distinctive organizational resources can generate a sustainable competitive advantage and lead to better performance (Prahalad and Hamel 1990; Carmeli and Tishler 2004a). Accordingly, a variety of the RBV-related empirical work in the field of strategic management has focused on identifying possible resources for competitive advantage and examining whether the expected performance outcomes exist (Barney and Clark 2007). In this vein, Bryson, Ackermann, and Eden (2007) point out that a key to the success of public organizations is to identify (and build) distinctive resources and competencies which can generate sustainable competitive advantages in order to produce the greatest value for organizations and key stakeholders (702).

This study attempts to apply the Resource-Based View to understanding agency performance (effectiveness) in the public sector. Based on the aforementioned key arguments of the RBV, this research project focuses on two questions. The first question is what types of resources are available to public organizations. Like private organizations, public organizations basically need financial and human resources to achieve their goals and, at the same time, public organizations may need somewhat different resources in that they are under the influences of political factors, unlike private organizations.

The second question is how we can identify which resources are distinctive resources (i.e., scarce, valuable, and imperfectly imitable resources) that have competitive advantages for better performance from these various organizational resources of public organizations. As

Barney (1991, 105) points out, not all organizational resources have the potential of sustained competitive advantages. Therefore, it is necessary to clarify the sources of sustained competitive advantages in order to strategically make use of those resources in achieving organizational goals.

To this end, scholars suggest several methods for identifying distinctive resources or capabilities of an organization. For example, Barney and Clark (2007) introduce the VRIO (Value, Rareness, Imperfect Imitability, and Organization) framework which "can be applied in analyzing the potential of a broad range of firm resources to be sources of sustained competitive advantage" (69). They argue that we can understand whether a particular firm resource is a potential source of competitive advantage through a series of questions (i.e., "Is that resource valuable?, Is it rare?, Is it imperfectly imitable?, and Is the firm organized to exploit this resource?") in the VRIO framework (Barney and Clark 2007, 72). That is, if a particular firm resource is scarce, valuable, and imperfectly imitable, it can be a possible source of sustained competitive advantage which leads to better organizational performance.

Bryson, Ackermann, and Eden (2007) suggest another method for identifying and making use of distinctive competencies in the form of a livelihood scheme based on the RBV. They define distinctive competencies as "competencies that are very difficult for others to replicate and therefore are a source of enduring advantage" (Bryson, Ackermann, and Eden 2007, 704) – that is, distinctive competencies are one of the scarce, valuable, and imperfectly imitable resources. The process of identifying and making use of these distinctive competencies includes the following steps: do the necessary preparation work; identify a tentative mission and goal system; identify critical success factors; identify distinctive competencies; create full livelihood

scheme; develop a multiyear strategic plan; develop a first-year business plan (for more information, see Bryson, Ackermann, and Eden 2007).

However, these methods have limitations for the following reasons. The RBV of the firm implies that we need to pay attention to successfully performing organizations, as low and average-performing firms do not have any sustainable advantage. As a result, it is unlikely that any conclusive findings on competitive advantage will emerge from large-sample, cross-sectional studies that indiscriminately include all kinds of organizations in a certain field, regardless of their performance (Rouse and Daellenbach 1999, 489). In addition, the VRIO framework does not seem to simultaneously account for various resources in analyzing sources of sustained competitive advantage. A number of scholars examined the performance effects of a variety of different types of firm resources, such as organizational culture (Barney 1986), media reputation (Deephouse 2000), racial diversity (Richard 2000), human capital (Hitt, Bierman, Shimizu, and Kochhar 2001), human resources management capabilities (Huselid, Jackson, and Schuler 1997), historical experience with competition (Barnett, Greve, and Park 1994), and physical and skill assets (Farjoun 1998), but their research examines the impact of specific firm resources on the overall performance of a firm (Ray, Barney, and Muhanna 2004), not the comprehensive and relative impact of various organizational resources. Different organizational resources may have different effects when they are simultaneously analyzed with other resources.

This study addresses the aforementioned two questions (especially the second question) through a quantitative analysis of the comprehensive and relative impacts of various resources on federal agency performance based on the RBV. According to the RBV, scarce, valuable, and imperfectly imitable resources are critical factors explaining sustained performance differences

among competing firms (Kraatz and Zajac 2001) because such resources create competitive advantage which leads to better performance (Carmeli and Tishler 2004a). In other words, if a specific organizational resource is a scarce, valuable, and imperfectly imitable resource, more of this resource will have a positive influence on the performance of the organization in that this resource generates competitive advantage, leading to better performance. Therefore, we can explore which resources are scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage through investigating the comprehensive and relative impacts of various resources on federal agency performance simultaneously. This research project is built on a time-series cross-sectional dataset (i.e., panel dataset) gathered from federal agencies for five fiscal years (FY 2003-2007). Also, both simple and sophisticated statistical techniques, such as graphical analysis and panel data analysis techniques, are employed to validate the study's findings, but with a continuous effort toward easy understanding of their implications and conclusions.

Potential Contributions of This Study

This study can make significant theoretical and practical contributions to the fields of public administration and public management in a number of ways. One of its major contributions is expected to be the introduction of the importance of organizational resources to the study of organizational performance, especially based on the RBV. No such approach has been taken before, so this approach can help the study of public organizations' performance move forward.

The theoretical strengths of this study also lie in its effort to incorporate and apply materials from a variety of disciplines, including public management, political science, strategic

management, public finance, human resources management, and public choice, to hypothesis formation, variable development, and result interpretation. In addition, this research can make another noteworthy contribution to the literature on public administration and public management: this study develops and uses objective measures of organizational effectiveness from the Performance and Accountability Reports as a dependent variable, whereas many research studies have used subjective measures such as perceptual measures of performance from a survey dataset.

This research project is expected to provide practical strategic knowledge about resources to enhance federal agencies' performance. This study's simultaneous examination of the relative impacts of various resources on federal agencies' performance can contribute important information about which resources are scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage for federal agencies' better performance. This useful strategic knowledge about resources can be helpful information especially for poorly performing agencies, which tend to imitate successful agencies' strategies as best practices. If the relationship between an agency's resources and its performance is poorly understood, it is difficult for agencies attempting to duplicate a successful agency's strategies through imitation of its resources to know which resources it should imitate (Barney and Clark 2007, 62). By examining the link between resources and agency effectiveness, this study gives poorly performing agencies an idea about which resources have positive impacts and which resources have negative influences on performance.

This study also expects to make practical contributions to managers of federal agencies. Public managers need to understand the importance of resources in agency performance and learn strategic knowledge about these resources for better federal agency performance. Of

course, understanding the role of various resources within organizations may not guarantee successful results in enhancing federal agency performance. However, understanding the importance and relative role of various resources would increase the possibility of successful outcomes in better public service because it can help public managers build a "large repertoire of managerial concepts" (Behn 1987) for effective management and the larger repertoire means the greater likelihood that managers will combine appropriate actions (Behn 1993).

This study's methodological strengths lie in its use of a time-series cross-sectional dataset and panel data analysis techniques. The majority of organizational performance studies use cross-sectional analysis, but this study compiles a time-series cross-sectional dataset consisting of data from the fiscal years 2003 to 2007. This longitudinal analysis can provide useful information and enhance the quality of empirical analysis in ways that would be impossible if we used only case study, cross-sectional analysis, or time-series analysis.

Organization of the Study

This study is organized into eight chapters, the first of which provides the introduction. Chapter two describes the research question guiding this study (i.e., comprehensive and relative impacts of various resources on agency performance), reviews theory and literature on resources in organization and organizational effectiveness, and formulates a series of hypotheses that will be tested in the study. Based on the literature on organizational resources, this research offers six types of organizational resources (i.e., administrative, human, financial, physical, political, and reputation resources). These six types of organizational resources include specific variables to measure each. In addition, this study uses three performance variables (i.e., agency effectiveness,

program effectiveness, and financial performance) to measure agency performance in three dimensions.

Chapter three presents the methodology that this study uses in order to investigate the above-mentioned research question, including data gathering, operationalization and measurement of the variables, and data description. Chapter four describes the analysis of the three performance variables (i.e., agency effectiveness, program effectiveness, and financial performance) of federal agencies in turn. The change in federal agencies' performance from FY 2003-2007 is analyzed using the connected-line plots and the mean comparison.

Chapters five, six, and seven present the results of empirical analyses. Through panel data analysis, chapter five addresses the comprehensive and relative impacts of various resources on agency's managerial effectiveness. Chapter six discusses the comprehensive and relative impacts of various resources on agency's program effectiveness; chapter seven examines the comprehensive and relative impacts of various resources on agency's financial performance. Finally, chapter eight summarizes the conclusions that can be drawn from this study's findings, describes their implications for theory and practice, and offers suggestions that can help to guide future research.

Table 1.1 Research on Modeling Organizational Effectiveness

Scholars	Independent Variables	Dependent Variable
Wolf (1993)	Age, Leadership, Political autonomy, Hierarchical structure, Formalization, Identification with agency, Monopoly, Sense of mission, Targeted on critical task, Delegation, Adaptability, Difficulty of mission, Controversy of mission, Presidential support	Agency effectiveness
Provan and Milward (1995)	Network structure (centralized integration, direct/nonfragmented external control), Network context (system ability, high resource munificence)	Network's effectiveness
Rainey and Steinbauer (1999)	Relations with oversight authorities, Relations with other stakeholders, Autonomy in operation, Mission valence, Strong organizational culture, Leadership, Task design, Utilization of technology, Development of human resources, Professionalism, Motivation	Organizational effectiveness
O'Toole and Meier (1999)	Measure of hierarchy, Management, Past performance, Environmental forces	Program performance
Lynn, Heinrich, and Hill (2000)	Environmental factors, Client characteristics, Treatments, Structures, Managerial roles and actions	Program outcomes
Ingraham and Donahue (2000)	Management capacity (financial management, human resources management, capital management, information technology management, and managing for results)	Government performance

Table 1.1 Research on Modeling Organizational Effectiveness (continued)

Brewer and Selden (2000)	Organizational culture, Human capital and capacity, Agency support for NPR, Leadership and supervision, Structure of task/work, Task motivation, Public service motivation, Individual performance, Red tape	Organizational performance
O'Toole and Meier (2003)	Network management, Management Quality, Stability (teachers), Stability (managers)	Program performance
Boyne (2003)	Resources, Regulation, Market structure, Organization, Management	Public service performance
Moynihan and Pandey (2005)	Environmental factors (support of elected officials, influence of clients, and influence of the public), Organizational factors (culture, centralization of decision authority, goal clarity, and barriers to reorganization)	Organizational effectiveness
Andrews, Boyne, and Walker (2006)	Strategic stance (extent to which an organization is a prospector, defender, or reactor), Strategic actions (relative emphasis on changes in markets, services, revenues, external relationships, and internal characteristics)	Organizational performance
Meier, O'Toole, Boyne, and Walker (2007)	Managerial strategy (defender, reactor, and prospector), Management (managerial networking, school board contact, management quality, management experience, and personnel stability), Control variables	Organizational performance
Garnett, Marlowe, and Pandey (2008)	Type of communication (task instructions, strategic direction, feedback, upward, lateral), Mission-oriented culture, Rule-oriented culture	Organizational performance

Table 1.2 Research on Measuring Organizational Effectiveness

Author(s)	Measurement Criteria
Brewer and Selden (2000)	Employees' perception of organizational performance - Internal efficiency, internal effectiveness, internal fairness, external efficiency, external effectiveness, and external fairness
Provan and Milward (2001)	Evaluation at three levels of analysis: community, network, and organization/participant levels - Community level: cost to community, building social capital, aggregate indicators of client well-being, public perceptions that problem is being solved, and changes in the incidence of the problem - Network level: membership growth, range of services provided, absence of service duplication, relationship strength, creation and maintenance of network administrative organization, integration/coordination of services, cost of network maintenance, and member commitment to network goals - Organization/participant level: agency survival, enhanced legitimacy, resource acquisition, cost of services, service access, client outcomes, minimum conflict for multiprogram agencies across multiple networks
Boyne (2002)	Dimensions of performance - Outputs: quantity and quality - Efficiency: cost per unit of output - Service outcomes: formal effectiveness, impact, equity, and cost per unit of service outcome - Responsiveness: consumer satisfaction, citizen satisfaction, staff satisfaction, and cost per unit of responsiveness - Democratic outcomes: probity, participation, accountability, and cost per unit of democratic outcome
Knack (2002)	Government Performance Project ratings - Overall performance - Performance in financial management, capital management, human resources, managing for results, and information technology

Table 1.2 Research on Measuring Organizational Effectiveness (continued)

Boyne (2003)	Seven types of performance indicators - Quantity of output, quality of outputs, efficiency, equity, outcomes, value for money, and consumer satisfaction
Selden and Sowa (2004)	Assessed by both objective and perceptual measures - Management capacity, program capacity, management outcomes, and program outcomes
Andrews, Boyne, Meier, O'Toole, and Walker (2005)	Two measures of organizational performance - Best Value Performance Indicator (BVPI): percentage of citizens satisfied with the overall service provided by their authority - Core Service Performance (CSP): quantity of outputs, quality of outputs, efficiency, outcomes, value for money, and consumer satisfaction with individual services
Boyne and Walker (2006)	Subjective and objective measures of the following dimensions - Effectiveness, output quality, output quantity and equity

CHAPTER 2

RESOURCES AND ORGANIZATIONAL PERFORMANCE

In this section, I first review the history and tenets of the RBV as a framework for explaining organizational performance in this study. Then, I develop a theoretical discussion for this project, based on the RBV. Lastly, I propose a number of hypotheses to be tested in this research.

Resource-Based View

The RBV of the firm grew out of dissatisfaction with the industrial organization economics view that a firm's success is wholly determined by external factors, such as a firm's market power (Bain 1959; Porter 1980; Russo and Fouts 1997). According to the structure-conduct-performance (SCP) paradigm in industrial organization economics, performance differences can persist, as a firm's market power can raise prices above a competitive level (Porter 1981) and firms having market power can prohibit other firms from entering industries (Bain 1956).

The resource-based theorists found that this industrial organization economics view is unrealistically limited. Thus, such scholars as Wernerfelt (1984), Prahalad and Hamel (1990), and Barney (1991) built the RBV around the internal competencies rooted in assets that are valuable, scarce, and inimitable inside a firm in order to respond to the emphasis of the industrial organization economics view on the external environment. The RBV, like other theories, is based on prior theoretical streams such as the traditional study of distinctive competencies, Ricardo's

analysis of land rents, Penrose (1959), and the study of the antitrust implications of economics in developing its fundamental theoretical tenets (Barney and Arikan 2001, 125; Barney and Clark 2007, 5).

From the traditional study of distinctive competencies, the resource-based theorists learned the concept of distinctive competencies: distinctive competencies of a firm enable it to pursue a strategy more efficiently and effectively than other firms and to persistently outperform other firms (Hrebiniak and Snow 1982; Hitt and Ireland 1985). For example, scholars such as Gordon and Howell (1959) and Pierson (1959) emphasized high-quality general managers as distinctive competencies which can explain persistent performance differences among firms because general managers can have a significant influence on the ability and the strategies of a firm in pursuing its goals (Barney and Clark 2007). According to Selznick (1957), institutional leaders can also be distinctive competencies of a firm in that they can create a firm's vision, mission, and structure which help define a firm's distinctive competencies, as well as carry out general managers' functions of decision-making and implementation (Barney and Arikan 2001).

Ricardo's analysis of land rents has important influence on the RBV. Ricardo (1817) argued that such a factor of production as land is perfectly inelastic because its quantity of supply is fixed, and thus it is possible for those who own that land to get the economic rent. Based on this analysis, the resource-based theorists proposed that numerous resources of a firm may be inelastic in supply and be possible sources of performance difference (Barney and Arikan 2001). For example, highly skilled employees, creative laborers, effective managers, and so on can be inelastic resources in supply which are possible sources of economic rents (Barney and Clark 2007).

Penrose's (1959) resources approach to the growth of the firm also made several contributions to the evolution of the RBV through the following observations. First, a firm's growth is limited by the bundle of productive resources controlled by a firm and the administrative framework used to coordinate the use of these resources (Russo and Fouts 1997; Kor and Mahoney 2000). Second, productive resources could vary significantly by firm and, in this vein, firms are fundamentally heterogeneous (Barney and Clark 2007, 11). Third, productive resources could be very broadly defined, extending the typology to managerial teams, top management groups, and entrepreneurial skills (Barney and Arikan 2001).

In addition, the study of the antitrust implications of economics can be a theoretical root of the RBV. From the early 1970s, a small number of scholars began to question the structure-conduct-performance paradigm (Barney and Clark 2007, 13). Among them, Demsetz (1973), an antitrust scholar, argued that industry structure is not the only determinant of a firm's performance and predicted that firms' persistent superior performance can be attributed to their superior competencies for addressing customer needs, not to anticompetitive activities. In other words, similar to the RBV, Demsetz focused on the importance of a firm's superior competencies in performance differences.

The main research question of the RBV is "why do firms in the same industry vary systematically in performance over time?" (Hoopes, Madsen, and Walker 2003, 889) or "Why do some firms persistently outperform others?" (Barney and Clark 2007, 3). The core argument of the RBV to this question is that firms that possessed resources that were valuable and rare would attain a competitive advantage and enjoy improved performance (Barney 1991; Newbert 2007) [1].

[1] According to Peteraf and Barney (2003), competitive advantage can be defined as follows: "An enterprise has a competitive advantage if it is able to create more economic value than the marginal (break even) competitor in its product market" (314).

The RBV observes that there are significant differences in the resources of firms within an industry for organizational survival, growth, and overall effectiveness (Wernerfelt 1984; Barney 1991; Peteraf 1993; Kraatz and Zajac 2001; Bryson, Ackerman, and Eden 2007) and distinctive organizational resources can generate sustainable competitive advantage and lead to better performance (Prahalad and Hamel 1990; Carmeli and Tishler 2004a).

The RBV is built on two assumptions to link a firm's distinctive resources and competitive advantage: resource heterogeneity (i.e., firms within a group may be heterogeneous in terms of the strategic resources and capacities they control) and resource immobility (i.e., these distinctive resources may not be perfectly mobile across firms) (Barney and Clark 2007, 51). In other words, a firm's distinctive resources can generate sustainable competitive advantage because differences in firm resource endowments are assumed to both exist and be long lasting (Newbert 2007). However, not all of an organization's resources hold the potential of sustained competitive advantages (Barney 1991, 106).

According to Barney (1991), in order for a firm's resource to have the potential of competitive advantage and be a source of sustained superior performance, a firm's resource needs to meet the following four conditions: "(a) it must be valuable, in the sense that it exploits opportunities and/or neutralizes threats in a firm's environment, (b) it must be rare among a firm's current and potential competition, (c) it must be imperfectly imitable, and (d) it must be able to be exploited by a firm's organizational processes" (106)[2]. That is, scarce, valuable, and imperfectly imitable resources can create sustained competitive advantage and performance differences among firms (Kraatz and Zajac 2001). As a result, organizations can enhance their

[2] This is the VRIO framework which was introduced in chapter one.

competitiveness and maximize returns through the development and deployment of such distinctive organizational resources (Hackler and Saxton 2007, 477).

Theory Development for This Dissertation

Bryson, Ackerman, and Eden (2007) claimed that public strategic management theorists have been strongly influenced either explicitly or implicitly by the RBV. Scholars in the public sector have devoted considerable attention to the empirical impact of specific and individual resources, including human resources (e.g., Perry and Miller 1991; Pitts 2005; Peter and Søren 2007), financial resources (e.g., Evans, Murray, and Schwab 1997; Wenglinsky 1997; Henry and Rubenstein 2002), and real material resources (e.g., Lee and Perry 2002). However, few have offered comprehensive theories of the role of various resources in organizational performance because they focused on a single factor to explain variation in organizational performance (Carmeli and Tishler 2004a). Although such research studies produce useful knowledge, it must be recognized that the competitive position and better performance of firms are derived from a successful integration of various strategic and non-strategic organizational elements, not from a single factor (Carmeli and Tishler 2004b).

Also, some scholars in the public sector have recognized explicitly the importance of the RBV, but they have not tested it to offer comprehensive understanding of the relative role of various resources in agency performance (Carmeli and Tishler 2004b). For example, Daley and Vasu (2005) used the concept of the RBV for the strategic human resources management, but they focused on the impact of specific resource (i.e., human resources) on the welfare reform outcomes. In addition, Hackler and Saxton (2007) addressed the strategic use of information

technology (IT) in terms of the RBV, but they also concentrated on the specific resource (i.e., IT resources), not various resources.

Therefore, in order to move the study of government performance in the public sector forward, this research project attempts to apply the RBV to understanding the impacts of various resources on federal agencies' performance. Like other organizations, federal agencies use a variety of resources to produce better service for the citizens, but we do not know which resources are distinctive resources that have competitive advantages for better agency performance. As Barney and Clark (2007) pointed out, not all of the organizational resources are likely to be economically valuable. Some of these resources may have no effect on better organizational performance and others may make it more difficult for a firm to implement valuable strategies (Barney 1986). Accordingly, through testing the RBV, this research investigates the relative impact of various resources, including both tangible and intangible resources, on federal agencies' performance in order to find out which resources are scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage for better performance.

To conduct such investigation, this study uses the two-step process that was suggested by Deephouse (2000) as an approach to testing the RBV. The first step is to identify resources with the potential of competitive advantage and analyze them in terms of the aforementioned four conditions: (a) is that resource valuable?; (b) is it rare?; (c) is it imperfectly imitable?; and (d) is the firm organized to exploit this resource? The second step is to measure the proposed distinctive resources and demonstrate they have a positive effect on organizational performance. This study follows this two-step approach in order to discover federal agencies' distinctive

resources that have competitive advantage through the analysis of the relative impact of various resources on federal agency performance.

Of course, one previous study tried to fill in these research gaps mentioned above. Based on the RBV, Carmeli and Tishler (2004b) examined the impact of a set of intangible organizational elements (managerial capabilities, human capital, internal auditing, labor relations, organizational culture, and perceived organizational reputation) on a set of organizational performance measures (self-income ratio, collecting efficiency ratio, employment rate, and municipal development) in a sample of local government authorities in Israel. However, the present study is different from their research in the following aspects:

First, while Carmeli and Tishler (2004b) focused on only intangible organizational resources in their research, this study included both tangible and intangible resources because both are needed for firms to develop and implement their strategies. Second, their unit of analysis is local government authorities (i.e., municipalities, local councils, and regional councils) in Israel and their data are cross-sectional. In contrast, the unit of analysis of the present study is the U.S. federal agencies and the data set for this project is a cross-sectional time-series data set (i.e., a panel data set). Third, Carmeli and Tishler (2004b) collected the data for the six intangible resources from the survey (that is, measurements of perception), whereas this study's data were gathered from archival sources (that is, objective measurements). More importantly, they argued that their study is based on the RBV, but they did not provide sufficient explanation as to why their intangible resources are valuable, scarce, and imperfectly imitable. Although these attributes are prerequisites of the resources that have the potential of competitive advantage, it seems that they assumed their intangible resources have these attributes. Unlike

their approach, this study follows the two-step approach: identifying resources with the potential of competitive advantage and testing the link between these resources and agency performance.

Identifying Resources with the Potential for Competitive Advantage

The first step is to identify resources that have the potential of competitive advantage and to analyze them in terms of the aforementioned four conditions. Resources are essential for organizations to succeed. Broadly construed, resources are any assets that an organization might draw on to help it achieve its goals (Bryson, Ackerman, and Eden 2007, 704). More specifically, "resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney 1991, 101). Resources are the tangible and intangible assets firms use to develop and implement their strategies (Ray, Barney, and Muhanna 2004, 24). The examples of tangible resources are financial and physical resources, and the examples of intangible resources include reputation, technology, and human resources (Grant 1991; Russo and Fouts 1997; Carmeli and Tishler 2004b). According to Itami (1987) and Grant (1991), intangible resources are as important as tangible assets or probably the most strategically important resources.

Scholars have offered alternative classifications for resource types. Bozeman and Straussman (1990, 47) offered three types: personnel resources, financial resources, and organizational structure. Grant (1991) suggested the following categories of resources: financial resources, physical resources, human resources, technological resources, reputation, and organizational resources. According to Barney (1991), numerous possible firm resources can be classified into physical capital resources, human capital resources, and organizational capital

resources[3]. Russo and Fouts (1997) classified resources as physical assets and technologies, human resources and organizational capabilities, and the intangible resources of reputation and political acumen. Rainey and Steinbauer (1999) divided organizational resources into financial, human, and technological resources. Hansen, Perry, and Reese (2004) classified an organization's resources into two broad concepts based on Penrose's (1959) argument: productive resources (which are needed for achieving goals) and administrative resources (which govern the use of productive resources). According to Fry, Stoner, and Hattwick (2004), organizational resources can be divided into the people, physical materials, financial assets, and information.

I offer six types of resources with the potential of competitive advantages in federal agencies: administrative resources, human resources, financial resources, physical resources, political resources, and reputation resources. Human resources, financial resources, and physical resources are traditional inputs in any organization. Administrative resources serve as leadership structures for governing and managing these traditional resources, as discussed later. Political resources are key for government agencies and are distinctive to public organizations. Reputation is also an important intangible resource.

In addition, in order for these six types of resources to be distinctive resources that can provide competitive advantages, they must have four attributes. First, these resources must be valuable (Barney and Clark 2007). According to Barney (1991), valuable resources enable a firm to increase the economic value it creates by increasing the willingness of customers to pay, decreasing its costs, or both. The six types of resources of this research can be valuable resources

[3] "Organizational capital resources include a firm's formal reporting structure, its formal and informal planning, controlling, and coordinating systems, as well as informal relations among groups within a firm and between a firm and those in its environment" (Barney 1991, 101).

in that they help federal agencies provide enhanced public service and better performance by increasing the willingness of citizens to pay taxes or decreasing federal agencies' costs. Also, these resources are valuable, as they enable federal agencies to implement strategies that improve agency efficiency and effectiveness.

Second, these resources must be rare (Barney and Clark 2007). A resource is rare to the extent that other agencies do not have the same resource (Deephouse 2000). Rarity is difficult to assess (Barney 1991), but one condition for rarity is variation in the resources of organizations (Deephouse 2000). This study's six types of resources are rare in that they have variations across agencies.

The third condition is that these resources must be imperfectly imitable (Barney and Clark 2007). This attribute refers to the challenge and costs an organization confronts when attempting to imitate a resource of another organization (Deephouse 2000). Barney (1991) suggested one possible reason for imperfect imitability of a firm's resources: social complexity. That is, when resources are based in complex social phenomena, the ability of other firms to imitate these resources is considerably limited. This study's six types of resources of federal agencies are imperfectly imitable in that they are decided and assigned through the complex social and political interactive process among the President, Congress, interest groups, mass media, the citizens, and so on.

Finally, these resources must be able to be exploited by a firm's organizational processes (Barney and Clark 2007). This attribute is related to the realization of competitive advantage of resources. Federal agencies are able to realize their resources' full potential as sources of competitive advantage through the combination with their numerous components and capabilities.

Testing the Link between Resources and Performance

The next step is to measure the proposed scarce, valuable, and imperfectly imitable resources and demonstrate they have a positive effect on organizational performance. According to the RBV, if a specific organizational resource is a scarce, valuable, and imperfectly imitable resource, more of this resource will have a positive influence on the performance of the organization in that such resource generates competitive advantage, leading to better performance.

However, even if a specific resource meets the four conditions (i.e., Is that resource valuable?, Is it rare?, Is it imperfectly imitable?, and Is the firm organized to exploit this resource?), it is still in the state of a resource that has the potential of competitive advantage. As Schroeder, Bates, and Junttila (2002) pointed out, "to confer competitive advantage, resources must … contribute positively to performance" (106). Therefore, we need to examine the comprehensive and relative impacts of various resources on federal agency performance simultaneously in order to explore which resources are actual scarce, valuable, and imperfectly imitable resources that have positive effects on agency performance through competitive advantage.

Hypotheses

I next provide hypotheses to test for this research, based on details on the six types of resources with the potential of competitive advantage and their expected relationships with agency performance (focusing on their positive contribution mechanism through competitive advantage). Measures of independent and dependent variables will be discussed in chapter three.

Administrative Resources

By administrative resources, I include the top decision-making structure for an agency because, as Bozeman and Straussman (1990) pointed out, organizational (leadership) structure is one type of organizational resources. According to Penrose (1959), the growth of a firm is limited by the bundle of productive resources controlled by a firm and by the administrative framework used to organize the use of these resources. Also, Hansen, Perry, and Reese (2004) argued that administrative resources govern productive resources which directly contribute to achieving organizational goals. In other words, administrative resources make decisions about selecting and deploying other resources. The value of administrative resources is reflected in the quality of administrative decisions which ultimately influence firm performance (Hansen, Perry, and Reese 2004, 1280). The top decision-making structure of an agency is often designed by Congress, but, once it is part of the agency, structure serves as an administrative resource governing productive resources. Kor and Mahoney (2000) suggested focusing on the impact of the formation of the top-management team on firm performance in the Resource-Based View.

Based on this idea, I focus on two aspects of the top decision-making structure of an agency: the number of members in the top decision-making structure, and the term length of these members. These two aspects play important roles in administrative decisions on selecting and deploying productive resources. The number of members and the term length of these members in the top leadership structure of an agency have the aforementioned four attributes for the potential of competitive advantage. That is, they are valuable, scarce, and imperfectly imitable resources.

The number of members and the term length of these members in the top decision-making structure of an agency are valuable resources because these members' decisions can help

agencies provide enhanced public service and better performance by increasing the willingness of tax-payers to pay or decreasing its costs (Barney and Clark 2007). These administrative resources are also rare in that they have variations across agencies (Deephouse 2000). That is, agencies do not have the same number of members and term length of these members in the top decision-making structure. As Barney (1991) explained, the number of members and the term length of these members in the top leadership structure are imperfectly imitable resources, as they are decided and assigned through the complex social and political interactive process among the President, Congress, interest groups, mass media, the citizens, and so on. Lastly, federal agencies are organized to exploit these administrative resources' full potential as sources of competitive advantage through the combination with their numerous components and capabilities.

The first administrative resource is the number of members in the governing structure of an agency. A department has one member (a secretary); a commission or board has several members. Having more members in the top decision-making structure has two advantages can enhance agency performance. First, resource dependence theory says that the size of the top decision-making structure measures an organization's ability to form environmental links and secure important assets (Goodstein, Gautam, and Boeker 1994); "the greater the need for effective external linkage, the larger the board should be" (Pfeffer and Salancik 1978, 172). A larger board or commission may reduce environmental uncertainty through external linkage. Second, the secretary, board members, or commissioners act like a Chief Executive Officer (CEO) for the agency. A larger board may provide higher quality advice and counsel (Dalton, Daily, Johnson, and Ellstrand 1999) since they may have more relevant experience and expertise (Lorsch and MacIver 1989, 174). Other scholars such as Jensen (1993) and Firstenberg and

Malkiel (1994) noted that having a larger number of members can make the organization less effective due to greater participation. Also, Haggard (2000) argued that dispersed decision-making authority (i.e., multiple veto points) can hinder the ability of governments to undertake necessary economic reforms in response to economic shocks. That is, having very few veto players is most conducive to policy change and recoveries from crises (Hicken, Satyanath, and Sergenti 2005, 898). I expect that more members in the top decision-making structure will result in better agency performance.

H1: Agencies have higher performance scores when they have more board members or commissioners.

The second type of administrative resource is the term length of members in the governing structure of an agency. Department secretaries do not have a fixed term of service. In contrast, members of a commission or board have fixed terms prescribed by law that vary across agency. Politicians may seek to insulate new administrative agencies from political control in order to protect specific policy outcomes both now and in the future (Moe 1989). For example, the central bank that is responsible for monetary policy should be independent from political accountability to make monetary policy more effective (Kydland and Prescott 1977; Barro and Gordon 1983). Congress may want to reduce the effect of the president and its change on agency policies through insulation (Lewis 2003). Boards or commissions with fixed terms are insulated from presidential control because they cannot be removed without cause (Lewis 2003, 47).

According to Krause and Douglas (2005), bureaucratic performance is positively related to the degree of political insulation enjoyed by an administrative agency because "better-

insulated agencies have a greater capacity to resist political pressures placed upon them to produce policy information that is compatible with politicians' programmatic goals" (282). Also, the duration of appointee service affects administrative competence in that appointee competence in public policymaking and implementation depends on appointee experience (Wood and Marchbanks 2008), and consequently short duration of service implies amateurs acting on behalf of the president to execute the law (Heclo 1977). Therefore, I expect that longer terms for members in the governing structure are positively related to better organizational performance.

H2: Agencies have higher performance scores when they have longer fixed term length of board members or commissioners.

Human Resources

Human resources are an intangible asset for an organization. I focus on the number of full-time employees and the composition of the human resources in an agency. To consider the composition of the human resources, I include the proportion of professional employees and the proportion of the Senior Executive Service (career SES and non-career SES).

According to the RBV, "scarce, valuable, and imperfectly imitable resources" (Kraatz and Zajac 2001, 632) create sustained performance differences by generating sustainable competitive advantages. These four types of human resources (i.e., professional employees, career SES, non-career SES, and full-time employees) are examples of valuable, scarce, and imperfectly imitable resources of an agency which lead to sustainable competitive advantages and better performance, as they meet the aforementioned four criteria for the potential of competitive advantage.

These four types of human resources of an agency are valuable resources because they enable federal agencies to implement strategies that improve agency efficiency (and effectiveness) and to exploit opportunities or neutralize threats in their environment (Barney and Clark 2007). Also, Koch and McGrath (1996, 335) argued that a highly productive workforce is likely to have attributes that make it a particularly valuable asset. These human resources are scarce in that they have variations across agencies (Deephouse 2000). In other words, federal agencies have different ratios of professional employees, career SES, non-career SES, and full-time employees, respectively. These four types of human resources of an agency are imperfectly imitable resources, as they are decided and assigned through the complex social and political process, which is beyond the ability of an agency to systematically manage and influence (Barney 1991). In addition, according to Lippman and Rumelt (1982) and Richard (2000), it is hard to imitate human resources because they appear to involve a socially complex mix of talents that are elusive and hard to understand. Lastly, through the combination with their numerous components and management systems, federal agencies are organized to exploit and realize the full potential of these human resources for sustained competitive advantage.

The first example of the composition of human resources of the federal agency is the proportion of professional employees. The proportion of professional employees in the agency is closely connected with autonomy in human resources. Hiring professionals who exercise enormous influence through the application of their expertise and neutrality by deciding crucial issues of society can increase agency's competitive advantages because "professionals strive continuously for freedom from external control over their activities and value internal accountability through peer-imposed codes of ethics" (Stillman 1999, 101). Therefore, I expect that professionals in human resources can have a positive impact on agency performance through

professionalism because “professionalism can enhance an agency's performance by increasing its autonomy, due to the social status and intellectual authority and independence of professionals in the agency” (Rainey and Steinbauer 1999, 22-23).

H3: Agencies have higher performance scores when they have a greater percentage of professionals.

The second type of the composition of human resources is the proportion of Senior Executive Service (SES) in each agency. The SES is a corps of federal managers that serve in management positions between Senate-confirmed political appointees and the traditional civil service, and is comprised of a mixture of career managers and political appointees (Lewis 2007, 1077). Accordingly, this study divides SES into two types: non-career SES (i.e., politically appointed SES) and career SES.

The SES aim at improving the quality of individual competence and agency performance by making experienced senior managers in government more flexible and mobile within and among agencies (Stillman 2004), by providing experienced senior managers with separate rewards and punishment systems for achievements, and by giving experienced senior managers enhanced chances for personal development and professional certification (Perry and Miller 1991). The SES’s considerable knowledge, experience, ability, and skill can lead to sustainable competitive advantages and better performance. Accordingly, I expect that an agency will produce better performance when it has a greater proportion of SES.

Hypothesis 4: Agencies have higher performance scores when they have a greater percentage of the non-career Senior Executive Service.

Hypothesis 5: Agencies have higher performance scores when they have a greater percentage of the career Senior Executive Service.

The last type of human resources is the number of full-time employees in an agency. The number of full-time government employees directly measures agency size (LeLoup 1975; Christensen and Sachs 1980). Scholars have studied the impact of the number of staff on agency performance or service performance (e.g., Whetten 1978; Christensen and Sachs 1980; Glisson and Martin 1980; Lan and Rainey 1992); size does not seem to systematically cause organizational performance (Boyne 2003).

While Blau (1970) pointed out that a large number of members can create coordination and communication problems that a small group does not have, other scholars argued that agencies with more employees have greater capabilities to solve tasks (Hill 1982; Jackson 1992) because they can absorb or recall more information about tasks, more critical judgments available to correct errors, and more possible solution strategies (Harrison 1975; Shaw 1981; Halebrian and Finkelstein 1993, 846). Those capabilities may help explain the higher-quality decisions sometimes reported in large groups (Cummings, Huber, and Arendt, 1974). Enhanced capacities for problem-solving offer competitive advantages for an organization that lead to better performance. I expect a positive impact of the number of full-time employees on agency performance.

H6: Agencies have higher performance scores when they have more full-time employees.

Financial Resources

Financial resources are basic, valuable, and scarce resources that can be used to acquire other resources such as purchasing equipment, paying workers, and buying advertising (Fry, Stoner, and Hattwick 2004). Money is obviously critical in government programs because money is necessary for the hiring of the staff and for conducting the technical analyses and the monitoring of compliance (Mazmanian and Sabatier 1989). Also, ample funding is indispensable to provide agencies with the administrative and technical capacity to make sure that they achieve statutory objectives (Fernandez and Rainey 2006). Of course, scholars such as Fenno (1966) have regarded financial resources (e.g., budget) as a form of political control of public agencies and bureaucracies. According to Ting (2001), however, financial resources as a form of political control can be a double-edged sword in that "punishing an agency by cutting budgets may also hinder a principal's ability to realize her own policy goals" (264).

Agency budget is a typical example of financial resources. Ripley and Franklin (1975) measured agency budgets in terms of appropriations, expenditures, and changes in appropriations and expenditures (172). Also, Chun and Rainey (2005a) measured financial publicness by the amount of financial resources from government sources, which was calculated by subtracting only the amounts collected from market-oriented activities from the total financial resources for the agency. Based on these ideas, this study focuses on two forms of budget authority (i.e., appropriations and the spending authority from offsetting collections) as financial resources because these two kinds of budget authority come from contrasting sources: while appropriations

come from the U.S. Treasury, offsetting collections come mainly from business-like or market-oriented activities[4].

These two types of financial resources of an agency have the aforementioned four attributes for the potential of competitive advantage. Appropriations and the spending authority from offsetting collections of an agency are valuable resources, as financial resources enable federal agencies to choose or implement strategies that enhance agency efficiency and effectiveness and that exploit environmental opportunities or neutralize threats (Barney and Clark 2007). These financial resources are also scarce in that the amount of these financial resources varies across agencies (Deephouse 2000). As Barney (1991) explained, appropriations and the spending authority from offsetting collections of an agency are imperfectly imitable resources because they are assigned through the complex political interactive process between the President and Congress. Lastly, federal agencies are organized to exploit the potential of these financial resources as sources of competitive advantage through the combination with their numerous components, management systems, and capabilities.

The first type of financial resources is the proportion of an appropriation in the total amount of budgetary resources. An appropriation is an approval by the Congress that allows agencies to incur obligations and to make payments out of the Treasury for specific purposes (Schafritz and Russell 2003, 450). An appropriation creates the authorization for spending the amount in the budget (Finkler 2001, 54) and is the most common form of budget authority (Schafritz and Russell 2003, 450).

[4] According to the budget system and concepts in the *Budget of the United States Government*, budget authority is the amount of money that agencies are allowed to commit to be spent in current or future years. The basic forms of budget authority are appropriations, contract authority, borrowing authority, and spending authority from offsetting collections.

The second type of financial resources is the proportion of the amount of spending authority from offsetting collections in the total amount of budgetary resources. According to the *Budget of the United States Government*, spending authority from offsetting collections is a form of budget authority that permits agencies to credit offsetting collections to an expenditure account, incur obligations, and make payment using the offsetting collections. Offsetting collections result primarily from business-type or market-oriented activities with the public and intra-governmental transactions with other government accounts.

The impact of financial resources on performance has usually been studied in the field of education. There has been an enduring discussion of whether differences in the educational expenditure of the schools make any difference in student performance, but no consensus has yet been reached (Wenglinsky 1997, iii). Meta-analysis by Hanushek (1989) concluded that "there is no strong or systematic relationship between school expenditures and student performance" (47). One argument, according to public choice theorists, is that self-interested bureaucrats have the incentive to ask for larger budgets (Niskanen 1971) and extra money is wasted away by inefficient and wasteful bureaucrats (Boyne 2003). In contrast, meta-analysis by Hedges, Laine, and Greenwald (1994) found that an argument can be made for a positive relationship between school spending and educational performance. This study expects that both a greater proportion of appropriation and a greater proportion of spending authority from offsetting collections have positive impacts on agency performance because financial resources help an organization acquire the employees, technical capacity, well-maintained facilities, and so on that can enhance agency's competitive advantages and improve performance.

H7: Agencies have higher performance scores when they have a greater percentage of the appropriation.

H8: Agencies have higher performance scores when they have a greater percentage of the spending authority from offsetting collections.

Physical Resources

According to Barney (1991), physical resources include the physical technology used in an organization, an organization's equipment, its geographic location, and raw materials. As physical resources, Farjoun (1998) suggested raw materials, plant, and equipment, manuals and blueprints, and computer hardware and software. In a similar way, Fry, Stoner, and Hattwick (2004) argued that physical resources include fixed assets (such as land, building, and equipment), raw materials that will be used in creating products, and general supplies used in the operation of the organization (334). While financial resources can be used flexibly to purchase equipment, pay workers, and buy advertising, physical resources are relatively inflexible in that they are more directly connected with the operation of an organization and the achievement of organizational goals than financial resources.

In this study, I focus on the (dollar) amount of general property, plant, and equipment in total assets of an agency as a physical resource. This physical resource is a valuable, scarce, and imperfectly imitable resource of an agency, as it meets the four conditions for the potential of competitive advantage as follows. The amount of general property, plant, and equipment of an agency is a valuable resource because it enables federal agencies to implement strategies that improve public service, agency efficiency, and agency effectiveness (Barney 1991). Physical

resource is also scarce in that it has variations across agencies (Deephouse 2000). That is, federal agencies have different amounts of general property, plant, and equipment. Physical resource of an agency is an imperfectly imitable resource, as it is decided and assigned through the complex social and political interactive process like other resources in this study (Barney 1991). Finally, federal agencies are organized to exploit the physical resource's full potential as a source of competitive advantage through the combination with its various components and competencies.

According to the *Statements of Federal Financial Accounting Concepts and Standards* (Federal Accounting Standards Advisory Board 2007), general property, plant, and equipment are tangible assets the agency uses when providing general government goods or services (492). They should have an estimated useful life of two or more years, not be intended for sale in the ordinary course of business, and be intended to be used or available for use by the entity. The amount of general property, plant, and equipment represents the amount of a physical resource because it includes the amount of fixed assets (such as land, facilities, and equipment) and general supplies (such as furniture and software) in an agency. I expect that a greater amount of general property, plant, and equipment has a positive impact on agency performance because general property, plant, and equipment can help an agency enhance its competitive advantages that lead to better agency performance through the direct connection with the operation of an agency.

H9: Agencies have higher performance scores when they have a greater percentage of general property, plant, and equipment.

Political Resources

Another focus of this study is the impact of political resources on organizational performance. Bozeman (1987) argued that all organizations are subject to some level of external governmental control and influence and that the publicness of an organization depends on the combination of political authority and economic authority. Of course, in public organizations political authority plays a much more important and influential role than in private organizations. Therefore, inevitably, public organizations need to consider the influence of political authorities.

According to Rainey (2003), there are various sources of political influence such as chief executives, legislative bodies, courts, interest groups, news media, citizens, and so on. The political support of these authorities for an agency is a key factor of successful agencies, reducing the potential for micromanagement on the part of elected officials and allowing bureaucrats to focus consistently on long-term goals (Wolf 1993; Rainey and Steinbauer 1999; Moynihan and Pandey 2005). Moynihan and Pandey (2005) measured political support of an agency by elected official support of the agency, degree of client influence, and degree of public/media influence, and show that elected official support of an agency and the degree of public/media influence have both significant and positive influences on organizational effectiveness.

Based on Moynihan and Pandey's (2005) research, this study focuses on three kinds of political resources of an agency: presidential attention, congressional attention, and mass media attention. These three types of political resources are examples of valuable, scarce, and imperfectly imitable resources of an agency which lead to sustainable competitive advantages and better performance, as they also have the four attributes for the potential of competitive advantage. Presidential attention, congressional attention, and mass media attention are valuable

resources, as these political resources enable federal agencies to implement strategies that improve agency efficiency and effectiveness and to exploit opportunities or neutralize threats in their environment (Barney and Clark 2007). These political resources are also rare because they have variations across agencies (Deephouse 2000). That is, each federal agency has various degrees of political attention from the President, Congress, and mass media, respectively. As Barney (1991) explained, these political resources of an agency are imperfectly imitable resources in that they are decided through the complex social and political interactive process and the ability of other agencies to imitate them is significantly constrained by this social complexity. Also, intangible resources such as political attention from the President, Congress, and mass media are, by definition, inimitable (Roberts and Dowling 2002; Armstrong and Shimizu 2007). Lastly, federal agencies are organized to exploit the potential of these political resources as sources of competitive advantage through the combination with their management systems and capabilities.

I use the concept of political attention for the following reasons. I use the term political attention to capture both support and concern of these political actors as a political resource; support for a well performing agency and concern for a poorly performing agency can be valuable and imperfectly imitable resources leading to employees' motivation, competitive advantage, and better performance. Second, the term political attention is used in the study of agenda setting. The core of agenda dynamics is the organization of attention (March and Olsen 1976) because the president, congress, and mass media use and allocate their limited time and attention for matters that they consider urgent and important (Flemming, Wood, and Bohte 1999; Whitford and Yates 2003; Lee, Rainey, and Chun forthcoming). Therefore, attention to issues is both a precursor to agenda setting and an indicator of issue strength in a restricted agenda space

(Edwards and Wood 1999, 327). Consequently, attention is a fundamental feature of overall policy processes as well as agenda setting (Flemming, Wood, and Bohte 1999). Third, some scholars used the term political salience instead of political attention (e.g., Epstein and Segal 2000; Ringquist, Worsham, and Eisner 2003; Pollitt 2006; Lee, Rainey, and Chun forthcoming), although the relationship between these two concepts is not clear. Attention may be a core element of media salience (e.g., Kiousis 2004), though others contended that attention depends on whether information is salient (e.g., Taylor and Fiske 1978; Ringquist, Worsham, and Eisner 2003). Therefore, I use the term attention because, unlike salience, the concepts of presidential attention, congressional attention, and media attention are more common in the field of political science (e.g., Hill 1998; Edwards and Wood 1999; Flemming, Wood, and Bohte 1999; Whitford and Yates 2003; Yackee 2006; Sheingate 2006; May and Winter forthcoming).

The first type is presidential attention. The president is influential in policy-making and performance (Beck 1982; Moe 1982, 1985; Chubb 1983). For example, Moe (1985) showed that the president, congressional committees, the courts, and constituent have significant impacts on the decision of the National Labor Relations Board (NLRB). More specifically, Wolf (1993) argued that agencies that possess the key political resource of presidential support can manage change effectively; he demonstrated that presidential support has a positive and significant impact on agency effectiveness. I expect that presidential attention to the agency has a positive impact on agency performance.

H10: Agencies have higher performance scores when they have higher presidential attention.

The second type is congressional attention to an agency. Congress helps determine and set the agenda (Baumgartner and Jones 1993; Kingdon 1995). However, the role of Congress is not limited to agenda setting. For example, Congress affects the performance of NLRB through its oversight power by making life difficult or easy for bureaucrats and threatening or promoting bureaucratic careers (Moe 1985). Members of Congress value their time, so they spend their time on priority policy issues (Flemming, Wood, and Bohte 1999; Whitford and Yates 2003). Attracting congressional attention serves as a political resource because Congress can initiate and authorize legislation for agency operations. I expect that the congressional attention to the agency has a positive impact on agency performance.

H11: Agencies have higher performance scores when they have higher congressional attention.

The third type is mass media attention to an agency. Research on the effect of the media on policy agenda setting has reached contradictory conclusions (Edwards and Wood 1993). Rogers and Dearing (1994) argued that the mass media has a direct and sometimes strong influence on the policy agenda of elite decision makers. In contrast, according to Kingdon (1995), "the media report what is going on in government, by and large, rather than having an independent effect on government agendas" (59). However, close media scrutiny of government plays an indispensable role in governance (Rainey 2003).

A survey of high-level executives in various presidential administrations shows that the vast majority of them regarded media coverage as having a significant influence on public policy (Graber 2003). Almost all agencies are concerned about media attention because the public's

familiarity with political matters is closely connected to the amount and duration of attention these agencies and issues receive in the media (Page and Shapiro 1992). According to Iyengar (1991, 2), issues and events highlighted by television news coverage become influential as criteria for evaluating public employees. Therefore, favorable press coverage of an agency can be a good political impetus to that agency for its goals and, at the same time, unfavorable media coverage can also be a critical political stimulus for that agency to look back on and rearrange itself for its goals. In this context, I expect that media attention to the agency has a positive impact on agency performance.

H12: Agencies have higher performance scores when they have higher mass media attention.

Reputation as a Resource

Reputation has been introduced as an important intangible resource (Russo and Fouts 1997; Huang and Provan 2007), representing an overall assessment of an organization's operation and performance (Teece, Pisano, and Shuen 1997)[5]. According to Roberts and Dowling (1997), reputation is an extremely important strategic asset and superior performers with favorable reputation are able to sustain superior outcomes for longer periods of time. Citizen opinions or evaluations of an agency's operation or performance are important and critical to that agency because reputational effects can be a powerful force for controlling behavior in a social system (Granovetter 1985). Several studies demonstrated that organizational reputation has a significant and positive impact on organizational performance (McGuire,

[5] Scholars such as Bertelli (2008) regard measures of public service satisfaction or government satisfaction taken from responses to public opinion polls as political capital.

Schneeweis, and Branch 1990; Herremans, Akathaporn, and McInnes 1993; Roberts and Dowling 2002; Carmeli and Tishler 2004b).

The public reputation of an agency meets the aforementioned four criteria for the potential of competitive advantage. That is, it is a valuable, scarce, and imperfectly imitable resource. The public reputation of an agency is a valuable resource, as it enables and encourages federal agencies to improve agency efficiency, agency performance, and the quality of public service (Barney and Clark 2007). A growing body of studies confirms that a good reputation has strategic value for the firms that own it (e.g., Rumelt 1987; Weigelt and Camerer 1988; Dierickx and Cool 1989). Furthermore, the public reputation is also a scarce resource in that it has considerable variations across agencies (Deephouse 2000). In other words, each federal agency has different levels of public reputation. An agency's public reputation is an imperfectly imitable resource because it is created through the complex social and political process, associated with a high degree of causal ambiguity, which is beyond an agency's systematic influence and which reduces the extent to which competitors may imitate (Barney 1991; Dowling 2001; Roberts and Dowling 2002). Lastly, through the combination with their numerous components, management, and capabilities, federal agencies are organized to exploit the reputation resource's full potential of competitive advantage.

According to bureaucratic reputation theory, reputation is a strong incentive for bureaucratic agencies to be concerned with their maintenance in order to protect themselves against being distinguished as inferior agents (Brehm and Gates 1997; March 1999; Whitford 2003; Krause and Douglas 2005, 282). The reasons are as follows. Agency reputation can enhance bureaucratic autonomy (Carpenter 2001; Whitford 2002) and professional prestige (Wilson 1989). A good reputation of an agency is key to success in staff motivation, staff

retention, and overall organizational health and a bad reputation can often create irreversible damage to an agency (Huang and Provan 2007). Having a good reputation means enhanced legitimacy for an organization (Scott 2001). These benefits that reputation can enhance, such as agency legitimacy, professional prestige, staff motivation, and bureaucratic autonomy, lead to sustainable competitive advantages and better performance. In this vein, I expect that an agency's public reputation has a positive impact on agency performance.

H13: Agencies have higher performance scores when they have a higher public reputation.

Table 2.1 provides all hypotheses of this study. As will be discussed in the next chapter, this study has three different dependent variables (i.e., agency managerial effectiveness, agency program effectiveness, and agency financial performance) for each independent variable. In other words, this research project has three different models. As seen in table 2.1, however, the independent variables that were included in each model are somewhat different. For example, the model for analyzing agency program effectiveness does not include the variable appropriation and the model for analyzing agency financial performance does not include the variables appropriation, spending authority from offsetting collections, and general property, plant, and equipment, while the model for analyzing agency managerial effectiveness has all the independent variables. Details will be discussed in chapters six and seven.

Summary

I have reviewed the history and tenets of the RBV as a framework for explaining organizational performance and developed a theoretical discussion for this project, based on the RBV. I have offered the six types of federal agencies' resources that have a potential of competitive advantages and analyzed them in terms of the aforementioned four conditions. Lastly, I have formulated a series of hypotheses to be tested through the analysis of the relative impact of various resources on federal agency performance in order to investigate which resources are federal agencies' distinctive resources that have actual competitive advantage. In the following chapter, I will discuss the research design for this study, including data collection, operationalization and measurement of the variables, and analysis method.

Table 2.1 Hypotheses

Administrative Resources

H1-1: Agencies have higher managerial effectiveness scores when they have more board members or commissioners.

H1-2: Agencies have higher program effectiveness scores when they have more board members or commissioners.

H1-3: Agencies have higher financial performance scores when they have more board members or commissioners.

H2-1: Agencies have higher managerial effectiveness scores when they have longer fixed term length of board members or commissioners.

H2-2: Agencies have higher program effectiveness scores when they have longer fixed term length of board members or commissioners.

H2-3: Agencies have higher financial performance scores when they have longer fixed term length of board members or commissioners.

Human Resources

H3-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of professionals.

H3-2: Agencies have higher program effectiveness scores when they have a greater percentage of professionals.

H3-3: Agencies have higher financial performance scores when they have a greater percentage of professionals.

H4-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of non-career Senior Executive Service.

H4-2: Agencies have higher program effectiveness scores when they have a greater percentage of non-career Senior Executive Service.

H4-3: Agencies have higher financial performance scores when they have a greater percentage of non-career Senior Executive Service.

Table 2.1 Hypotheses (continued)

H5-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of career Senior Executive Service.

H5-2: Agencies have higher program effectiveness scores when they have a greater percentage of career Senior Executive Service.

H5-3: Agencies have higher financial performance scores when they have a greater percentage of career Senior Executive Service.

H6-1: Agencies have higher managerial effectiveness scores when they have more full-time employees.

H6-2: Agencies have higher program effectiveness scores when they have more full-time employees.

H6-3: Agencies have higher financial performance scores when they have more full-time employees.

Financial Resources

H7-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of the appropriation.

H8-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of the spending authority from offsetting collections.

H8-2: Agencies have higher program effectiveness scores when they have a greater percentage of the spending authority from offsetting collections.

Physical Resource

H9-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of general property, plant, and equipment.

H9-2: Agencies have higher program effectiveness scores when they have a greater percentage of general property, plant, and equipment.

Table 2.1 Hypotheses (continued)

Political Resources

H10-1: Agencies have higher managerial effectiveness scores when they have higher presidential attention.

H10-2: Agencies have higher program effectiveness scores when they have higher presidential attention.

H10-3: Agencies have higher financial performance scores when they have higher presidential attention.

H11-1: Agencies have higher managerial effectiveness scores when they have higher congressional attention.

H11-2: Agencies have higher program effectiveness scores when they have higher congressional attention.

H11-3: Agencies have higher financial performance scores when they have higher congressional attention.

H12-1: Agencies have higher managerial effectiveness scores when they have higher mass media attention.

H12-2: Agencies have higher program effectiveness scores when they have higher mass media attention.

H12-3: Agencies have higher financial performance scores when they have higher mass media attention.

Reputation as a Resource

H13-1: Agencies have higher managerial effectiveness scores when they have a higher public reputation.

H13-2: Agencies have higher program effectiveness scores when they have a higher public reputation.

H13-3: Agencies have higher financial performance scores when they have a higher public reputation.

CHAPTER 3

DATA, VARIABLES, AND METHODS

In this section, I discuss the data, variables, and analysis methods through which I quantitatively test the hypotheses derived from the theoretical discussion in chapter two. First, I briefly outline the data that I use to examine the hypotheses. Second, I explain operationalization and measurements of dependent variables and independent variables of this study and discuss data sources and collecting. Lastly, I address the statistical analysis methods that I use for this study.

Data

The unit of analysis of this study is federal agencies. In this research, by the federal agency I mean the executive agency. According to the title 5 of the United States Code, executive agency means an executive department, a government corporation, and an independent establishment. Among them, this study includes executive departments (i.e., 15 cabinet agencies) and independent establishments (i.e., independent agencies).

All the data for this study are gathered from fiscal year (FY) 2003 to FY 2007, but sample size is not distributed evenly across years, due to the data availability. That is, some agencies provide complete data for independent and dependent variables for those five years, but some others do not make them fully available for those five years. Therefore, the data set for this study is an unbalance panel data set. The majority of organizational performance studies use cross-sectional analysis, but I compile an unbalanced panel dataset consisting of data from FY

2003 to 2007 for this study. This dataset can provide useful information in terms of longitudinal analysis. The in-depth discussion about data sources and collecting will be addressed by variables in the following section because the data for this study were gathered from a variety of sources to avoid a mono-source bias that is a frequent problem in using a survey data set.

Dependent Variables

The dependent variable of this study is the federal agencies' performance. This study offers three specific dependent variables (i.e., agency effectiveness, program effectiveness, and financial performance) to measure agency's performance because I evaluate organizational performance at both the organization level and at the program level. Agency performance at the organizational level is assessed as an agency's overall effectiveness and an agency's financial performance. I also assess an agency's program performance. This diversity of performance measures can help us understand the relative roles and impact of various resources across various performance measures. Table 3.1 shows each dependent variable's source and measurement strategy.

Agency's Managerial Effectiveness

The first dependent variable of this study is the agency's managerial effectiveness. This measures the level of an agency's goal achievement in terms of overall management of those goals. The data for this agency effectiveness variable were gathered from each agency's Performance and Accountability Report (PAR). Under the Reports Consolidation Act of 2000, agencies are permitted to submit combined reports in implementing statutory requirements for financial and performance management reporting to improve the efficiency of executive branch

performance. These reports are combined in this annual Performance and Accountability Report which satisfies the reporting requirements of the following major legislation: Chief Financial Officers Act of 1990, Government Performance and Results Act of 1993, Government Management Reform Act of 1994, and Reports Consolidation Act of 2000. According to the OMB's memorandum titled "FY 2002 Financial and Performance Reporting," the Performance and Accountability Report should be presented in three parts: management's discussion and analysis, performance section, and financial section. This PAR, especially the performance results of each agency, has not been studied or used yet in the field of public administration and management.

Management's discussion and analysis section of the Performance and Accountability Report discusses summary of an agency's performance result and the use of resources in that fiscal year. This section also includes information on the strategies an agency uses to achieve its goals and the management challenges and external factors that affect its performance. Performance section provides detailed information on an agency's performance results by strategic goal in that fiscal year. That is, an agency compares its actual results against targets and goals that were set in its annual performance plan and were developed to help carry out its strategic plan. It also includes an explanation of how an agency ensures the completeness and reliability of the performance data used in this report. The financial section reports details on an agency's finances in that fiscal year, including a letter from its Chief Financial Officer, audited financial statements and notes, and the reports from its external auditor and audit advisory committee.

The purpose of an agency's annual Performance and Accountability Report (PAR) is to provide the agency's performance information relative to its mission and goals in order to

demonstrate accountability and enable the president, the Congress, and the public to assess the performance of the agency. To that end, each agency's PAR provides the agency's strategic goals (or strategic objectives) and specific annual performance measures (or annual performance indicators) for achieving these strategic goals, based on its own strategic plan. In addition, the PAR reports that fiscal year's performance results of the agency in terms of whether the actual performance results meet the targets of performance indicators. For example, annual performance indicators are rated as 'exceeded' when the actual performance results exceed the targets of performance indicators and annual performance indicators are rated as 'met' when the actual performance results meet the targets of performance indicators. If the actual performance results fail to satisfy the targets of performance indicators, they are rated as 'unmet'. The actual performance results are rated as 'not assessed' when the data are not available. Agency effectiveness for this study was measured by the percentage of met or exceeded annual performance indicators in an agency's total annual performance indicators (i.e., number of met or exceeded annual performance indicators / number of total annual performance indicators) in each agency's annual Performance and Accountability Report[6]. This study performed a logit transformation on this dependent variable because it is a proportion. If the dependent variable is a proportion, it is bounded in the range of 0 to 1. To solve the issue of this 0/1 boundaries, this research performed a logit transformation on the dependent variable so that the transformed dependent variable could theoretically assume any value between minus and plus infinity.

[6] This study does not include 'not assessed' rating in counting number of total annual performance indicators, as this rating means that the data for evaluation are not available.

Agency's Program Effectiveness

The second dependent variable of this research is the program effectiveness of an agency. This means the level of an agency's program achievement. Data for this dependent variable were obtained from each agency's Program Assessment Rating Tool (PART) data (from FY 2003 to FY 2007) in the President's Budget available at the Office of Management and Budget web site. Starting with the fiscal year 2004 budget, the Office of Management and Budget (OMB) began to assess performance and management of federal programs in each agency, and this initiative is called Program Assessment Rating Tool (PART) (Gilmour and Lewis 2006b, 742).

PART data are the evaluations of an agency's program effectiveness. They provide information about whether a program was effective. They assess each program's performance based on four evaluation criteria: program purpose and design, strategic planning, management, and accountability/results. The program purpose and design criterion is to assess whether the program design and purpose are clear and defensible and strategic planning category is to assess whether the agency sets valid annual and long-term goals for the program. The program management category is to rate agency management of the program, including financial oversight and program improvement efforts and accountability (results) criterion is to rate program performance on goals reviewed in the strategic planning section and through other evaluations.

Management and performance grades in the PART data range from 'effective' to 'moderately effective', 'adequate', 'ineffective' or 'results not demonstrated' (Moynihan 2006). Programs that are 'performing' have ratings of 'effective', 'moderately effective', or 'adequate'. 'Effective' is the highest rating a program can achieve. Programs rated 'effective' set ambitious goals, achieve results, are well-managed, and improve efficiency. In general, a program rated

'moderately effective' has set ambitious goals and is well-managed. Moderately Effective programs likely need to improve their efficiency or address other problems in the programs' design or management in order to achieve better results. 'Adequate' rating describes a program that needs to set more ambitious goals, achieve better results, improve accountability, or strengthen its management practices. In contrast, programs categorized as 'not performing' have ratings of 'ineffective' or 'results not demonstrated'. Programs receiving an 'ineffective' rating are not using citizens' tax dollars effectively. Ineffective programs have been unable to achieve results due to a lack of clarity regarding the program's purpose or goals, poor management, or some other significant weakness. A rating of 'results not demonstrated' indicates that a program has not been able to develop acceptable performance goals or collect data to determine whether it is performing. While the Performance and Accountability Report (PAR) focuses on strategic and managerial performance (i.e., level of annual target achievement) and financial performance, PART data deal with program performance of each agency. In other words, the PAR is the evaluation of agency-level performance and the PART evaluates program-level performance.

I use program effectiveness evaluation results of PART data as the second dependent variable. For this study, an agency's program effectiveness was measured by the percentage of programs that are performing in the agency's number of total programs (i.e., number of effective, moderately effective, and adequate programs / number of total programs in each agency) because, according to the U.S. Office of Management and Budget's performance web portal (i.e., ExpectMore.gov), receiving ratings of 'effective', 'moderately effective', or 'adequate' means that this program is performing, while receiving those of 'ineffective' or 'results not demonstrated' means that this program is not performing. This research also performed a logit transformation on this dependent variable because it is a proportion. If the dependent variable is

a proportion, it is bounded in the range of 0 to 1. To solve the issue of this 0/1 boundaries, this research performed a logit transformation on the dependent variable so that the transformed dependent variable could theoretically assume any value between minus and plus infinity.

Agency's Financial Performance

The last dependent variable of this study is the agency's financial performance. Data on an agency's financial performance were obtained from the financial statement in each agency's Performance and Accountability Reports from FY 2003 to FY 2007. The Performance and Accountability Report also includes an agency's annual financial statement. These statements include information about the agency's assets and liabilities. This shows how well an agency is managed financially during that fiscal year. A variety of ways can be used to measure an agency's financial performance. One of those various ways is the use of ratios. Ratios help the organization's managers and external users understand its strengths and weaknesses and they serve as useful indicators about the health and efficiency of the organization (Finkler 2001, 469).

Finkler (2001) provides six principal types of ratios: common size, liquidity, asset turnover, leverage, coverage, and profitability. This study focuses on profitability ratio that uses the information about agency's assets as an agency's financial performance measure because, as Finkler (2001) points out, virtually all organizations need to earn at least minimum profit to be able to replace equipment with newer one, acquire new technologies, expand services, and meet the future challenges, even if it might be inappropriate for many not-for-profit organizations to make an excessive profit (482).

To calculate profitability of an agency, this research used the return on assets (ROA = change in net assets / total assets) measure. The return on assets compares the profit with assets

in order to determine the amount of profit earned for each dollar invested in the organization (Finkler 2001, 483). That is, this measure evaluates the organization's return relative to the asset base used to generate that income (Finkler 2001, 484) and, therefore, a high ROA means better financial performance. For example, Russo and Fouts (1997), Deephouse (2000), and Roberts and Dowling (2002) used return on assets (ROA) ratio to measure the financial performance of a firm in their research projects. Of course, public organizations are not familiar with the concept of ROA, but ROA can reflect the activities of public organizations for earning minimum profit through managing their assets. For example, federal agencies have items such as investments, loans and interest, and so forth in their assets. These activities can be related to and interpreted as activities for the return on assets.

Independent Variables

As mentioned in chapter two, this study identifies six types of resources with a potential of competitive advantages in federal agencies: administrative resources, human resources, financial resources, physical resources, political resources, and reputation resources. Each type of resource can be broken into specific components. Table 3.2 shows each independent variable's source and measurement strategy by resource types.

Administrative Resources

The first specific variable of administrative resources is the number of members in the top leadership structure. By top leadership structure, this study means how an agency is governed. That is, some agencies such as cabinet agencies are governed by a secretary, while other agencies such as a commission or a board are governed by board members and

commissioners. Therefore, number of members in the top leadership structure is measured by counting the number of agency administrators including board members and commissioners. For this research, agencies without a commission or a board structure are coded 1 and all other agencies are coded according to the numbers of commissioner or board members (Lewis 2003). Data for this variable were obtained from each agency's Performance and Accountability Report, agency website, and the U.S. Government Manual. Table 3.3 shows the information about the number of members in agencies' top leadership structure across agencies.

The second variable of administrative resources is the term length of members in the top decision-making structure of an agency. Agencies without fixed terms are coded with a 0, and all other agencies are coded according to the length of the term (Lewis 2003). Data for this variable were obtained from each agency's Performance and Accountability Report, agency website, and the U.S. Government Manual. Table 3.4 provides the information about the term length of the members in agencies' top leadership structure across agencies.

Human Resources

The second resource category is human resources. I argue that human resources are composed of four specific variables. These are professional employees, non-career Senior Executive Service, career Senior Executive Service, and number of full-time employees. Professional employees are measured by the proportion (%) of professional employees in an agency's total number of employees. Non-career SES and career SES are measured by the proportion (%) of each SES category in an agency's total number of employees. For the number of full-time employees, this study uses total number of full-time employees in an agency.

The information about these four human resources variables was gathered from the Federal Human Resources Database (FedScope) and the Central Personnel Data File (CPDF) in the Office of Personnel Management. The data for these four human resources variables are from one year prior to the data for the performance variable in terms of a temporal ordering because these data are statistics as of September in each year and the federal fiscal year starts in October.

Financial Resources

The third resource category of this study is financial resources. Agency budget is a typical example of financial resources. Ripley and Franklin (1975) measured agency budgets in terms of appropriations, expenditures, and changes in appropriations and expenditures (172). This study offers two specific variables for financial resources. They are appropriations and spending authority from offsetting collections. Appropriations were measured by the proportion (%) of the appropriation in the total budgetary resources and spending authority from offsetting collections was measured by the proportion (%) of the spending authority from offsetting collections in total budgetary resources. The information about an agency's appropriations and spending authority from offsetting collections was gathered from the combined statement of budgetary resources in each agency's Performance and Accountability Reports from FY 2003 to FY 2007.

Physical Resources

The fourth resource category of this study is physical resources. This study measures physical resources by the proportion (%) of general property, plant and equipment in an agency's total assets. The balance sheet in each agency's Performance and Accountability Reports from

FY 2003 to 2007 provides the information on the amount ($) of total assets and the amount ($) of general property, plant and equipment.

Political Resources

The fifth resource category of this study is political resources and they include three specific attention variables. The first political resource variable of this study is presidential attention to an agency. It was measured by the number of the presidential documents such as statements, remarks, executive orders, conferences, addresses, and so on that contain an agency's name. The more an agency is mentioned, the more attention it obtains because the president allocates his/her limited time and ability according to the priority of affairs.

Many scholars have used similar ways of measuring presidential attention. For example, LeLoup (1975) counted the number of times the president mentions an agency in his public statements in a given year to measure presidential attention (88). Cohen (1995) measured presidential attention to domestic policy issues by searching State of the Union addresses. Edwards and Wood (1999) used Public Papers of the President, an annual compilation of presidential activities, to capture presidential attention. In this study, data on presidential attention to an agency were obtained from the website of the American Presidency Project at the University of California (Santa Barbara).

The second political resource variable of this study is congressional attention to an agency. It was measured by the number of the congressional records that contain an agency's name. The more an agency is mentioned, the more attention it obtains because members of Congress spend their time on priority policy issues (Flemming, Wood, and Bohte 1999; Whitford and Yates 2003). For example, Whitford and Yates (2003) measured congressional attention to

drug policy by counting the number of congressional hearings devoted to drug policy issues using Baumgartner and Jones' (1993) Congressional Hearings Data Set. Bertelli (2008) measured backbench salience by counting the number of mentions of each of the British Executive Non-Departmental Public Bodies in the Parliamentary Question Book.

In this study, data on congressional attention to an agency were gathered from the Congressional Record database on the website of the Government Printing Office. The Congressional Record is the official record of the proceedings and debates of the United States Congress. It is published daily when Congress is in session.

The third political resources variable of this study is mass media attention to an agency. It was measured by the number of televised news stories that mention an agency's name. The more an agency is mentioned, the more attention it obtains because mass media tend to focus on important and controversial issues in order to generate an audience (Rainey 2003)[7]. For example, Seingate (2006) counted the number of the *New York Times* articles to capture media influence on the congressional agenda. Lee, Rainey, and Chun (forthcoming) also used the *New York Times* and the *Washington Post* to measure salience to mass media. In this study, data on media attention to an agency were obtained from the Vanderbilt Television News Archive (for the number of news stories that contain an agency's name).

The Vanderbilt Television News Archive has been recording, preserving and providing access to television news broadcasts of the national networks since August 5, 1968. I searched the regularly scheduled newscasts from ABC, CBS, NBC, CNN and Fox News for an agency's name and counted the number of televised news stories that mention an agency's name. I

[7] As Rainey (2003) points out, news coverage of government seems to be more and more negative. As mentioned earlier, however, this kind of unfavorable media coverage can also be a critical political stimulus for that agency to look back on and rearrange itself for its goals.

excluded commercials, program introductions, and anchor good night segments from the search results. I also excluded overlapped search results from the search results. For example, to find out how many times 'Department of Agriculture' mentioned in the newscasts, I had to check the terms 'Department of Agriculture', 'Agriculture Department', 'U.S. Department of Agriculture', 'U.S. Agriculture Department', and 'USDA' at the same time and then remove the newscasts overlapped and mentioning state agriculture departments from the search results. Because of this redundancy problem and complex search results, I did not use the newspaper archives for this mass media attention variable. Newspaper archives often provide too many search results to control and manage.

Reputation Resource

The last resource category of this study is reputation resource. In the private sector, to measure reputation, scholars such as Deephouse (2000) and Roberts and Dowling (2002) used a survey of America's Most Admired Corporations conducted by *Fortune*, which has been published since 1982. For public organizations, the American Consumer Satisfaction Index has provided information on government satisfaction scores since 1991. These satisfaction scores can be a useful measure of federal agencies' reputation, but they are not used in this study because they do not cover all the agencies in this study's dataset. To measure an agency's reputation, this study used each agency's Freedom of Information Act (FOIA) (U.S. Code, Title 5, Section 552) report. Of course, a number of scholars have studied this Freedom of Information Act (e.g., Cooper 1986; Feinberg 1986; Piotrowski and Rosenbloom 2002), but they have focused on the law itself.

The FOIA was signed into law by President Lyndon B. Johnson in 1966 (Amended 1996, 2002, 2007) and went into effect the following year. The FOIA is a law ensuring public access to U.S. government records. This act allows for the full or partial disclosure of previously unreleased information and documents controlled by the United States Government. According to *A Citizen's Guide on Using the FOIA* (Committee on Government Reform 2005), the FOIA carries a presumption of disclosure; the burden is on the government - not the public - to substantiate why information may not be released. Upon written request, agencies of the United States government are required to disclose those records, unless they can be lawfully withheld from disclosure under one of nine specific exemptions in the FOIA. The FOIA applies to Executive Branch departments, agencies, and offices; federal regulatory agencies; and federal corporations. Congress, the federal courts, and parts of the Executive Office of the President that function solely to advise and assist the President are not subject to the FOIA. Records obtainable under the FOIA include all agency records - such as print documents, photographs, videos, maps, email, and electronic records - that were created or obtained by a Federal agency and are, at the time the request is filed, in that agency's possession and control.

According to the Freedom of Information Act, each agency to which the FOIA applies should submit to the Attorney General of the U.S. an annual report which shall include the statistics and information on the requests such as number of initial requests, disposition of initial requests, number of appeals, compliance with time limit, and so on. The purpose of the FOIA is to ensure public access to U.S. government records and provide information in a timely manner (ordinarily 20 working days from proper receipt of a perfected FOIA request). Consequently, the number of request denial and time period to respond to a request can be good proxies for agency's public reputation because large number of denial and long processing time give

significant damages to an agency's reputation. Therefore, this study measures agency reputation by a combined index (i.e., average of two Z-scores) of the Z-score of the number of denied requests and the Z-score of time period to respond to requests[8]. The lower a combined index, the higher an agency's reputation because a lower combined index means a satisfactory public service which leads to high agency reputation.

Agency Age

This study includes agency age to control for agency characteristics. According to Thornhill and Amit (2003), young organizations will be more prone to failure as a function of general management because time is required to develop the necessary organization-specific knowledge, skills, and abilities. The age of an agency was measured by the number of years after the agency's establishment (Ripley, Franklin, Holmes, and Moreland 1975; Chun and Rainey 2005). Agency age data were obtained from each agency's Performance and Accountability Reports from 2003 to 2007, the Greenwood Encyclopedia of American Institution's *Government Agencies*, and the U.S. Government Manual.

Analytic Methods

This research project chose analytic methods based on two goals. The first goal is to take a close look at the levels in federal agencies' performance during the five fiscal years (2003-2007) in terms of agency managerial effectiveness, agency program effectiveness, and agency financial performance. This goal is not the main purpose of this project, but it is still meaningful to analyze the change in federal agency performance levels because the longitudinal agency

[8] This is because the FOIA report provides information only on median processing time for requests.

performance data for this study have not been analyzed yet. Especially, the Performance and Accountability Report (PAR), which is the main source of agency performance data for this project, has not been studied yet. For this purpose, this research used the connected-line plots and the mean comparison (i.e., *t*-tests and the one-way analysis of variance) to show and analyze the levels of federal agencies' performance from FY 2003 to 2007. The analysis results of the agency performance data were reported in chapter four.

The main purpose of this research project is to examine the comprehensive and relative impacts of various organizational resources on federal agency performance in order to explore which resources are actual scarce, valuable, and imperfectly imitable resources that have positive effects on agency performance through competitive advantage. To accomplish this goal, this study tests the hypotheses mentioned in chapter two simultaneously. The analytic method employed for this purpose involves a panel data analysis method (i.e., feasible generalized least squares).

Panel data analysis can enhance the quality of empirical analysis in ways that would be impossible if we used only cross-section or time series data (Gujarati 2003). Yet, panel data analysis has issues to which researchers need to pay attention -- issues of interest in panel data are the presence of serial correlation of an error term and the presence of heteroskedasticity of an error term. In order to test the relationship between various organizational resources and agency performance, I used three different measures of performance (i.e., agency managerial effectiveness, agency program effectiveness, and agency financial performance) as dependent variables. The specific analysis methods and results of these models will be presented in chapters five, six, and seven, respectively.

Table 3.1 Sources and Measurement Strategies of Dependent Variables

Dependent Variables	Sources	Measurement Strategies
Agency Managerial Effectiveness	Performance and Accountability Report	It is measured as the percentage of met or exceeded targets in an agency's total targets (i.e., number of met or exceeded targets / number of total targets)
Agency Program Effectiveness	PART data in the President's Budget	It is measured with the percentage of programs rated as effective, moderately effective, and adequate in the agency's total programs (i.e., number of effective, moderately effective, and adequate programs / number of total programs in each agency)
Agency Financial Performance	Performance and Accountability Report	It is measured by Return on Assets (ROA = change in net assets / total assets)

Table 3.2 Measurement and Sources of Independent Variables

Types of Resources	Independent Variables	Measurement Strategies	Sources
Administrative Resources	Term Length of Members in Top-Leadership	Agencies without fixed term are coded with 0 and all other agencies are coded according to the length of the term	Performance and Accountability Report, Agency website, and the U.S. Government Manual
	Number of Members in Top-Leadership	Agencies without a commission (board) structure are coded with 1 and all other agencies are coded according to the numbers of board members (commissioners)	
Human Resources	Professionals	Proportion (%) of professionals in an agency's total number of employees	Federal Human Resources Data Base (FedScope) and Central Personnel Data File (CPDF) in OPM
	Non-career SES	Proportion (%) of non-career SES in an agency's total number of employees	
	Career SES	Proportion (%) of career SES in an agency's total number of employees	
	Full-Time Employees	Total number of full-time employees	

Table 3.2 Measurement and Sources of Independent Variables (continued)

Financial Resources	Appropriations	Proportion (%) of the appropriation in the total budgetary resources	Performance and Accountability Report
	Spending Authority from Offsetting Collections	Proportion (%) of the spending authority from offsetting collections in total budgetary resources	
Physical Resource	General Property, Plant, & Equipment	Proportion (%) of general property, plant and equipment in an agency's total assets	Performance and Accountability Report
Political Resources	Presidential Attention	Number of the presidential documents that contain an agency's name	American Presidency Project Database
	Congressional Attention	Number of the congressional record that contains an agency's name	Congressional Record Database
	Media Attention	Number of the media coverage that contains an agency's name	Vanderbilt Television News Archive
Reputation Resource	Agency's Public Reputation	(Z-scores of the number of denied requests + Z-score of days to respond to requests) / 2	Freedom of Information Act Report

Table 3.3 Number of Members in Top-Leadership Structure by Agency

Number of Members	Agency
1	Dept. of Agriculture, Dept. of Commerce, Dept. of Defense, Dept. of Education, Dept. of Energy, Dept. of Health & Human Services, Dept. of Homeland Security, Dept. of Housing & Urban Development, Dept. of Interior, Dept. of Justice, Dept. of Labor, Dept. of State, Dept. of Transportation, Dept. of Treasury, Dept. of Veterans Affairs, Environmental Protection Agency, General Services Administration, National Aeronautics & Space Administration, Small Business administration, Social Security Administration, Office of Personnel Management, National Archives & Record Administration, National Science Foundation, Peace Corps, Pension Benefit Guaranty Corporation, U.S. Agency for International Development, Armed Forces Retirement Home, National Endowment for the Arts, National Endowment for the Humanities, Selective Service System, Office of Government Ethics, Office of Special Counsel
3	Consumer Product Safety Commission, Farm Credit Administration, National Credit Union Administration, Railroad Retirement Board, Merit System Protection Board, National Mediation Board, Marine Mammal Commission, Federal Labor Relations Authority
5	Equal Employment Opportunity Commission, Commodity Futures Trading Commission, Federal Communications Commission, Federal Trade Commission, National Labor Relations Board, Nuclear Regulatory Commission, Securities & Exchange Commission, Chemical Safety and Hazard Investigation Board, Defense Nuclear Facilities Safety Board, Federal Energy Regulatory Commission, Federal Housing Finance Board, Federal Maritime Commission, Federal Deposit Insurance Corporation, National Transportation Safety Board
6	U.S. International Trade Commission, Federal Election Commission
7	Presidio Trust
8	Commission on Civil Rights
9	Broadcasting Board of Governors
11	Nuclear Waste Technical Review Board, American Battle Monuments Commission
14	Appalachian Regional Commission
15	Corporation for National and Community Service, Morris K. Udall Scholarship and Excellence in National Environmental Policy Foundation

Table 3.4 Term Length of Members in Top-Leadership Structure by Agency

Term Length (Year)	Agency
No Fixed Term	Dept. of Agriculture, Dept. of Commerce, Dept. of Defense, Dept. of Education, Dept. of Energy, Dept. of Health & Human Services, Dept. of Homeland Security, Dept. of Housing & Urban Development, Dept. of Interior, Dept. of Justice, Dept. of Labor, Dept. of State, Dept. of Transportation, Dept. of Treasury, Dept. of Veterans Affairs, Environmental Protection Agency, General Services Administration, National Aeronautics & Space Administration, Small Business administration, National Archives & Record Administration, Peace Corps, Pension Benefit Guaranty Corporation, U.S. Agency for International Development, Armed Forces Retirement Home, Morris K. Udall Scholarship and Excellence in National Environmental Policy Foundation, Presidio Trust, Broadcasting Board of Governors, Appalachian Regional Commission, Selective Service System, Federal Deposit Insurance Corporation, Nuclear Waste Technical Review Board, American Battle Monuments Commission
3	Marine Mammal Commission
4	Office of Personnel Management, Defense Nuclear Facilities Safety Board, National Mediation Board, National Endowment for the Arts
5	Commodity Futures Trading Commission, Equal Employment Opportunity Commission, Federal Communications Commission, National Labor Relations Board, Nuclear Regulatory Commission, Railroad Retirement Board, Securities & Exchange Commission, Chemical Safety and Hazard Investigation Board, Federal Maritime Commission, National Endowment for the Humanities, Corporation for National and Community Service, Federal Energy Regulatory Commission, National Transportation Safety Board, Office of Government Ethics, Federal Labor Relations Authority, Office of Special Counsel
6	Farm Credit Administration, Social Security Administration, Merit System Protection Board, Federal Election Commission, National Credit Union Administration, National Science Foundation, Commission on Civil Rights
7	Consumer Product Safety Commission, Federal Trade Commission, Federal Housing Finance Board
9	U.S. International Trade Commission

CHAPTER 4

ANALYSIS OF AGENCY PERFORMANCE

In this chapter, first, I address the issue of how we measure organizational performance. Then, I discuss the change in agency performance levels from FY 2003 to FY 2007, based on this study's three performance dependent variables (i.e., agency's managerial effectiveness, agency's program effectiveness, and agency's financial performance). Also, I analyze these three performance variables in turn by using the connected-line plots and the mean comparison.

Organizational Performance

The concept of organizational performance (effectiveness) is encountered repeatedly in the literature on organizations and management, as it is central to the investigation of organizational structures, processes, and outputs (Cameron and Whetten 1981), but there is only a rudimentary understanding of what constitutes this concept (Steers 1975). Of course, there have been many definitions and over several hundred articles and book chapters on organizational effectiveness. For example, according to Barnard (1938), an organizational action is effective when "a specific desired end is attained" (19). Osborne and Gaebler (1992, 351) defined effectiveness as a measure of the quality of output: "How well did it achieve the desired outcome?" Rainey and Steinbauer (1999) argued that effectiveness refers to whether the agency does well that which it is supposed to do, whether people in the agency work hard and well, whether the actions and procedures of the agency and its members are well suited to achieving its mission, and whether the agency actually achieves its mission. However, almost all acknowledge

that little agreement exists regarding what organizational effectiveness means or how properly to assess it (Cameron and Whetten 1983).

In fact, organizational effectiveness has been one of the most pervasive yet least delineated organizational constructs (Goodman and Pennings 1977). Although "the field of organizational effectiveness research appears to be in conceptual disarray" (Connolly, Conlon, and Deutsch 1980, 211), interest with the topic of organizational effectiveness or performance has been increased by the following factors: Empirically, it is the ultimate dependent variable in organizational study; theoretically, the construct lies at the center of all organizational models; and practically, individuals are continually faced with the demand to make judgments about the effectiveness of organizations (Pfeffer 1977; Cameron and Whetten 1983; Au 1996). In addition, in the public sector, virtually all of public management and organizations is concerned with performance and effectiveness, at least implicitly because effectiveness in pursuing their goals influences the quality of our lives and even our ability to survive (Rainey 2003).

Few questions challenge scholars more than what constitutes organizational performance or effectiveness (Selden and Sowa 2004). Ironically, while public officials and scholars emphasize measures of organizational effectiveness, scholars have yet to develop clear and conclusive ways of defining and assessing effectiveness (Rainey 2003). In other words, there is little consensus as to what organizational effectiveness means and what constitutes a valid set of measurement criteria. Therefore, I intend to get a better grasp on how to measure organizational effectiveness by discussing four issues related to the concept of organizational effectiveness and its measurement, instead of directly providing a specific definition of organizational effectiveness and measurement. That will help to understand the dependent variables of this study, too. Through a literature review on a number of articles and books, I identified four issues

to which we have to pay attention in order to have a better understanding of organizational effectiveness. They are issues of effectiveness or performance, levels of analysis, perceptual measurement, and measurement criteria.

Effectiveness or Performance?

This is a matter of terminology. The majority of scholars in the public and private sectors have not clearly differentiated the term 'effectiveness' and the term 'performance'. They often substituted terms such as performance or productivity for effectiveness (Cameron and Whetten 1983), usually implicitly[9]. According to Selden and Sowa (2004), "Scholars often use the terminology 'effectiveness' and 'performance' interchangeably to describe the same phenomenon, the overall ability of organizations to perform well or effectively pursue their missions" (396). It seems that the reason is that there is no clear consensus on the concepts or definitions of effectiveness and performance, respectively and people assume that these two terms have almost the same meaning in a broad sense.

Some scholars think of organizational effectiveness as one measurement or dimension of organizational performance. Nord (1983) said that effectiveness is often viewed as the bottom line measure of performance, and Walker and Boyne (2006) regarded effectiveness as one of six dimensions of performance. In contrast, even if Brewer and Selden (2000) selected effectiveness as one of three performance-related values, they used these two terms interchangeably in other parts of their article. It seems that they differentiate overall organizational effectiveness and effectiveness as one dimension of organizational performance. In this research, like Brewer and Selden's (2000) work, I use the terms 'effectiveness' and 'performance' interchangeably; that is,

[9] Wolf (1997) made it clear that he used the terms 'effectiveness' and 'performance' interchangeably in his government effectiveness study.

the term 'effectiveness' refers to overall effectiveness of the agency in seeking to fulfill goals related to its mission, not specific effectiveness of performance indicators.

Levels (Units) of Analysis

The issue of levels of analysis is related to the appropriate unit of analysis for measuring the construct of organizational effectiveness. The unit of analysis is one source of the obvious inability of researchers to agree on the definition and operationalization of this construct (Campbell 1977; Cameron and Whetten 1981). Each researcher uses his or her own unit of analysis fit for the purpose of research. According to Campbell (1977), sometimes the unit of analysis is a large organization with personnel located at many places, sometimes it is all the people under one roof, and sometimes the unit of analysis is an organizational subunit corresponding to the immediate work group. Boschken (1994) argued that "performance analysis is done at three levels-the individual employee or small group, the program, and the organizational level" (309). It is not a problem for each scholar to use his or her own unit of analysis according to the research purpose, but the problem is, although some of the literature makes the distinctions of unit of analysis clear, much of it does not (Boschken 1994) [10].

Of course, some scholars have argued this debate over levels of analysis has at times appeared bewildering and futile (Cameron and Whetten 1981). However, clarification of the unit of analysis facilitates the accumulation of the measurement criteria of effectiveness according to the unit of analysis and this will contribute to our understanding of the concept of effectiveness.

[10] For example, Wolf (1997) made it clear that "the federal agency or bureau was selected as the unit of analysis" (355) and that what is the meaning of the federal agency or bureau in his research clearly.

Its clarification also makes the scope of the research clear for better communication with other researchers.

Based on scholars' arguments and previous literatures, I identified the units of analysis in organizational effectiveness study with the concept of locus of analysis and focus of analysis as shown in table 4.1. Locus of analysis means the place where assessment of effectiveness happens. Assessment of effectiveness can take place at the levels of individual employee, subunit of organization, single organization, multiple or networked organizations, and entire government (in the case of the public sector). Focus of analysis means the subject of effectiveness measurement and scholars usually choose the performance of organization or program as the subject of assessment.

Then, what is the unit of analysis for measuring effectiveness in this study? Some scholars measure organizational effectiveness at a single level or for a single aspect (usually organization level or program level). For example, O'Toole and Meier (2003) measured organizational performance by evaluating program performance (i.e., pass rate on Texas Assessment of Academic Skills). Heinrich and Lynn (2000) measured performance by assessing program performance (i.e., earnings of participants in a job training program under the Job Training Partnership Act). Brewer and Selden (2000) and Chun and Rainey (2005b) measured organizational performance by evaluating overall managerial effectiveness at the organization level.

As Carmeli and Tishler (2004b, 1259) pointed out that most research projects have examined each performance measure separately and, thus, did not capture the simultaneity embedded in the multidimensionality of performance, this study argues that organizational performance could and should be measured in multiple aspects (not a single level or aspect); this

is similar to the idea that governance research focuses on individual-level and organizational-level performance (Lynn, Heinrich, and Hill 2001). Therefore, I evaluate organizational performance in the managerial aspect, program aspect, and financial aspect. This diversity of performance measures can further our understanding of the relative roles and impact of various resources across various performance measures.

Perceptual Measure or Objective Measure?

Although there are multiple ways to classify performance measures, the most popular partition has been objective and subjective (perceptual) measures. The difference between 'objective' and 'subjective' is usually about differences in source material. Subjective measures are constructed typically from the survey responses for performance assessment either by members of an organization, such as managers or employees, or external stakeholders, such as consumers or citizens, while objective measures are usually constructed from impartial and independent records or archives of performance such as school exam results (Parks 1984; Andrews, Boyne, and Walker 2006).

In general, subjective measures of effectiveness are regarded as perceptual assessment because generally they use the interview survey or questionnaire. Subjective measures are considered to be biased in that they are assessment of perceived effectiveness relying upon informant's recall (Golden 1992) and often have the potential for monomethod bias. However, this does not mean that subjective measures are useless. The measurement of perceived effectiveness is still useful when objective measures cannot appropriately deal with the complex dimensions of organizational performance, especially in the public sector. In the public sector, no single dimension of performance is as paramount because multiple constituencies (e.g.,

consumers, taxpayers, employees, politicians, etc) may have widely different interpretations of the public organization's effectiveness while most stakeholders in the private sector agree that strong financial results are essential to business success (Andrews, Boyne, and Walker 2006).

Many scholars use subjective (perceptual) performance measures from surveys (e.g., Berman and Wang 2000; Brewer and Selden 2000; Chun and Rainey 2005b; Light 2006), while others use both subjective and objective performance measures (e.g., Selden and Sowa 2004; Walker and Boyne 2006). This research employs objective measures of organizational performance gathered from archives of information on performance (i.e., Performance and Accountability Reports and Program Assessment Rating Tool data) because objective measures may accurately reflect the real world and minimize the designer's discretion (Meier and Brudney 2002) and relatively few studies have used objective measures of organizational performance.

Measurement Criteria

A number of scholars throughout the development of organization theory have focused on developing the best way to define and measure organizational performance, but they have never come to agreement on one conclusive model or framework for measuring effectiveness (Daft 2001). I briefly review several generic approaches to assessing performance.

The rational goal, or purposive-rational model, of organizational performance focuses on the extent to which an organization reaches its goals as the key criterion of performance (Pfeffer 1982). The system resource model, developed by Seashore and Yuchtman (1967), defined organizational performance through the overall survival of the organization, "the ability to exploit its environment in the acquisition of scarce and valued resources to sustain its functioning"

(393) [11]. The participant-satisfaction model involved asking many different participants about their satisfaction with the organization (Rainey 2003). It defined organizational performance according to an organization's ability to satisfy key strategic constituencies in its environment (Boschken 1994). Likert (1967) and other scholars focused on the internal process and human resources model, which refers to such factors as communication system, stable procedures, motivation, leadership, interpersonal trust, workforce cohesion, and so on (Selden and Sowa 2004). Quinn and Rohrbaugh (1983) developed a spatial model of organizational effectiveness that attempts to acknowledge the competing values that surround the assessment of organizational performance. These competing values or dimensions are flexibility-control, internal-external, and means-end. These dimensions combine to represent the four models of effectiveness: the human relations model, the open systems model, the rational goal model, and the internal process model.

The aforementioned models are generic approaches to assessing effectiveness and somewhat theoretical models of performance. These approaches can be applied to both the public sector and the private sector, but they do not provide specific measurement criteria of effectiveness especially fit for the public sector. Therefore, I reviewed previous empirical research on measuring organizational performance (effectiveness) in the public sector and summarized what kinds of measurement criteria of effectiveness were used in the public sector as in table 1.2 in order to get a better picture of organizational effectiveness in the public sector.

[11] The system resource model may look similar to the resource-based view in that both theories are using the concept of 'scarce and valued resources'. Yet, they are different in that the system resource model is focusing on how to measure organizational performance using the concept of 'scarce and valued resources', while the resource-based view is explaining causes of the sustained difference in organizational performance through the concept of 'scarce and valued resources'. In addition, this study does not use the system resource model to measure agency performance.

Through this review, I found that it is not easy to identify common measurement criteria for organizational performance in the public sector from prior research because, as Campbell (1977) pointed out, particular conceptualization and measurement of organizational effectiveness may be useful only for a certain purpose of that research. In other words, the search for the one best measurement is just as futile as the search for the one best way (Behn 1996). Accordingly, Behn (2003) suggested that public managers should select a collection of performance measures with the characteristics necessary to help achieve eight managerial purposes: evaluate, control, budget, motivate, promote, celebrate, learn, and improve. In this vein, for this study, I used the traditional concept of effectiveness -- that is, the degree to which an organization achieves its goals (Daft 2001, 22) -- in order to measure agency managerial effectiveness and program effectiveness because the data sources (i.e., Performance and Accountability Reports and Program Assessment Rating Tool data) that I used for these two dependent variables are mainly based on this traditional concept of effectiveness.

Analysis of Agency Managerial Effectiveness

In this section, I analyze the change in agency managerial effectiveness levels from FY 2003 to FY 2007. Agency managerial effectiveness for this study was measured by the percentage of met or exceeded annual performance indicators in an agency's total annual performance indicators (i.e., number of met or exceeded annual performance indicators / number of total annual performance indicators) in each agency's annual Performance and Accountability Report[12]. Figures 4.1 and 4.2 show the change in agency managerial effectiveness levels of the

[12] In this chapter, I do not conduct a logit transformation for dependent variables which are measured by the percentage in order to compare means relatively easily. Also, sample sizes of

15 cabinet agencies and other independent agencies using the connected-line plots, respectively. Because the dataset for this study was an unbalanced dataset, I included agencies which had at least four years' performance data in this graphical analysis.

According to table 4.2, the one-way analysis of variance (ANOVA) for agency managerial effectiveness of all the agencies in this dataset demonstrated that ANOVA could not be used for this analysis because the *P*-value of Bartlett's test for equal variances did not support the equal variance assumption. In contrast, table 4.3 shows the result of a two-sample (i.e., 15 cabinet agencies vs. independent agencies) *t* test without equal variance assumption for the mean comparison between the 15 cabinet agencies and independent agencies: the population means of these two groups' agency managerial effectiveness for the five years were significantly different at the 0.05 level. That is, independent agencies (mean = .762) performed statistically significantly better than the 15 cabinet agencies (mean = .724) in achieving their targets.

According to figure 4.1, in general, almost all cabinet agencies met or exceeded at least more than 50% of their managerial performance targets (indicators). Especially, the Department of Commerce and the Department of Energy showed that more than 75% of their performance indicators were met or exceeded during all five years. The Department of Education and the Department of Energy kept improving their performance during these five years, while the Department of Homeland Security, the Department of Labor, and the Department of Veterans Affairs showed decreasing agency managerial effectiveness. The performance of the Department of Health & Human Services fluctuated considerably during these time periods.

Table 4.4 ranks the 15 cabinet agencies by their agency managerial effectiveness. The total mean of all 15 cabinet agencies' effectiveness was 0.724, which means 72.4% of their

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dependent variables in this chapter may be different from those in chapters 5, 6, and 7 because this chapter does not consider independent variables.

performance targets were met or exceeded on average. According to the one-way analysis of variance (ANOVA) for the 15 cabinet agencies' managerial effectiveness shown in table 4.5, the means among the 15 cabinet agencies were significantly different at the 0.01 level, and the *P*-value of Bartlett's test for equal variances was .315, which indicated that this result was valid. Among the 15 cabinet agencies, the Department of Justice, the Department of Homeland Security, the Department of Transportation, the Department of Defense, the Department of Education, and the Department of Veterans Affairs performed more poorly than the total mean. The Department of Veterans Affairs showed the lowest agency managerial effectiveness, while the Department of Energy showed the best performance. As mentioned before, the Department of Education demonstrated increasing agency managerial effectiveness, but its average effectiveness score was relatively much lower than those of other cabinet agencies.

According to figure 4.2, in general, almost all independent agencies met or exceeded at least more than 50% of their managerial performance targets (indicators). Furthermore, the National Aeronautics & Space Administration, the Commodity Futures Trading Commission, the Federal Communications Commission, the Nuclear Regulatory Commission, and the Federal Deposit Insurance Corporation showed that more than 75% of their performance indicators were met or exceeded during all four or five years. The Federal Election Commission, the National Credit Union Administration, and the Federal Deposit Insurance Corporation continued to improve their performance during these five years, while the National Science Foundation showed decreasing agency managerial effectiveness. The Small Business Administration, the Social Security Administration, and the Federal Trade Commission demonstrated decreasing performance during the first four years (2003 - 2006), but showed better performance from 2007. The Equal Employment Opportunity Commission, the Pension Benefit Guaranty Corporation,

and the Broadcasting Board of Governors fluctuated considerably in their agency managerial effectiveness during these time periods.

Table 4.6 ranks independent agencies in this study by their agency managerial effectiveness. The total mean of independent cabinet agencies' managerial effectiveness was 0.762, which means 76.2% of their performance indicators were met or exceeded on average. According to table 4.7, the one-way analysis of variance (ANOVA) for these independent agencies' managerial effectiveness showed that the means of the independent agencies were significantly different at the 0.01 level, and the *P*-value of Bartlett's test for equal variances was .207, indicating that this result is valid. Among these independent agencies, the Social Security Administration (SSA) and the National Archives & Record Administration (NARA) performed more poorly than the total mean during all five years, while the National Aeronautics & Space Administration (NASA), the Commodity Futures Trading Commission (CFTC), the Federal Communications Commission (FCC), the Nuclear Regulatory Commission (NRC), and the Federal Deposit Insurance Corporation (FDIC) performed better than the total mean during all five years. Moreover, the Marine Mammal Commission, the Federal Deposit Insurance Corporation, the Armed Forces Retirement Home, the Farm Credit Administration (FCA), and the Federal Housing Finance Board showed that more than 90% of their performance targets were met or exceeded on average.

Analysis of Effectiveness of Agency Programs

This section addresses the change in agency program effectiveness levels from FY 2003 to FY 2007. Agencies' program effectiveness for this study was measured by the percentage of programs rated as effective, moderately effective, or adequate in an agency's total programs (i.e.,

number of effective, moderately effective, or adequate programs / number of total programs in each agency). Figures 4.3 and 4.4 show the change in program effectiveness levels of the 15 cabinet agencies and other independent agencies using the connected-line plots, respectively. Because the dataset for this study was an unbalanced dataset, I included agencies which had at least four years' performance data in this graphical analysis.

According to table 4.8, unlike agency managerial effectiveness, the result of a two-sample (i.e., 15 cabinet agencies vs. independent agencies) *t* test for program effectiveness without equal variance assumption showed that the population means of these two groups' program effectiveness were not significantly different ($t = 0.9108$, $P = 0.3641$). Also, the one-way analysis of variance (ANOVA) for program effectiveness of all the agencies, as seen in table 4.9, demonstrated that ANOVA cannot be used for this analysis because the *P*-value of Bartlett's test for equal variances did not support equal variance assumption.

According to figure 4.3, the Department of Agriculture, the Department of Housing & Urban Development, the Department of Interior, the Department of Justice, and the Department of Veterans Affairs kept improving their program performance during these five years. Especially, the change of the Department of Agriculture's program effectiveness was noticeable. In contrast, the Department of Transportation, the Department of Labor, and the Department of Health & Human Services showed decreasing agency program effectiveness. In the case of the Department of Transportation, it showed decreasing performance recently and FY 2007 was the worst performance year, but even in that year, 93% of its programs were rated as 'effective, moderately effective, or adequate'. The Department of Education showed the relatively worst program effectiveness throughout these five years.

Figure 4.4 provides the information on the change of some independent agencies' program effectiveness levels for four or five years. The Environmental Protection Agency, the Small Business Administration, and the Securities & Exchange Commission kept improving their program effectiveness. Especially, the Nuclear Regulatory Commission, the National Science Foundation, and the Broadcasting Board of Governors demonstrated that almost 99% of their programs were rated as 'effective, moderately effective, or adequate' during these four years.

This study did not include the ranking tables of agencies' program effectiveness for the following two reasons. According to table 4.10, the results of the one-way analysis of variance (ANOVA) for the 15 cabinet agencies' program effectiveness showed that the means between the 15 cabinet agencies were significantly different at the 0.01 level, but the *P*-value of Bartlett's test for equal variances did not support equal variance assumption. Table 4.11 demonstrates that the one-way analysis of variance (ANOVA) for independent agencies' program effectiveness also had the unequal variance problem.

Analysis of Agency's Financial Performance

In this section, I discuss the change in agency financial performance levels from FY 2003 to FY 2007. For this study, agency financial performance was measured by the return on assets (ROA = increase in net assets / total assets) which evaluates the organization's return relative to the asset base used to generate that income. Figures 4.5 and 4.6 show the change in financial performance levels of the 15 cabinet agencies and other independent agencies using the connected-line plots, respectively. Because the dataset for this study was an unbalanced dataset, I included agencies which had at least four years' performance data in this graphical analysis.

According to table 4.12, unlike the result for agency managerial effectiveness, the result of a two-sample (i.e., 15 cabinet agencies vs. independent agencies) *t* test for financial performance without equal variances assumption showed that the population means of these two groups' financial performance were not significantly different ($t = -1.4104$, $P = 0.1625$). Also, According to table 4.13, the one-way analysis of variance (ANOVA) for financial performance of all the agencies in this dataset demonstrated that the means were not significantly different.

According to figure 4.5, the Department of Justice kept improving their financial performance during these five years. That is, its return on assets, though relatively small, was increasing during this period of years. Returns on assets of the Department of Commerce, the Department of Education, and the Department of Treasury were quite stable near zero (i.e., almost no increase in net assets) during the five fiscal years. The Department of Interior and the Department of State showed a stable and positive increase in net assets, while the Department of Transportation demonstrated a stable, but negative, increase in net assets during this period. In contrast, return on assets of the Department of Energy kept decreasing during the five fiscal years. The financial performance of the Department of Homeland Security and the Department of Veterans Affairs fluctuated considerably during this time period. In the case of the Department of Veterans Affairs, the financial performance levels seem to fluctuate noticeably because 'federal employee and veteran benefits liability' causes excessive total liabilities.

Figure 4.6 provides the information on the change of some independent agencies' financial performance levels. The Equal Employment Opportunity Commission (EEOC) and the Consumer Product Safety Commission (CPSC) kept improving their financial performance during this period. That is, their returns on assets were increasing during the five years. Returns on assets of the Farm Credit Administration (FCA), Nuclear Regulatory Commission (NRC), and

Pension Benefit Guaranty Corporation (PBGC) decreased at first, but began to increase after that. In contrast, the National Aeronautics & Space Administration (NASA), the Chemical Safety and Hazard Investigation Board (CSHIB), and the National Science Foundation (NSF) demonstrated decreasing financial performance during this time period. The return on assets of the Environmental Protection Agency (EPA) was quite stable near zero (i.e., almost no increase in net assets) during the five fiscal years. The Social Security Administration (SSA) showed a stable and positive increase in net assets, while the Office of Personnel Management (OPM) demonstrated a stable, but negative, increase in net assets.

The ranking tables of agencies' financial performance, like those for program effectiveness, were not included for the following reasons. According to table 4.14, the results of the one-way analysis of variance (ANOVA) for the 15 cabinet agencies' financial performance showed that the means between the 15 cabinet agencies are not significantly different. According to table 4.15, the results of the one-way analysis of variance (ANOVA) for independent agencies' financial performance showed that the means between the 15 cabinet agencies are significantly different at the 0.01 level, but *P*-value of Bartlett's test for equal variances does not support equal variance assumption.

Table 4.1 Units of Analysis in Effectiveness Research

		Locus of Analysis				
		Individual Employee	Subunit	Single Organization	Multiple (networked) Organizations	Entire Government
Focus of Analysis	Organization	Individual's Effectiveness in Organization	Organizational Effectiveness of Subunit in Organization	Organizational Effectiveness of Single Organization	Organizational Effectiveness of Multiple or Networked Organizations	Organizational Effectiveness of Entire Government
	Program	-	Program Performance of Subunit in Organization	Program Performance of Single Organization	Program Performance of Multiple/ Networked Organization	Program Performance of Entire Government

Table 4.2 One-Way Analysis of Variance for All Agencies
(Agency Managerial Effectiveness)

Source	SS	df	MS	F	Prob > F
Between Groups	2.276	57	.039	3.88	.0000
Within Groups	1.647	160	.010		
Total	3.923	217	.018		
Bartlett's test for equal variances:		chi2(53) = 73.7067		Prob>chi2 = 0.031	

Table 4.3 Two-Sample *t* Test with Unequal Variances
between 15 Cabinet Agencies and Independent Agencies
(Agency Managerial Effectiveness)

Group	N	Mean	SE	SD
Cabinet Agencies	74	.724	.012	.101
Independent Agencies	144	.762	.012	.147
Combined	218	.749	.009	.134
Difference		-.038	.017	
		t = -2.2082	p = .0284	

Table 4.4 Summary of 15 Cabinet Agencies' Managerial Effectiveness

Agency	Mean	Std. Dev.	Frequency
Department of Energy	.852	.056	5
Department of Commerce	.849	.061	5
Department of Housing & Urban Development	.791	.063	5
Department of Agriculture	.761	.034	5
Department of Health & Human Services	.751	.128	5
Department of Treasury	.745	.061	5
Department of Labor	.733	.037	5
Department of State	.732	.088	5
Department of Interior	.729	.049	4
Department of Justice	.722	.053	5
Department of Homeland Security	.706	.035	5
Department of Transportation	.678	.055	5
Department of Defense	.633	.101	5
Department of Education	.624	.099	5
Department of Veterans Affairs	.556	.082	5
Total	.724	.101	74

Table 4.5 One-Way Analysis of Variance for 15 Cabinet Agencies
(Agency Managerial Effectiveness)

Source	SS	df	MS	F	Prob > F
Between Groups	.442	14	.032	6.08	.0000
Within Groups	.307	59	.005		
Total	.749	73	.010		
Bartlett's test for equal variances:		chi2(14) = 15.9791		Prob>chi2 = 0.315	

Table 4.6 Summary of Independent Agencies' Managerial Effectiveness

Agency	Mean	Std. Dev.	Frequency
Marine Mammal Commission	.990	0	1
Federal Deposit Insurance Corporation (FDIC)	.945	.030	4
Armed Forces Retirement Home	.924	.094	2
Farm Credit Administration (FCA)	.910	.109	5
Federal Housing Finance Board	.909	.098	3
Commodity Futures Trading Commission (CFTC)	.896	.056	4
Federal Communications Commission (FCC)	.889	.066	5
Nuclear Regulatory Commission (NRC)	.879	.102	5
Merit System Protection Board	.873	.128	2
Railroad Retirement Board	.872	.011	2
National Aeronautics & Space Administration (NASA)	.868	.060	5
National Mediation Board	.868	.078	2
Federal Election Commission (FEC)	.867	.145	4
Federal Maritime Commission	.818	.115	2
Morris K. Udall Foundation	.808	.258	2
Appalachian Regional Commission	.800	0	1
Federal Energy Regulatory Commission (FERC)	.799	.071	4
Consumer Product Safety Commission (CPSC)	.789	.036	5
National Science Foundation (NSF)	.785	.109	4
National Credit Union Administration (NCUA)	.779	.043	4
Environmental Protection Agency (EPA)	.777	.059	5
Securities & Exchange Commission (SEC)	.756	.091	4

Table 4.6 Summary of Independent Agencies' Managerial Effectiveness (continued)

Office of Personnel Management (OPM)	.743	.070	5
Federal Trade Commission (FTC)	.739	.181	5
Small Business Administration (SBA)	.728	.109	5
General Services Administration	.727	.120	3
Peace Corps	.714	.145	4
Equal Employment Opportunity Commission (EEOC)	.707	.127	5
Selective Service System	.684	.074	2
U.S. Agency for International Development (US AID)	.678	.094	3
Broadcasting Board of Governors (BBG)	.662	.186	4
Pension Benefit Guaranty Corporation (PBGC)	.656	.189	5
Social Security Administration (SSA)	.655	.081	5
Federal Labor Relations Authority	.651	.113	2
Presidio Trust (Presidio)	.645	.024	3
U.S. International Trade Commission	.639	.121	3
National Archives & Record Administration (NARA)	.628	.079	5
National Endowment for the Arts	.615	0	1
Chemical Safety and Hazard Investigation Board	.599	.141	2
National Labor Relations Board	.561	.323	2
National Endowment for the Humanity	.523	.125	2
Commission on Civil Rights	.500	.236	2
Corporation for National and Community Service	.444	0	1
Total	.762	.147	144

Table 4.7 One-Way Analysis of Variance for Independent Agencies
(Agency Managerial Effectiveness)

Source	SS	df	MS	F	Prob > F
Between Groups	1.765	42	.042	3.17	.0000
Within Groups	1.341	101	.013		
Total	3.106	143	.022		
Bartlett's test for equal variances:		chi2(38) = 44.8343		Prob>chi2 = 0.207	

Table 4.8 Two-Sample *t* Test with Unequal Variances
between 15 Cabinet Agencies and Independent Agencies
(Agency Program Effectiveness)

Group	N	Mean	SE	SD
Cabinet Agencies	75	.649	.026	.225
Independent Agencies	85	.601	.046	.426
Combined	160	.624	.027	.347
Difference		.048	.053	
		t = .9108	p = .3641	

Table 4.9 One-Way Analysis of Variance for All Agencies
(Agency Program Effectiveness)

Source	SS	df	MS	F	Prob > F
Between Groups	13.417	37	.363	7.79	.0000
Within Groups	5.679	122	.047		
Total	19.096	159	.120		
Bartlett's test for equal variances:		chi2(27) = 76.1070		Prob>chi2 = 0.000	

Table 4.10 One-Way Analysis of Variance for 15 Cabinet Agencies
(Agency Program Effectiveness)

Source	SS	df	MS	F	Prob > F
Between Groups	2.308	14	.165	6.86	.0000
Within Groups	1.441	60	.024		
Total	3.749	74	.051		
Bartlett's test for equal variances:		chi2(14) = 40.5894		Prob>chi2 = 0.000	

Table 4.11 One-Way Analysis of Variance for Independent Agencies
(Agency Program Effectiveness)

Source	SS	df	MS	F	Prob > F
Between Groups	11.107	22	.505	6.05	.0000
Within Groups	5.178	62	.084		
Total	16.285	84	.194		
Bartlett's test for equal variances:		chi2(8) = 15.5122		Prob>chi2 = 0.048	

Table 4.12 Two-Sample *t* Test with Unequal Variances between 15 Cabinet Agencies and Independent Agencies (Agency Financial Performance)

Group	N	Mean	SE	SD
Cabinet Agencies	72	-.077	.069	.589
Independent Agencies	139	.023	.013	.150
Combined	211	-.011	.025	.367
Difference		-.099	.071	
		t = -1.4104	p = .1625	

Table 4.13 One-Way Analysis of Variance for All Agencies
(Agency Financial Performance)

Source	SS	df	MS	F	Prob > F
Between Groups	8.812	57	.155	1.22	.1755
Within Groups	19.462	153	.127		
Total	28.273	210	.135		
Bartlett's test for equal variances:		chi2(51) = 475.7683		Prob>chi2 = 0.000	

Table 4.14 One-Way Analysis of Variance for 15 Cabinet Agencies
(Agency Financial Performance)

Source	SS	df	MS	F	Prob > F
Between Groups	6.692	14	.478	1.51	.1353
Within Groups	17.986	57	.316		
Total	24.677	71	.348		
Bartlett's test for equal variances:		chi2(14) = 251.1267		Prob>chi2 = 0.000	

Table 4.15 One-Way Analysis of Variance for Independent Agencies
(Agency Financial Performance)

Source	SS	df	MS	F	Prob > F
Between Groups	1.649	42	.039	2.55	.0001
Within Groups	1.476	96	.015		
Total	3.125	138	.023		
Bartlett's test for equal variances:		chi2(36) = 101.4445		Prob>chi2 = 0.000	

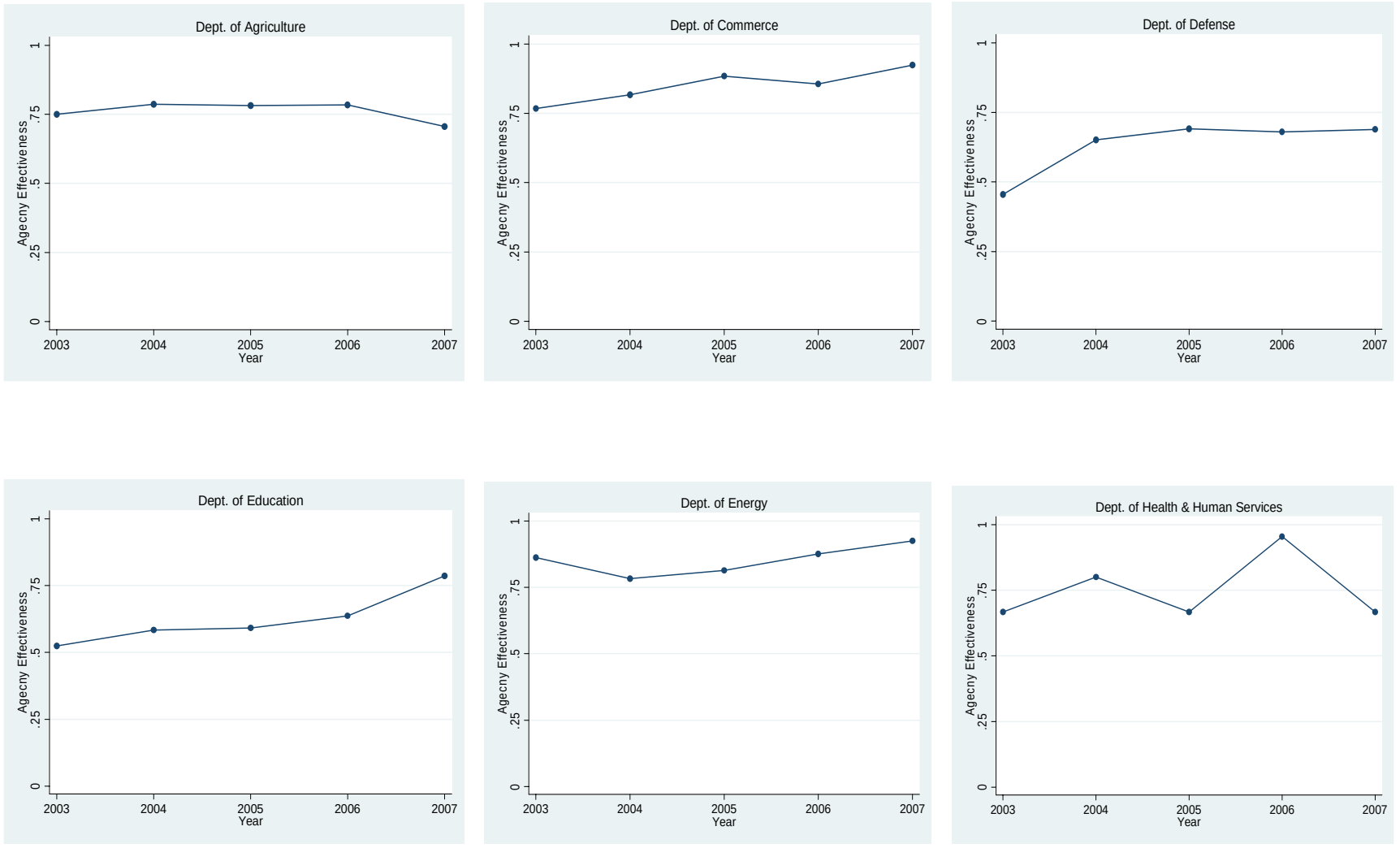


Figure 4.1 Change of 15 Cabinet Agencies' Managerial Effectiveness Levels

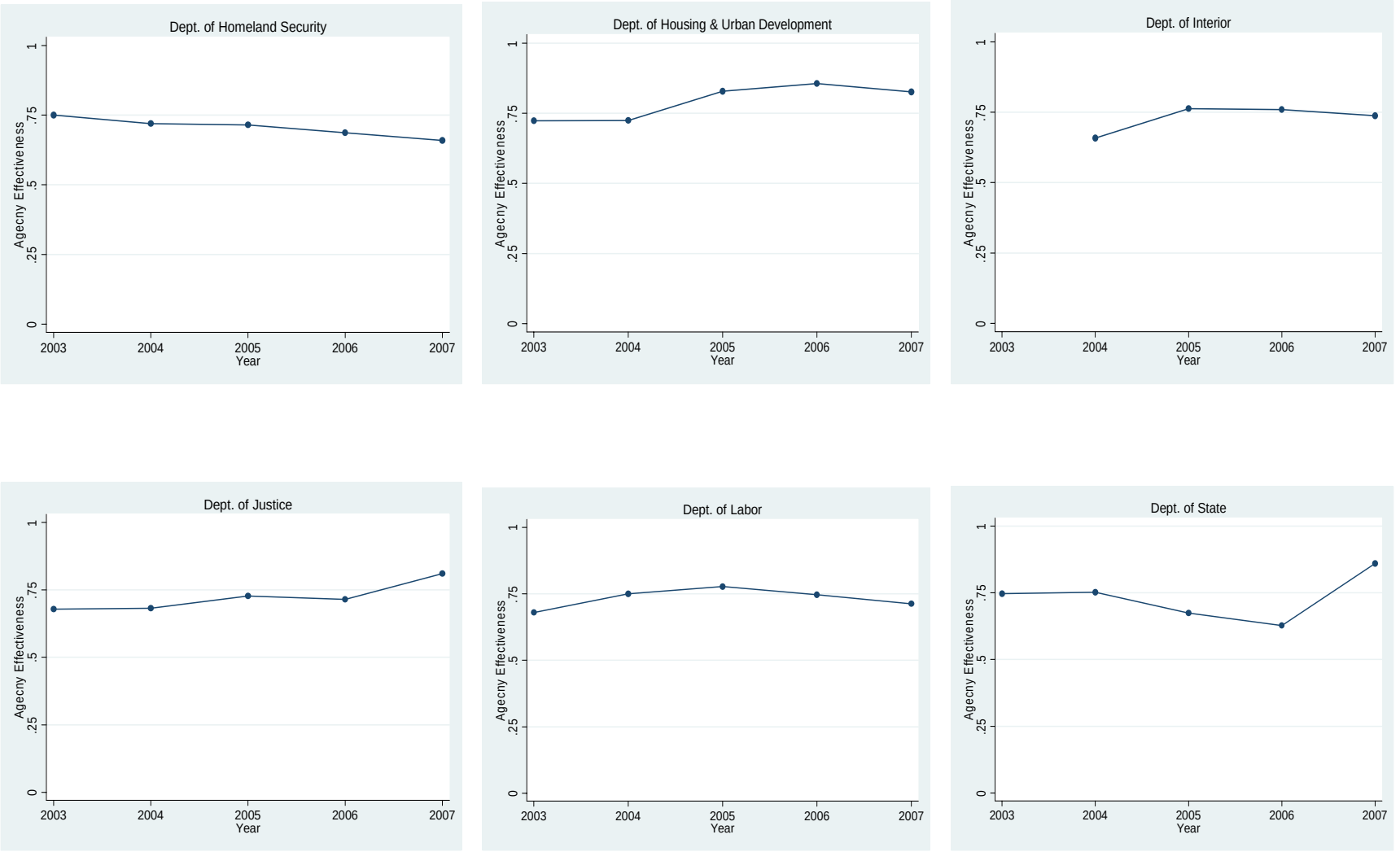


Figure 4.1 Change of 15 Cabinet Agencies' Managerial Effectiveness Levels (Continued)

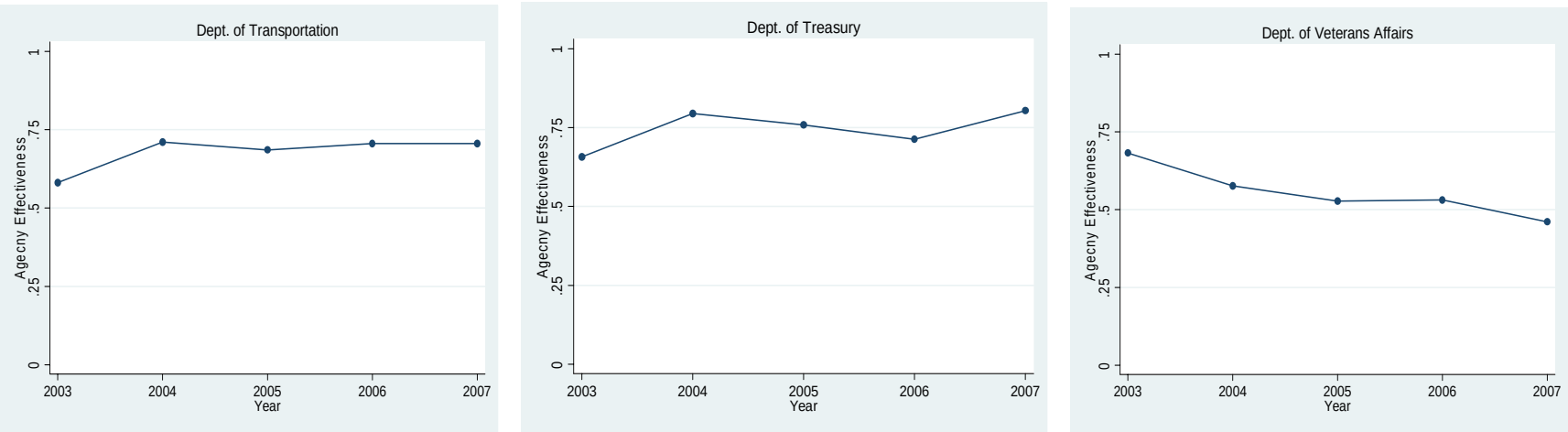


Figure 4.1 Change of 15 Cabinet Agencies' Managerial Effectiveness Levels (Continued)

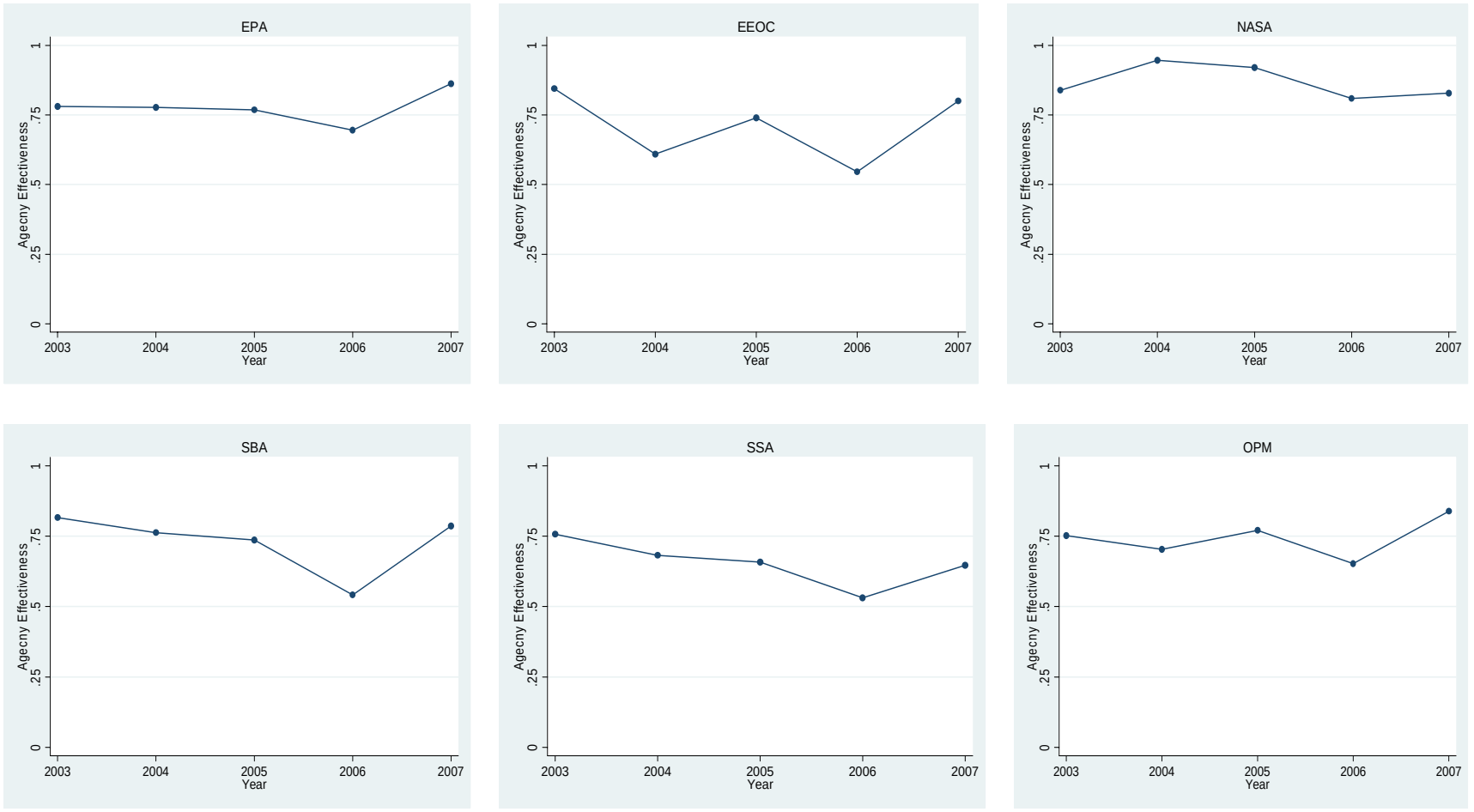


Figure 4.2 Change of Independent Agencies' Managerial Effectiveness Levels[13]

[13] EPA (Environmental Protection Agency), EEOC (Equal Employment Opportunity Commission), NASA (National Aeronautics & Space Administration), SBA (Small Business Administration), SSA (Social Security Administration), OPM (Office of Personnel Management)

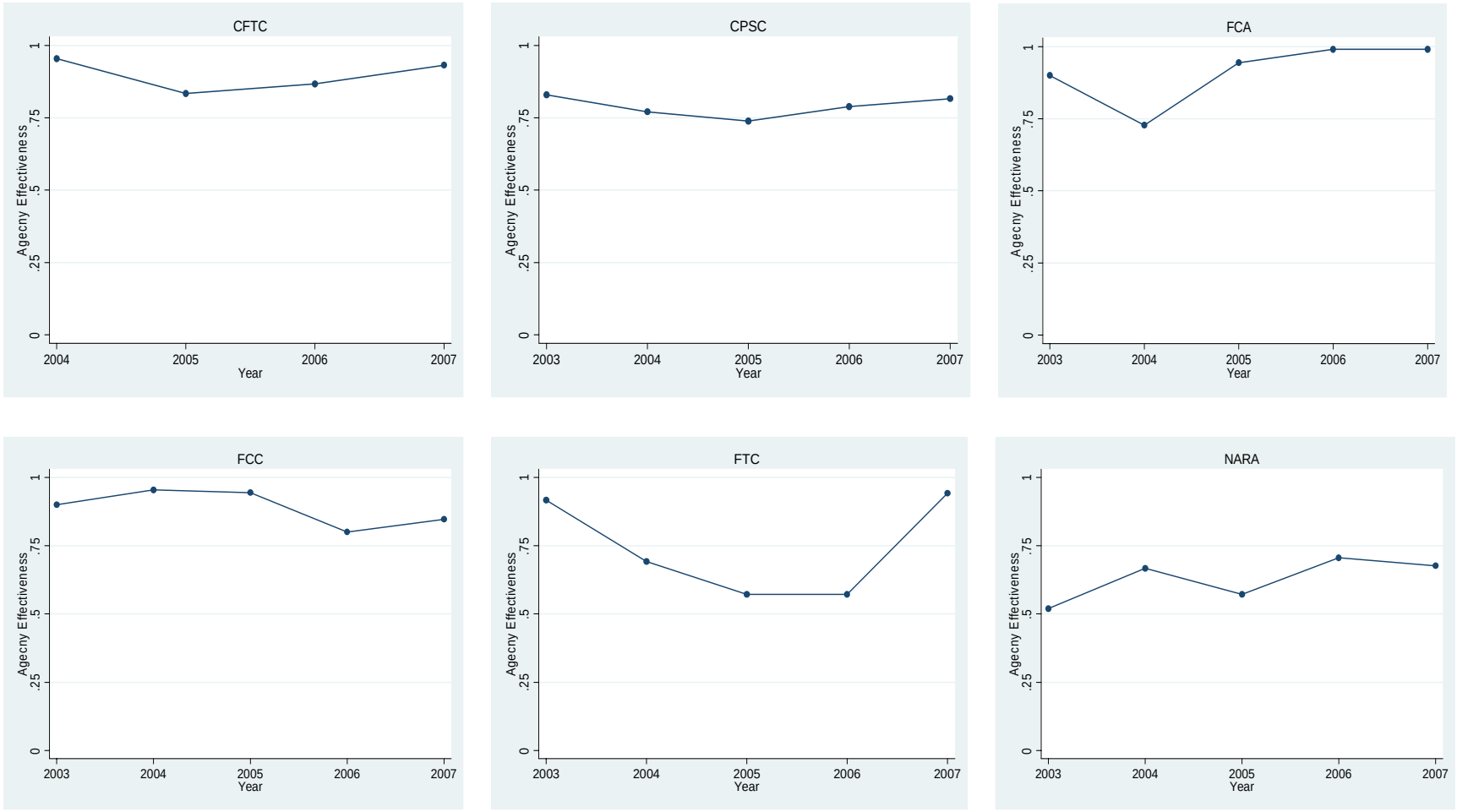


Figure 4.2 Change of Independent Agencies' Managerial Effectiveness Levels (Continued)[14]

[14] CFTC (Commodity Futures Trading Commission), CPSC (Consumer Product Safety Commission), FCA (Farm Credit Administration), FCC (Federal Communications Commission), FTC (Federal Trade Commission), NARA (National Archives & Record Administration)

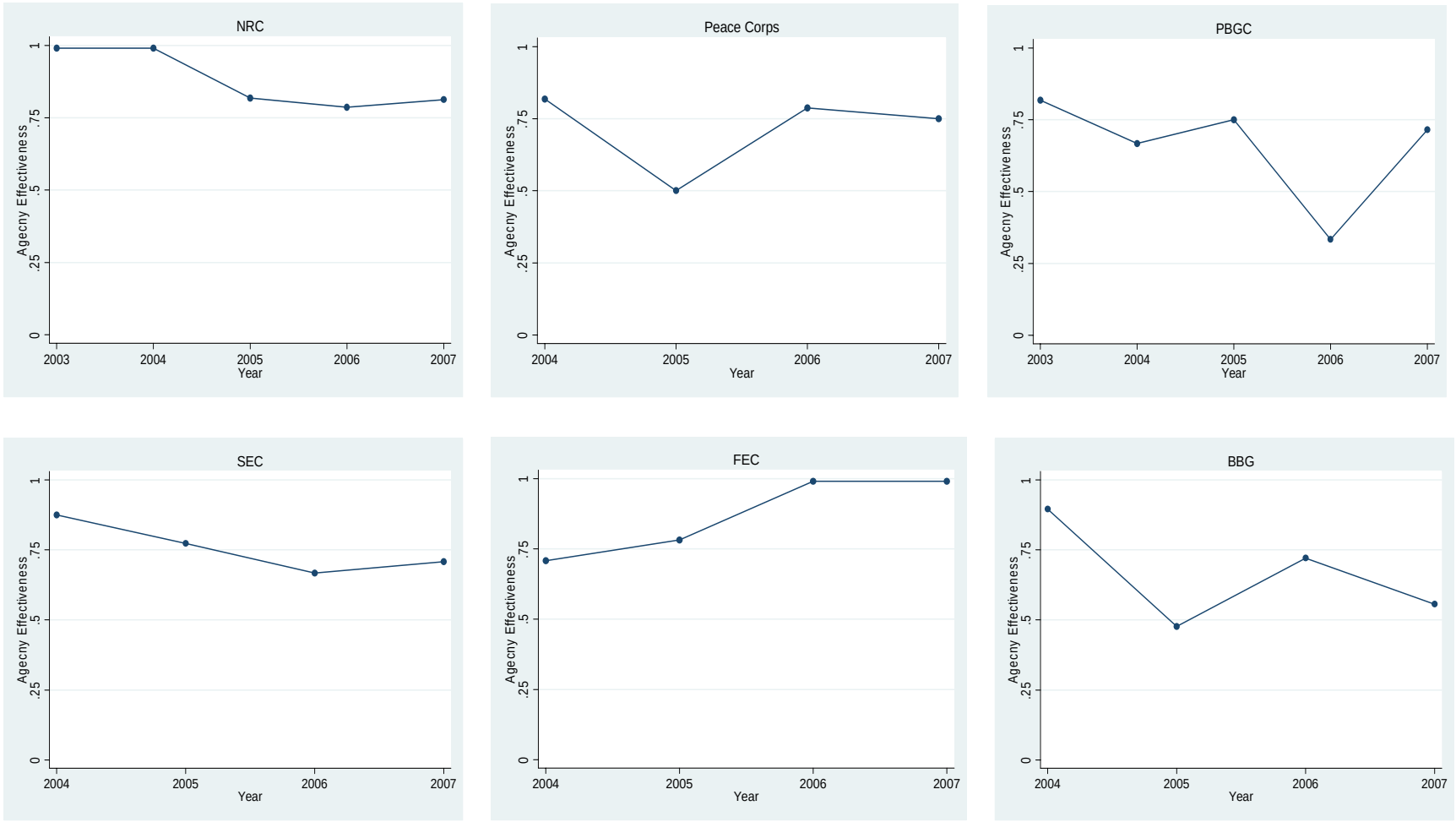


Figure 4.2 Change of Independent Agencies' Managerial Effectiveness Levels (Continued)[15]

[15] NRC (Nuclear Regulatory Commission), PBGC (Pension Benefit Guaranty Corporation), SEC (Securities & Exchange Commission), FEC (Federal Election Commission), BBG (Broadcasting Board of Governors)

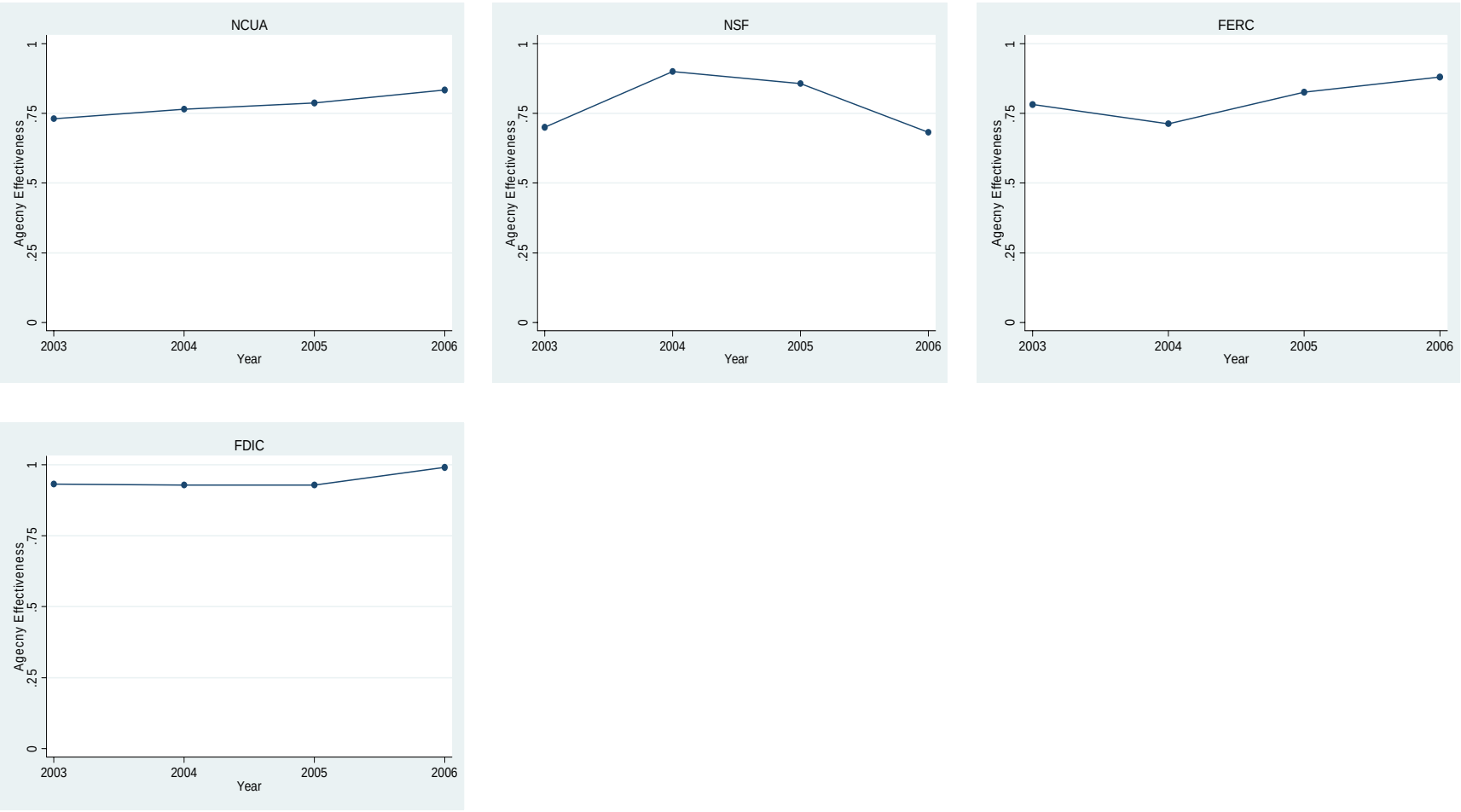


Figure 4.2 Change of Independent Agencies' Managerial Effectiveness Levels (Continued)[16]

[16] NCUA (National Credit Union Administration), NSF (National Science Foundation), FERC (Federal Energy Regulatory Commission), FDIC (Federal Deposit Insurance Corporation)

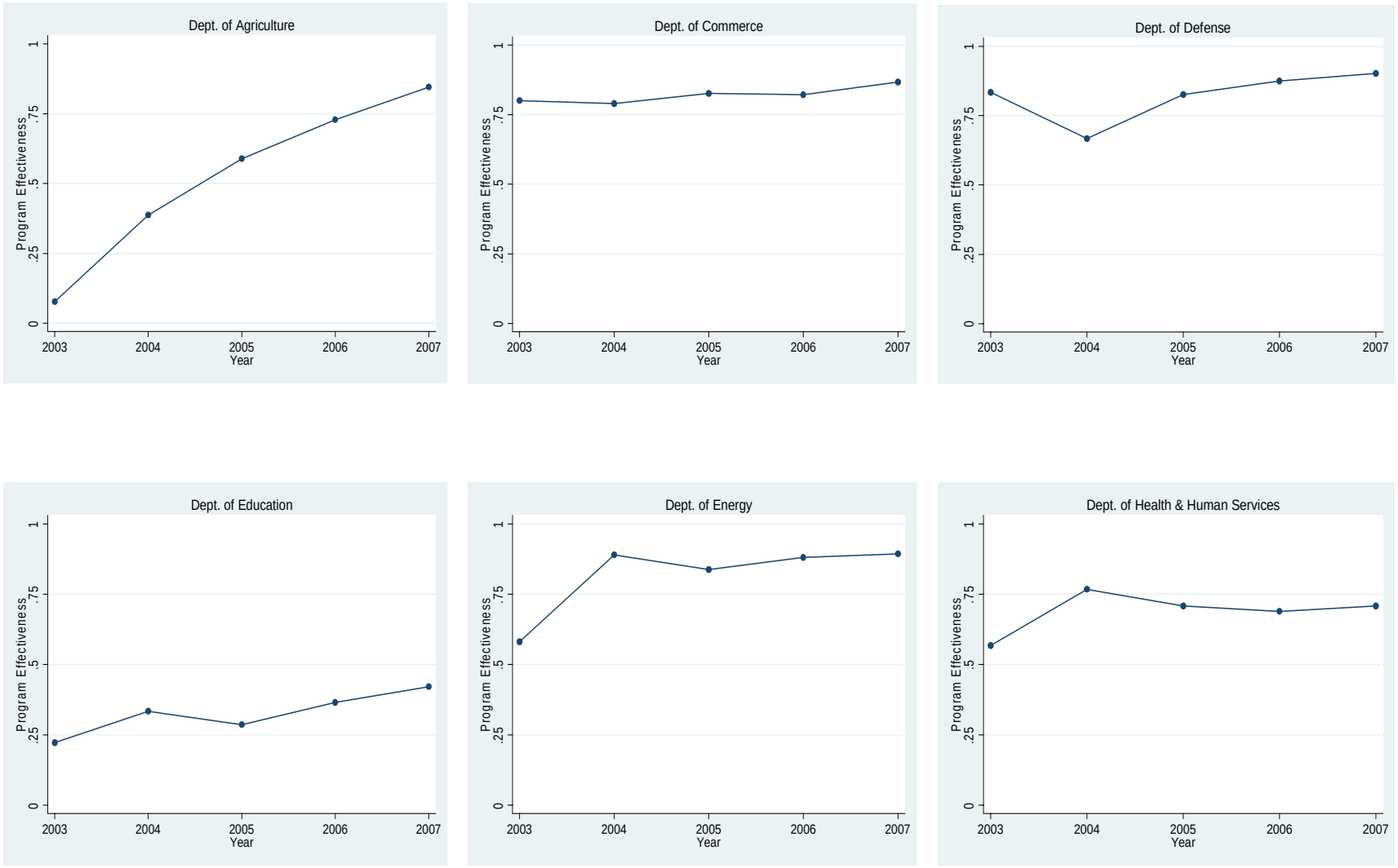


Figure 4.3 Change of 15 Cabinet Agencies' Program Effectiveness Levels

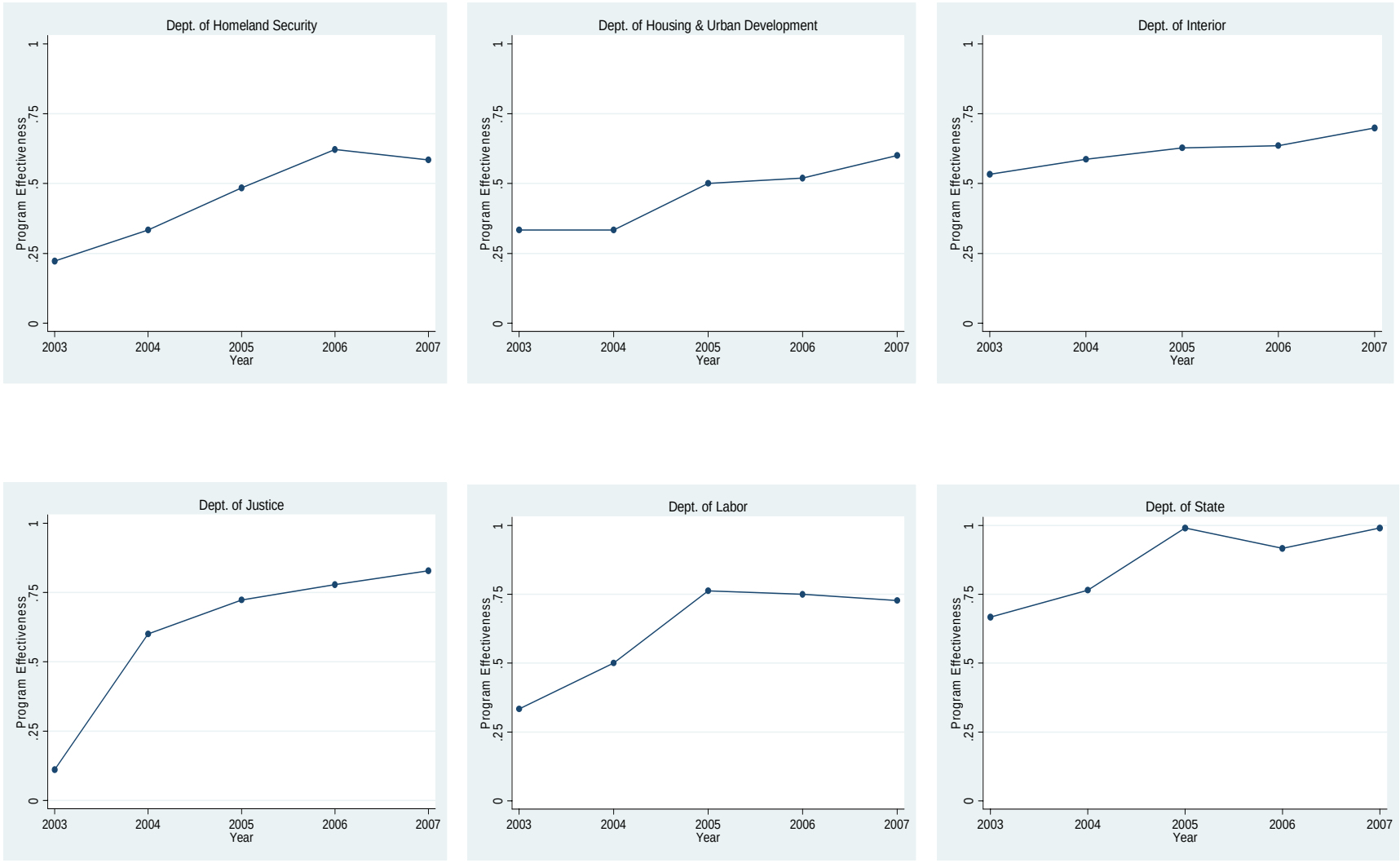


Figure 4.3 Change of 15 Cabinet Agencies' Program Effectiveness Levels (Continued)

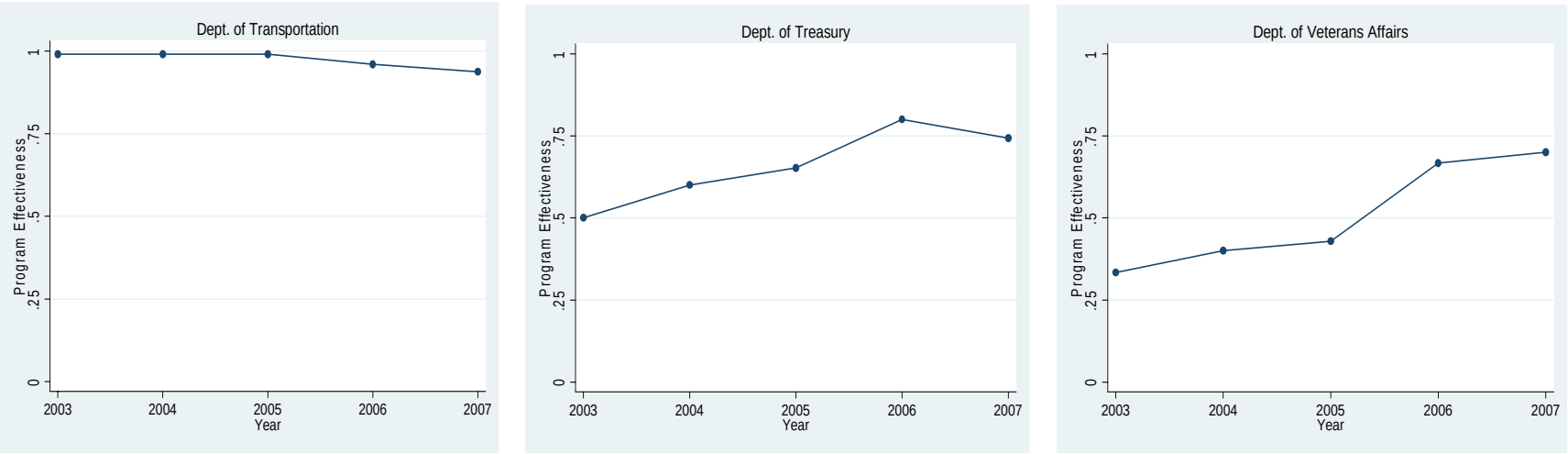


Figure 4.3 Change of 15 Cabinet Agencies' Program Effectiveness Levels (Continued)

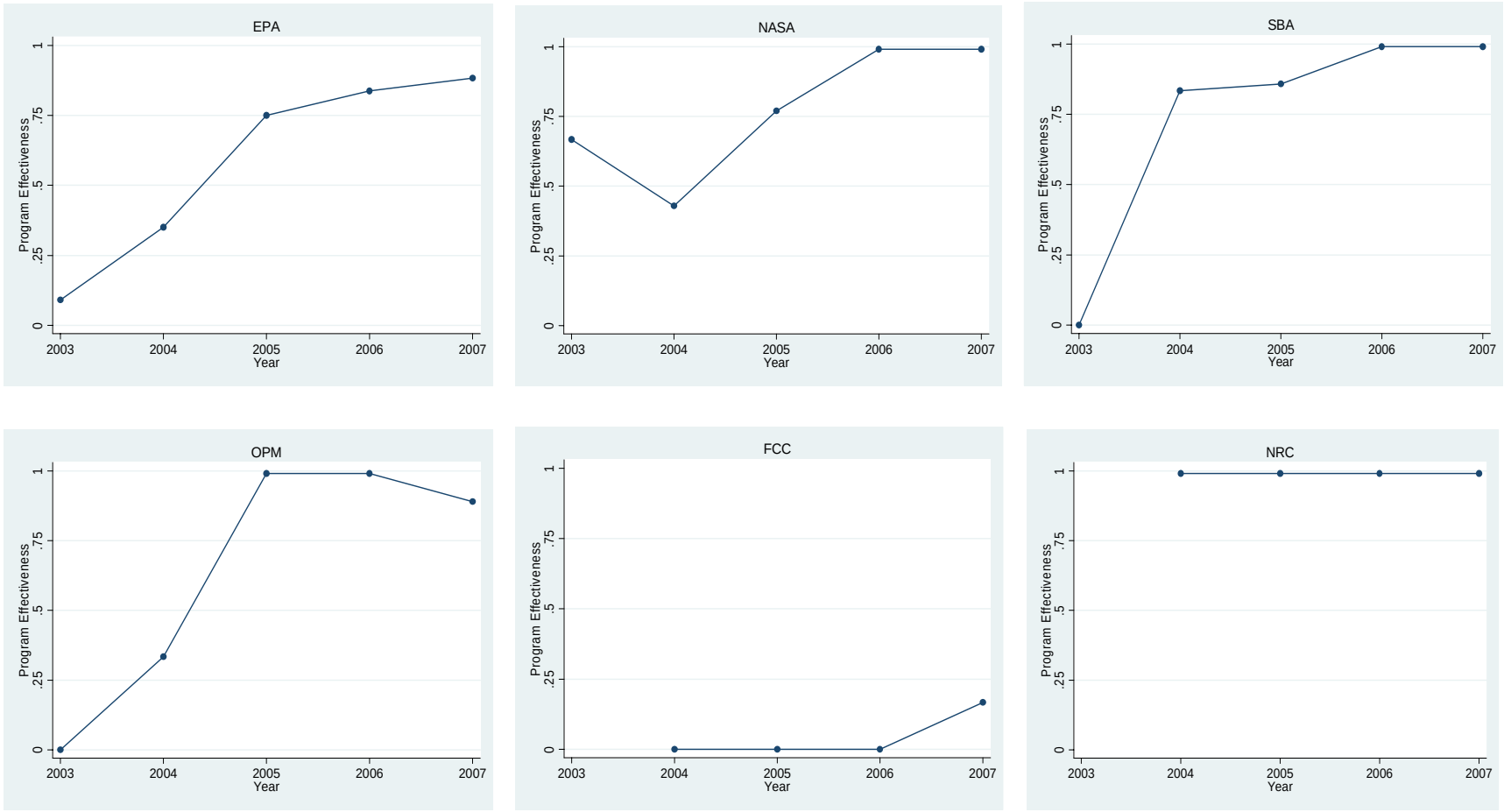
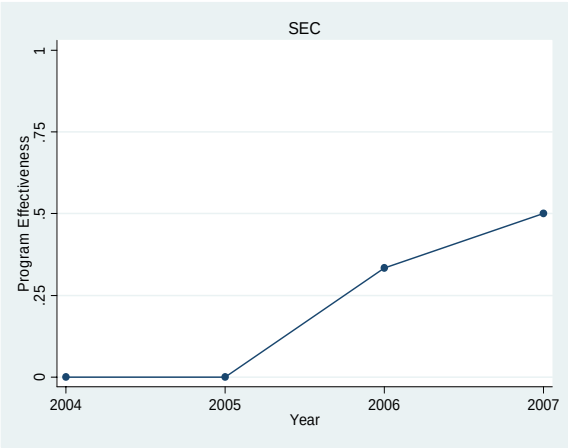
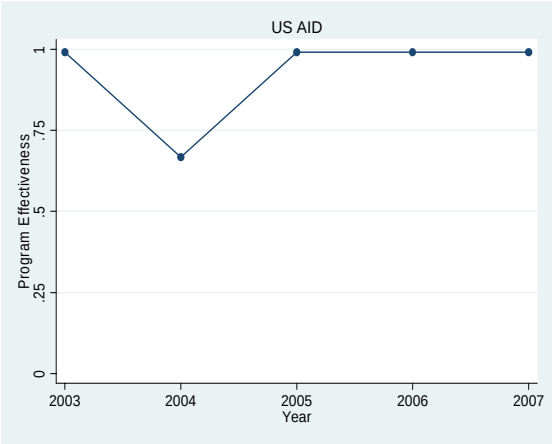
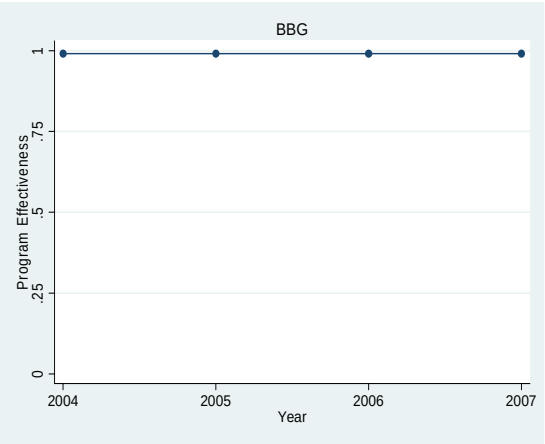


Figure 4.4 Change of Independent Agencies' Program Effectiveness Levels[17]

[17] EPA (Environmental Protection Agency), NASA (National Aeronautics & Space Administration), SBA (Small Business Administration), OPM (Office of Personnel Management), FCC (Federal Communications Commission), NRC (Nuclear Regulatory Commission)







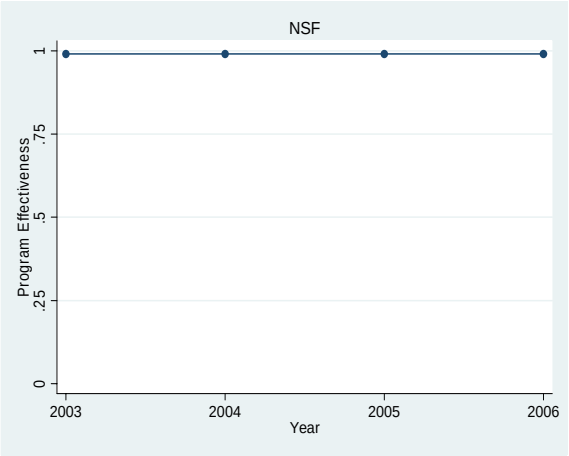


Figure 4.4 Change of Independent Agencies' Program Effectiveness Levels (Continued)[18]

[18] SEC (Securities & Exchange Commission), US AID (U. S. Agency for International Development), BBG (Broadcasting Board of Governors), NSF (National Science Foundation)

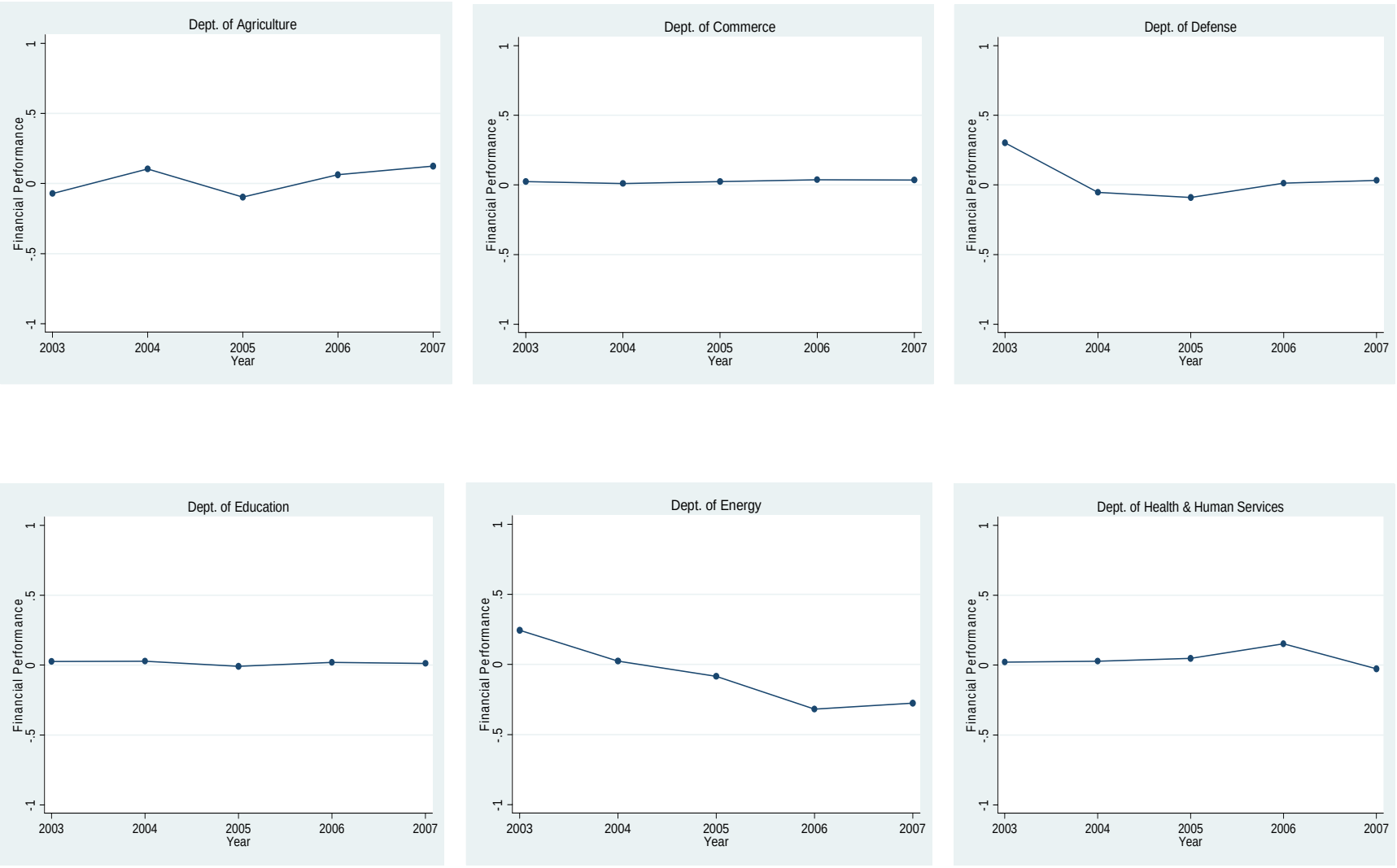


Figure 4.5 Change of 15 Cabinet Agencies' Financial Performance Levels

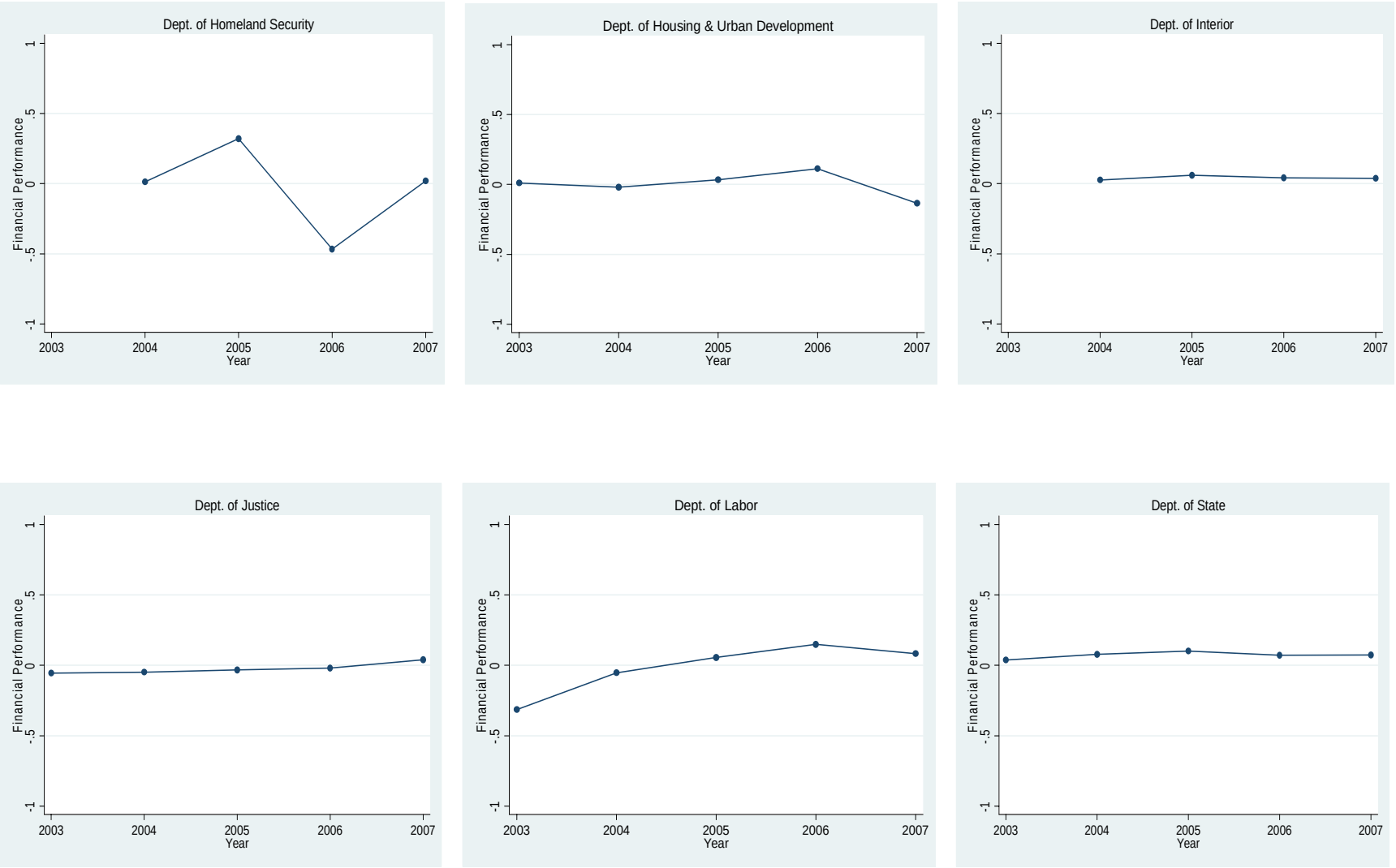


Figure 4.5 Change of 15 Cabinet Agencies' Financial Performance Levels (continued)

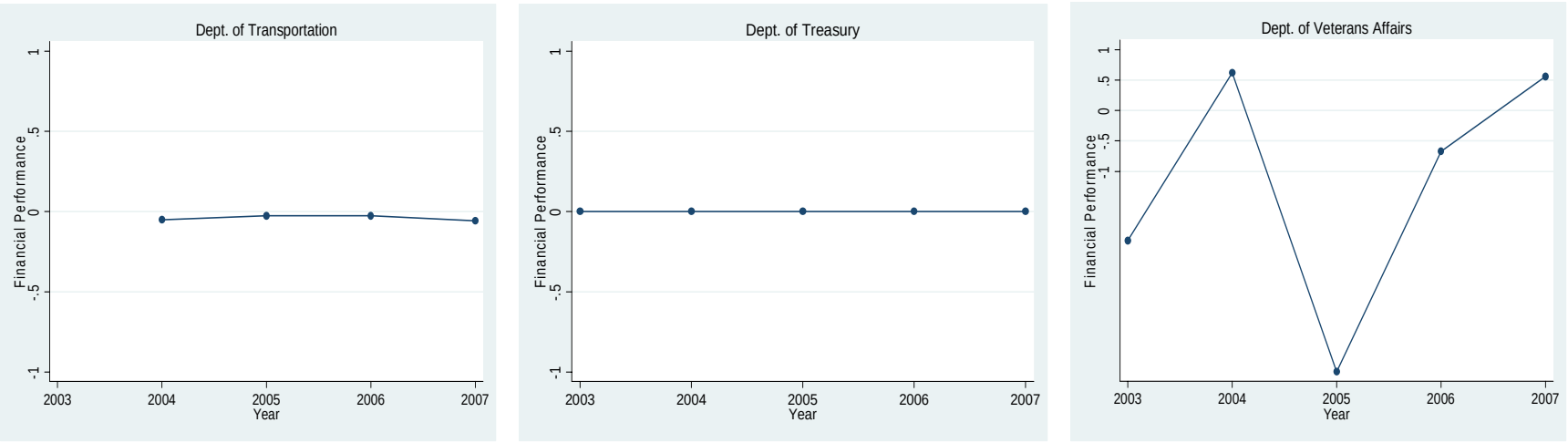


Figure 4.5 Change of 15 Cabinet Agencies' Financial Performance Levels (continued)

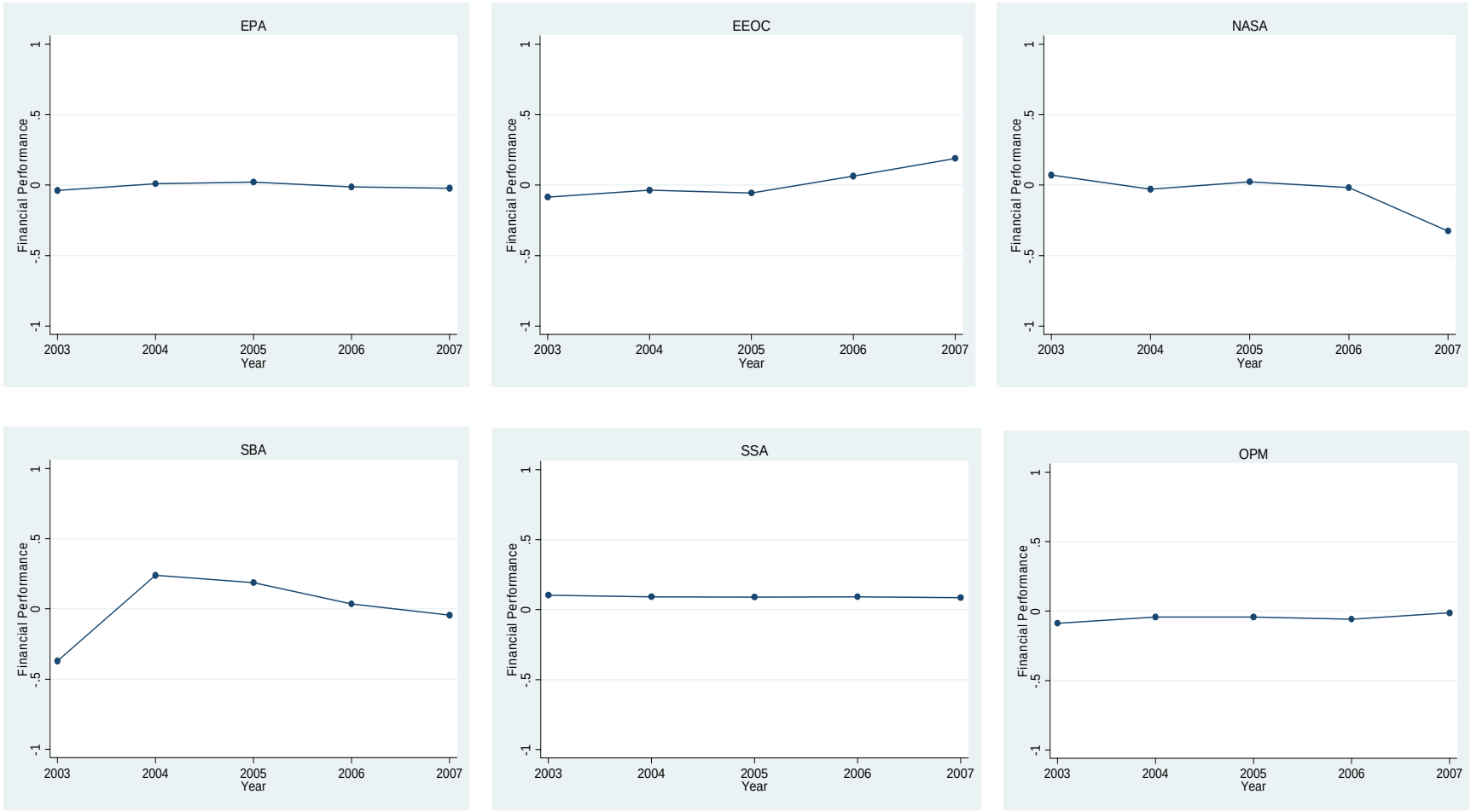


Figure 4.6 Change of Independent Agencies' Financial Performance Levels[19]

[19] EPA (Environmental Protection Agency), EEOC (Equal Employment Opportunity Commission), NASA (National Aeronautics & Space Administration), SBA (Small Business Administration), SSA (Social Security Administration), OPM (Office of Personnel Management)

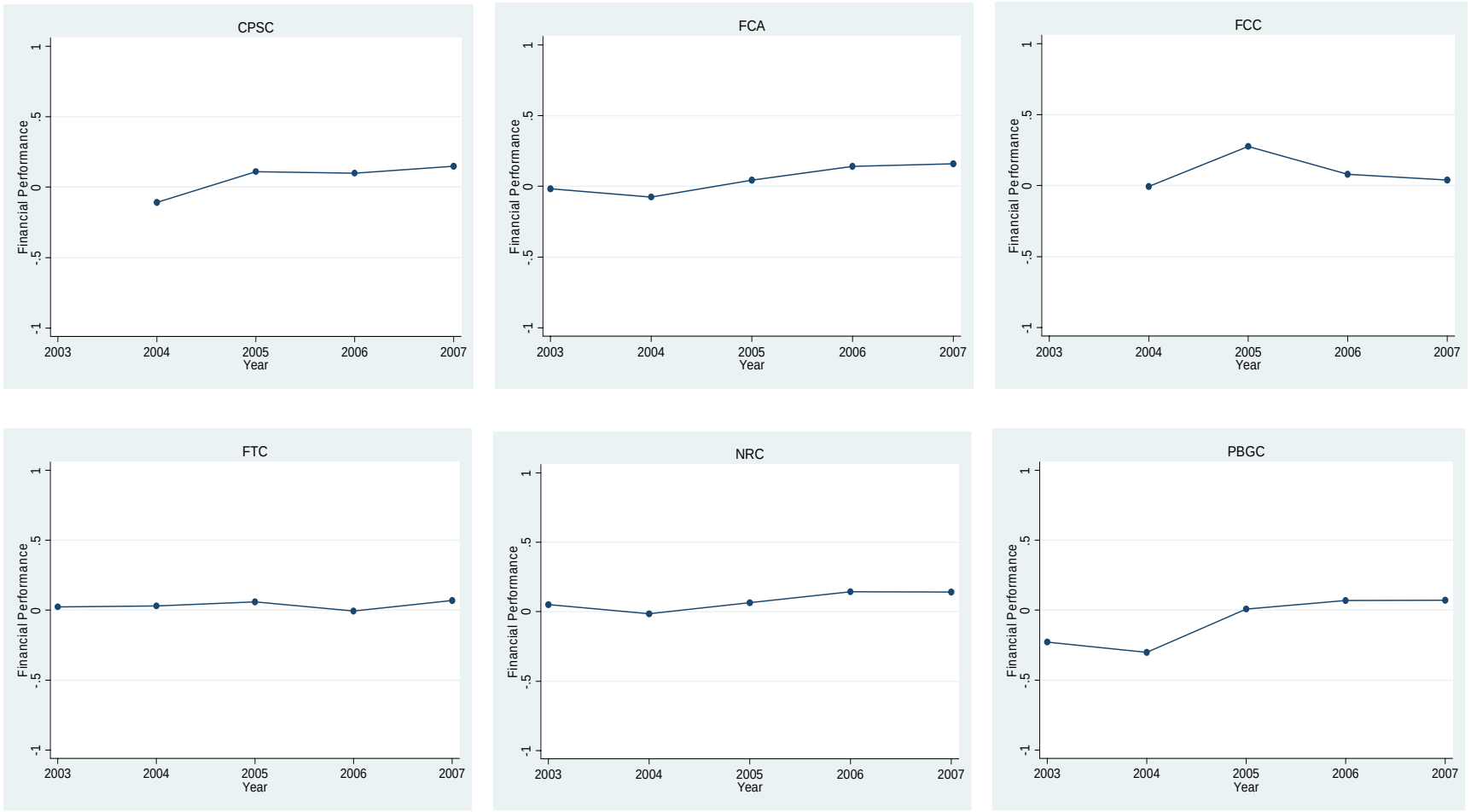


Figure 4.6 Change of Independent Agencies' Financial Performance Levels (continued)[20]

[20] CPSC (Consumer Product Safety Commission), FCA (Farm Credit Administration), FCC (Federal Communications Commission), FTC (Federal Trade Commission), NRC (Nuclear Regulatory Commission), PBGC (Pension Benefit Guaranty Corporation)

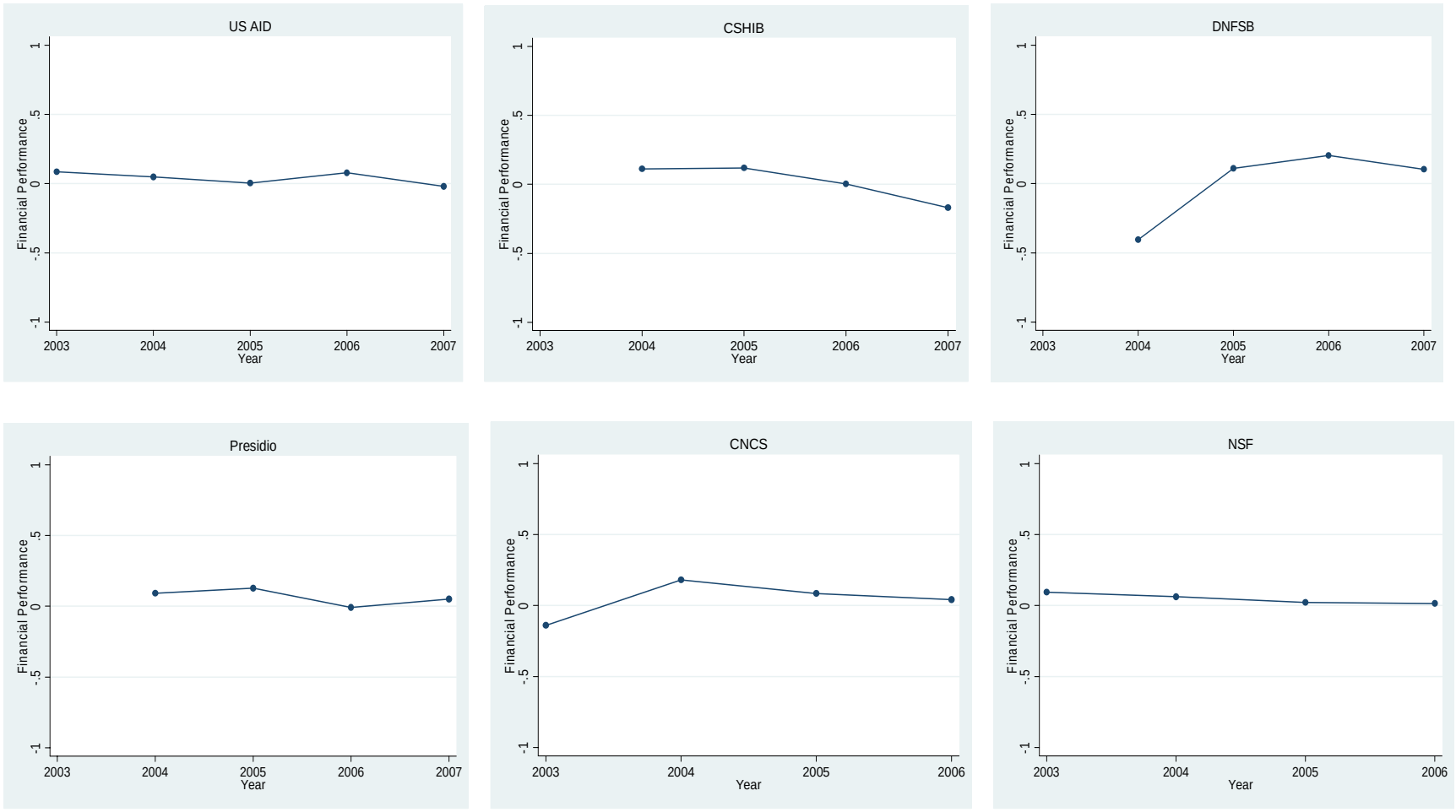


Figure 4.6 Change of Independent Agencies' Financial Performance Levels (continued)[21]

[21] US AID (U. S. Agency for International Development), CSHIB (Chemical Safety and Hazard Investigation Board), DNFSB (Defense Nuclear Facilities Safety Board), Presidio (Presidio Trust), CNCS (Corporation for National and Community Service), NSF (National Science Foundation)

CHAPTER 5

RESULTS: RESOURCES AND AGENCY MANAGERIAL EFFECTIVENESS

As discussed in chapter three, agency managerial effectiveness was measured by the level of an agency's goal achievement in terms of overall management of those goals. More specifically, it was measured by the percentage of met or exceeded annual performance indicators in an agency's total annual performance indicators (i.e., number of met or exceeded annual performance indicators / number of total annual performance indicators). The management and achievement of goals or performance indicators are accomplished by the help of various organizational resources. Therefore, as addressed in chapter two, six types of resources of this study are valuable, scarce, and imperfectly imitable resources that have the potential for competitive advantage that can improve agency managerial effectiveness.

In this chapter, I investigate the comprehensive and relative impacts of various resources on agency managerial effectiveness simultaneously in order to explore which resources are actual scarce, valuable, and imperfectly imitable resources that have positive effects on agency managerial effectiveness through competitive advantage. I close with a larger discussion of the findings taken as a whole, specifically in the context of the following hypotheses formulated in chapter two:

H1-1: Agencies have higher managerial effectiveness scores when they have more board members or commissioners.

H2-1: Agencies have higher managerial effectiveness scores when they have longer fixed term length of board members or commissioners.

H3-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of professionals.

H4-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of non-career Senior Executive Service.

H5-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of career Senior Executive Service.

H6-1: Agencies have higher managerial effectiveness scores when they have more full-time employees.

H7-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of the appropriation.

H8-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of the spending authority from offsetting collections.

H9-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of general property, plant, and equipment.

H10-1: Agencies have higher managerial effectiveness scores when they have higher presidential attention.

H11-1: Agencies have higher managerial effectiveness scores when they have higher congressional attention.

H12-1: Agencies have higher managerial effectiveness scores when they have higher mass media attention.

H13-1: Agencies have higher managerial effectiveness scores when they have a higher public reputation.

Estimation

I first ran Ordinary Least Squares and conducted the tests for AR(1) serial autocorrelation and heteroskedasticity in order to examine the relationship between various resources and agency managerial effectiveness by panel data analysis method. A fixed effects model could not be used for this analysis because this study has two time-invariant variables (i.e., term length of members in top leadership and number of members in top leadership) (Wooldridge 2003). That is, a fixed effect model dropped these two time-invariant variables. A random effects model could not be used because the joint significance test of the coefficients was not significant. Also, dummy variables for agencies and years were not included in this model because using agencies and year dummies can complicate heteroskedasticity and autocorrelation issues (Andrew B. Whitford, personal communication, December 1, 2008). Ordinary Least Squares (OLS) with panel-corrected standard errors could not be used for this study, as it works well if the length of the time frame is bigger than the number of units (Beck and Katz 1995).

According to the T test for the presence of AR(1) serial autocorrelation[22], the dataset for this study had a serial autocorrelation problem. The Breusch-Pagan test for heteroskedasticity[23] rejected the null hypothesis of constant variance. Therefore, this study performed feasible generalized least squares (FGLS) in Stata 10 to take care of both the heteroskedasticity and serial autocorrelation issues. More specifically, this study modeled the heteroskedastic error structure with AR(1) autocorrelation common to all the panels. As discussed in chapter three, this study performed a logit transformation on the dependent variable of this model because it is a proportion. If the dependent variable is a proportion, it is bounded in the range of 0 to 1. To solve the issue of this 0/1 boundary, this research performed a logit transformation on the agency

[22] $t = 5.05$ ($P < .001$).
[23] chi2(1) = 33.57 ($P < .001$).

managerial effectiveness variable so that the transformed dependent variable could theoretically assume any value between minus and plus infinity. Table 5.1 provides descriptive statistics of the variables in this model and table 5.2 shows the estimation results of this cross-sectional time-series FGLS regression. Generally, the model fits well, with Wald χ^2 significant at better than 0.001.

Analysis Results

Estimation Results

First, in the case of administrative resources, both variables (term length of members in top leadership and number of members in top leadership) showed the expected relationships with agency managerial effectiveness, but the statistical significance was different. Number of members in top leadership (coefficient: .091) had a significant and positive relationship with agency managerial effectiveness at the 0.10 level, while term length of members in top leadership (coefficient: .012) had a statistically insignificant and positive relationship. That is, agencies have higher managerial effectiveness scores when they have more board members or commissioners in their top decision-making structures.

This study included four types of human resources. Professional employees in an agency (coefficient: 1.018) had a significant and positive influence on agency managerial effectiveness at the 0.05 level, as expected. Career SES (coefficient: 5.491) had the expected positive relationship with agency managerial effectiveness, but this positive relationship was not statistically significant. In contrast, non-career SES (coefficient: -63.813) showed a negative and significant relationship with the dependent variable at the 0.10 level, unlike my expectation. That is, agencies have lower managerial performance scores when they have a greater percentage of

the non-career Senior Executive Service. The last human resources variable is full-time employees. In contrast to my expectation, number of full-time employees in an agency (coefficient: -.017) had a negative and significant impact on agency managerial effectiveness at the 0.01 level. In other words, agencies show lower managerial performance scores when they have more full-time employees.

In the case of financial resources, spending authority from offsetting collections (coefficient: .848) had a positive and insignificant relationship with agency managerial effectiveness. Appropriations (coefficient: -.043) also had an insignificant impact on agency effectiveness, but this relationship was negative, unlike my expectation. In contrast to my expectation, physical resource (general property, plant, and equipment) had a negative and insignificant relationship (coefficient: -.319) with the dependent variable.

This study included three political resources variables (i.e., presidential attention, congressional attention, and mass media attention). Presidential attention (coefficient: .272) had a statistically significant and positive impact on agency managerial effectiveness at the 0.10 level, as expected. In other words, agencies have higher managerial performance scores when they have higher presidential attention. Yet, congressional attention (coefficient: .032) and mass media attention (coefficient: .026) showed statistically insignificant relationships with agency managerial effectiveness, although they had positive impacts on the dependent variable.

The estimation results revealed that reputation (coefficient: -.164) had a negative and significant impact on agency managerial effectiveness at the 0.01 level. As mentioned in chapter three, a lower combined index means satisfactory public service which leads to high agency reputation, so agencies have higher managerial performance scores when they have a higher public reputation.

Figures 5.1 - 5.6 show the estimated marginal effects of six types of organizational resources on the agency managerial effectiveness dependent variable. Because this analysis uses a linear model, all the figures show linear relationships between organizational resources and agency performance. In other words, the coefficient of each independent variable in table 5.2 is congruent with a marginal effect of each independent variable (i.e., a slope of each graph).

Impact Analysis

This study calculated the impacts of six statistically significant resources (number of members in top leadership structures, professional employees, non-career SES, full-time employees, presidential attention, and agency's public reputation) on agency managerial effectiveness through marginal effects analysis[24]. According to the analysis results, the impact of number of members in top leadership on agency managerial effectiveness was the biggest: the impact of a 1 standard deviation increase in number of members in top leadership was a 0.216 standard deviation increase in agency managerial effectiveness (ceteris paribus).

The impact of a 1 standard deviation increase in percentage of professionals in an agency was a 0.193 standard deviation increase in agency managerial effectiveness. The impact of full-time employees was almost the same as that of professionals, but the direction was negative: a 1 standard deviation increase in number of full-time employees was a 0.152 standard deviation decrease in agency managerial effectiveness. The impact of a 1 standard deviation increase in

[24] This analysis was conducted as follows. First, I calculated a marginal effect of a specific independent variable by setting it at its mean. Then, I calculated a marginal effect of that independent variable by setting it at its mean + 1 standard deviation. After that, I observed the two predicted values of the dependent variable given at each level and interpreted that difference in terms of standard deviation shifts in the dependent variable.

percentage of non-career SES in an agency was a 0.168 standard deviation decrease in agency managerial effectiveness.

Marginal effects analysis showed that the impact of a 1 standard deviation increase in agency's public reputation was a 0.133 standard deviation decrease in agency managerial effectiveness. The impact of presidential attention was the smallest: the impact of a 1 standard deviation increase in presidential attention was a 0.083 standard deviation increase in agency managerial effectiveness (ceteris paribus).

Tests for Contribution by Types of Resources

The analysis results discussed above have focused on an individual effect of a specific resource on agency managerial effectiveness. In this section, I examine the impacts of blocks of resource variables on agency managerial effectiveness. In other words, to investigate the contribution by types of resources to agency managerial effectiveness, this study performed the joint *F* tests (χ^2 Wald tests). Such tests on subsets of coefficients are useful when we have several conceptually related predictors (Hamilton 2004).

Specifically, the first test showed we should not omit four human resources variables from the model (Wald $\chi^2 = 21.78$); the second (joint) test showed we should not omit four human resources variables and two administrative resources variables ($\chi^2 = 28.58$). The third test showed we should not omit four human resources variables, two administrative resources variables, and two financial resources variables ($\chi^2 = 30.58$); and the fourth test showed we should not omit four human resources variables, two administrative resources variables, two financial resources variables, and three political resources variables from this model ($\chi^2 = 35.62$). According to the fifth test, we should not omit four human resources variables, two

administrative resources variables, two financial resources variables, three political resources variables, and a physical resource variable ($\chi^2 = 35.64$), even if it slightly increased the test statistic. The last test showed we should not omit the human resources variables, the administrative resources variables, the financial resources variables, the political resources variables, the physical resource variable, and the reputation resource variable ($\chi^2 = 63.84$); note the large jump in the test statistic when adding a reputation resource to the block of resources.

Discussion

Table 5.3 summarizes the hypothesis test results of the model in this chapter. Four out of thirteen hypotheses were supported and nine hypotheses were rejected. Number of members in top leadership structures (administrative resource), professional employees (human resource), presidential attention (political resource), and agency's public reputation had positive and significant impacts on agency managerial effectiveness. Non-career SES (human resource) and full-time employees (human resource) also had statistically significant impacts on agency managerial effectiveness, but they had negative impacts on the dependent variable. Term length of members in top leadership (administrative resource), career SES (human resource), appropriations (financial resource), spending authority from offsetting collections (financial resource), general property, plant, and equipment (physical resource), congressional attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency managerial effectiveness.

As discussed in chapter two, this study intends to find out valuable, scarce, and imperfectly imitable resources that have competitive advantage through testing the relative impacts of various resources on agency performance. The estimation results of this model

suggest four valuable, scarce, and imperfectly imitable resources - number of members in top leadership structures, professional employees, presidential attention, and agency's public reputation. The next sections address each hypothesis, focusing on valuable, scarce, and imperfectly imitable organizational resources and the significance of the hypothesis tests.

H 1-1 and H 2-1

Hypothesis 1-1 is that agencies have higher managerial effectiveness scores when they have more board members or commissioners. According to the results of this analysis, number of members in top leadership structures had a positive and significant impact on agency managerial effectiveness, as expected. In other words, agencies that have more board members or commissioners in their top decision-making structures show higher managerial performance scores. Therefore, hypothesis 1-1 was supported and the first valuable, scarce, and imperfectly imitable resource is number of members in top leadership. The reason is that more members of the top decision-making structure are connected with an organization's ability to form environmental links and secure important assets (Goodstein, Gautam, and Boeker 1994) and a larger board or commission can provide higher quality advice, expertise, and experience and reduce environmental uncertainty through external linkage (Pfeffer and Salancik 1978).

Hypothesis 2-1 is that agencies have higher managerial effectiveness scores when they have a longer fixed term length of board members or commissioners. The direction of the impact of fixed term length of board members or commissioners was positive, as expected, but it was not statistically significant. That is, as Wood and Marchbanks (2008) noted, it seems that the duration of appointee service affects administrative competence in that appointee competence in public policymaking and implementation depends on appointee experience, but this positive

relationship between fixed term length of board members or commissioners and agency managerial effectiveness was not statistically supported in this model (i.e., hypothesis 2-1 was rejected).

H 3-1, H 4-1, H 5-1, and H 6-1

Hypothesis 3-1 is that agencies have higher managerial effectiveness scores when they have a greater percentage of professionals. Analysis results showed that professional employees had a positive and significant relationship with agency managerial effectiveness. That is, agencies that have more professional employees in their workforces show higher managerial performance scores. Therefore, hypothesis 3-1 was supported and professional employees in an agency are another valuable, scarce, and imperfectly imitable organizational resource. This can be explained as follows: more professional employees contribute to better agency performance through their expertise, autonomy, independence, and neutrality, as professionals strive continuously for freedom from external control over their activities and value internal accountability through peer-imposed codes of ethics (Stillman 1999; Rainey and Steinbauer 1999).

Hypothesis 4-1 is that agencies have higher managerial effectiveness scores when they have a greater percentage of non-career Senior Executive Service. Non-career SES had a statistically significant impact on agency managerial effectiveness, although it had a negative relationship with agency managerial effectiveness, unlike my expectation. That is, hypothesis 4-1 was rejected. Due to this negative relationship, it is not a valuable, scarce, and imperfectly imitable resource. However, it is worthwhile to think about this negative relationship because it can give helpful insights for improving agency performance. This negative, but significant,

impact of non-career SES on agency managerial effectiveness can be explained as follows. Non-career SES (who are politically appointed) can lead to a negative influence on agency managerial effectiveness because, even if the non-career SES have enough experience and expertise, agencies that have politically appointed SES often experience greater turnover and this higher turnover causes ambiguous agency goals, leadership vacuums, difficulties to commit to reform, and poorer performance (Heclo 1977; Boylan 2004; Lewis 2007).

Hypothesis 5-1 is that agencies have higher managerial effectiveness scores when they have a greater percentage of career Senior Executive Service. The direction of the relationship was positive, as expected, but it was not a significant relationship. In other words, unlike non-career SES, career SES's considerable knowledge, ability, and skill may contribute to agencies' better performance because careerists are more likely to be specialists and have work experience in the bureau they manage, and they are more likely to have public management experience (Lewis 2007, 1083), but this relationship was not statistically supported (hypothesis 5-1 was rejected). The positive relationship between career SES and agency managerial effectiveness and the negative relationship between non-career SES and agency managerial effectiveness in the results of this model are consistent with those in Lewis's (2007) research.

Hypothesis 6-1 is that agencies have higher managerial effectiveness scores when they have more full-time employees. Full-time employees also had a statistically significant impact on agency managerial effectiveness, although it had a negative relationship with agency managerial effectiveness, unlike my expectation. That is, hypothesis 6-1 was rejected, too. In the case of full-time employees, one possible explanation on this negative relationship between full-time employees and agency managerial effectiveness is that a large number of employees can create

coordination and communication problems that a small group does not have and these problems can lead to lower performance (Blau 1970).

H 7-1, H 8-1, and H 9-1

Hypothesis 7-1 is that agencies have higher managerial effectiveness scores when they have a greater percentage of the appropriation. According to the analysis results, the relationship between appropriations and agency managerial effectiveness was negative and not significant. That is, hypothesis 7-1 was rejected. Hypothesis 8-1 is that agencies have higher managerial effectiveness scores when they have a greater percentage of the spending authority from offsetting collections. Unlike hypothesis 7-1, this relationship was positive, as expected, but it was not statistically significant. Therefore, hypothesis 8-1 was also rejected. These results are consistent with Boyne's (2003, 376) argument that a majority of empirical evidence shows no significant relationship between financial resources and service performance.

Hypothesis 9-1 is that agencies have higher managerial effectiveness scores when they have a greater percentage of general property, plant, and equipment. Unlike this study's expectation, the relationship between the amounts of general property, plant, and equipment and agency managerial effectiveness was negative and not statistically significant. That is, hypothesis 9-1 was rejected as well.

H 10-1, H 11-1, and H 12-1

Hypothesis 10-1 is that agencies have higher managerial effectiveness scores when they have higher presidential attention. According to the analysis results, presidential attention also had a statistically significant and positive impact on agency managerial effectiveness. In other

words, agencies that have higher presidential attention have higher managerial performance scores. Therefore, hypothesis 10-1 was supported and presidential attention is a valuable, scarce, and imperfectly imitable resource of an agency. This result is congruent with Moe's (1982, 1985) argument that the President is influential in policy-making and performance and Wolf's (1993) demonstration that presidential support has a positive and significant impact on agency effectiveness. Attracting presidential attention serves as a positive political resource for an agency's performance because the President can initiate legislation (including the agency's budget), influence policy formation and implementation, and motivate employees in an agency.

Hypothesis 11-1 is that agencies have higher managerial effectiveness scores when they have higher congressional attention. The analysis results showed that congressional attention had a positive impact on agency managerial effectiveness, as expected, but it was not statistically significant. That is, hypothesis 11-1 was rejected. It seems that congressional attention serves as a critical resource for better agency performance because Congress can initiate and authorize legislation for agency operations, but this relationship was not statistically supported.

Hypothesis 12-1 is that agencies have higher managerial effectiveness scores when they have higher mass media attention. According to the results, the relationship between mass media attention and agency managerial effectiveness was positive, like that of each of the other two political resources and my expectation, but it was insignificant. Therefore, hypothesis 12-1 was rejected, too.

H 13-1

Hypothesis 13-1 is that agencies have higher managerial effectiveness scores when they have a higher public reputation. The analysis results showed that agency public reputation had a

negative and significant impact on agency program effectiveness, as expected. That is, hypothesis 13-1 was supported because a lower combined index means satisfactory public service which leads to high agency reputation. Therefore, the last valuable, scarce, and imperfectly imitable organizational resource of this model is an agency's public reputation. Reputation leads to better agency performance because agency reputation can enhance bureaucratic autonomy (Carpenter 2001; Whitford 2002), professional prestige (Wilson 1989), staff motivation, staff retention, and overall organizational health (Huang and Provan 2007), and legitimacy for an organization (Scott 2001).

Summary

According to the resource-based view, there are significant differences in the resources of firms within an industry for organizational survival, growth, and overall effectiveness (Wernerfelt 1984; Barney 1991; Peteraf 1993; Kraatz and Zajac 2001; Bryson, Ackerman, and Eden 2007) and distinctive organizational resources can generate sustainable competitive advantage and lead to better performance (Prahalad and Hamel, 1990; Carmeli and Tishler 2004a). However, as Barney and Clark (2007) pointed out, not all of the organizational resources are likely to be economically valuable. That is, some of these resources may have no effect on better organizational performance and others may make it more difficult for a firm to implement valuable strategies (Barney 1986). Accordingly, through testing the RBV, this research investigated the relative impact of various resources on federal agencies' performance in order to find out which resources are actual scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage for better performance.

Principal findings from this analysis is that number of members in top leadership structures (administrative resource), professional employees (human resource), presidential attention (political resource), and agency's public reputation had positive and significant impacts on agency managerial effectiveness, while non-career SES (human resource) and full-time employees (human resource) had statistically significant, but negative, impacts on the dependent variable. Term length of members in top leadership (administrative resource), career SES (human resource), appropriations (financial resource), spending authority from offsetting collections (financial resource), general property, plant, and equipment (physical resource), congressional attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency managerial effectiveness.

Therefore, the model of agency managerial effectiveness has four valuable, scarce, and imperfectly imitable resources -- number of members in top leadership structures, professional employees, presidential attention, and agency's public reputation. For the resource-based view, this analysis suggests that even if a specific resource meets the conditions for a valuable, scarce, and imperfectly imitable resource, it is still in the state of a resource that has the potential of competitive advantage until it proves its positive contribution to agency performance because different organizational resources may have different effects on performance when they are simultaneously analyzed with other resources.

Table 5.1 Descriptive Statistics of Variables in This Model

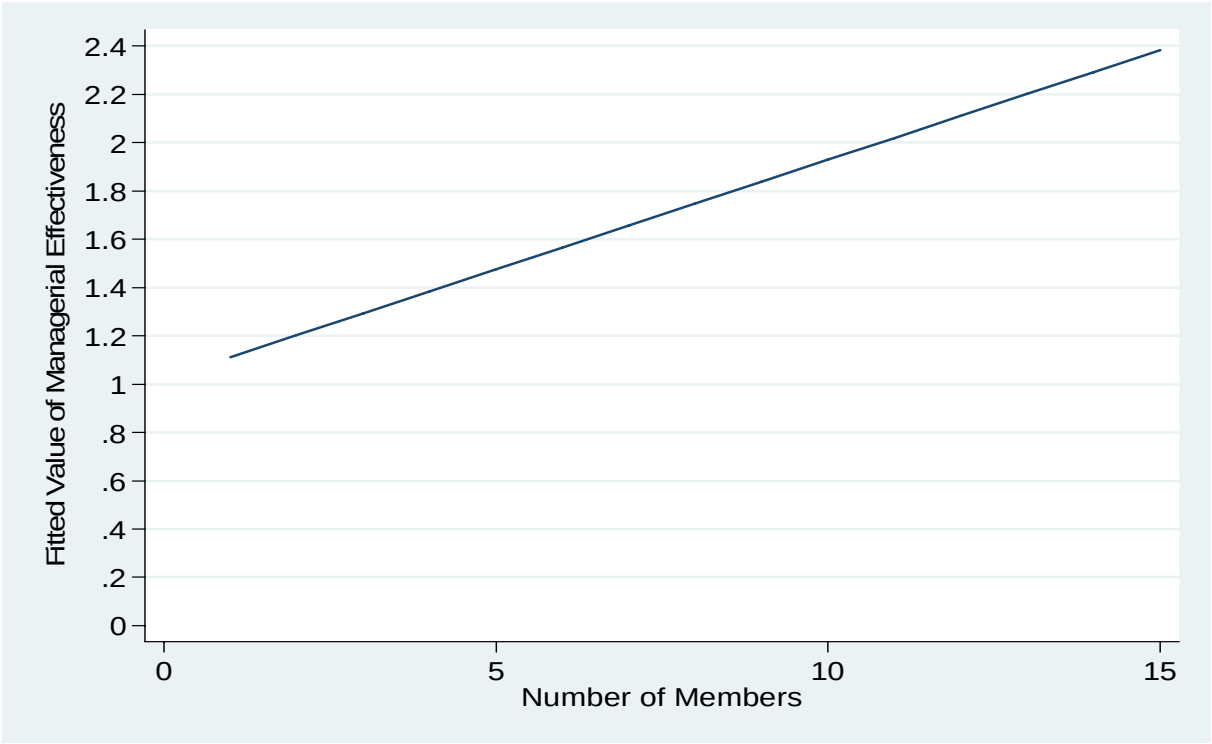
Variables	Mean	SD	Min	Max
Dependent Variable				
Managerial Effectiveness (logit transformed)	1.25	.95	-.69	4.59
Independent Variables				
Term length of members in top leadership (Year)	2.33	2.86	0	9
Number of members in top leadership (Number)	2.39	2.27	1	15
Professionals (%)	.28	.18	.001	.66
Non-career Senior Executive Service (%)	.001	.003	0	.02
Career Senior Executive Service (%)	.01	.02	0	.07
Full-time employees (10,000)	4.60	11.01	.004	64.56
Appropriations (%)	.71	.29	0	1
Spending authority from offsetting collections (%)	.13	.18	0	.83
General property, plant, and equipment (%)	.16	.19	.00	.78
Presidential attention (100)	.18	.29	0	1.62
Congressional attention (100)	2.72	2.66	0	13.06
Mass media attention (100)	.18	.38	0	2.79
Agency's public reputation (Z-score)	.06	.77	-.50	4.39
Age (100)	.63	.50	.02	2.18

Table 5.2 Cross-Sectional Time-Series FGLS Regression Result

(Dependent Variable: Agencies' Managerial Effectiveness)

Independent Variables	Coefficient	Standard Error
Number of members in top leadership	.091	.054 *
Term length of members in top leadership	.012	.029
Professionals	1.018	.398 **
Non-career Senior Executive Service	-63.813	34.029 *
Career Senior Executive Service	5.491	5.853
Full-time employees	-.017	.005 ***
Appropriations	-.043	.195
Spending authority from offsetting collections	.848	.548
General property, plant, and equipment	-.319	.548
Presidential attention	.272	.145 *
Congressional attention	.032	.029
Mass media attention	.026	.139
Agency's public reputation	-.164	.058 ***
Age	.044	.086
Constant	.619	.224 **
Observations	178	
Sample period	2003-2007	
Wald χ^2	65.87 ***	

(*** p<0.01, ** p<0.05, * p<0.10)



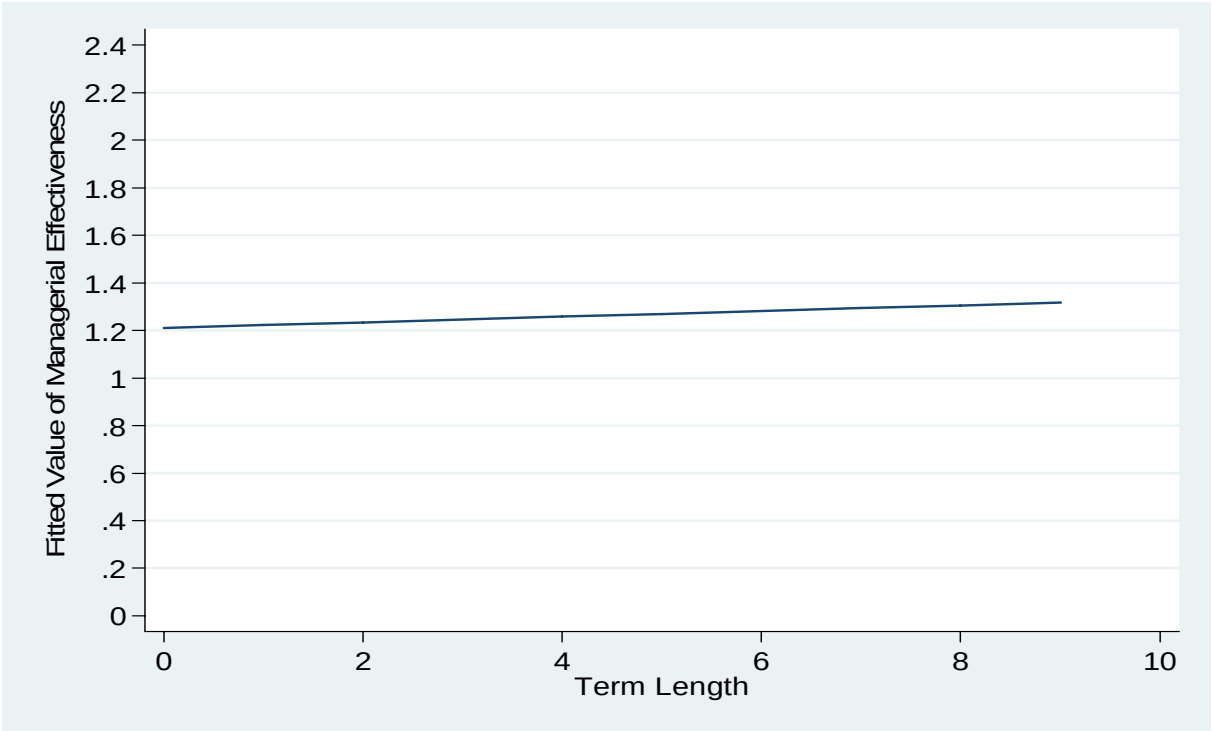
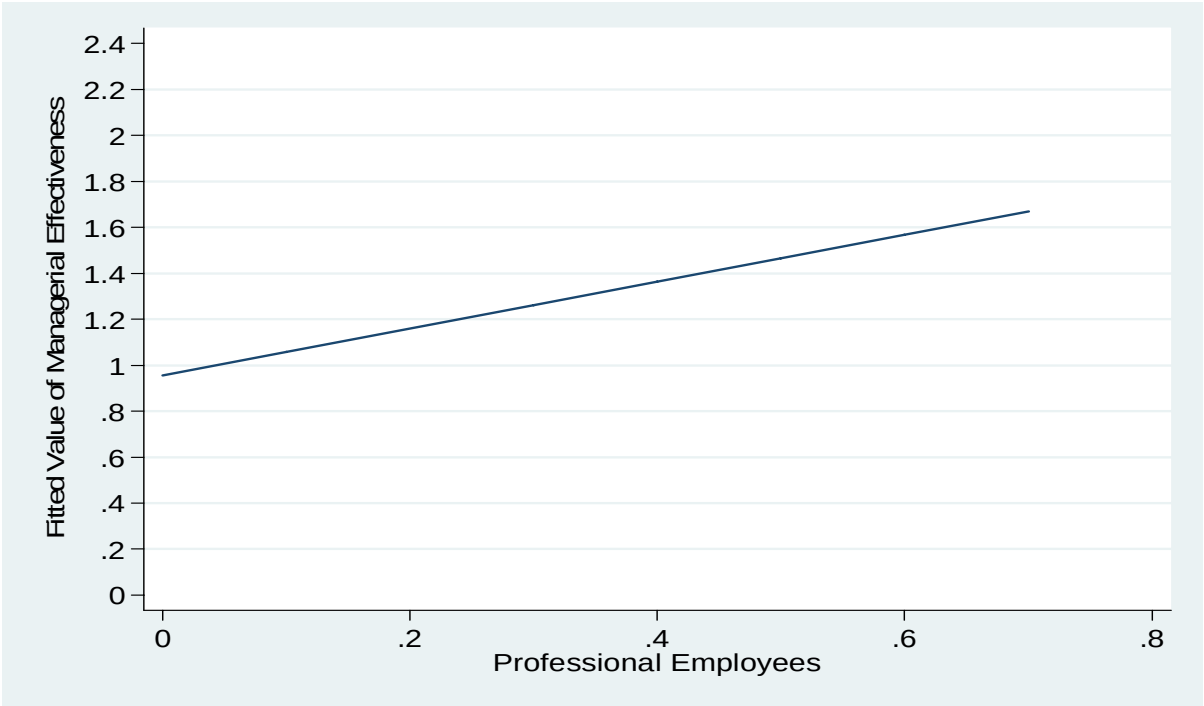


Figure 5.1 Marginal Effects of Administrative Resources



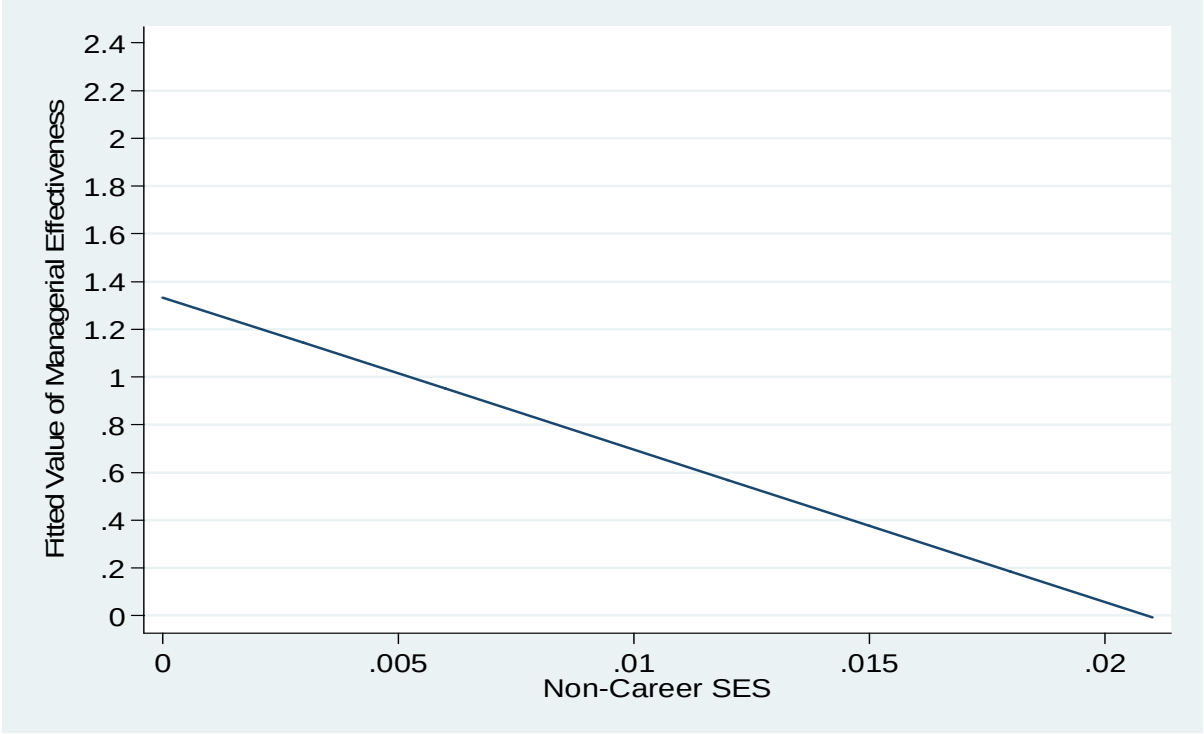
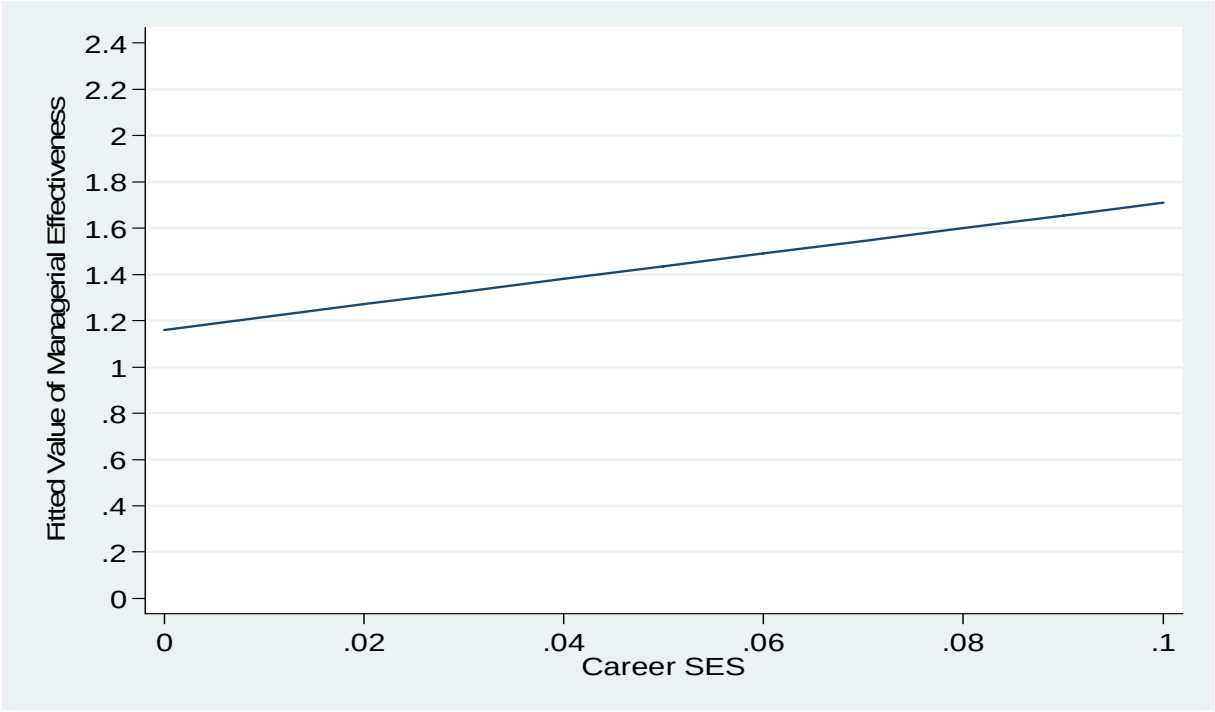


Figure 5.2 Marginal Effects of Human Resources



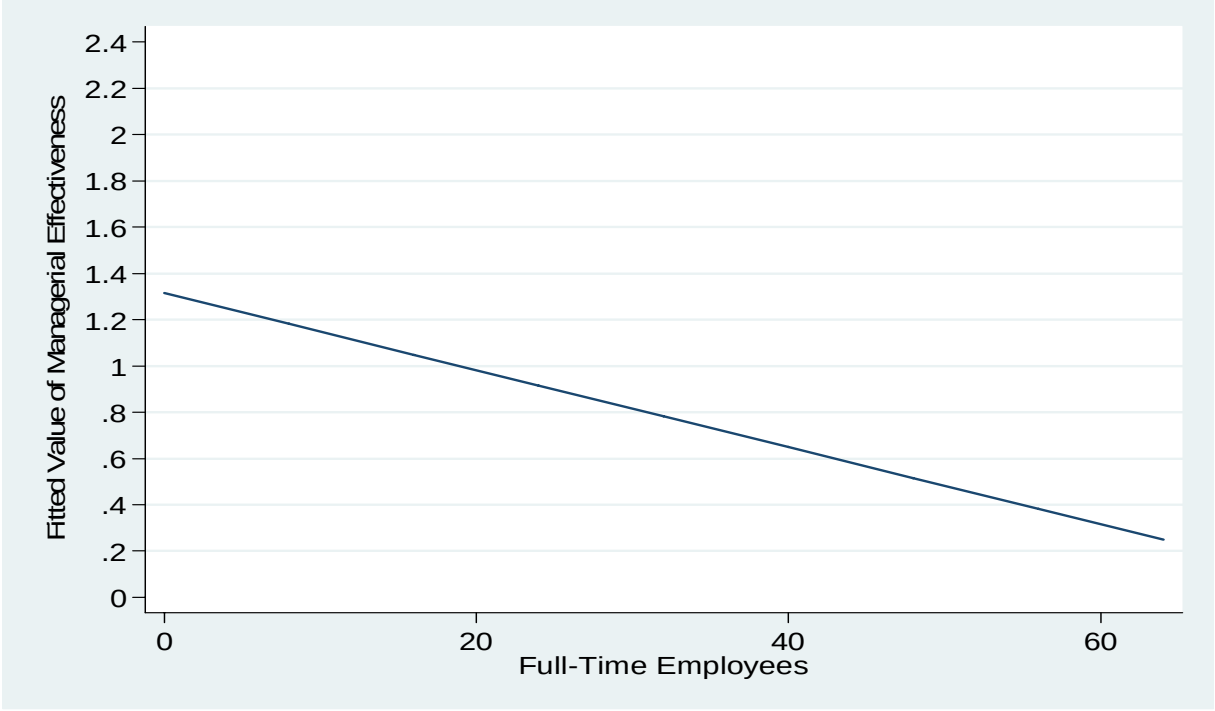
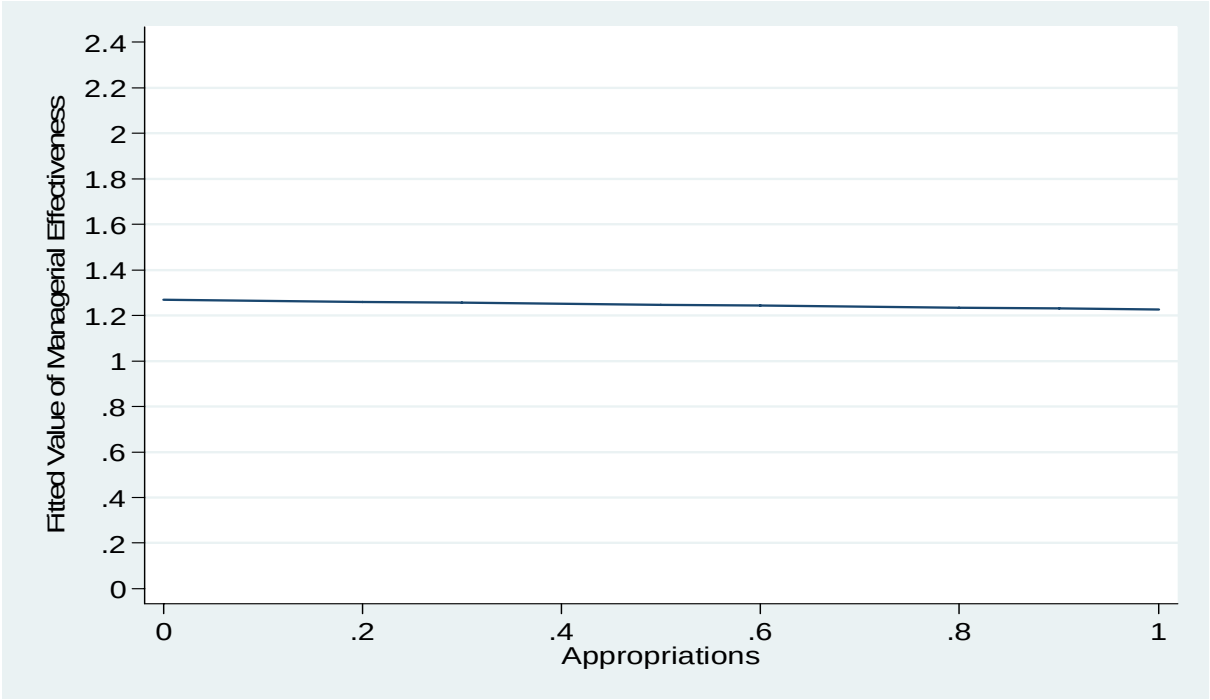


Figure 5.2 Marginal Effects of Human Resources (continued)



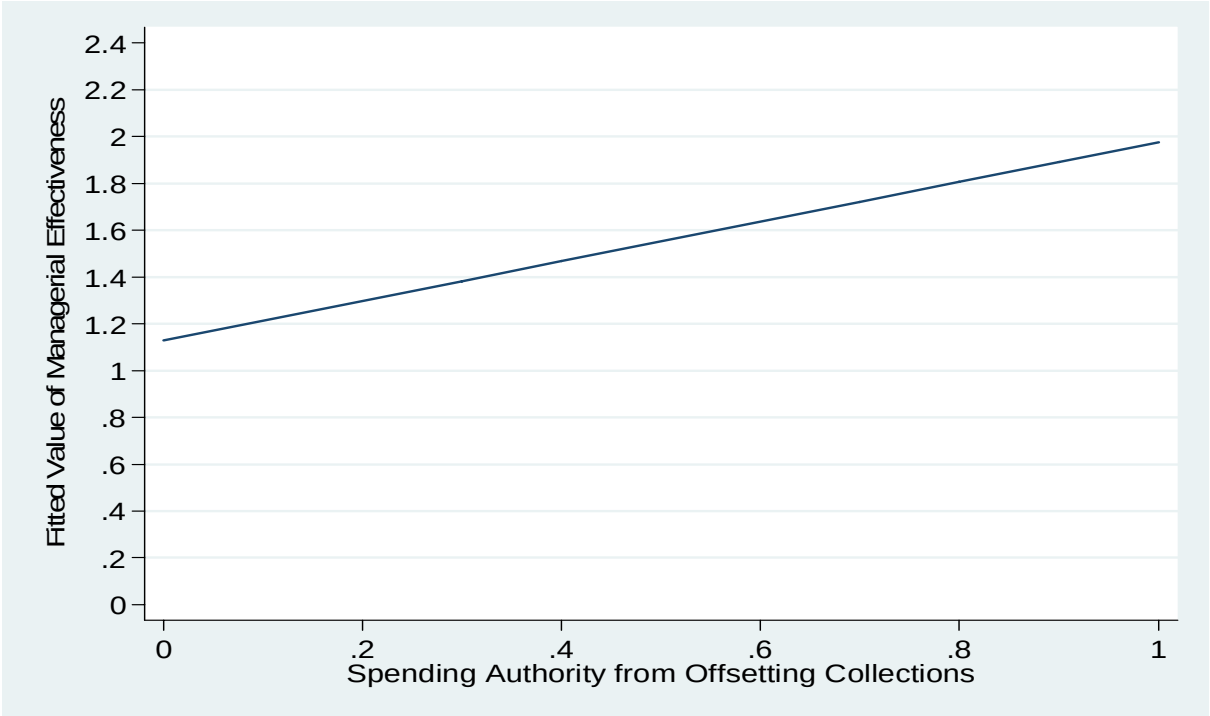


Figure 5.3 Marginal Effects of Financial Resources

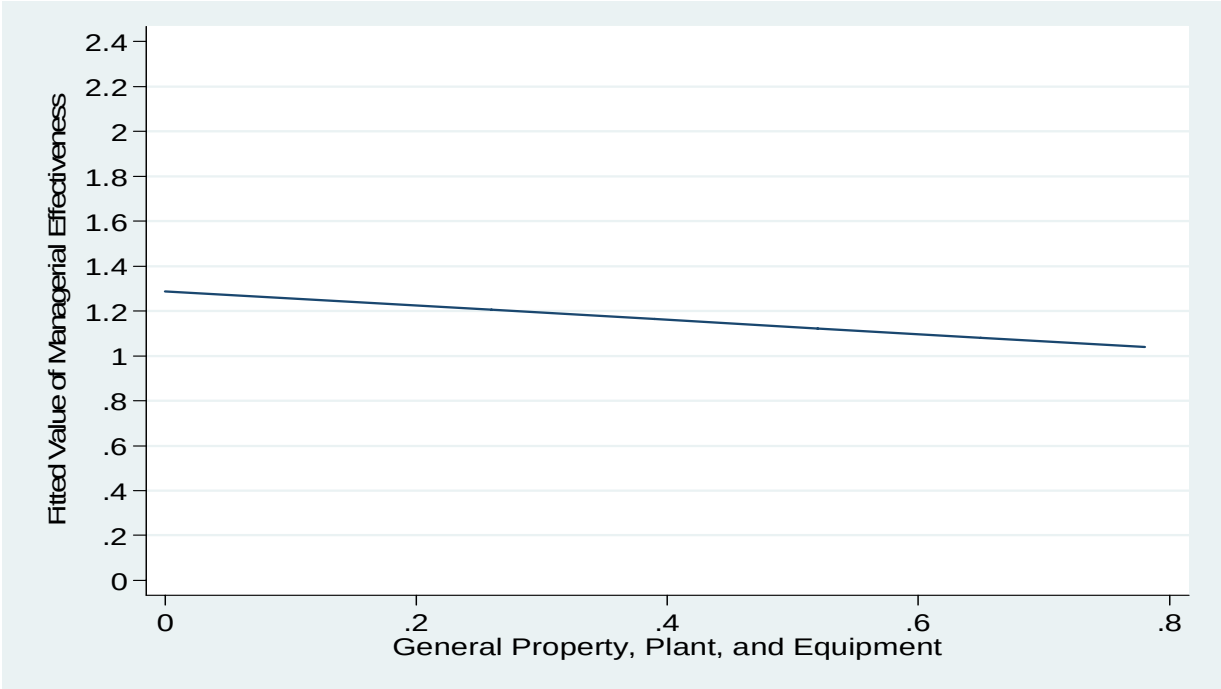
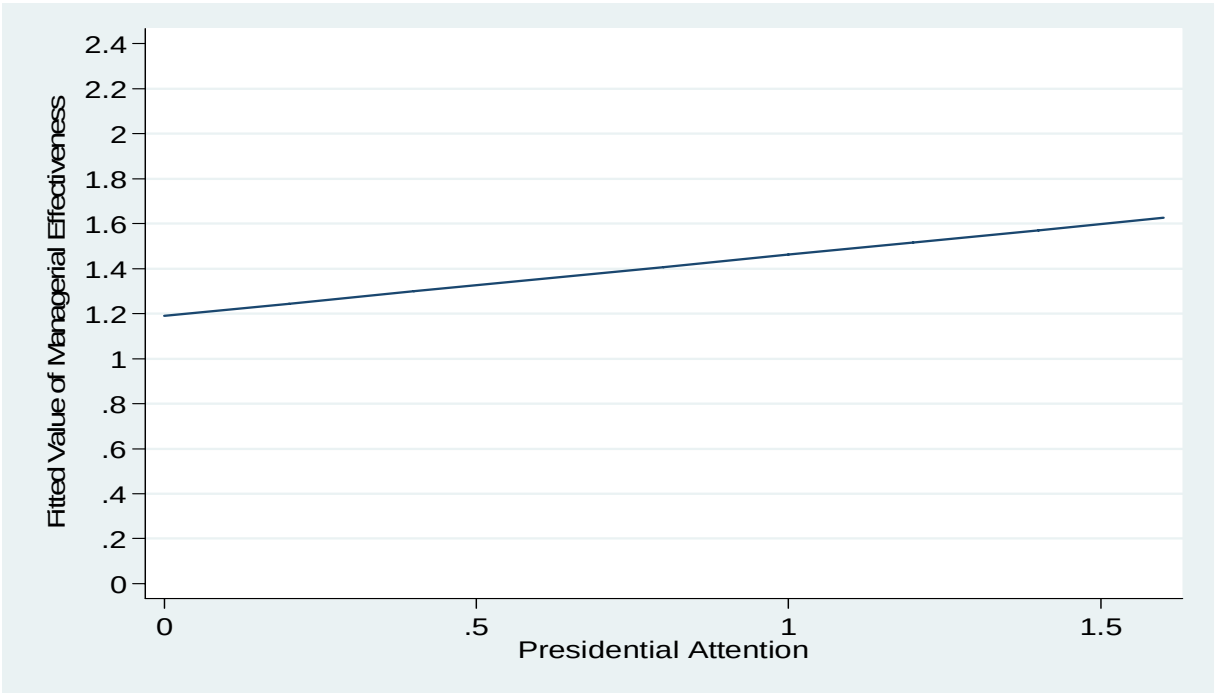


Figure 5.4 Marginal Effect of Physical Resource



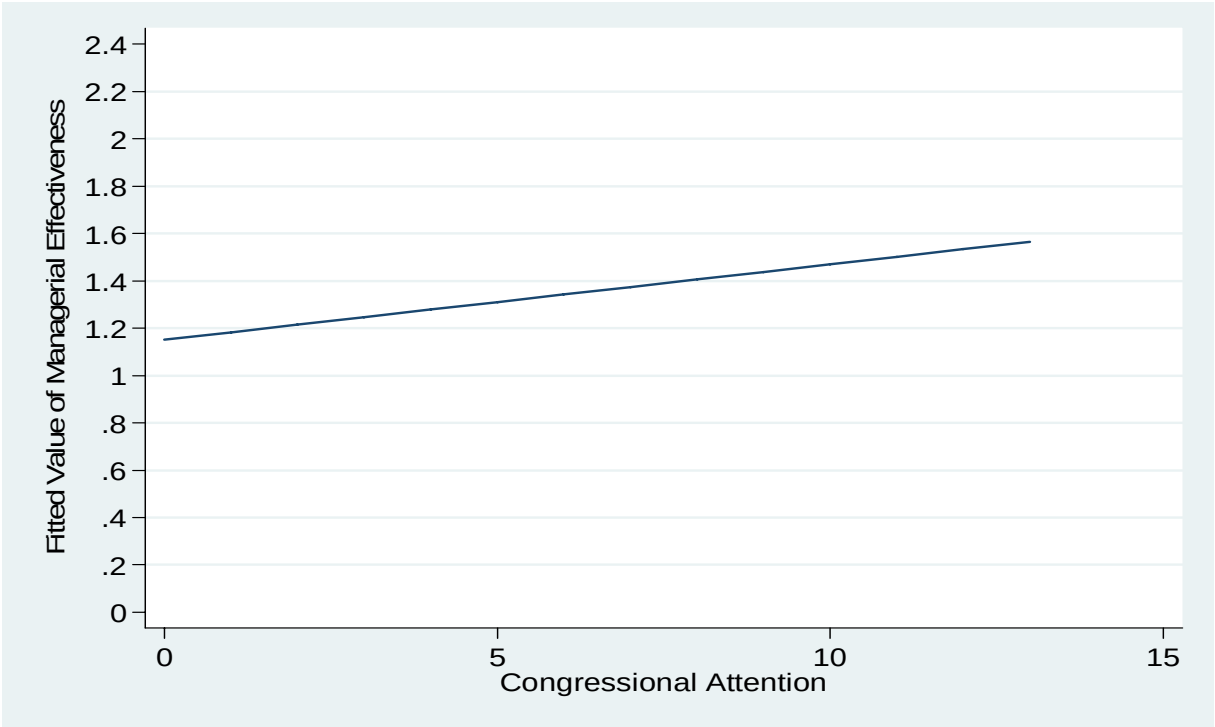


Figure 5.5 Marginal Effects of Political Resources

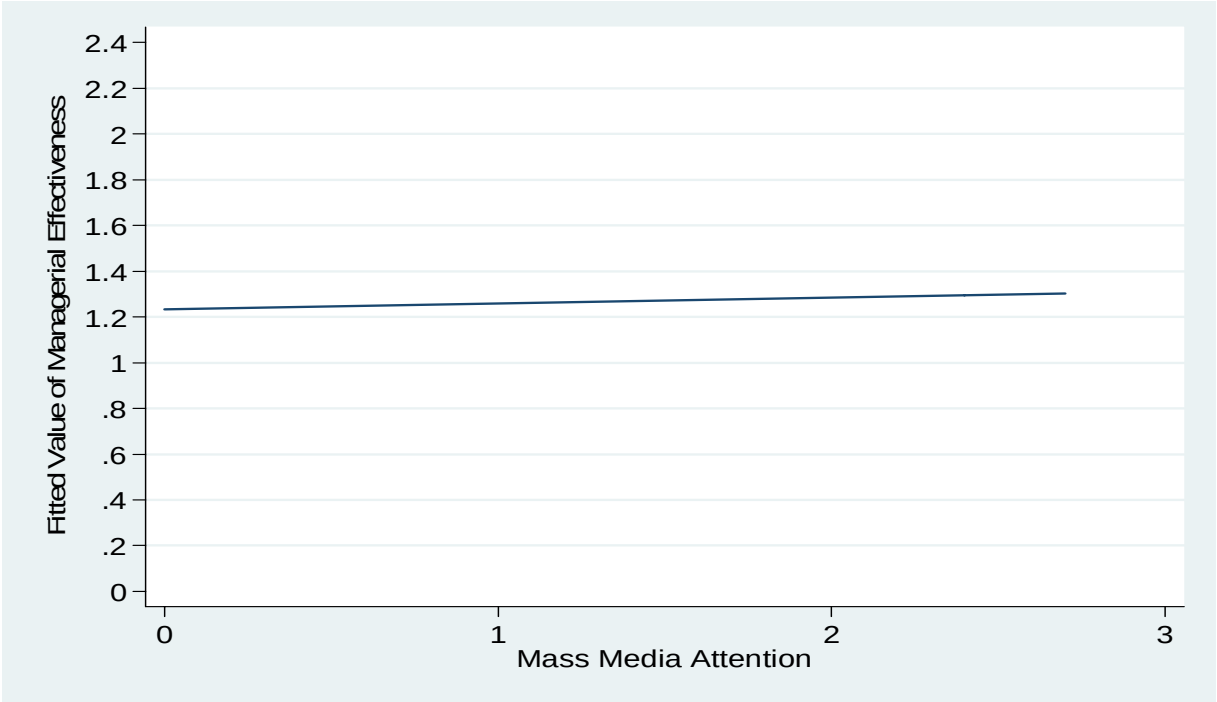


Figure 5.5 Marginal Effects of Political Resources (continued)

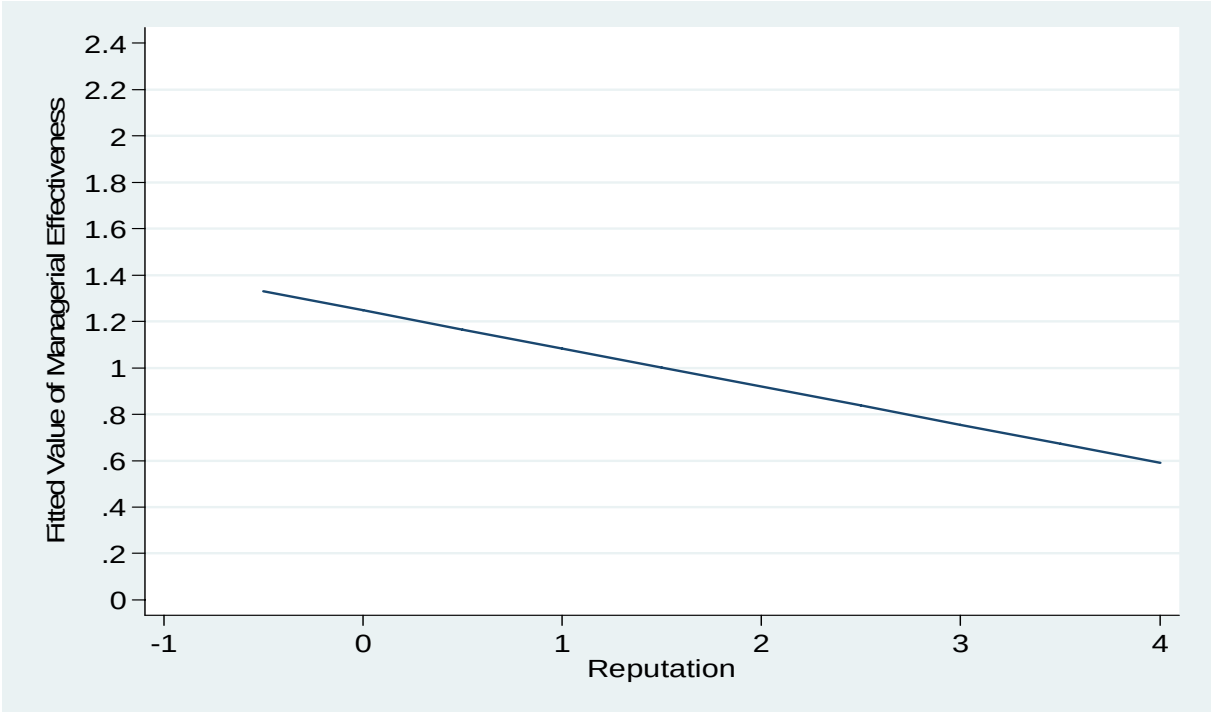


Figure 5.6 Marginal Effect of Reputation

Table 5.3 Summary of Hypothesis Test

Hypothesis	Result
H1-1: Agencies have higher managerial effectiveness scores when they have more board members or commissioners.	supported
H2-1: Agencies have higher managerial effectiveness scores when they have longer fixed term length of board members or commissioners.	rejected
H3-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of professionals.	supported
H4-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of non-career Senior Executive Service.	rejected
H5-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of career Senior Executive Service.	rejected
H6-1: Agencies have higher managerial effectiveness scores when they have more full-time employees.	rejected
H7-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of the appropriation.	rejected
H8-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of the spending authority from offsetting collections.	rejected
H9-1: Agencies have higher managerial effectiveness scores when they have a greater percentage of general property, plant, and equipment.	rejected
H10-1: Agencies have higher managerial effectiveness scores when they have higher presidential attention.	supported
H11-1: Agencies have higher managerial effectiveness scores when they have higher congressional attention.	rejected
H12-1: Agencies have higher managerial effectiveness scores when they have higher mass media attention.	rejected
H13-1: Agencies have higher managerial effectiveness scores when they have a higher public reputation.	supported

CHAPTER 6

RESULTS: RESOURCES AND AGENCY PROGRAM EFFECTIVENESS

As discussed in chapter three, agency program effectiveness was measured by the level of an agency's program achievement in the PART data. More specifically, it was measured by the percentage of programs rated as effective, moderately effective, or adequate in the agency's total programs (i.e., number of effective, moderately effective, and adequate programs / number of total programs in each agency). In this chapter, I investigate the comprehensive and relative impacts of various resources on federal agencies' program effectiveness simultaneously in order to explore which resources are actual scarce, valuable, and imperfectly imitable resources that have positive effects on agency program effectiveness through competitive advantage.

There can be an argument that using the PART data as the dependent variable and various organizational resources as the independent variables may mesh program-specific outcomes to agency-specific factors. Yet, programs of each agency are being implemented by that agency. In other words, each agency's programs are implemented by using that agency's various resources. For example, staffs who are implementing a specific program are human resources of that agency, at the same time. Building, equipment, general supplies, and so on that are necessary to the operation of a specific program are physical resources of that agency, at the same time. That is, the management and achievement of programs' goals are accomplished by the help of various organizational resources. Therefore, as addressed in chapter two, six types of resources of this study are valuable, scarce, and imperfectly imitable resources that have the potential for competitive advantage that can improve agency program effectiveness.

After presenting the estimation method and analysis results, I close with a larger discussion of the findings taken as a whole, specifically in the context of the following hypotheses formulated in chapter two:

H1-2: Agencies have higher program effectiveness scores when they have more board members or commissioners.

H2-2: Agencies have higher program effectiveness scores when they have longer fixed term length of board members or commissioners.

H3-2: Agencies have higher program effectiveness scores when they have a greater percentage of professionals.

H4-2: Agencies have higher program effectiveness scores when they have a greater percentage of non-career Senior Executive Service.

H5-2: Agencies have higher program effectiveness scores when they have a greater percentage of career Senior Executive Service.

H6-2: Agencies have higher program effectiveness scores when they have more full-time employees.

H8-2: Agencies have higher program effectiveness scores when they have a greater percentage of the spending authority from offsetting collections.

H9-2: Agencies have higher program effectiveness scores when they have a greater percentage of general property, plant, and equipment.

H10-2: Agencies have higher program effectiveness scores when they have higher presidential attention.

H11-2: Agencies have higher program effectiveness scores when they have higher congressional attention.

H12-2: Agencies have higher program effectiveness scores when they have higher mass media attention.

H13-2: Agencies have higher program effectiveness scores when they have a higher public reputation.

Estimation

I first ran Ordinary Least Squares and conducted the tests for AR(1) serial autocorrelation and heteroskedasticity in order to examine the relationship between various resources and agency program effectiveness by panel data analysis method. A fixed effects model could not be used for this analysis because this study has two time-invariant variables (i.e., term length of members in top leadership and number of members in top leadership) (Wooldridge 2003). That is, a fixed effect model dropped these two time-invariant variables. A random effects model could not be used because the joint significance test of the coefficients was not significant. Also, dummy variables for agencies and years were not included in this model because using agencies and year dummies can complicate heteroskedasticity and autocorrelation issues (Andrew B. Whitford, personal communication, December 1, 2008). Ordinary Least Squares (OLS) with panel-corrected standard errors could not be used for this study, as it works well if the length of the time frame is bigger than the number of units (Beck and Katz 1995).

According to the T test for the presence of AR(1) serial autocorrelation[25], the dataset for this study had a serial autocorrelation problem. The Breusch-Pagan test for heteroskedasticity[26] could not reject the null hypothesis of constant variance, which means that this data set does not have the heteroskedasticity issue. Therefore, this study performed feasible generalized least

[25] $t = 7.39$ ($P < .001$).
[26] chi2(1) = 1.52, P-value = .2182.

squares (FGLS) in Stata 10, taking care of serial autocorrelation issues. More specifically, this study modeled the AR(1) autocorrelation common to all the panels. As discussed in chapter three, this study performed a logit transformation on the dependent variable of this model because it is a proportion. If the dependent variable is a proportion, it is bounded in the range of 0 to 1. To solve the issue of this 0/1 boundary, this research performed a logit transformation on agency program effectiveness variable so that the transformed dependent variable could theoretically assume any value between minus and plus infinity. Table 6.1 provides descriptive statistics of the variables in this model and table 6.2 shows the estimation results of this cross-sectional time-series FGLS regression. Generally, the model fits well, with Wald χ^2 significant at better than 0.001.

Before discussing the results, I note that this model did not include the variable appropriations, unlike the model in chapter five. The reason is that PART scores, the dependent variable of this model, have a significant and positive impact on agencies' program budget (Gilmour and Lewis 2006b). "In a limited yet still important way, PART scores influence the OMB's budgetary allocations" (Gilmour and Lewis 2006b, 750). That is, due to performance budgeting, PART scores are being reflected in an agency's budget (e.g., appropriations). Therefore, there may be an endogeneity issue between PART scores and an agency's appropriations. In contrast, the variable spending authority from offsetting collections was not excluded from this model because it comes mainly from business-like or market-oriented activities, not from the U.S. Treasury.

Analysis Results

Estimation Results

First of all, in the case of administrative resources, both variables (term length of members in top leadership and number of members in top leadership) showed the expected relationships with agency program effectiveness, but the statistical significance was different. Term length of members in top leadership structure had a significant and positive relationship (coefficient: .336) with agency program effectiveness at the 0.05 level, while number of members in top leadership (coefficient: .167) had a statistically insignificant and positive relationship. That is, agencies have higher program effectiveness scores when they have longer term length of members in their top decision-making structures.

This study included four types of human resources. Two of these (i.e., professional employees and non-career SES) showed expected relationships with agency program effectiveness, while the other two revealed opposite relationships. Yet, all these four human resources were not statistically significant. Professional employees (coefficient: -2.348) in an agency had an insignificant and negative influence on agency program effectiveness, unlike my expectation. Non-career Senior Executive Service (SES) had a negative relationship (coefficient: -129.919) with agency program effectiveness, but this relationship was not statistically significant. In contrast, career SES (coefficient: 20.741) showed a positive relationship with the dependent variable, but this positive relationship was not significant, either. The last human resources variable is full-time employees. Like my expectation, number of full-time employees (coefficient: .004) had a positive impact on agency program effectiveness, but this impact was statistically insignificant.

In congruence with my expectation, physical resource (i.e., general property, plant, and equipment) showed a positive and significant relationship (coefficient: 2.462) with agency program effectiveness at the 0.10 level. However, financial resource (i.e., spending authority from offsetting collections) had a negative, but insignificant, relationship (coefficient: -2.757) with agency program effectiveness.

This study included three political resources variables -- presidential attention, congressional attention, and mass media attention. Presidential attention (coefficient: .357) had a positive impact on agency program effectiveness, as expected, but this impact was not statistically significant. In contrast, the other two political resources, congressional attention (coefficient: -.133) and media attention (coefficient: -.206), showed negative relationships with the dependent variable. However, they had statistically insignificant relationships with agency program effectiveness.

The estimation results revealed that reputation (coefficient: -.385) had a negative and significant impact on agency program effectiveness at the 0.10 level. However, hypothesis 13-2 was supported because, as mentioned in chapter three, a lower combined index means satisfactory public service which leads to high agency reputation. That is, agencies have higher managerial performance scores when they have a higher public reputation.

Figures 6.1 - 6.6 show the estimated marginal effects of six types of organizational resources on the agency program effectiveness dependent variable. As discussed in chapter five, because this analysis uses a linear model, all the figures show linear relationships between organizational resources and agency program performance. In other words, the coefficient of each independent variable in table 6.2 is congruent with a marginal effect of each independent variable (i.e., a slope of each graph).

Impact Analysis

This study calculated the impacts of three statistically significant organizational resources (i.e., term length of members in top leadership structure; general property, plant, and equipment; and agency's public reputation) on agency program effectiveness through marginal effects analysis whose process was already mentioned in chapter five. According to the analysis results, the impact of the term length of members in the top leadership structure on agency program effectiveness was the biggest: the impact of a 1 standard deviation increase in the term length of members in the top leadership structure was a 0.236 standard deviation increase in agency program effectiveness (ceteris paribus).

The impact of a 1 standard deviation increase in the general property, plant, and equipment was a 0.065 standard deviation increase in agency program effectiveness. Lastly, marginal effects analysis showed that the impact of a 1 standard deviation increase in agency's public reputation was a 0.002 standard deviation decrease in agency program effectiveness.

Discussion

Table 6.3 summarizes the hypothesis test results of the model in this chapter. Three out of thirteen hypotheses were supported and nine hypotheses were rejected. Term length of members in top leadership structures (administrative resource), agency's public reputation, and general property, plant, and equipment (physical resource) had positive and significant relationships with agency program effectiveness. Number of members in top leadership structures (administrative resource), professional employees (human resource), non-career SES (human resource), career SES (human resource), full-time employees (human resource), appropriations (financial resource), spending authority from offsetting collections (financial resource), presidential

attention (political resource), congressional attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency program effectiveness.

As discussed in chapter two, this study's goal is to find out valuable, scarce, and imperfectly imitable resources that have competitive advantage through testing the relative impacts of various resources on agency performance. The estimation results of this model suggest three valuable, scarce, and imperfectly imitable resources (i.e., term length of members in top leadership structures; agency's public reputation; and general property, plant, and equipment) that have actual positive impacts on agency program effectiveness through their competitive advantage.

H 1-2 and H 2-2

Hypothesis 1-2 is that agencies have higher program effectiveness scores when they have more board members or commissioners. According to the results of this analysis, number of members in top leadership structures had a positive impact on agency managerial effectiveness, as expected, but it was not statistically significant. It seems that more members of the top decision-making structure can contribute to better agency program effectiveness through providing higher quality advice, expertise, and experience, and reducing environmental uncertainty through external linkage, but this was not statistically supported. That is, hypothesis 1-2 was rejected.

Hypothesis 2-2 is that agencies have higher program effectiveness scores when they have longer fixed term length of board members or commissioners. As expected, the direction of the impact of fixed term length of board members or commissioners was positive and statistically

significant. That is, longer fixed term length of top decision-making structure in an agency is a valuable, scarce, and imperfectly imitable organizational resources. According to Fesler and Kettl (1996), early political appointee departures may cause the following costs: a loss of sustained themes, undermined teamwork, loss of political control, and so on. Also, the duration of appointee service affects administrative competence in that appointee competence in public policymaking and implementation depends on appointee experience (Wood and Marchbanks 2008). That is, short duration of service implies amateurs (and their lack of experience) acting on behalf of the President to execute the law (Heclo 1977). As a result, longer terms for members in the governing structure were positively and significantly related to better agency program performance; thus, hypothesis 2-2 was supported.

H 3-2, H 4-2, H 5-2, and H 6-2

Hypothesis 3-2 is that agencies have higher program effectiveness scores when they have a greater percentage of professionals. Analysis results showed that professional employees had a negative, but insignificant, relationship with agency program effectiveness. That is, hypothesis 3-2 was rejected and professional employees in an agency are not a valuable, scarce, and imperfectly imitable organizational resources.

Hypothesis 4-2 is that agencies have higher program effectiveness scores when they have a greater percentage of non-career Senior Executive Service and hypothesis 5-2 is that agencies have higher program effectiveness scores when they have a greater percentage of career Senior Executive Service. According to analysis results, while non-career SES had a negative impact on agency program effectiveness, career SES showed a positive relationship with agency program effectiveness. However, these two relationships were not statistically significant. That is, both

hypothesis 4-2 and hypothesis 5-2 were rejected. Due to these insignificant relationships, they are not valuable, scarce, and imperfectly imitable resources. As discussed in chapter five, although their impacts were not statistically significant, the positive relationship between career SES and agency program effectiveness and the negative relationship between non-career SES and agency program effectiveness in the results of this model are consistent with those in Lewis's (2007) research.

Hypothesis 6-2 is that agencies have higher program effectiveness scores when they have more full-time employees. Full-time employees did not have a statistically significant impact on agency program effectiveness, although it had a positive relationship with agency program effectiveness, like my expectation. That is, hypothesis 6-1 was also rejected. One possible explanation for this positive relationship between full-time employees and agency program effectiveness is that agencies with more employees have greater capabilities to solve tasks (Hill 1982; Jackson 1992) because they can absorb or recall more information about tasks, more critical judgments available to correct errors, and more possible solution strategies (Harrison 1975; Shaw 1981; Halebrian and Finkelstein 1993).

H 8-2 and H 9-2

Hypothesis 8-2 is that agencies have higher program effectiveness scores when they have a greater percentage of the spending authority from offsetting collections in their total budgetary resources. This relationship was negative, unlike my expectation, but it was not statistically significant. Therefore, hypothesis 8-2 was rejected. This result can be interpreted as follows. It seems that this result supports the public choice theorists' argument that self-interested bureaucrats have the incentive to ask for larger budgets, this extra money is wasted away by

inefficient and wasteful bureaucrats, and it does not contribute to better agency performance due to these inefficient bureaucrats. However, this negative relationship was not statistically supported.

Hypothesis 9-2 is that agencies have higher program effectiveness scores when they have a greater percentage of general property, plant, and equipment in their total assets. Like this study's expectation, the relationship between the amounts of general property, plant, and equipment and agency program effectiveness was positive and statistically significant. That is, hypothesis 9-1 was supported and the second valuable, scarce, and imperfectly imitable resource to agency program effectiveness is physical resources (i.e., general property, plant, and equipment. More amounts of general property, plant, and equipment in an agency's total assets can lead to better agency program performance in that they will be more directly used in creating products, operating the agency, and achieving the agency's goals than other organizational resources (Fry, Stoner, and Hattwick 2004).

H 10-2, H 11-2, and H 12-2

Hypothesis 10-2 is that agencies have higher program effectiveness scores when they have higher presidential attention. According to the analysis results, presidential attention had a positive impact on agency managerial effectiveness, as expected, but it was not statistically significant. Therefore, hypothesis 10-2 was rejected and presidential attention is not a valuable, scarce, and imperfectly imitable resource of an agency.

Hypothesis 11-2 is that agencies have higher program effectiveness scores when they have higher congressional attention and hypothesis 12-2 is that agencies have higher program effectiveness scores when they have higher mass media attention. According to the analysis

results, unlike my expectation, both congressional attention and mass media attention showed negative and insignificant relationships with agency program effectiveness. That is, both hypothesis 11-2 and hypothesis 12-2 were rejected, and congressional attention and mass media attention are not valuable, scarce, and imperfectly imitable organizational resources.

H 13-2

Hypothesis 13-2 is that agencies have higher program effectiveness scores when they have a higher public reputation. According to the analysis results, agency's public reputation had a negative and significant relationship with agency program effectiveness. That is, hypothesis 13-2 was supported because a lower combined index means a satisfactory public service which leads to high agency reputation. Therefore, the last valuable, scarce, and imperfectly imitable organizational resource of this model is an agency's public reputation. As mentioned earlier, reputation can lead to better agency performance because agency reputation can enhance bureaucratic autonomy (Carpenter 2001; Whitford 2002), professional prestige (Wilson 1989), staff motivation, staff retention, and overall organizational health (Huang and Provan 2007), and legitimacy for an organization (Scott 2001).

Summary

Organizations are using a variety of resources to achieve their goals. However, as Barney and Clark (2007) pointed out, not all of the organizational resources are likely to be economically valuable. That is, some of these resources may have no effect on better organizational performance and others may make it more difficult for a firm to implement valuable strategies (Barney 1986). Accordingly, through testing the RBV, this research

investigated the relative impact of various resources on federal agencies' program effectiveness in order to find out which resources are actual scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage for better performance.

Principal findings from this analysis is that term length of members in top leadership structures (administrative resource), agency's public reputation (reputation resource), and general property, plant, and equipment (physical resource) had positive and significant relationships with agency program effectiveness. In contrast, number of members in top leadership structures (administrative resource), professional employees (human resource), non-career SES (human resource), career SES (human resource), full-time employees (human resource), appropriations (financial resource), spending authority from offsetting collections (financial resource), presidential attention (political resource), congressional attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency program effectiveness.

Therefore, the model of agency program effectiveness has three valuable, scarce, and imperfectly imitable resources -- term length of members in top leadership structures, agency's public reputation, and general property, plant, and equipment. For the resource-based view, this analysis suggests that even if a specific resource meets the conditions for a valuable, scarce, and imperfectly imitable resource, it is still in the state of a resource that has the potential of competitive advantage until it proves its positive contribution to agency performance because different organizational resources may have different effects on performance when they are simultaneously analyzed with other resources.

Table 6.1 Descriptive Statistics of Variables in This Model

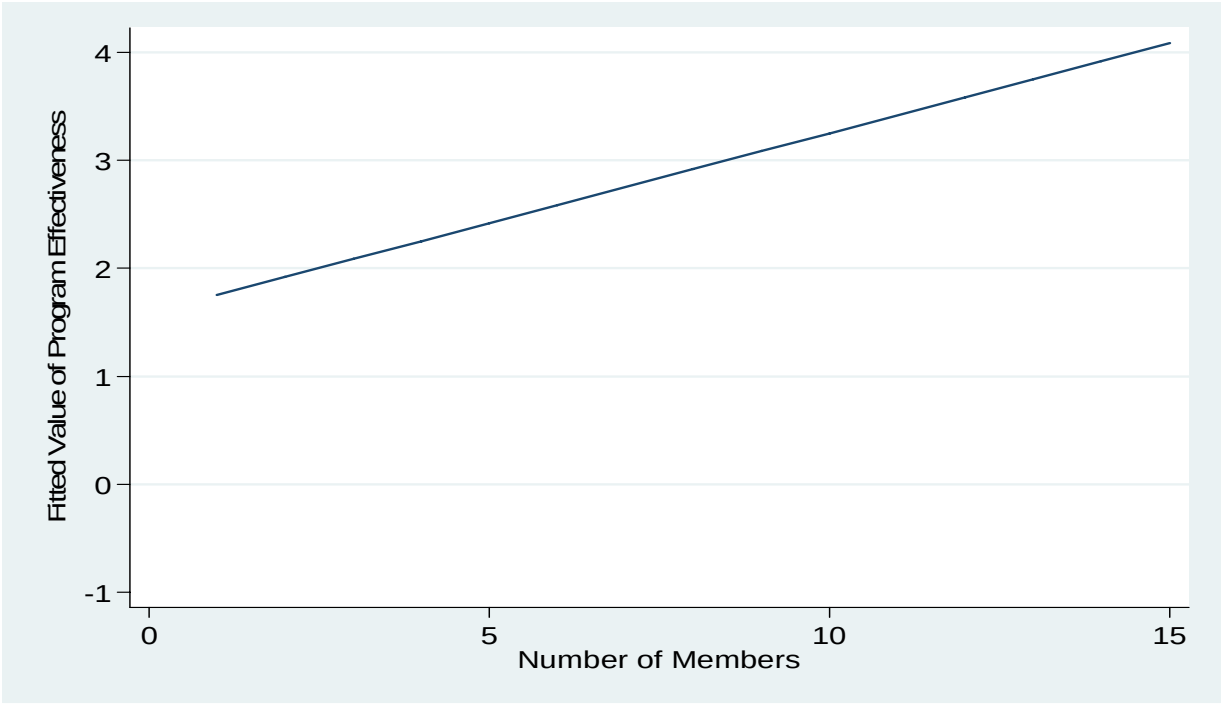
Variables	Mean	SD	Min	Max
Dependent Variable				
Program Effectiveness (logit transformed)	1.76	2.05	-2.48	4.59
Independent Variables				
Term length of members in top leadership (Year)	.9	2.03	0	7
Number of members in top leadership (Number)	1.74	2.32	1	15
Professionals (%)	.25	.17	.001	.66
Non-career Senior Executive Service (%)	.001	.001	0	.004
Career Senior Executive Service (%)	.01	.01	0	.07
Full-time employees (10,000)	6.49	12.60	.004	64.56
Spending authority from offsetting collections (%)	.12	.13	0	.83
General property, plant, and equipment (%)	.18	.21	.00	.78
Presidential attention (100)	.24	.32	0	1.62
Congressional attention (100)	3.55	2.74	.04	13.06
Mass media attention (100)	.24	.48	0	2.79
Agency's public reputation (Z-score)	.24	.84	-.48	4.39
Age (100)	.69	.57	.02	2.18

Table 6.2 Cross-Sectional Time-Series FGLS Regression Result

(Dependent Variable: Agencies' Program Effectiveness)

Independent Variables	Coefficient	Standard Error
Number of members in top leadership	.167	.113
Term length of members in top leadership	.336	.159 **
Professionals	-2.348	1.599
Non-career Senior Executive Service	-129.919	201.246
Career Senior Executive Service	20.741	23.537
Full-time employees	.004	.025
Spending authority from offsetting collections	-2.757	1.709
General property, plant, and equipment	2.462	1.272 *
Presidential attention	.357	.814
Congressional attention	-.133	.114
Mass media attention	-.206	.477
Agency's public reputation	-.385	.216 *
Age	.167	.381
Constant	2.044	.725 **
Observations	125	
Sample period	2003-2007	
Wald χ^2	48.00 ***	

(*** p<0.01, ** p<0.05, * p<0.10)



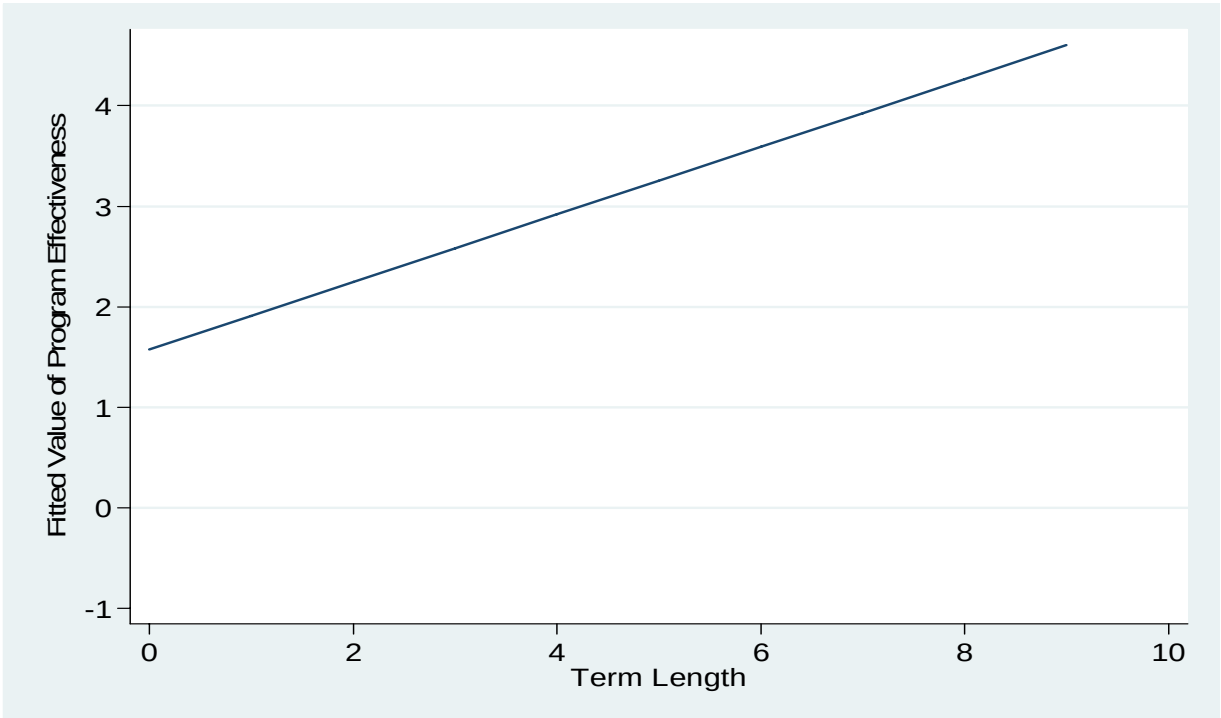
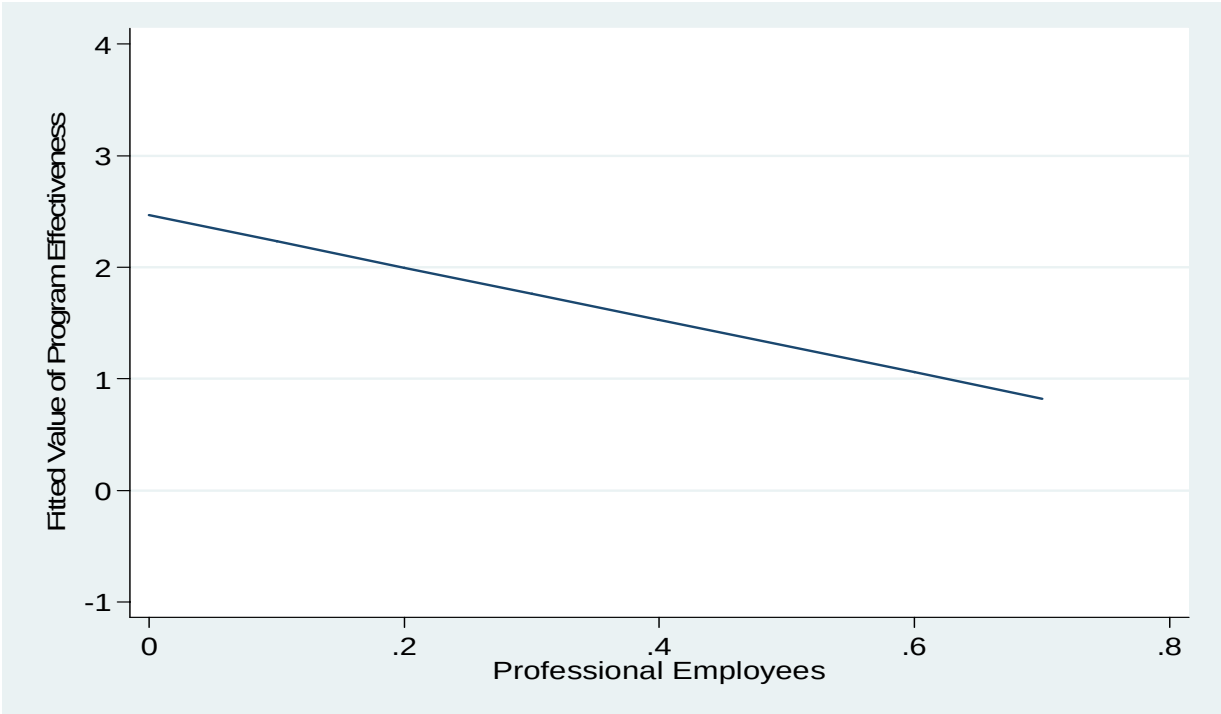


Figure 6.1 Marginal Effects of Administrative Resources



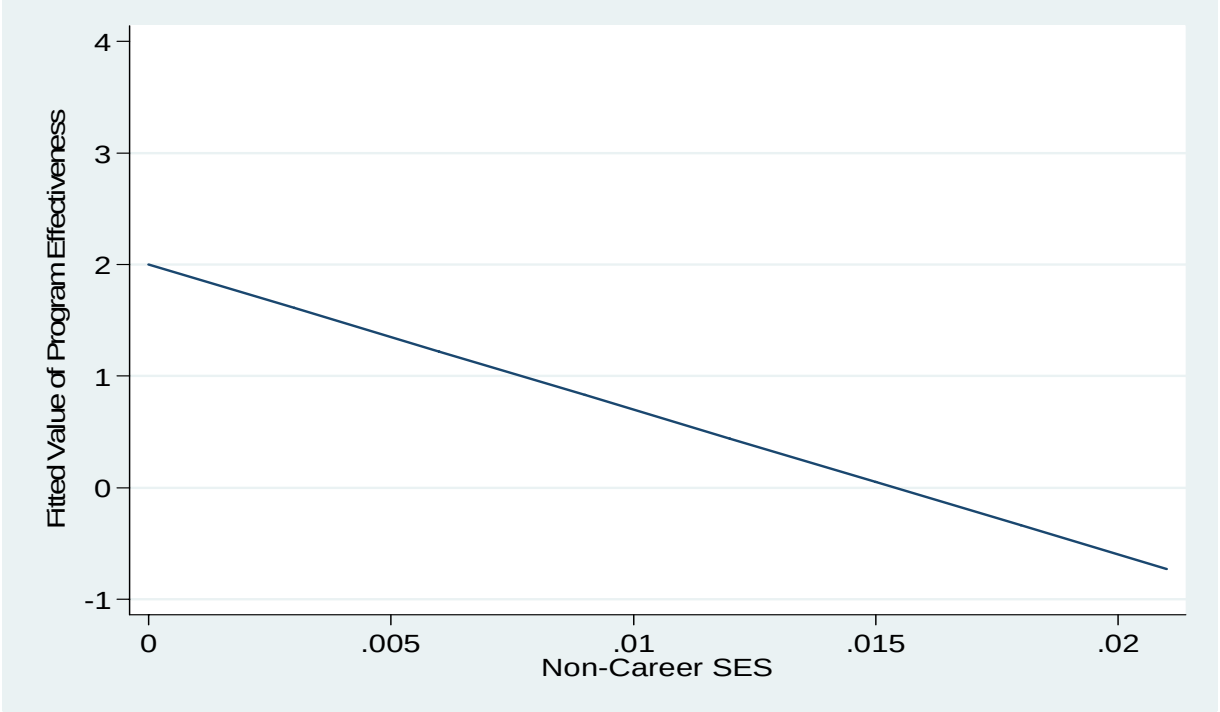
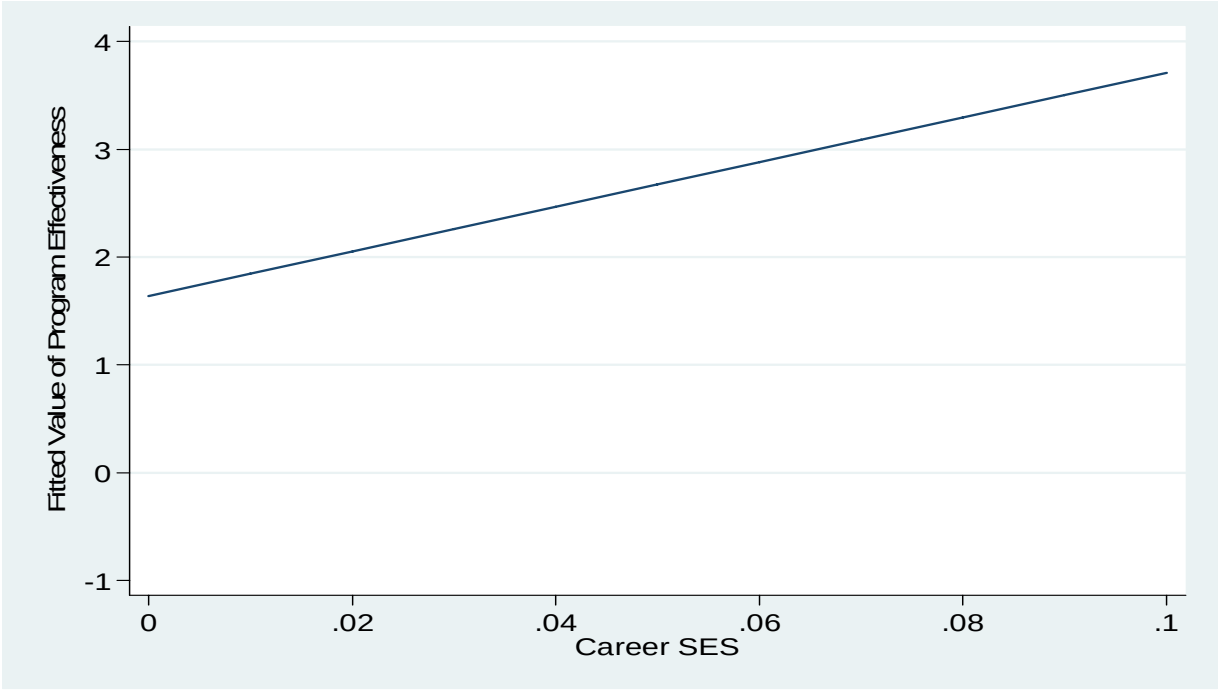


Figure 6.2 Marginal Effects of Human Resources



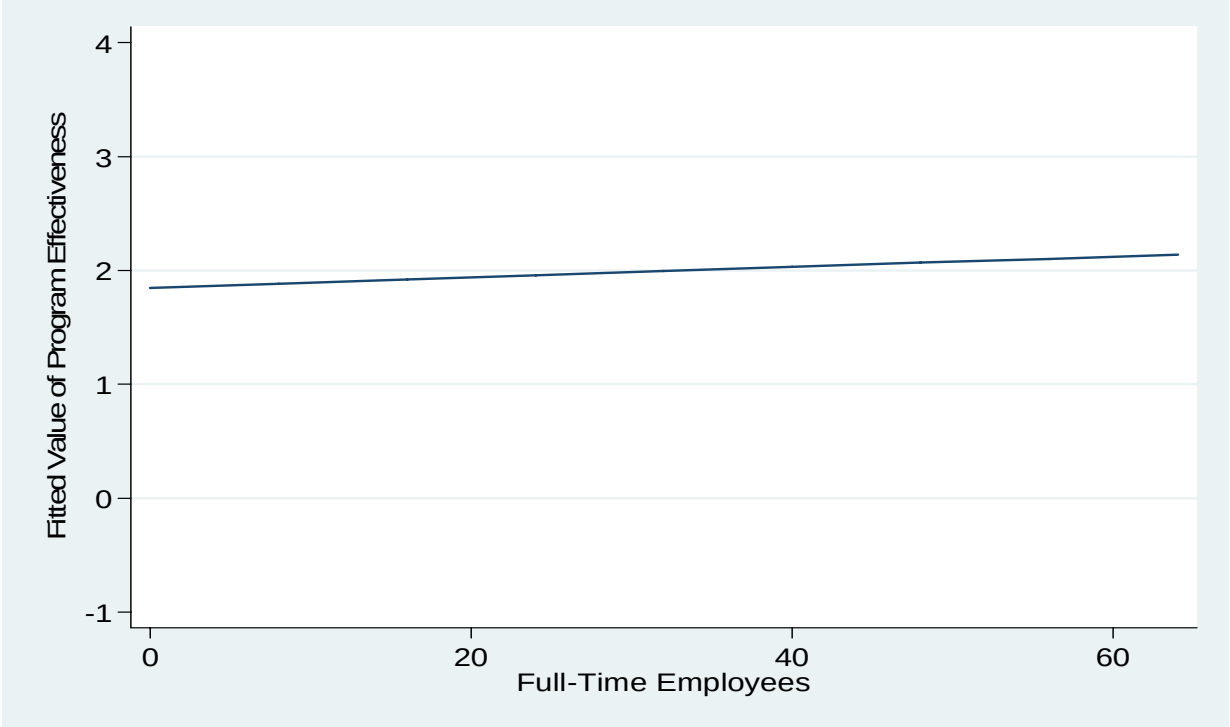


Figure 6.2 Marginal Effects of Human Resources (continued)

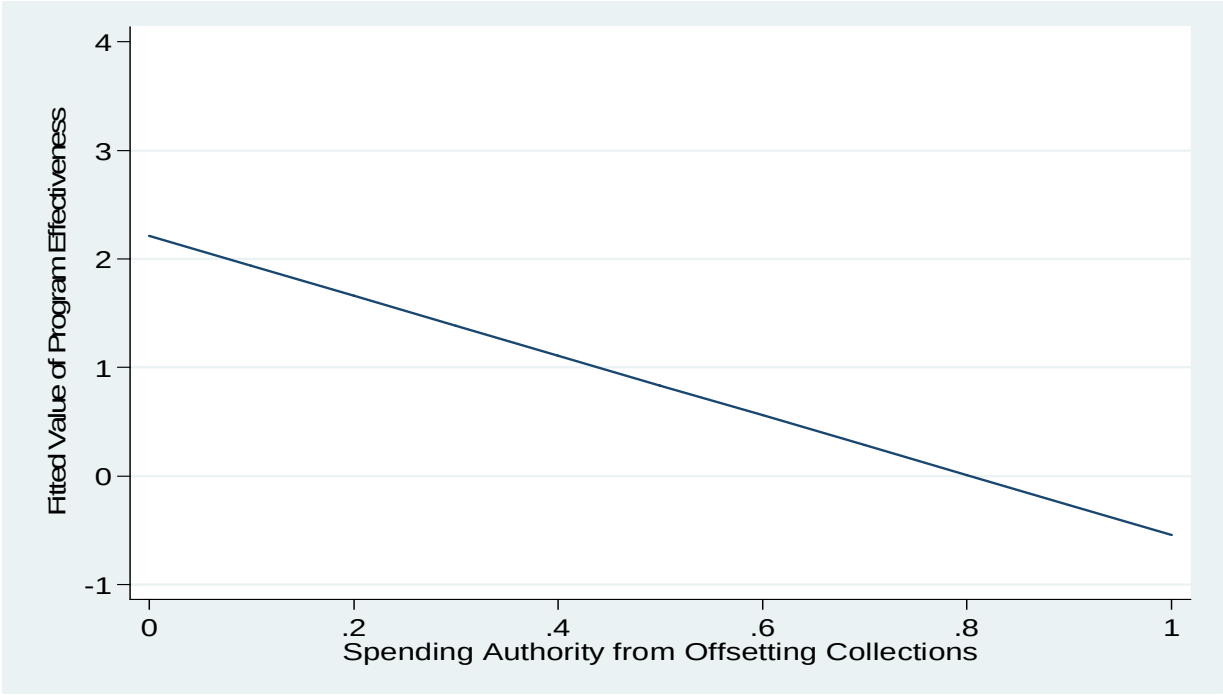


Figure 6.3 Marginal Effects of Financial Resource

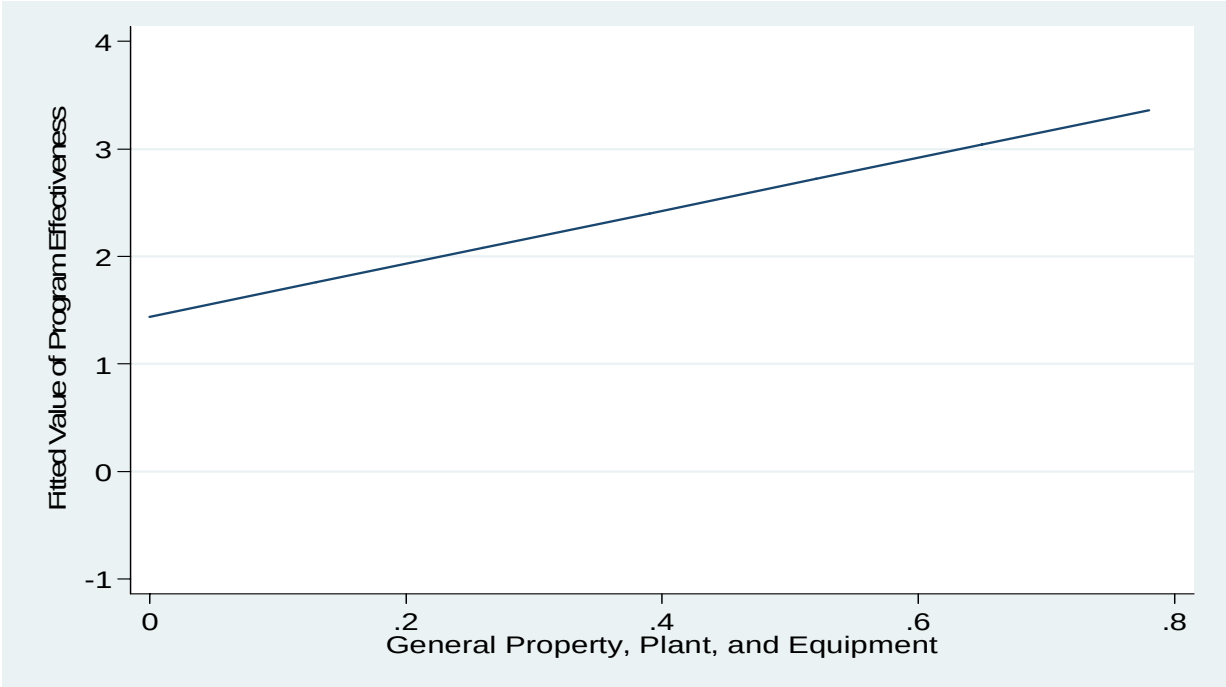
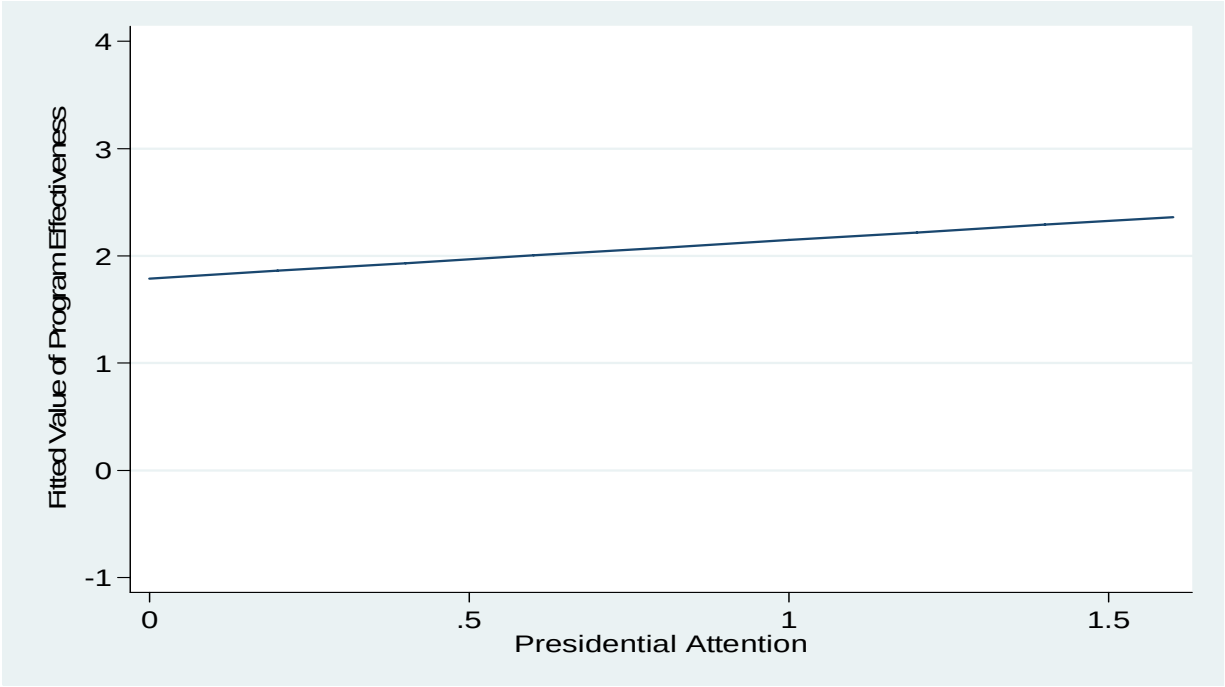


Figure 6.4 Marginal Effect of Physical Resource



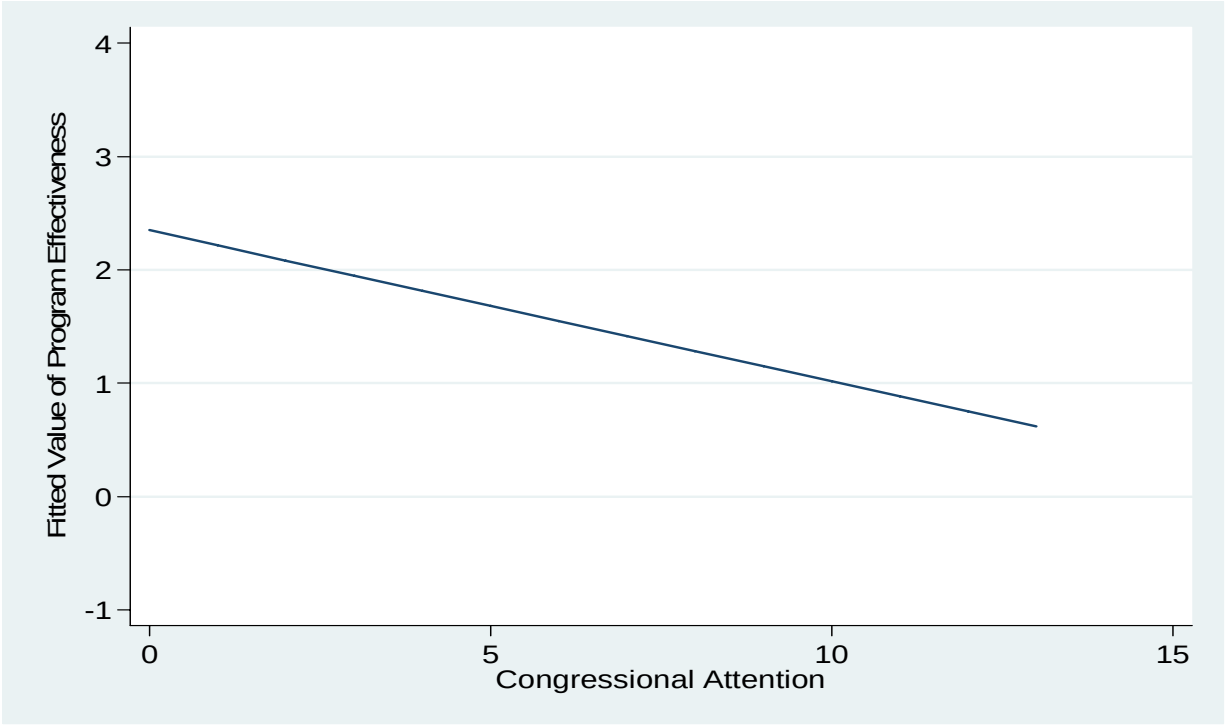


Figure 6.5 Marginal Effects of Political Resources

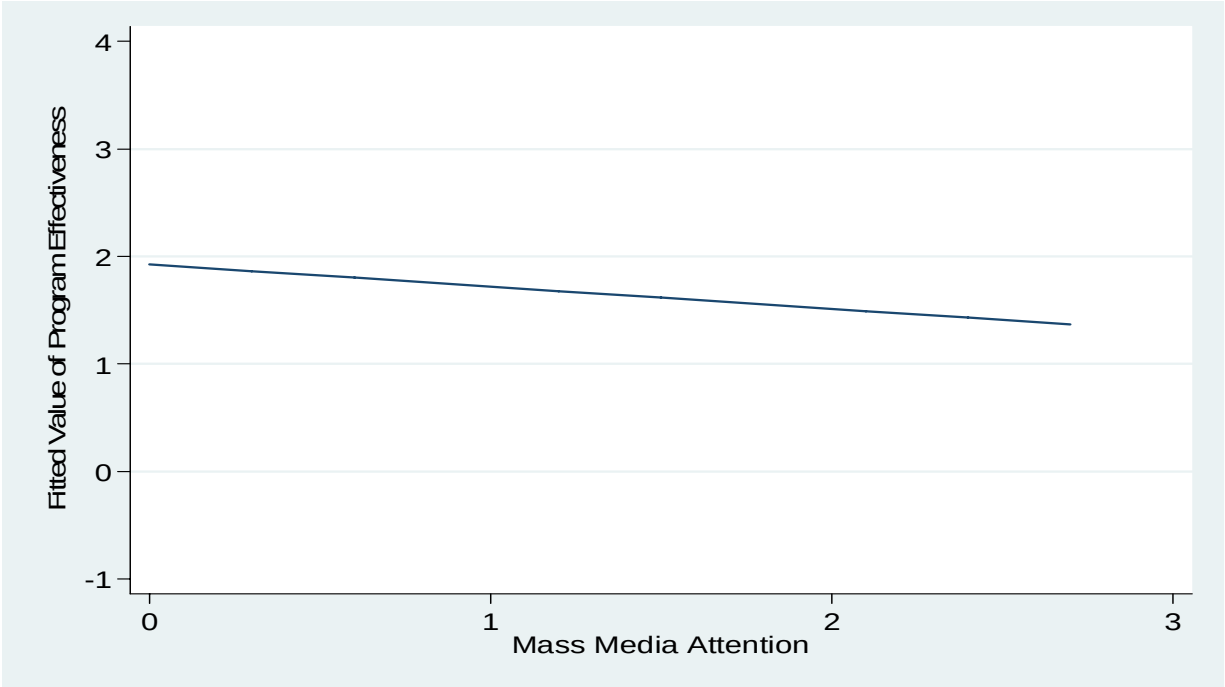


Figure 6.5 Marginal Effects of Political Resources (continued)

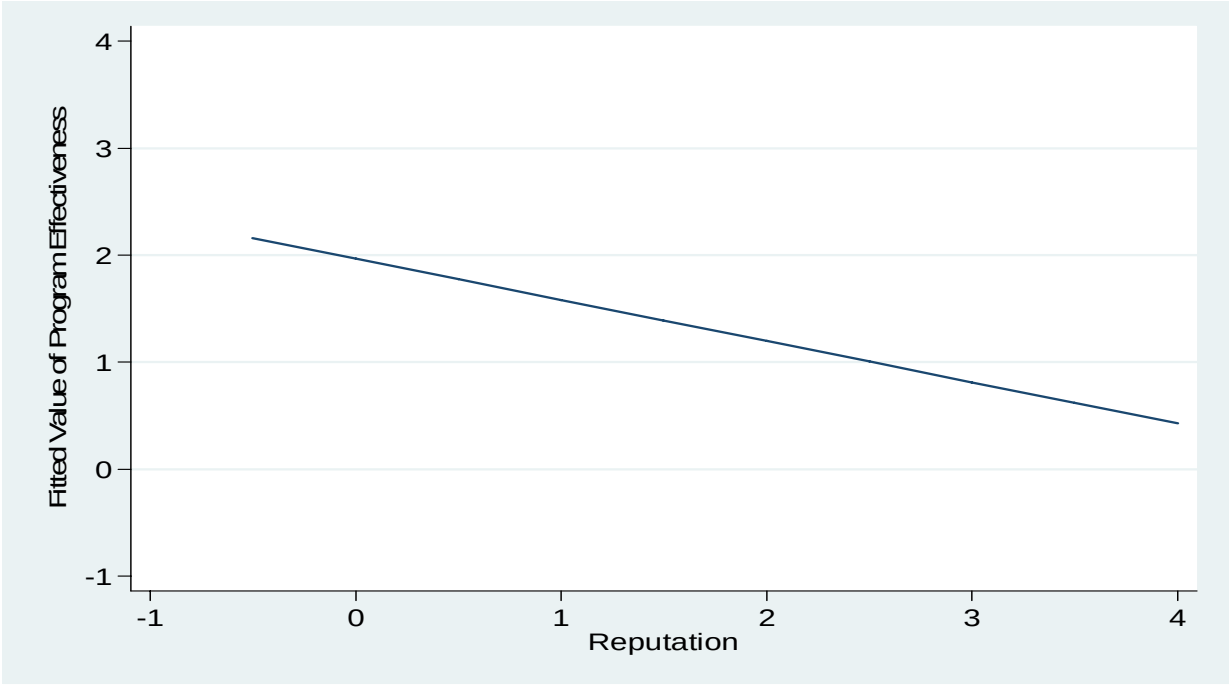


Figure 6.6 Marginal Effect of Reputation

Table 6.3 Summary of Hypothesis Test

Hypothesis	Result
H1-2: Agencies have higher program effectiveness scores when they have more board members or commissioners.	rejected
H2-2: Agencies have higher program effectiveness scores when they have longer fixed term length of board members or commissioners.	supported
H3-2: Agencies have higher program effectiveness scores when they have a greater percentage of professionals.	rejected
H4-2: Agencies have higher program effectiveness scores when they have a greater percentage of non-career Senior Executive Service.	rejected
H5-2: Agencies have higher program effectiveness scores when they have a greater percentage of career Senior Executive Service.	rejected
H6-2: Agencies have higher program effectiveness scores when they have more full-time employees.	rejected
H8-2: Agencies have higher program effectiveness scores when they have a greater percentage of the spending authority from offsetting collections.	rejected
H9-2: Agencies have higher program effectiveness scores when they have a greater percentage of general property, plant, and equipment.	supported
H10-2: Agencies have higher program effectiveness scores when they have higher presidential attention.	rejected
H11-2: Agencies have higher program effectiveness scores when they have higher congressional attention.	rejected
H12-2: Agencies have higher program effectiveness scores when they have higher mass media attention.	rejected
H13-2: Agencies have higher program effectiveness scores when they have a higher public reputation.	supported

CHAPTER 7

RESULTS: RESOURCES AND AGENCY FINANCIAL PERFORMANCE

As discussed in chapter three, agency financial performance was measured by the return on assets (ROA = change in net assets / total assets). The management and achievement of an agency's balanced financial condition are made by the help of various organizational resources. Therefore, as addressed in chapter two, six types of resources of this study are valuable, scarce, and imperfectly imitable resources that have the potential for competitive advantage that can improve agency financial performance.

In this chapter, I investigate the comprehensive and relative impacts of various resources on federal agencies' financial performance (i.e., return on assets) simultaneously in order to explore which resources are actual scarce, valuable, and imperfectly imitable resources that have positive effects on agency financial performance through competitive advantage. I close with a larger discussion of the findings taken as a whole, specifically in the context of the following hypotheses formulated in chapter two:

H1-3: Agencies have higher financial performance scores when they have more board members or commissioners.

H2-3: Agencies have higher financial performance scores when they have longer fixed term length of board members or commissioners.

H3-3: Agencies have higher financial performance scores when they have a greater percentage of professionals.

H4-3: Agencies have higher financial performance scores when they have a greater percentage of non-career Senior Executive Service.

H5-3: Agencies have higher financial performance scores when they have a greater percentage of career Senior Executive Service.

H6-3: Agencies have higher financial performance scores when they have more full-time employees.

H10-3: Agencies have higher financial performance scores when they have higher presidential attention.

H11-3: Agencies have higher financial performance scores when they have higher congressional attention.

H12-3: Agencies have higher financial performance scores when they have higher mass media attention.

H13-3: Agencies have higher financial performance scores when they have a higher public reputation.

Estimation

I first ran Ordinary Least Squares and conducted the tests for AR(1) serial autocorrelation and heteroskedasticity in order to examine the relationship between various resources and agency financial performance by panel data analysis method. A fixed effects model could not be used for this analysis because this study has two time-invariant variables (i.e., term length of members in top leadership and number of members in top leadership) (Wooldridge 2003). That is, a fixed effect model dropped these two time-invariant variables. A random effects model could not be used because the joint significance test of the coefficients was not significant. Also, dummy

variables for agencies and years were not included in this model because using agencies and year dummies can complicate heteroskedasticity and autocorrelation issues (Andrew B. Whitford, personal communication, December 1, 2008). Ordinary Least Squares (OLS) with panel-corrected standard errors could not be used for this study, as it works well if the length of the time frame is bigger than the number of units (Beck and Katz 1995).

According to the T test for the presence of AR(1) serial autocorrelation[27], the dataset for this study had a serial autocorrelation problem. The Breusch-Pagan test for heteroskedasticity[28] rejected the null hypothesis of constant variance. Therefore, this study performed feasible generalized least squares (FGLS) in Stata 10 to take care of both the heteroskedasticity and serial autocorrelation issues. More specifically, this study modeled the heteroskedastic error structure with AR(1) autocorrelation common to all the panels. Table 7.1 provides descriptive statistics of this model and table 7.2 shows the estimation results of this cross-sectional time-series FGLS regression. Generally, the model fits well, with Wald χ^2 significant at better than 0.01.

Before discussing the results, I note that, unlike the model in chapter five, this model did not include the financial resources (i.e., appropriations and spending authority from offsetting collections) and physical resource (i.e., general property, plant, and equipment), as there is a considerable overlap between the financial performance measure and the measures of the financial and physical resources. Appropriations were excluded from this model, as considerable amounts of an agency's total assets are composed of funds balance with the U.S. Treasury (e.g., general funds, trust funds, revolving funds, appropriated funds, and so on); according to the budget system and concepts in the *Budget of the United States Government*, an appropriation may make funds available from the general fund, special funds, or trust funds, including

[27] t = -2.68 (P-value = .008).
[28] chi2(1) = 862.26 (P < .001).

revolving funds. That is, appropriations can be directly related to or be a part of an agency's total assets. Spending authority from offsetting collections was not included in this model because offsetting collections result primarily from business-type or market-oriented activities with the public and other government accounts, and certain items of an agency's total assets (e.g., loans and related interest; and investments and related interest) are closely related to business-type or market-oriented activities. Therefore, spending authority from offsetting collections can be a part of an agency's total assets. General property, plant, and equipment were excluded from this model in that they are one item of an agency's total assets, as discussed in chapter two.

Analysis Results

Estimation Results

First, two specific administrative resources of this study (i.e., term length of members in top leadership and number of members in top leadership) showed the expected positive relationships with agency financial performance, but the statistical significance was different. Number of members in top leadership (coefficient: .014) had a significant and positive relationship with agency financial performance at the 0.01 level, while term length of members in top leadership (coefficient: .003) had a positive, but statistically insignificant, relationship with agency financial performance. That is, agencies have higher financial performance scores when they have more board members or commissioners in their top decision-making structures.

Four types of human resources (i.e., professional employees, non-career SES, career SES, and full-time employees) were included in this model. Professional employees in an agency (coefficient: -.087) had an insignificant and negative influence on agency financial performance, unlike my expectation. Career SES (coefficient: 1.077) had the expected positive and statistically

significant relationship with agency financial performance at the 0.05 level. In addition, non-career SES (coefficient: 11.576) showed a positive and significant relationship with the dependent variable at the 0.01 level, as expected. That is, both career SES and non-career SES had positive and significant impacts on agency financial performance. The last human resources variable is full-time employees. In contrast to my expectation, number of full-time employees in an agency (coefficient: -.001) had a negative and insignificant impact on agency financial performance.

This study included three political resources variables (i.e., presidential attention, congressional attention, and mass media attention). Presidential attention (coefficient: .109) had the expected positive impact on agency financial performance, but this impact was not statistically significant. However, congressional attention (coefficient: .017) had a positive and significant relationship with agency financial performance at the 0.05 level, as expected. That is, agencies have higher financial performance scores when they have more congressional attention. In contrast, mass media attention (coefficient: -.034) showed a negative and insignificant relationship with agency financial performance, unlike my expectation.

The estimation results revealed that reputation (coefficient: -.039) had a negative and significant impact on agency financial performance at the 0.10 level. As mentioned in chapter three, a lower combined index means satisfactory public service which leads to high agency reputation, so agencies have higher financial performance scores when they have a higher public reputation.

Figures 7.1 - 7.4 show the estimated marginal effects of four types of organizational resources (i.e., administrative resources, human resources, political resources, and reputation resource) on the agency financial performance dependent variable. Because this analysis uses a

linear model, all the figures show linear relationships between organizational resources and agency financial performance. In other words, the coefficient of each independent variable in table 7.2 is congruent with a marginal effect of each independent variable (i.e., a slope of each graph).

Impact Analysis

This study calculated the impacts of five statistically significant resources (number of members in top leadership structures, non-career SES, career SES, congressional attention, and agency's public reputation) on agency financial performance through marginal effects analysis, as discussed in chapter five. According to the analysis results, the impact of number of members in top leadership structure on agency financial performance was the biggest: the impact of a 1 standard deviation increase in number of members in top leadership structure was a 0.123 standard deviation increase in agency financial performance (ceteris paribus).

The impact of a 1 standard deviation increase in percentage of non-career SES in an agency was a 0.091 standard deviation increase in agency financial performance. The impact of a 1 standard deviation increase in percentage of career SES in an agency was a 0.062 standard deviation increase in agency financial performance. That is, the impact of career SES on agency financial performance was somewhat smaller than that of non-career SES. The impact of career SES on agency financial performance was the smallest among the five significant resources.

The impact of a 1 standard deviation increase in congressional attention to an agency was a 0.116 standard deviation increase in agency financial performance. The impact of a 1 standard deviation increase in agency's public reputation was a 0.074 standard deviation decrease in agency financial performance (ceteris paribus).

Tests for Contribution by Types of Resources

Analysis results discussed above have focused on an individual effect of a specific resource on agency financial performance. In this section, I examine the impacts of blocks of resource variables on agency financial performance. In other words, to investigate the contribution by types of resources to agency financial performance, this study performed the joint *F* tests (χ^2 Wald tests). Such tests on subsets of coefficients are useful when we have several conceptually related predictors (Hamilton 2004).

Specifically, the first test showed we should not omit two administrative resources variables from the model (Wald $\chi^2 = 10.62$); the second (joint) test showed we should not omit two administrative resources variables and three political resources variables ($\chi^2 = 14.17$). The third test showed we should not omit two administrative resources variables, three political resources variables, and a reputation resource ($\chi^2 = 16.93$). The fourth test showed we should not omit two administrative resources variables, three political resources variables, a reputation resource, and four human resources variables ($\chi^2 = 29.45$); note the large jump in the test statistic when adding four human resources variables to the block of resources.

Discussion

Table 7.3 summarizes the hypothesis test results of the model in this chapter. Five out of ten hypotheses were supported and five hypotheses were rejected. Number of members in top leadership structures (administrative resource), non-career SES (human resource), career SES (human resource), congressional attention (political resource), and agency's public reputation had positive and significant impacts on agency financial performance. Term length of members in top leadership (administrative resource), professional employees (human resource), full-time

employees (human resource), presidential attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency financial performance.

As discussed in chapter two, this study intends to find out valuable, scarce, and imperfectly imitable resources that have competitive advantage through testing the relative impacts of various resources on agency financial performance. The estimation results of this model suggest five valuable, scarce, and imperfectly imitable resources -- number of members in top leadership structures, non-career SES, career SES, congressional attention, and agency's public reputation. The next sections address each hypothesis, focusing on valuable, scarce, and imperfectly imitable organizational resources and the significance of the hypothesis tests.

H 1-3 and H 2-3

Hypothesis 1-3 is that agencies have higher financial performance scores when they have more board members or commissioners. According to the results of this analysis, number of members in top leadership structures had a positive and significant impact on agency financial performance, as expected. In other words, agencies that have more board members or commissioners in their top decision-making structures show higher financial performance scores. Therefore, hypothesis 1-3 was supported and the first valuable, scarce, and imperfectly imitable resource is number of members in top leadership. The reason is that, as Goodstein, Gautam, and Boeker (1994) and Pfeffer and Salancik (1978) pointed out, more members of the top decision-making structure are connected with an organization's ability to form environmental links and secure important assets; as a result, a larger board or commission can provide higher quality

advice, expertise, and experience and reduce environmental uncertainty through this external linkage.

Hypothesis 2-3 is that agencies have higher financial performance scores when they have a longer fixed term length of board members or commissioners. The direction of the impact of fixed term length of board members or commissioners was positive, as expected, but it was not statistically significant. That is, hypothesis 2-3 was rejected. As Wood and Marchbanks (2008) noted, the duration of appointee service affects administrative competence which can lead to better performance in that appointee competence in public policymaking and implementation depends on appointee experience. Yet, this positive relationship was not statistically supported.

H 3-3, H 4-3, H 5-3, and H 6-3

Hypothesis 3-3 is that agencies have higher financial performance scores when they have a greater percentage of professionals. Unlike my expectation, analysis results showed that professional employees had a negative and insignificant relationship with agency financial performance. Therefore, hypothesis 3-3 was rejected.

Hypothesis 4-3 is that agencies have higher financial performance scores when they have a greater percentage of non-career Senior Executive Service. Non-career SES had a statistically significant and positive impact on agency financial performance, as expected. That is, hypothesis 4-3 was supported. Hypothesis 5-3 is that agencies have higher financial performance scores when they have a greater percentage of career Senior Executive Service. The direction of the relationship was positive, as expected, and was significant. In other words, hypothesis 5-3 was supported. Therefore, both non-career SES and career SES are valuable, scarce, and imperfectly imitable organizational resources in this model. The purpose of the SES is to improve the quality

of individual competence and agency performance by making experienced senior managers in government more flexible and mobile within and among agencies (Stillman 2004), and it seems that the SES helps agencies improve and enhance their financial performance.

Hypothesis 6-3 is that agencies have higher financial performance scores when they have more full-time employees. Full-time employees had a statistically insignificant and negative impact on agency financial performance, unlike my expectation. That is, hypothesis 6-3 was rejected. One possible explanation for this negative relationship between full-time employees and agency financial performance is that a large number of employees can create coordination and communication problems that a small group does not have and these problems can lead to lower performance (Blau 1970), but this relationship was not statistically supported.

H 10-3, H 11-3, and H 12-3

Hypothesis 10-3 is that agencies have higher financial performance scores when they have higher presidential attention. According to the analysis results, presidential attention had a positive, but statistically insignificant, impact on agency financial performance. Therefore, hypothesis 10-3 was rejected. This positive relationship between presidential attention and agency financial performance is consistent with Moe's (1982, 1985) argument that the President is influential in policy-making and performance and Wolf's (1993) demonstration that presidential support has a positive and significant impact on agency effectiveness. However, it was not statistically supported.

Hypothesis 11-3 is that agencies have higher financial performance scores when they have higher congressional attention. The analysis results showed that congressional attention had a positive impact on agency financial performance, like my expectation, and this impact was

statistically significant. That is, hypothesis 11-3 was supported. Therefore, congressional attention to a federal agency is a valuable, scarce, and imperfectly imitable organizational resource in this model and congressional attention has sustained competitive advantage for better agency financial performance because Congress can initiate and authorize legislation for agency operations.

Hypothesis 12-3 is that agencies have higher financial performance scores when they have higher mass media attention. According to the results, the relationship between mass media attention and agency financial performance was negative and insignificant. Therefore, hypothesis 12-3 was rejected.

H 13-3

Hypothesis 13-3 is that agencies have higher financial performance scores when they have a higher public reputation. The analysis results showed that agency public reputation had a negative and significant impact on agency financial performance, as expected. That is, hypothesis 13-3 was supported because a lower combined index means satisfactory public service which leads to high agency reputation. Therefore, the last valuable, scarce, and imperfectly imitable organizational resource of this model is an agency's public reputation. It seems that reputation leads to better agency financial performance because agency reputation can enhance bureaucratic autonomy (Carpenter 2001; Whitford 2002), professional prestige (Wilson 1989), staff motivation, staff retention, and overall organizational health (Huang and Provan 2007), and legitimacy for an organization (Scott 2001).

Summary

Even if organizations have various resources, not all of the organizational resources are likely to be economically valuable. That is, some of these resources may have no effect on better organizational performance and others may make it more difficult for a firm to implement valuable strategies (Barney 1986). Accordingly, through testing the RBV, this research investigated the relative impact of various resources on federal agencies' financial performance in order to find out which resources are actual scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage for better performance.

Principal findings from this analysis is that number of members in top leadership structures (administrative resource), non-career SES (human resource), career SES (human resource), congressional attention (political resource), and agency's public reputation (reputation resource) had positive and significant impacts on agency financial performance. Yet, term length of members in top leadership (administrative resource), professional employees (human resource), full-time employees (human resource), presidential attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency financial performance.

Therefore, the model of agency financial performance has five valuable, scarce, and imperfectly imitable resources -- number of members top leadership structures, non-career SES, career SES, congressional attention, and agency's public reputation. For the resource-based view, this analysis suggests that even if a specific resource meets the conditions for a valuable, scarce, and imperfectly imitable resource, it is still in the state of a resource that has the potential of competitive advantage until it proves its positive contribution to agency performance because

different organizational resources may have different effects on performance when they are simultaneously analyzed with other resources.

Table 7.1 Descriptive Statistics of Variables in This Model

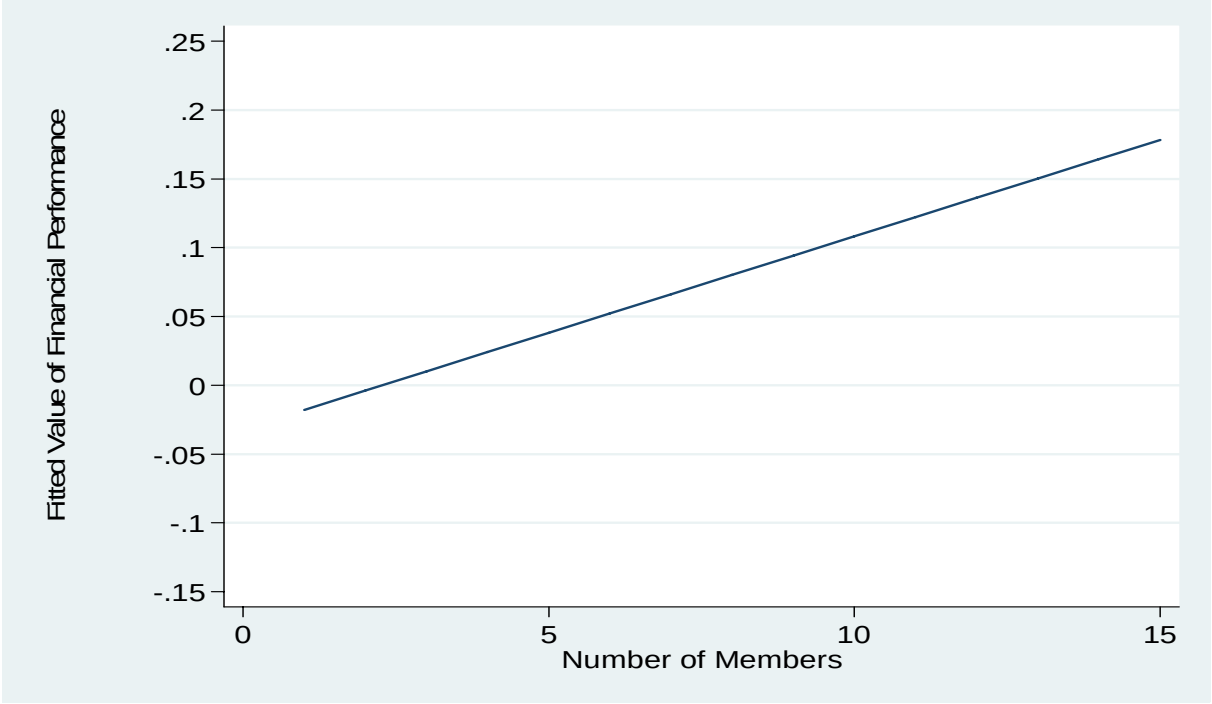
Variables	Mean	SD	Min	Max
Dependent Variable				
Financial Performance (ROA)	-.02	.38	-4.29	.62
Independent Variables				
Term length of members in top leadership (Year)	2.45	2.83	0	9
Number of members in top leadership (Number)	2.65	2.76	1	15
Professionals (%)	.27	.18	.001	.72
Non-career Senior Executive Service (%)	.001	.003	0	.02
Career Senior Executive Service (%)	.02	.02	0	.11
Full-time employees (10,000)	4.22	10.67	.004	64.56
Presidential attention (100)	.16	.28	0	1.62
Congressional attention (100)	2.51	2.64	.04	13.06
Mass media attention (100)	.17	.37	0	2.79
Agency's public reputation (Z-score)	.01	.71	-.51	2.94
Age (100)	.59	.50	.02	2.18

Table 7.2 Cross-Sectional Time-Series FGLS Regression Result

(Dependent Variable: Agencies' Financial Performance)

Independent Variables	Coefficient	Standard Error
Number of members in top leadership	.014	.004 ***
Term length of members in top leadership	.003	.005
Professionals	-.087	.072
Non-career Senior Executive Service	11.576	2.830 ***
Career Senior Executive Service	1.077	.489 **
Full-time employees	-.001	.003
Presidential attention	.109	.085
Congressional attention	.017	.008 **
Mass media attention	-.034	.043
Agency's public reputation	-.039	.023 *
Age	.043	.025 *
Constant	-.124	.038 ***
Observations	193	
Sample period	2003-2007	
Wald χ^2	29.62 ***	

(*** p<0.01, ** p<0.05, * p<0.10)



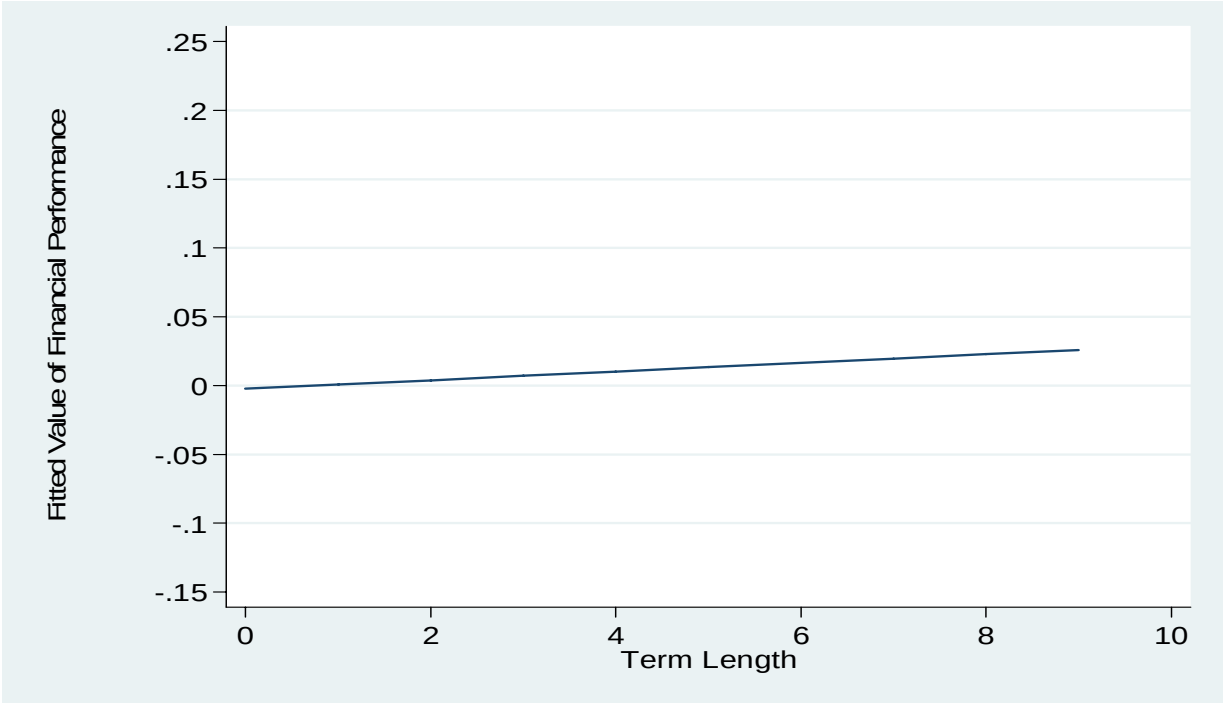
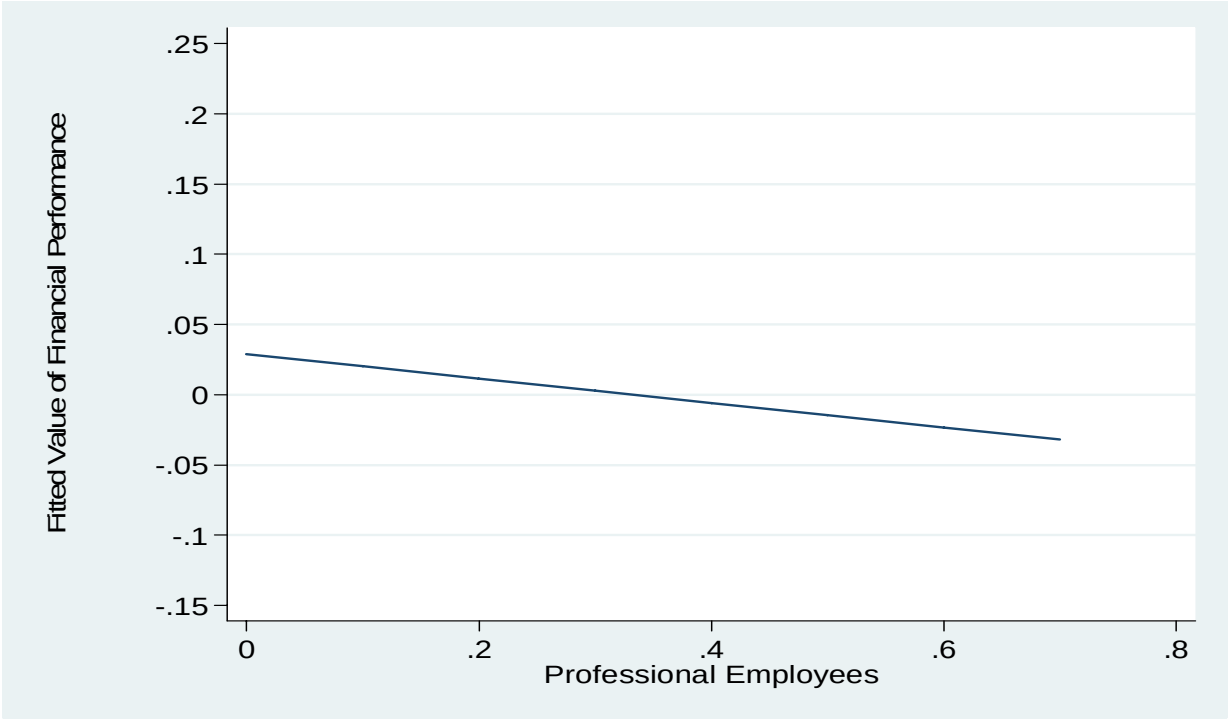


Figure 7.1 Marginal Effects of Administrative Resources



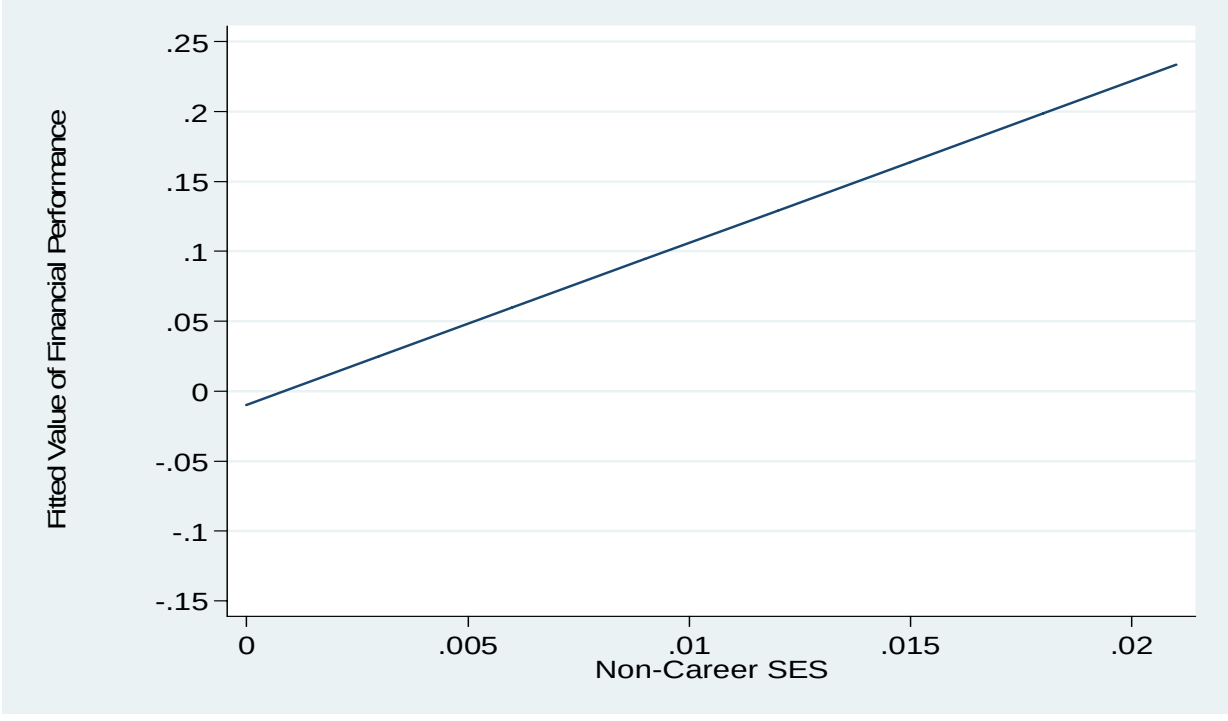
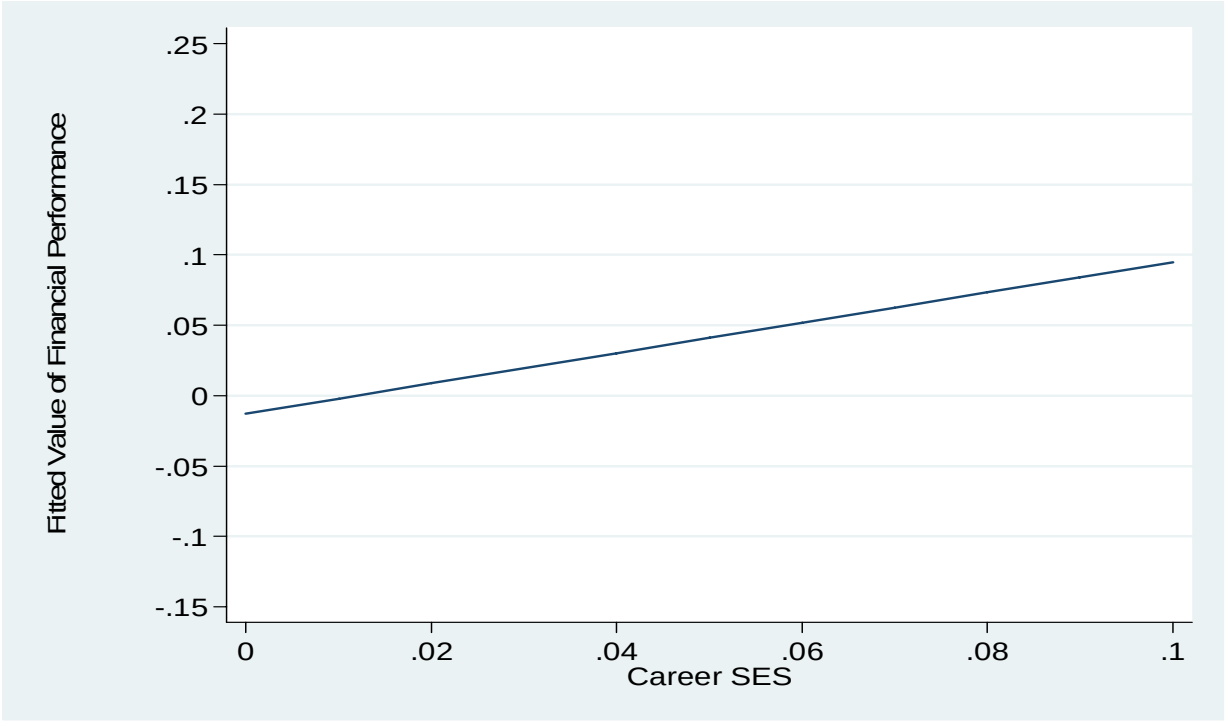


Figure 7.2 Marginal Effects of Human Resources



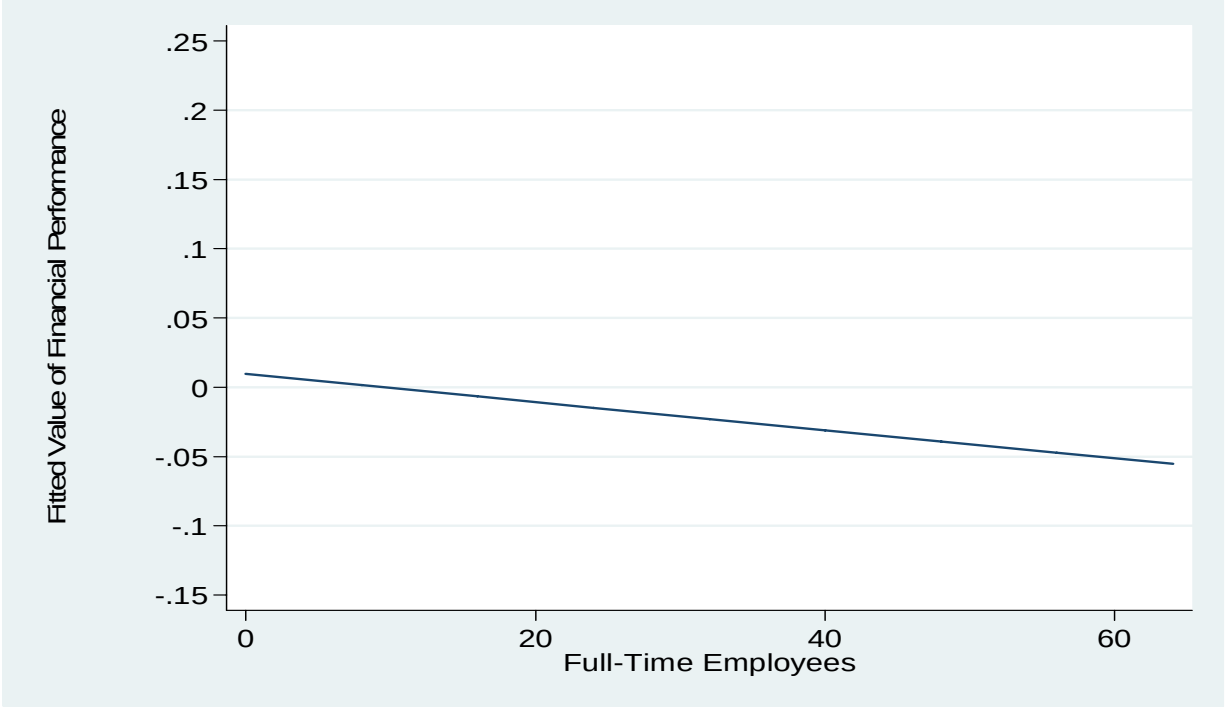
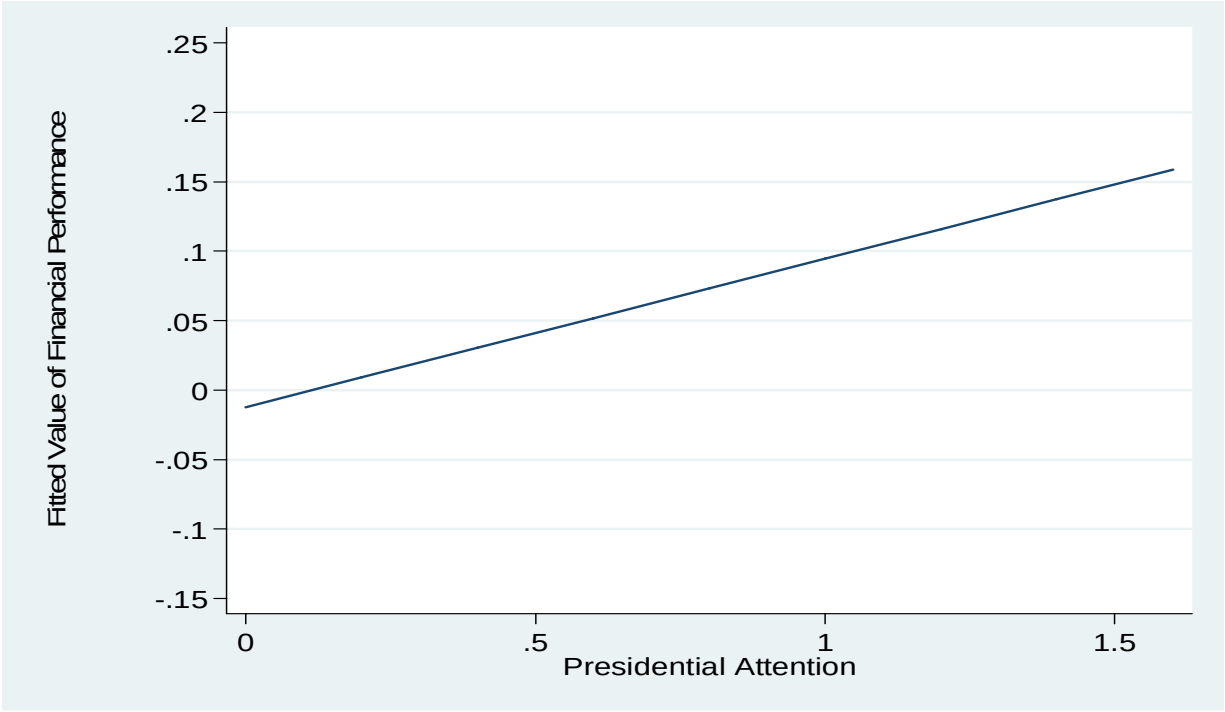


Figure 7.2 Marginal Effects of Human Resources (continued)



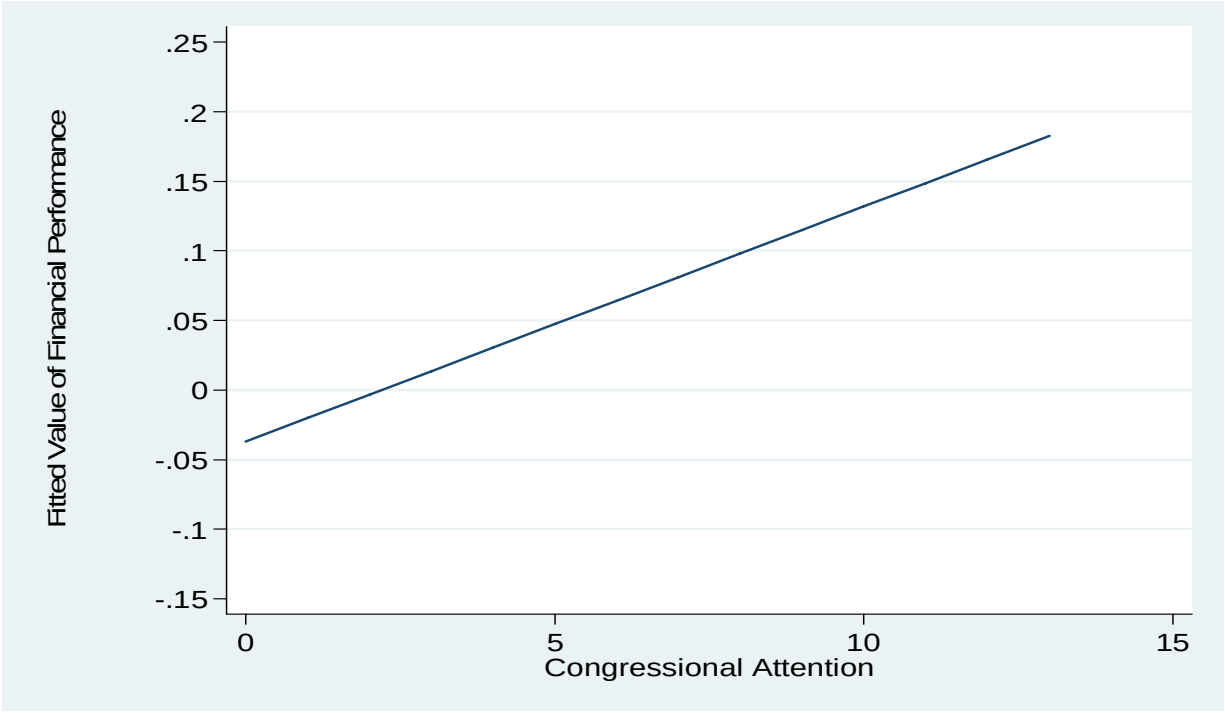


Figure 7.3 Marginal Effects of Political Resources

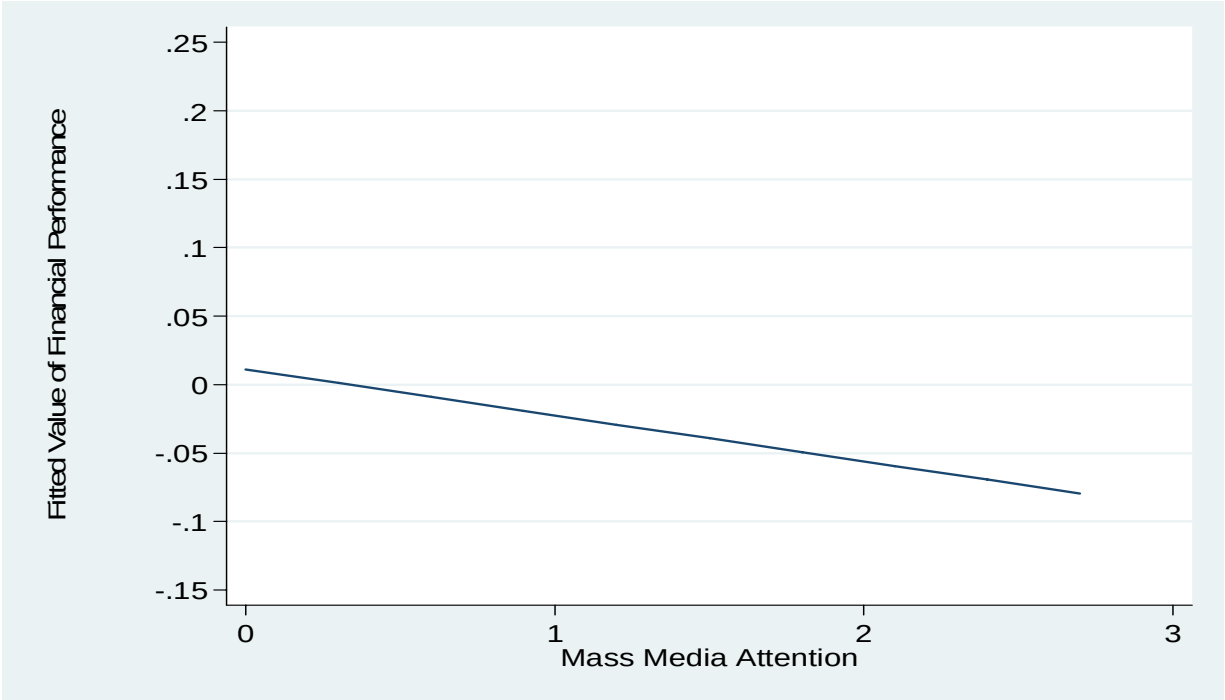


Figure 7.3 Marginal Effects of Political Resources (continued)

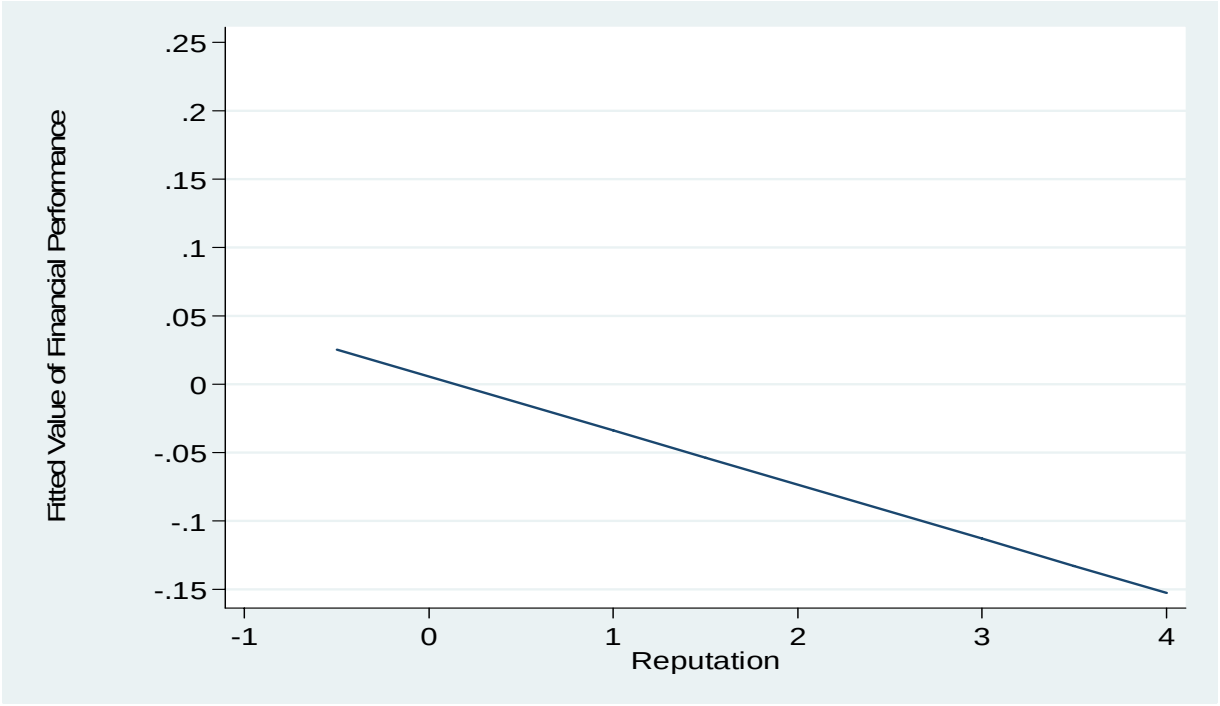


Figure 7.4 Marginal Effect of Reputation

Table 7.3 Summary of Hypothesis Test

Hypothesis	Result
H1-3: Agencies have higher managerial effectiveness scores when they have more board members or commissioners.	supported
H2-3: Agencies have higher managerial effectiveness scores when they have longer fixed term length of board members or commissioners.	rejected
H3-3: Agencies have higher managerial effectiveness scores when they have a greater percentage of professionals.	rejected
H4-3: Agencies have higher managerial effectiveness scores when they have a greater percentage of non-career Senior Executive Service.	supported
H5-3: Agencies have higher managerial effectiveness scores when they have a greater percentage of career Senior Executive Service.	supported
H6-3: Agencies have higher managerial effectiveness scores when they have more full-time employees.	rejected
H10-3: Agencies have higher managerial effectiveness scores when they have higher presidential attention.	rejected
H11-3: Agencies have higher managerial effectiveness scores when they have higher congressional attention.	supported
H12-3: Agencies have higher managerial effectiveness scores when they have higher mass media attention.	rejected
H13-3: Agencies have higher managerial effectiveness scores when they have a higher public reputation.	supported

CHAPTER 8

CONCLUSION

Federal agencies, like other organizations including private firms, are using a variety of organizational resources to produce public goods and services for the citizens. Yet, federal agencies have not paid much attention to the roles of various organizational resources in accomplishing organizational goals, compared to private firms. Private firms and the field of strategic management have focused on the study of relative impacts of various organizational resources on firms' performance, based on the resource-based view (RBV). The RBV have tried to explain the sustained difference in firms' performance through sustained competitive advantage from valuable, scarce, and imperfectly imitable resources.

However, federal agencies and the field of public administration take it for granted that organizational resources exist for creating public values and they just use these resources without considering costs and relative roles of resources. Of course, some scholars in the field of public administration and public management have embraced the RBV and the study of relative roles of various resources as a topic warranting research and attention, but there remains much to be done before they can accumulate enough empirical evidence and systematic conclusions about the roles and impacts of various resources in achieving organizational goals in public organizations.

In this concluding chapter, I will summarize the major findings this study has generated, followed by a discussion of implications of this study for practice and theory. I will then discuss the limitations of this study and future research agendas.

Principal Findings

Public organizations are using a variety of resources in managing their organizations, pursuing their organizational goals, and implementing their policies or programs. The ultimate purpose of these activities is to produce better public service for the citizens. In the public sector, however, we do not have enough comprehensive and empirical knowledge about what kinds of resources exist, whether various resources really contribute to organizational performance, which resources are more important than others, and so on. Therefore, this study tests the relative impacts of various organizational resources on federal agencies' performance through the RBV. In other words, this research attempts to discover federal agencies' distinctive resources that have competitive advantage through the analysis of the relative impacts of various organizational resources on federal agency performance.

To conduct such investigation, this study uses the two-step process. The first step is to identify resources with the potential of competitive advantage and analyze them in terms of the four conditions (i.e., Is that resource valuable?, Is it rare?, Is it imperfectly imitable?, and Is the firm organized to exploit this resource?) for the potential of competitive advantage. The second step is to measure the proposed distinctive resources and demonstrate they have a positive effect on organizational performance.

This research offered six types of organizational resources (i.e., administrative, human, financial, physical, political, and reputation resources) in federal agencies and argued that these six types of resources have the potential of competitive advantage by showing that they are valuable, scarce, and imperfectly imitable resources, based on the RBV. Then, to demonstrate that these six types of resources have positive impacts on federal agency performance, I hypothesized that having more resources that have the potential of competitive advantage can

lead to better federal agency performance, using the RBV. In addition, I tested these hypotheses with three different agency performance dependent variables (i.e., agency managerial effectiveness, agency program effectiveness, and agency financial performance).

The principal findings from this research can be summarized in the following three ways. The most important finding is that a variety of resources show relatively different impacts on federal agency performance: some resources have positive and significant influences on federal agency performance, while others have negative or insignificant relationships with federal agency performance. We know that sufficient resources are essential for successful organizational performance, but we have usually assumed that organizational resources always positively influence organizational performance. Therefore, scholars have paid relatively little formal attention to the roles and importance of organizational resources (i.e., inputs). However, the analysis results of this research project reveal that the six types of organizational resources have different effects on federal agency performance. Furthermore, these different impacts of the six types of organizational resources vary across the three performance dependent variables.

More specifically, chapter five demonstrated the relationship between the six types of resources and agency managerial effectiveness. Number of members in top leadership structures (administrative resource), professional employees (human resource), presidential attention (political resource), and agency's public reputation had positive and significant impacts on agency managerial effectiveness, while non-career SES (human resource) and full-time employees (human resource) had statistically significant, but negative, impacts on the dependent variable. Term length of members in top leadership (administrative resource), career SES (human resource), appropriations (financial resource), spending authority from offsetting collections (financial resource), general property, plant, and equipment (physical resource),

congressional attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency managerial effectiveness.

In chapter six, I tested the impacts of the six types of resources on agency program effectiveness[29]. Term length of members in top leadership structures (administrative resource), agency's public reputation (reputation resource), and general property, plant, and equipment (physical resource) had positive and significant relationships with agency program effectiveness. However, number of members in top leadership structures (administrative resource), professional employees (human resource), non-career SES (human resource), career SES (human resource), full-time employees (human resource), appropriations (financial resource), spending authority from offsetting collections (financial resource), presidential attention (political resource), congressional attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency program effectiveness.

Chapter seven showed the relationships between four types of resources and agency financial performance[30]. Number of members in top leadership structures (administrative resource), non-career SES (human resource), career SES (human resource), congressional attention (political resource), and agency's public reputation had positive and significant impacts on agency financial performance. Yet, term length of members in top leadership (administrative resource), professional employees (human resource), full-time employees (human resource), presidential attention (political resource), and mass media attention (political resource) did not have statistically significant relationships with agency financial performance.

[29] As discussed in chapter six, one financial variable, appropriations, was excluded from this model.
[30] As mentioned in chapter seven, financial resources and physical resource were excluded from this model.

Second, through the investigation of the relationships between the six types of resources and the three agency performance dependent variables, we can identify which organizational resources are valuable, scarce, and imperfectly imitable resources that have real competitive advantage for better performance in federal agencies. Based on the RBV, I first argued that the six types of resources are valuable, rare, and imperfectly imitable resources that have the potential of competitive advantage and then tested whether they have positive impacts on agency performance in order to discover the actual distinctive organizational resources because not all organizational resources are the sources of sustained competitive advantages. Table 8.1 showed valuable, scarce, and imperfectly imitable resources of federal agencies that have actual competitive advantage for better agency performance. One interesting finding from these results is that agencies' public reputation is a valuable, scarce, and imperfectly imitable resource in all three models.

According to the analysis results in chapter five, the model of agency managerial effectiveness has four valuable, scarce, and imperfectly imitable resources -- number of members in top leadership structures, professional employees, presidential attention, and agency's public reputation. Chapter six showed that the model of agency program effectiveness suggests three valuable, scarce, and imperfectly imitable resources (i.e., term length of members in top leadership structures; agency's public reputation; and general property, plant, and equipment) that have actual positive impacts on agency program effectiveness through their competitive advantage. The estimation results of chapter seven suggest five organizational resources (i.e., number of members in top leadership structures, non-career SES, career SES, congressional attention, and agency's public reputation) that have sustained competitive advantage as valuable, scarce, and imperfectly imitable resources.

Lastly, we can also identify the magnitude of the impacts of organizational resources that have statistically significant relationships with agency performance. Through marginal effects analysis, I interpreted the impact of 1 standard deviation change in the independent variable in terms of standard deviation shifts in the dependent variable. Table 8.2 summarized the impact scores of statistically significant organizational resources.

In chapter five, this study calculated the impacts of six statistically significant resources on agency managerial effectiveness through marginal effects analysis. According to the analysis results, the impact of number of members in top leadership on agency managerial effectiveness was the biggest (i.e., 0.216) in this model. Next, the impact of a 1 standard deviation increase in percentage of professionals in an agency was a 0.193 standard deviation increase in agency managerial effectiveness. The impacts of non-career SES, full-time employees, and agency's public reputation were 0.168, 0.152, and 0.133, respectively, but their impacts were negative. The impact of presidential attention was the smallest: the impact of a 1 standard deviation increase in presidential attention was a 0.083 standard deviation increase in agency managerial effectiveness (ceteris paribus).

Chapter six revealed the impact scores of three statistically significant organizational resources on agency program effectiveness. The impact of the term length of members in the top leadership structure on agency program effectiveness was 0.236, which means that the impact of a 1 standard deviation increase in the term length of members in the top leadership structure was a 0.236 standard deviation increase in agency program effectiveness (ceteris paribus). The impact of a 1 standard deviation increase in the general property, plant, and equipment was a 0.065 standard deviation increase in agency program effectiveness. Marginal effects analysis

showed that the impact of agency's public reputation was - 0.002, which is the smallest in this model.

In chapter seven, this study calculated the impact scores of five statistically significant resources on agency financial performance. The impact of number of members in top leadership structure on agency financial performance was the biggest (i.e., 0.123). The impact of a 1 standard deviation increase in congressional attention to an agency was a 0.116 standard deviation increase in agency financial performance. The impact of a 1 standard deviation increase in percentage of non-career SES in an agency was a 0.091 standard deviation increase in agency financial performance. The impact of agency's public reputation on agency financial performance was - 0.074. The impact of career SES was the smallest in this model (i.e., 0.062).

Like other organizations, federal agencies use a variety of resources to produce better service for the citizens, but we do not know which resources are distinctive resources that have competitive advantages for better agency performance. As Barney and Clark (2007) pointed out, not all of the organizational resources are likely to be economically valuable. Some of these resources may have no effect on better organizational performance and others may make it more difficult for a firm to implement valuable strategies (Barney 1986). Accordingly, through testing the RBV, this research investigates the relative impact of various resources on federal agencies' performance in order to find out which resources are scarce, valuable, and imperfectly imitable resources that have sustained competitive advantage for better performance. As seen in table 8.1, the analysis results of this research project showed that not all organizational resources are actual valuable, scarce, and imperfectly imitable resources that have positive impacts on agency performance even if they are identified as resources that have the potential for competitive advantage. In addition, as seen in table 8.2, analysis results demonstrated that valuable, scarce,

and imperfectly imitable resources have different impact scores even though they are actual valuable, scarce, and imperfectly imitable resources of that agency.

Contributions of This Study

Theoretical Contributions

This study makes several significant contributions to the field of public administration and public management. First, as Scott (1998) pointed out, no single set of factors can explain organizational performance. However, many empirical studies about organizational effectiveness usually focus on the impact of managerial roles, capacity, actions, and behaviors of managers and employees. In contrast, this study deals with the issue of agency resources, which has been largely ignored in organizational performance study in the public sector. Of course, this research attempts to incorporate and apply materials from a variety of disciplines, including public management, political science, strategic management, public finance, human resources management, and public choice, to hypothesis formation, variable development, and result interpretation, but the major theoretical contribution of this research is the introduction of the importance of organizational resources to the study of organizational performance, especially based on the RBV. That is, this research project intends to introduce the RBV as another theory or framework to explain federal agencies' organizational performance. As no such approach has been taken before, this approach can help the study of public organizations' performance move forward.

Second, this study offers three different dependent variables (i.e., agency managerial effectiveness, agency program effectiveness, and agency financial performance) to measure agencies' organizational performance because I evaluate organizational performance in both the

organization aspect and the program aspect. Agency performance in the organizational aspect is assessed as an agency's overall effectiveness and agency's financial performance. Specifically, in assessing agency performance in the organizational aspect, this study includes the evaluation of an agency's financial performance because financial performance is often neglected in measuring a public organization's performance. I also assess an agency's program performance. This diversity of performance measures can help us understand the relative roles and impact of various resources across various performance measures.

In addition, this study can make other noteworthy contributions to the literature on public administration and public management. For example, while most studies have used subjective measures such as perceptual measures for organizational performance from a survey dataset, this study uses objective organizational performance measurements as dependent variables because data like those gathered by survey do not always provide data about what we want to measure. Data for my three performance measurements were gathered from each agency's annual Performance and Accountability Report (PAR) and the Program Assessment Rating Tool (PART) dataset in the President's budget document. Especially, no research project has ever reviewed each agency's annual Performance and Accountability Report to create federal agencies' performance measurements such as agency managerial effectiveness and agency financial performance.

Whereas the majority of organizational performance studies use cross-sectional analysis, this study compiles a time-series cross-sectional dataset (i.e., unbalanced panel dataset) consisting of data from the fiscal years 2003 to 2007. This longitudinal analysis can provide useful information and enhance the quality of empirical analysis in ways that would be impossible if we used only cross-section or time-series data.

Implications for Practice

This study provides accurate knowledge of the roles and potential of various organizational resources necessary to enhance federal agencies' performance. According to Alchian and Demsetz (1972), "efficient production with heterogeneous resources is a result not of having better resources but in knowing more accurately the relative productive performances of those resources" (793). This argument means that every organization faces limited organizational resources and thus, to exploit and manage these limited resources more efficiently for better performance, we need to know the relative impacts of these resources more accurately. This is consistent with this study's main research purpose. Therefore, this research provides accurate knowledge of the actual productive actions of various organizational resources through understanding the relative roles and importance of different resources in achieving organizational goals and identifying which resources are distinctive resources (i.e., scarce, valuable, and imperfectly imitable resources) that have competitive advantage for better performance from these various organizational resources of public organizations. Numerous scholars have argued that management matters in improving organizational performance in the public sector. Thus, management that accurately understands the relative roles and impacts of various resources in federal agencies can play a significant role in improving public organizations' performance more strategically.

This study also offers strategic knowledge of employing the organizational resources to improve federal agency performance. In addition, this research implies that the strategies for making use of resources to enhance federal agency performance can be different according to the specific performance variable or target. For example, in the case of agency managerial effectiveness, number of members in top leadership, professional employees, presidential

attention, and agency's public reputation can be valuable and critical assets to federal agencies that have competitive advantage. This result suggests that federal agencies can produce better managerial effectiveness when they have more members in their top decision-making structure, more professional employees, more political support from the President, and higher reputation from the citizens. Therefore, trying to have more of these resources can be an effective strategy for producing better managerial effectiveness. Of course, the number of members in the top decision-making structure is strictly fixed by the law, but we can consider this suggestion (i.e., federal agencies can perform better when they have more members in their top decision-making structure) when we create new organizations. Also, this analysis implies that it can be helpful for federal agencies' managerial effectiveness not to have too many non-career SES or full-time employees, even though they are not valuable, scarce, and imperfectly imitable organizational resources.

This study also provides helpful information for poorly performing agencies. Poorly performing agencies tend to imitate successful agencies' strategies as best practices. If the relationship between an agency's resources and its performance is poorly understood, it is difficult for agencies attempting to duplicate a successful agency's strategies through imitation of its resources to know which resources it should imitate (Barney and Clark 2007, 62). By examining the link between resources and agency effectiveness, this study gives poorly performing agencies an idea about which resources have positive impacts and which resources have negative influences on performance.

Limitations of this Study and Implications for Future Research

This research project also has limitations, like other studies, yet these limitations suggest future research agendas, at the same time. One concern about this study is the possibility of endogeneity in three political attention variables. That is, there is the possibility of a two-way relationship between agency performance and the three political attention variables. In this study, the data for the three political attention variables are from one year prior to the data for the performance variable in terms of a temporal ordering so that the causality associated with the relationship could be unidirectional, although this does not necessarily solve the endogeneity problem. As Wooldridge (2003) pointed out, as in this study, finding proxy variables or instrumental variables as solutions to endogeneity is difficult. Future research should continue to address this limitation.

The second concern is related to the types of organizational resources and their specific variables. As discussed in chapter two, both tangible and intangible resources are important and necessary to achieve agencies' goals, and this research offers six types of tangible and intangible organizational resources. Yet, other types of resources still exist. For example, according to Itami (1987), future research needs to develop and include appropriate measures for intangible organizational resources such as information, technology, citizen or customer trust, and agency culture in order to provide more valid and comprehensive evidence for the impacts of various resources on agency performance. Future research especially needs to consider that invisible resources such as agency culture may have moderating or mediating effects on the relationships between other resources and organizational performance. In addition, organizational resources introduced in this study could be categorized into more specific and detailed resource variables. For example, administrative resources in this research were divided into two specific resources:

number of members in top leadership structure of an agency and term length of members in an agency's top decision-making structure. Yet, there may be some other types of specific administrative resources such as appointment method of members in top leadership structure. Future research needs to include other specific resource variables of each type of resources to provide more accurate knowledge and comprehensive evidence for the impacts of various resources on agency performance.

Conclusion

All resources of an organization are essential to that organization's success, but their relative impacts on organizational performance may be different from our simple expectation. Therefore, it is important to realize that "greater accuracy of knowledge of the potential and actual productive actions of inputs rather than having high productivity resources makes a firm profitable" (Alchian and Demsetz 1972, 794). However, we have just assumed the positive impacts of various resources on agency performance and have not paid formal attention to the comprehensive understanding of accurate and actual effects of resources in federal agencies.

The purpose of this research project was to begin filling this gap by asking the following basic questions: what kinds of resources do federal agencies have?; do all these various resources have positive impacts on agency performance, as we simply assume?; and how do we know the accurate effects of various resources on organizational performance? To answer these questions, this study applied the Resource-Based View to federal agencies. The findings from this study can provide useful information about how to strategically use and manage which resources for which performance goal. This research project is one small attempt to initiate a new type of research agenda on organizational resources and organizational performance in the public sector, with the

hope that this contribution can move the study of public administration and public management forward.

Table 8.1 Valuable, Scarce, and Imperfectly Imitable Resources by Model

Independent Variables	Dependent Variables		
	Managerial Effectiveness	Program Effectiveness	Financial Performance
Number of members in top leadership	√	.	√
Term length of members in top leadership	.	√	.
Professionals	√	.	.
Non-career Senior Executive Service	.	.	√
Career Senior Executive Service	.	.	√
Full-time employees	.	.	.
Appropriations	.	x	x
Spending authority from offsetting collections	.	.	x
General property, plant, and equipment	.	√	x
Presidential attention	√	.	.
Congressional attention	.	.	√
Mass media attention	.	.	.
Agency's public reputation	√	√	√

(√: valuable, scarce, and imperfectly imitable resource, x: this variable is not in the model)

Table 8.2 Impact Scores by Model

Independent Variables	Dependent Variables		
	Managerial Effectiveness	Program Effectiveness	Financial Performance
Number of members in top leadership	0.216	.	0.123
Term length of members in top leadership	.	0.236	.
Professionals	0.193	.	.
Non-career Senior Executive Service	-0.168	.	0.091
Career Senior Executive Service	.	.	0.062
Full-time employees	-0.152	.	.
Appropriations	.	x	x
Spending authority from offsetting collections	.	.	x
General property, plant, and equipment	.	0.065	x
Presidential attention	0.083	.	.
Congressional attention	.	.	0.116
Mass media attention	.	.	.
Agency's public reputation	-0.133	-0.002	-0.074

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