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A Study of Federal Academic Earmarks and Research Funding in Relation to the Institutional Research Culture of Research University/High (RU/H) Institutions in Mississippi

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The University of Southern Mississippi

A STUDY OF FEDERAL ACADEMIC EARMARKS AND RESEARCH FUNDING IN RELATION TO THE INSTITUTIONAL RESEARCH CULTURE OF RESEARCH UNIVERSITY/HIGH (RU/H) INSTITUTIONS IN MISSISSIPPI

by

James Hubert Young III

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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ABSTRACT

A STUDY OF FEDERAL ACADEMIC EARMARKS AND RESEARCH FUNDING IN RELATION TO THE INSTITUTIONAL RESEARCH CULTURE OF RESEARCH UNIVERSITY/HIGH (RU/H) INSTITUTIONS IN MISSISSIPPI

by James Hubert Young, III

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Nationally, reductions in public funding for higher education, a stagnate economy, looming sequestration, and a divisive political culture present a complex and challenging dynamic for research universities in pursuit of external funding for their research programs and infrastructure needs. These universities and their research initiatives have relied on significant federal investment in research and development as a source of competitive research funding for more than half a century.

Over the last thirty years, congressionally directed funding for research, referred to in the study presented here and throughout the literature as academic earmarks, emerged as an alternative means to achieve research funding for institutions of higher education exclusive of the traditional, peer-review award system. The state of Mississippi and its public universities have benefited significantly from this alternative research funding mechanism. Since the cessation of the practice in 2010, the research universities in the state have been forced to adapt to a new reality – one without congressionally directed funding.

This qualitative study explored the influence of academic earmarking on the institutional research culture of the research extensive universities in Mississippi by describing the attitudes, opinions, and practices of those individuals who shape that

culture. Interviews were conducted with government representatives, university research administration officials, and research active faculty at the four RU/H institutions in the state that have been involved with the procurement of external funding for research. Data collected in interviews were analyzed for themes.

The data analysis identified ten common themes in the opinions, attitudes, and practices of study participants as they relate to the influence of federal funding and academic earmarks specifically on the institutional research culture and infrastructure at the RU/H universities in Mississippi. Further, this study identified participants' views on the prevailing factors, benefits, and detrimental effects associated with the 2010 congressional moratorium on earmarks, as well as expected trends in federal research funding in the coming years. Study findings suggested that academic earmarks have influenced the institutional research culture of the research extensive universities in Mississippi.

The University of Southern Mississippi

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TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF ILLUSTRATIONS

Figure

CHAPTER I

INTRODUCTION

Overview

In recent decades, American higher education has experienced exponential growth in the level of congressional discretionary spending, also known as earmarks (Crespin & Finnocchiaro, 2008; Greenberg, 2001, 2007; Martin, 2002; Payne, 2003a; Savage, 2002; U.S. Congress Office of Technology Assessment (OTA), 1991). Referencing this level of growth in earmarked funding, Savage indicated that earmarks could once be measured in tens of millions of dollars, but contemporary measurements would indicate hundreds of millions of dollars in earmark expenditures. The greatest period of marked expansion of academic earmarks occurred during the span from 1980 to 2000 (U.S. OTA, 1991). Savage further reported that earmarked funding for research increased from less than $20 million in 1980 to more than $1 billion in 2000. This shift in research funding has implications for higher education, generally, as well as the institutional culture of institutions of higher education that are vested in the enterprise of research.

Economic Indicators and External Funding of Research

The stagnation that has plagued the American economy in recent years has influenced global markets and culture, including higher education. This influence has manifested in myriad forms, but is especially notable in reductions in public funding for universities and colleges. Declines in state funding for postsecondary education, coupled with the inflationary costs of operations, technology, and expanding infrastructure have forced public institutions and systems of higher education into precarious financial positions, which often necessitate the implementation of sweeping budget cuts and

program eliminations. Prolonged exposure to such fiscal measures may contribute to shifts in institutional mission, as well as the evolution of organizational policy and practice. Further, academic program elimination and mandated budget reductions may contribute to decreases in faculty morale and the loss of talented faculty.

Contemporary economic trends within the field of higher education have led to the assignment of a greater emphasis on the role of external funding in the financial sustainability of universities and colleges. Funding for academic research has become a leading source of external financial support for higher education and, in many instances, supplements operational costs and makes possible the expansion of institutional infrastructure that facilitates further research. The federal government represents the most significant benefactor in this funding of research. Payne (2003a) suggested that federal funding constitutes more than 60% of the financial support for academic research at the university level. Consequently, the federal government's funding for research and development contributes significantly to the subsidization of the enterprise of higher education in America.

Figure 1 indicates that as recently as FY 2012, approximately 80% of total research funding received by Mississippi's eight public institutions of higher education was awarded by the federal government compared to only 4% funded through state appropriations (Board of Trustees of State Institutions of Higher Learning, 2012). The Board of Trustees of State Institutions of Higher Learning (IHL) reported that the total federal expenditure and total awards in general for research were $324,644,594 and $408,140,703, respectively, and comprised more than 2,300 research projects or programs (2012).

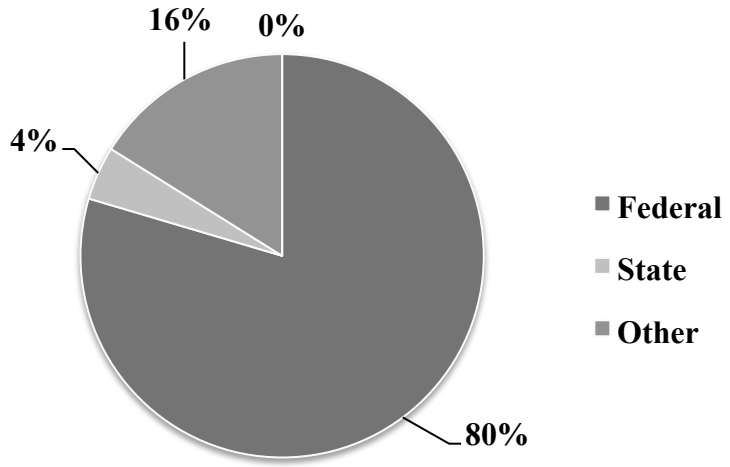

Figure 1. Leading sources of research funding in Mississippi public universities adapted from "FY 2012 Research Catalog – IHL System Summary" by Mississippi Institutions of Higher Learning.

Table 1 presents the value of research awards, by funding source, for each of the public universities in Mississippi' s higher education system for FY 2012. The universities referenced in this study have been denoted with bold lettering.

Table 1

Research Funding Levels By Source and Number of Projects in Mississippi Public Universities

University	Total Research Projects Supported	Federal Research Funding	State Research Funding	Private/ Corporate/ Other Funding	Total Funding Awarded
ASU	119	$27,355,032	$562,216	$2,029,984	$29,947,232
DSU	62	$3,078,533	$6,913	$4,000,809	$7,086,255
JSU	**180**	**$44,288,635**	**$2,518,253**	**$1,857,911**	**$48,664,799**
MSU	**1,212**	**$114,582,684**	**$3,592,091**	**$16,729,570**	**$134,904,345**
MUW	31	$732,236	$36,213	$5,701,200	$6,469,649
MVSU	33	$6,188,892	$854,398	$823,040	$7,866,330

Table 1 (continued).

University	Total Research Projects Supported	Federal Research Funding	State Research Funding	Private/ Corporate/ Other Funding	Total Funding Awarded
UM/UMMC	**499**	**$85,132,242**	**$6,949,844**	**$17,777,421**	**$109,859,507**
USM	**256**	**$43,286,340**	**$3,232,392**	**$16,823,854**	**$63,342,586**
SYSTEM	**2,392**	**$324,644,594**	**$17,752,320**	**$65,743,789**	**$408,140,703**

Note. From "FY 2012 Research Catalog – IHL System Summary," by Board of Trustees of State Institutions of Higher Learning, 2013.

Historical Development and Emergence of Earmarks in America

Today, Congress, through one of two primary funding processes, competitive grant funding or earmarks, appropriates the majority of funding for academic research. Literature regarding the funding of research in higher education has established that these two funding mechanisms, along with set-aside appropriations, did not develop simultaneously (de Figueriredo & Silverman, 2007; Greenberg, 2001; Payne, 2003a). The competitive research funding process emerged as the leading mechanism for the federal government's venture into the academic research enterprise in the post-World War II era and has retained this position in the financing of research to present day (Payne, 2003a). Beginning in the late 1970s, however, earmarks and set-aside programs emerged as alternative funding processes for the advancement of federal research (Payne, 2003a).

Earmarks and set-aside funding are both forms of direct appropriations that serve as mechanisms through which Congress may focus attention and resources to a specific project, program, or institution in a designated region or district (Appendix B). Funding

for earmarks is awarded through the successful adoption of an amendment to a much larger appropriations bill and the subsequent passage of that legislation (Payne, 2003a). Passage of such an appropriations measure thereby authorizes federal funding for all mandates specified in the legislation, including those found in earmark amendments.

These direct appropriations in federal research funding emerged in the latter quarter of the 20th century to address criticisms of the competitive or peer-reviewed funding process. Critics argued that the system of competitive funding of research perpetuated elitism in higher education, as only a relatively few institutions were able to secure competitive research funding (Geiger, 2001; Greenberg, 2001; Greenberg, 2007; Martino, 1992; Savage, 2002). Initially, the aim of direct appropriations for research was to bypass the peer-review process and provide funding for regions, districts, projects, or institutions that demonstrated need, thereby making the federal government's funding for research more equitably distributed (Savage, 2002).

Criticism of the Earmark Appropriations

Critics noted that direct appropriations, particularly earmarks, presented other challenges (de Figueriredo & Silverman, 2007; Greenberg, 2001; Payne, 2003a; Savage, 2002). Most notably, the politicizing of the federal research funding process became a leading criticism and sparked a controversy that exists more than three decades later. Lazarus (2010) affirmed this notion and suggested that in modern congressional history no other issue has engendered the same level of controversy as the rise of earmarking. Central to critical attacks on earmarking is the suggestion of disproportionate influence afforded to more senior, powerful congressional representatives, especially those who serve on either a Senate or House of Representatives appropriations committee.

Engstrom and Vanberg (2010) supported the claim of earmark critics that the home districts of these House and Senate members benefit most from earmarking. In addition, earmark proponents must defend against criticisms that these awards are often wasteful, lack accountability and transparency, and result in weaker research findings.

Long-standing congressional rules associated with the disclosure of earmark appropriations further fuel the debate between proponents and critics of earmarking. Prior to the recently enacted Honest Leadership and Open Government Act (2007), Congress did not require the publication or disclosure of the source or name of the endorser of specific earmarks, allowing representatives to secure earmarks for their districts while maintaining public anonymity. Engstrom and Vanberg (2010) explained that access to data and other appropriations information that would facilitate further study of earmarks and their impact has been limited by the veil of secrecy shrouding the congressional earmarking process.

In recent years, several legislative attempts in both houses of Congress have sought to implement permanent changes in congressional disclosure rules concerning earmarking (H.R. 6, 2007; H.R. 5258, 2010; S. 3335, 2010). While most of these attempts have proven unsuccessful, Congress did enact the Honest Leadership and Open Government Act, (2007) which established a mandatory earmark disclosure reporting system that requires the identification of earmark funding sources and sponsors. The enactment of this legislation has provided extensive earmark research and analysis opportunities previously not possible.

Criticism of congressional earmarking is widespread (Savage, 1999; Schick & LoStracco, 2000). Schick and LoStracco (2000) noted that the executive branch of the

federal government does not favor earmarks and argues that earmarks limit the discretionary funding authority of federal government agencies. Schick and LoStracco also contended that members of Congress who have not been particularly successful at securing distributive benefits for their respective causes or constituencies bemoan earmarking as corrupt and wasteful. Further, there has been pervasive criticism in the American news media of earmarking, and of Congress, generally, that the earmarking process is corrupt and employs vote buying tactics in the authorization of these funds (Schick & LoStracco, 2000). Additionally, Schick and LoStracco emphasized that while earmarks may not result from prudent congressional practice, they are relatively insignificant in comparison with cumulative expenditures authorized in the federal budget.

The Resiliency of Earmarks

Notwithstanding the controversy associated with federal research earmarks, the funding mechanism has experienced remarkable growth. Payne (2003a) confirmed the exponential growth of earmarks since 1980, as well as increases in competitive funding for research. Further, Savage (2002) reported that the level of earmarking has increased to more than $1 billion in funding in 2000, from only $16 million in 1980. Crespin and Finnocchiaro (2008) indicated that spending on earmark projects, in general, rose from approximately $3 billion in 1991 to more than $25 in billion in 2005. Moreover, Crespin and Finnocchiaro reported that these expenditures are aligned with the growth in number of earmark-funded projects from 1,000 to 14,000 in 1991 and 2005, respectively. Regardless of the growth in earmarks over the course of the past three decades, research exploring their impact on the field of higher education is limited. Delaney (2011)

contended that while academic earmarks are controversial, they are understudied in academe.

The role of Congress in the rise of earmarking is fundamental. However, institutions of higher education, too, have played an increasing role in the political dynamics associated with earmarks. The shift in practice of universities from avoidance, and in some instances public denouncement of lobbying, to active participation in this political process has been increasingly noted in the literature (de Figueriredo & Silverman, 2007; DiMaggio & Powell, 1983; Hagermann, 2009; Lazarus, 2010) (Appendix C). Further, de Figueriredo and Silverman (2007) theorized that lobbying by universities contributed to the rise of earmarking in academe.

Recent Reversal in Earmarking Trends

Despite the escalation of earmarking for academic research in recent years, these Congressional funds are now in a state of decline and cessation (Kennedy & Gelber, 2012). In early 2011, the newly installed Republican majority in the House of Representatives honored a 2010 election commitment and passed a two-year moratorium on all earmarks (Field, 2012). Field (2012) reported that by March 2011 the Democratic leadership of the Senate, too, reluctantly agreed to a moratorium on earmarks. While discussion on the recent congressional earmark moratorium is prevalent in various forms of public media, limited academic research exploring the scope and influence of earmark cessation and reduction on higher education has been published.

Existing literature reveals that the life cycle of academic earmarking has progressed from its inception to the point of cessation in contemporary higher education. Mervis (2010) warned that, “federal investment in academic research may shrink as the

government struggles to reduce the federal deficit, even as states are cutting support to their flagship public research institutions in an attempt to balance their recession-battered budgets" (p. 1304). Cessation of earmark funding has forced colleges and universities to explore and pursue alternative funding opportunities to offset the losses attributed to the ban on earmark appropriations. The influence of both the growth and decline of academic earmarked funding on institutional culture in higher education merits investigation.

Mississippi – a National Leader in Earmarks

Delaney (2011) identified the state of Mississippi as a leading recipient of earmarks in a retrospective analysis of congressional earmark appropriations. Delaney revealed that Mississippi was one of only three states in the nation to receive more than $20 million in earmarks in 1990. Further, Delaney revealed that by 2006, four states, including Mississippi, each received more than $20 million in earmarks. Mississippi was the only state included on both the 1990 and 2006 lists of earmark leaders and ranked first in the nation in 2006 for receipt of earmarks with a total of $45.9 million. A data report compiled by Lederman (2010) ranking the highest earmark recipient institutions of higher education from across the country by the amount of awarded funding also revealed Mississippi's position as a national leader in earmark receipt. Institutions of higher education in Mississippi held four of the top twenty-five positions including the ranks second, sixth, twelfth, and twenty-fifth as shown in Table 2.

Table 2

Leading Mississippi Institutions of Higher Education and Their Respective Rankings and Amount of Earmarks Received as Reported by Lederman in Inside Higher Ed's Top 25 Ranking for FY 2010

Institution	National Rank	Amount of Earmarks (in millions)
Mississippi State University (MSU)	#2	$47.9
The University of Mississippi (UM)	#6	$33.7
The University of Southern Mississippi (USM)	#12	$22.6
The University of Mississippi Medical Center (UMMC)	#25	$14.0

These findings have considerable implications for higher education in Mississippi as it manages its declines in both earmarks and public funding at its public institutions of higher education.

Purpose Statement

The purpose of this study is to describe the knowledge, attitudes, opinions, and practices associated with academic earmarks in Mississippi among a sample of government and university representatives. Further, this study will investigate institutional culture regarding external research funding among university administrative officials and faculty. The magnitude and effect of both the exponential growth and sudden reversal of this trend in academic earmarking on institutional culture in higher education merits investigation.

Problem Statement

Despite research that chronicles the escalation of academic earmarks in higher education and its economic impact on the field, a marked gap in the literature exists in relation to a recent reversal of this trend. Subsequent to the implementation of a Congressional moratorium on earmarking in both the Republican-controlled United States House of Representatives and Democratic-controlled Senate in early 2011, academic earmarks entered a period of cessation that persists in contemporary higher education. Additionally, limited research exists in the literature regarding the impact of this recent decline of earmarks on the institutional culture, mission, and level of academic drift (Morphew & Huisman, 2002) within institutions of higher education. Both Delaney (2011) and Payne (2003a) confirmed the existence of gaps in the literature when considering academic earmarks. In fact, Delaney noted that while academic earmarks are controversial, they are understudied in academe.

Government and higher education constituencies are linked to earmarks in different and overlapping ways, yet discussion in the literature as to how these interactions have impacted institutional change is limited. Further, documented research in the literature examining the influence of attitudes and opinions of policy- and decision-makers on the earmark funding process, and more specifically, on changes in academic mission, institutional culture, and policy attributed to earmarks, is limited. In addition, the influence of potential changes, such as academic drift, that may occur as a result of the cessation of earmark funding is not known.

Several fundamental research questions served to guide this research:

1. What knowledge, attitudes, opinions, and practices regarding federal research

funding and academic earmarking in the state are held by governmental representatives in Mississippi?

2. What knowledge, attitudes, opinions, and practices regarding federal research funding academic earmarking in the state are held by higher education administrators at the four RU/H universities in Mississippi?
3. What knowledge, attitudes, opinions, and practices regarding federal research funding academic earmarking in the state are held by faculty principal investigators (PIs) on externally funded research programs or projects at the four RU/H universities in Mississippi?
4. How do faculty and administrators at the four RU/H universities in Mississippi believe that knowledge, attitudes, opinions, and practices associated with federal research funding academic earmarks have influenced the institutional culture at their respective institutions?
5. How are these RU/H institutions, as well as these university and government officials, similar to one another in relation to the knowledge, attitudes, opinions, and practices associated with federal research funding and academic earmarks in Mississippi?

Justification

The study may impact higher education policy associated with the institutional procurement of external funding for research in higher education, and more specifically, Mississippi institutions of higher education with vested interest in research. In addition, the study may also inform practice in the field of federally funded research in academe as to the historical development, financial impact, and emergent trends of academic

earmarking. The findings of this research may offer an explanation of the process that resulted in Mississippi's station as a national leader in the receipt of earmark funding for research as well as recent reductions and cessation of earmark funds in the state. The study could also provide insight into university faculty experiences with grant funding processes and this dimension of institutional culture's associations with earmark funding procurement, administration, accountability, and program efficacy.

Theoretical Framework

Institutional Theory, also known as Institutionalism or Adaptation Theory, was first introduced by Selznick (1948, 1949, 1957) and later expanded by DiMaggio and Powell (1983, 1991), Oliver (1991), and Scott (1987, 1994, 1995, 2004). Institutional Theory serves as a lens through which to assess consensus, conformity, conflict, change, and institutional emergence. Scott (2004) postulated that these fundamental elements of Institutional Theory are each possible dependent constructs within the theory and may be influenced by any number of independent factors or processes that serve to establish rules, norms, routines, or schemes in an organization. Further, Institutional Theory allows for an exploration of the influence of the aforementioned independent factors on the life cycle of an institutional culture including its creation, adoption, adaptation, periods of transition, decline, and eventual discard of an institutional or organizational dynamic. The life cycle of this expansion in academic earmarks has progressed from its inception to the point of decline in contemporary higher education. The stagnation of the American economy in recent years has contributed to the decline and cessation of academic earmarking and other sources of public funding for higher education (Mervis, 2011).

Congressional research earmarks have impacted institutional culture in public

higher education in Mississippi. With the current reductions and possible cessation of some academic earmarks, institutional leaders are charged with the development of a new institutional culture that includes a particular emphasis on competitive, interdisciplinary research endeavors (Mervis, 2006, 2010, 2011). As modeled by Institutional Theory, this new institutional culture serves as the embarkation point for the next life cycle in higher education in Mississippi.

DiMaggio and Powell (1983) posited that isomorphism in an organizational field may develop when decision makers in an organization adjust their behaviors in an effort to align themselves with learned, appropriate responses to field challenges or expectations. When considered through Hannan and Freeman's (1977) conception of institutional isomorphism, these responses are associated with political or ceremonial behaviors related to myriad aspects of an organization including its development, transitions, and sustainability. These responses and behaviors of decision makers are likely to influence institutional dynamics. Further, organizational leaders develop strategies to meet, and institutions adapt to, the demands of their organizational field (Hannan & Freeman, 1977). Institutional Theory, then, may be applied to assess what, if any, impact earmarks have on academic drift and changes in institutional culture and mission. Moreover, an application of Institutional Theory in the assessment of institutional culture changes may indicate how leaders in academe and the field of higher education, generally, have developed strategies and adapted to the demands of the field. Support for this proposition is found in Morphew and Huisman's (2002) affirmation and application of DiMaggio and Powell's analytical distinctions to higher education

processes. Earmarking, as a process in higher education could be related to academic drift or isomorphism of organizational field.

Definitions

For the purposes of this study, the following terminology will be utilized with these definitions:

Academic drift: An observable shift, evolution, morphing, or realignment of institutional priorities as they relate to the functions, mandates, and resource allocations directly associated with the fulfillment of the academic mission of an institution of higher education (Morphew & Huisman, 2002).

Academic earmark: A type of earmark, which directs federal funding to a specified academic project or program located at or administrated by an institution of higher education.

Earmark: A mechanism of direct congressional appropriations through which Congress may focus attention and financial resources to a specific project, program, research, or institution in a designated region or district by adding an amendment to a much larger appropriations or spending bill that is funded through the subsequent passage of that legislation. Passage of such an appropriations measure thereby authorizes federal funding for all mandates specified in the legislation, including those found in earmark amendments; these appropriations are synonymous with distributive spending, distributive benefits, allocation spending, congressionally directed funding (Payne, 2003a; Savage, 1999; Schick & LoStracco, 2000).

Institutions of Higher Learning (IHL): IHL refers to the Board of Trustees, as well as board officials and staff, of the State Institutions of Higher Learning in

Mississippi. Further, for the purposes of this study, IHL refers to the state board and system of public higher education in Mississippi.

Isomorphism in organizational field (institutional isomorphism): Isomorphism is a tenet of Institutional Theory that offers an explanation of the increased homogeneity that emerges over time among institutions in a shared field or similar environment. Isomorphism may be conceptualized as a process in which an organization, through the adoption of or conformity to prevailing, contemporary institutional practices, policies, beliefs, or structure, seeks to achieve greater legitimacy in its given field (DiMaggio & Powell, 1983, 1991; Meyer & Rowan, 1977; Morphew, 2009; Scott, 1987, 1995, 2004).

Program Director/Principal Investigator (P.D./P.I.): Refers to a faculty member or staff representative that serves as a leader of a research group or project and has budget authority for the specified research at the institutional level. Further, a P.D./P.I. has been assigned an appropriate level of authority and responsibility to effectively administrate and direct the specific project or program to which he or she has oversight (National Institutes of Health, 2013).

RU/H institution: A designation that indicates a high level of research activity at institutions of higher education. This designation is assigned based on a classification system developed by the Carnegie Foundation for the Advancement of Teaching (Carnegie Foundation for the Advancement of Teaching, 2013).

Assumptions

The following assumptions were made for the purposes of this study:

1. Interview participants responded truthfully to all questions posed in interviews.

2. Responses of interview participants were based on the definitional standards established by the researcher.
3. Interview questions were developed based on complete and accurate data and relevant information.
4. Any data or supplemental materials provided by interview participants are accurate.
5. Interview participants possessed, at minimum, a basic understanding of the earmarking process.
6. Financial data, documents, and research materials reviewed are both accurate and complete.
7. Earmarks are not necessarily synonymous with pork or pork barrel spending.

Delimitations

1. The study was delimited to participants in one of three groups:
    A) State and federal governmental officials representing Mississippi.

    Potential interview participants in this participant group include:

    - Governor of the State of Mississippi
    - Commissioner of Higher Education
    - Assistant Commissioner of Higher Education for Government Relations (*currently unfilled post)*
    - U.S. Senators representing Mississippi
    - Member of U.S. Congress representing
    - Presidents, Vice Presidents for Research, and Directors of Sponsored Programs Administrations at Jackson State

University, Mississippi State University, The University of Mississippi, and The University of Southern Mississippi

B) Institutional administrators and RU/H institutions of higher education in Mississippi deemed by the researcher to have in-depth knowledge of and experience with earmark-funded projects and programs in the state. Potential interview participants in this participant group include:

- Presidents, Vice Presidents for Research, and Directors of Sponsored Programs Administrations at Jackson State University, Mississippi State University, The University of Mississippi, and The University of Southern Mississippi

C) Principal investigators employed at RUH institutions of higher education in Mississippi who have worked on earmark-funded projects or programs with a minimum cumulative funding award of $250,000

2. Interview questions related to the influence of earmarks only addressed those earmark-funded projects and programs applicable to Mississippi.
3. Only those state and federal government officials currently in office were invited to participate in the study.
4. While several types of congressionally directed funding are prevalent in the legislative, appropriatory process in Congress, only academic earmarks were considered for the purposes of this study.

CHAPTER II

REVIEW OF LITERATURE

Overview

Wilson (1980) argued that the endurance and survival of institutions of higher education are dependent on the maintenance of a unique institutional identity. Further, universities and colleges in America have become adept at adapting to ever-changing market demands, student demographics, governmental and political policies, societal pressures, and funding models. Amidst these extensive environmental change factors, institutions of higher education are faced with the complexity of maintaining their distinctive institutional identity while adapting appropriately to internal and external pressures. A review of the literature of higher education offers discussion of this complexity as it relates to multiple dimensions of a shifting research culture at the institutional, system, and field levels in American academe.

The review of literature presented here offers insight into the historical development of the United States government's funding role in research and development, specifically, as it relates to higher education, and myriad dynamics associated with the funding of research in this country. Moreover, this literature review presents multiple dimensions of Institutional Theory, which are useful in assessing trends in research funding in higher education, specifically, the emergence of congressional earmarking, the exponential growth of the distributive spending practice, the recent cessation of earmarking in Congress, and the impact of earmarks on American institutions of higher education. This chapter also offers justification, based in the literature, for Mississippi's role as a national leader in earmarking and the various

political dimensions in Congress that have made this possible. The chapter culminates with a discussion of the evolution and impact of earmarking on the public, research extensive universities in Mississippi.

The Evolution of the Federal Government as Research Patron

A survey of the history of American higher education indicates that the federal government began its financial investment in research and development in the late 19th century when Congress authorized funding for agricultural experiment stations (Mumper, Gladieux, King, & Corrigan, 2011). This federal funding, while small compared to contemporary funding levels, signaled an expansion of the federal government's appropriatory funding power and influence, as well as its interest in research. McCarthy (2011) noted that academe garnered greater attention as increased government contracts and grants were directed at scientific innovation and academic research in American universities in the postwar era. Further, McCarthy reported that by 1950, approximately $150 million in government contracts were funding myriad research projects and development in institutions of higher education across the nation. Moreover, federal funding for research in American academe surpassed $750 million by 1960 (Lucas, 2006; McCarthy, 2011).

The relationship between the federal government and the American scientific community has been described as a trusteeship, or social contract, that emerged as a result of the scientific research agenda advanced by the demands of World War II (U.S. OTA, 1991). Further, the U.S. OTA (1991) contended that a central dynamic of this trusteeship was the delegation of legitimizing authority in the formation of a federal research agenda to government-vetted scientific experts. Symbolically, the research grant

became the trademark of this evolved contractual relationship between the federal government and researchers, particularly those based at institutions of higher education (U.S. OTA, 1991). The U.S. OTA also explained that in exchange for receipt of federal funding, researchers were thereby obligated to contribute to the public good in their production of knowledge and technological innovation. This understanding was fundamental to the newly formed trusteeship that existed between the federal government and the American research enterprise.

Exponential increases in federal research appropriations commenced with the inception of World War II and the accompanying demand for military research and development (R&D) (Geiger, 1993; Greenberg, 2001; Forman, 1987; Martino, 1992; McCarthy, 2011; Mumper et al., 2011; Thelin, 2004). Forman (1987) described this exponential growth in the federal government's spending for R&D by reporting pre- and post-World War II spending levels. The expenditures reported by Forman indicated that prior to the outset of the war, in fiscal year 1938, the federal government allocated 30% of its annual R&D budget—$23 million—to military research and development projects. Forman also reported that by fiscal year 1945, spending levels soared to seventy times greater than pre-war levels with the U.S. Office of Scientific Research and Development (OSRD), U.S. Army, U.S. Navy, and the Manhattan Project, collectively, spending a cumulative $1.6 billion on research and development. Further, Forman indicated that in the years immediately following World War II, the government spending on military research and development constituted 90% of the entire federal R&D budget.

Rising demand and increased funding levels for research solidified the relationship between the United States government and the future of the research

enterprise in American higher education. Martino (1992) referenced an official request made by President Theodore Roosevelt in November 1944 to Vannevar Bush, head of the U.S. Office of Scientific Research and Development (OSRD), asking that a recommendation be made to the administration regarding how the cooperation between the federal government and the scientific community might be maintained following the end of the war. Bush (1945) responded to President Roosevelt's request with the publication of *Science: The Endless Frontier*, a report that called for the establishment of a federal agency charged with the funding of new research and outlined five fundamental principles that would guide the operation of this proposed government agency. Bush emphasized that to be effective and achieve specified research goals, this conceptual governmental research agency, and its funding of future scientific research and education, must adhere to and be aligned with the following five principals:

1. Stability in funding, irrespective of the type and level of support, over an extended period is essential in the conduction of long-range research and programs.
2. Individuals selected to serve in the administration of funds in the federal government's research funding agency must be chosen based on their relevant interests, their capability and willingness to promote the agency, and their possession of a broad understanding of the unique dynamics associated with scientific research and education.
3. The federal government should not support or operate laboratories of its own. Rather, the agency should promote and fund research grants and contracts to entities external to the federal government.

4. The research funding agency should fund basic research in colleges, universities, and research institutes, both public and private. Further, it is essential that all policies and practices associated with the internal control, as well as the scope and methods of research, be left to these institutions of higher education without influence from the federal government.
5. The agency must assure its independence from the multiple dimensions of the research process at the institutional level and report directly to Congress and the President of the United States. Additionally, the agency must implement and maintain standard control measures in relation to the financial administration and operation of the agency including proper audits, budgeting, and reporting practices.

Bush had been trained as an engineer and physicist and had served as president of the Carnegie Institution in Washington, D.C. before leading the U.S. OSRD during World War II (Geiger, 1993; Greenberg, 2001; Thelin, 2004). In this latter role, Bush was instrumental in the federal government's implementation of atomic energy research and the Manhattan Project, specifically (Greenberg, 2001). Additionally, Bush was appointed to serve on several governmental advisory boards including the National Advisory Committee for Aeronautics, the agency that predicated the foundation of the National Aeronautics and Space Administration (NASA) and the National Defense Research Committee (NDRC). Bush's position and influence in government afforded him the opportunity to shape America's research policy in the post-World War II era (Greenberg, 2001). Throughout his career, Bush advised five American presidents on matters related to scientific and technological research and development and was

instrumental in the eventual founding of the National Science Foundation in 1950 (Bush, 1945, 1967; Greenberg, 2001; Newman, 1985; Savage, 1999).

Greenberg (2001), Thelin (2004), and Newman (1985) noted that it was Vannevar Bush and his contemporaries who championed a rebranding of the federal research enterprise from one which had been largely egalitarian prior to the war era of the 1940s, to a new research culture in the United States focused on large, peer reviewed science conducted by the best researchers in the country. This new direction for American research advanced by Bush translated into the rise of a few elite research universities that along with the federal government's investments in its own research infrastructure and facilities, established a dominant federal research culture that would span decades (Greenberg, 2001; Mumper et al., 2011; Thelin, 2004).

With the publication of *Science: The Endless Frontier*, Bush (1945) impacted federal research policy and practice significantly, most notably, with his advocacy of the competitive, peer-reviewed funding of research grants through a host of federal agencies such as the National Institutes of Health (NIH), National Science Foundation (NSF), and Departments of Energy, Defense, Health, Transportation, and Agriculture (Greenberg, 2001; Thelin, 2004). Thelin (2004) further described Bush's contribution on American research culture by noting the federal government's new role as a research contractor and patron. The role of the United States government as a significant patron of scientific research is clearly depicted in Thelin's account of the transformative power of federal funding in the nation's medical schools. Further, Thelin noted that by 1960, universities with affiliated medical schools or teaching hospitals were among the most well funded

research centers in America due to increased federal investment in the health science, particularly through competitive grants funded by the National Institutes of Health.

Thelin (2004) signaled that these emerging funding relationships between higher education and the federal bureaucracy, in the form of competitive research grant awards, not only represented the evolution of American research culture, but also sparked resistance within the academic community. Some university administrators and members of the professoriate were critical of the federal government's newfound influence in academe (Greenberg, 2001; Thelin, 2004). Moreover, Thelin noted that these critics believed this new research funding model challenged traditional notions of academic research, threatened academic freedom and autonomy, and left the institutional missions of their universities far too vulnerable to external, federal influence. In reference to this latter challenge, Thelin commented, "for once the principal headache facing university presidents was not a shortage of money but rather the political problems created by new monies and their uneven distribution" (2004, p. 274).

Martino (1992) also emphasized the importance of maintaining the stability of federal funding for research in the post-World War II era in an effort to emphasize the importance of funding continuity as it is related to the quality of research. Kidd (1959) acknowledged that multiple dimensions of research are affected when financial support is not stable. Among these dimensions referenced by Kidd are financial considerations associated with the staffing of research projects and programs, restrictions imposed by short-term research agendas that may limit the scope and influence of research, and the reallocation of valuable research time to necessary funding procurement activities.

Following World War II, funding levels for academic research began to increase and continued to do so throughout the latter half of the 20th century (Martino, 1992). Martino (1992) reported that between the years 1960 and 1986, funding for academic and basic research in the United States experienced annual growth rates of 11.5% and 10%, respectively. Further, Martino reported that even after these growth rates were adjusted to remove the influence of inflation, academic research still experienced growth at a rate of 6% during the same period. The U.S. OTA (1991) reported that between 1960 and 1990, federal research funding in both basic and applied sciences increased from $8 billion to more than $21 billion, a net increase in 1990 dollars of $13 billion. Additionally, the U.S. OTA noted that federal funding for research has risen steadily since 1960 with the exception of a brief period of decline, which began in the late 1960s and persisted through the mid-1970s.

In addition to continual growth in the levels of funding for research between 1977 and 1987, the number of researchers based in academe grew as much as 60% (U.S. OTA, 1991). The U.S. OTA (1991) also noted the average 7.8% annual growth in the science and engineering workforces between 1980 and 1988. With increased funding and participation in research, competition for funding and demands for accountability also surged (U.S. OTA, 1991). Consequently, researchers complained of a research culture wrought with elevated stress, extensive paperwork, and the stifling of research creativity and satisfaction (U.S. OTA, 1991). The U.S. OTA contended that the strength and resilience of American research will continually yield opportunities for further research, resulting in a culture of competition for limited funding. Further, the U.S. OTA acknowledged that fundamental challenges in an era of competitive research are

stabilizing funding for most qualified research initiatives while supporting the development of an adequate, qualified research workforce.

While the exponential growth of federal funding for research over the last several decades has impacted R&D in America, Martino (1992) contended that efforts to stabilize this funding have been limited. In a study conducted by Engler and Martino (1986), participants—scientists who have received federal funding for their research—were asked to identify changes in program or project activities related to the marketing of their research. More than 65% of respondents in Engler and Martino's study indicated having to spend some degree more time ("somewhat more" or "much more") on marketing-related activities. Further, Engler and Martino's study explored researchers' experiences with federal funding renewal requests. Engler and Martino also reported that more than 40% of study respondents indicated that the speed of research funding renewal decisions were some degree slower than they used to be, while an equivalent percentage of respondents indicated no change in the time required to receive a renewal decision.

Martino (1992) signaled an evolution in the funding role of the federal government by referencing an assertion made by Nobel Prize winner and president of Rockefeller University, Joshua Lederberg, in which he described a shift in grant-funding by the government from an investment in sustainable research and development to one of buying short-term results. This assertion has significant implications for research conduct in the United States and identifies a departure from the goals for research advanced by Vannevar Bush (1945) in *Science – The Endless Frontier*. As Martino explained, this shift contributed to a decrease in research productivity due to greater time being spent by the researcher on funding procurement, renewal, and marketing, rather,

than actual research. Martino also contended that due to this suggested shift in the research ethos in America, researchers would be required to redesign research programs and projects from continuous, long-term designs to those which yield short-term results that are "publishable even if not significant" (p. 40). The departure from the development of continuous, long-term research designs to those which are shorter in duration and heavily results-oriented has been criticized (Culliton, 1984). Culliton (1984) characterized this transition as a re-alignment from exploratory to exploitative research.

Greenberg (2007) contended that amid a stringent economic climate, state governments are inclined to intensify the pressure placed upon their public, state-supported institutions of higher education to offer some measure of economic return to their respective states. As universities are able to capitalize on externally funded research opportunities and, in turn, subsidize their operational budgets and potentially contribute to the economic development of a region, state governments take note. States may extend their expectations of economic return among their state-supported universities beyond lean economic times and apply them to any economic condition (Greenberg, 2007). Based on Greenberg's logic, the argument could be made that greater financial subsidization of public universities from external sources, excluding state governments, may translate into increased propositions of state funding reductions for higher education.

While boasting numerous benefits, the relationship that emerged between the federal government and American academe in the post-World War II era was not without criticism. Newman (1985) indicated that this new research funding scheme met substantial resistance and opposition from academia. This opposition, according to

Newman, was rooted in a fear that the newly formed financial relationship between the federal government and select institutions of higher education would lead to governmental influence on the identity of America's universities and, ultimately, transform their culture. Newman confirmed that the fear of those in opposition was well founded as a type of higher education institution, the research university, emerged in the decades following World War II.

Research Funding in Flux

Tierney (1988) suggested that American academe was experiencing increased fragmentation and complexity during the 1980s. Savage (1999) explained that during this period universities were pursuing higher levels of prestige while contending with significant financial constraints, which were rooted in a period of high inflation that plagued the late 1970s and were exacerbated by bouts of recession in the early 1980s and 1990s. Additionally, Savage reported that these financial difficulties in higher education were compounded by consistent reductions of public funding for universities at the state level, with the exception of a brief period of significant economic growth in the late 1980s.

Savage (1999) noted that the federal government's financial investment in academic research, historically, has been one of the most stable, protected types of federal spending. Despite reductions in the late 1960s and early 1970s, and again in the early 1980s, federal spending for academic research grew consistently between 1963 and 1994, from approximately $830 million to nearly $8 billion, respectively (Savage, 1999). However, Savage warned that despite its consistent support, the federal government

would not be able to meet higher education's rapidly expanding demand for academic research funding.

Geiger and Feller (1995) noted that the federal government's financial sponsorship of academic research and development in the United States declined from 67.3% of all research expenditures in the academic year 1979-80 to 58.8% by 1990. During the same period, Geiger and Feller also reported that federal investment in R&D directed specifically at universities rose from 13.7% to 18.7%. Further, Geiger and Feller explained that careful reflection on these funding trends, when considered in the broad context of total federal funding for R&D in the decade of the 1980s, indicates that a universities' share of federal funding for academic research may increase while overall funding expenditures experience decline.

This analytic comparison of institutional share, or shift-share analysis, was discussed by Stevens and Moore (1980) and applied in Geiger and Feller's (1995) study of the relative impact of changes among sectors in the federal government's research and development funding scheme during the 1980s. Shift-share analysis, advanced by Stevens and Moore, is a technique that may be employed to disaggregate relative dimensions of a specific change. Geiger and Feller, in their analysis of federal funding for academic research, employed shift-share analysis to identify the influence of changes in both sector and institutional shares collective research universities in America. The shift-share analysis model, as employed and explained by Geiger and Feller, may be expressed as an equation, $G_{ij} = U_{im} + P_{ij} + D_{ij}$. This equation was used to explain that growth of a university's research and development expenditures (G) may be best understood as the sum of three primary components: (a) university share component (U);

(b) proportionality component (*P*); and (c) differential shift component (*D*). In this equation introduced by Geiger and Feller, the subscripts *i* and *j* represent the respective institution and funding sector for which R&D growth is being estimated. The proportionality component (*P*) is an indicator of market demand, with the sector's ability to procure federal R&D funding awards held constant among all competing sectors (Geiger & Feller, 1995). Further, Geiger and Feller explained that the differential shift component (*D*) is an indicator of a specific institution's fluctuating competitive capabilities and offered the number of completed research proposals as an example of a reasonable differential shift component.

Geiger and Feller's (1995) shift-share analysis of 194 universities indicated that 70% of the reported growth among the collective research universities sector in the 1980s is attributable to cumulative R&D expenditure increases. Additionally, Geiger and Feller noted that approximately 1% of the determined growth in federal research and development funding in higher education during this period was attributable to changes in the proportion of funds that originated in other sectors, while 30% was attributed to competitive capability factors at the institutional level when competing for funding that originated in other sectors. Summarily, Geiger and Feller explained that the university growth rate (*G*) was impacted negatively by federal funding dependence and positively by dependence on institutional and external sources other than the federal government. Further, the level of competitive capability at the institutional level in the process of research funding procurement accounted for much of the change in the differential component (Geiger and Feller, 1995). Geiger and Feller suggested that this is an indication that university-specific activity (competitive capability) has a notable influence

in the growth of research funding at the institutional level. Such a suggestion has marked implications for higher education and, particularly, universities heavily vested in research.

In response to a request from the House Committee on Science, Space, and Technology (HCSST) for information on the current state of the federal government's research system, the U.S. OTA (1991) signaled changes in the landscape of research in America. Specifically, the HCSST requested information related to the policies, goals and outcomes, research funding decisions, and projected challenges of the U.S. OTA in the 1990s (Abelson, 1991). Central to this congressionally-mandated study of American research culture was the process of funding decisions and research funding distribution associated with federally funded research initiatives (U.S. OTA, 1991). In its report to Congress, the U.S. OTA noted trends of increased influence of congressional directives in research funding decisions and greater specificity of research goals in annual research appropriation among agencies of the federal government.

The Contemporary Research Culture of American Higher Education

In contemporary American higher education, most significant research conduct and awarding of new PhDs occurs among a virtual top-tier group of institutions, comprised of approximately fifty large research universities (Goodwin, 1993; Greenberg, 2007; Mumper et al., 2011; U.S. OTA, 1991). Mumper et al. (2011) noted that the federal government's financial investment in the enterprise of research is highly concentrated on a relative few institutions of higher education, most of which are major research universities. Geiger and Feller (1995) also noted that the nation's leading research universities are more likely to be among the wealthiest institutions of higher

education. Greenberg (2007) suggested that another fifty institutions comprise a second tier of research universities and are striving to earn rank among this top-tier field. Further, Greenberg identified institutional claims of financial hardship as a common complaint among both tiers of research-intensive universities, even while those top-tier institutions such as Harvard, Stanford, The University of Michigan, and John Hopkins, for example, maintain multiple-billon dollar endowments and operational budgets.

The U.S. OTA (1991) reported that, collectively, the leading recipients of federal research funding are institutions of higher education. Specifically, federal funding for research in academe has risen from approximately $4 billion dollars in 1969 to $8 billion in 1990 (in 1990 dollars) (U.S. OTA, 1991). Additionally, the U.S. OTA noted that within the higher education community, 25% of federal research funding is awarded to ten elite institutions and 50% is distributed among only 30 universities. Moreover, 100% of federal funds for academic research are distributed among 100 research universities across 38 states (U.S. OTA, 1991).

Earmarks Defined in the Context of American Higher Education

Varied definitions of the term earmark are present in the literature of higher education policy and finance. In his seminal work, *Funding Science in America: Congress, Universities, and the Politics of the Academic Pork Barrel*, Savage (1999) defined an earmark as a mechanism by which agencies of the federal government or other beneficiaries receive funding or special consideration, rules, or treatment through legislative provision. Moreover, Savage argued that the subjugation of earmarks and their association with pork barrel politics to negative criticism is typically based on congressional direction of specific benefits to constituents. Within the ethos of academe,

earmarking results in the insertion of an academic earmark provision into broader appropriations or other legislation and, upon enactment, directs funding to specified university research projects, programs, or facilities (Savage, 1999). In the context of the typical legislative process in Congress, earmarks present as amendments to committee reports rather than proposed appropriations legislation (Schick & LoStracco, 2000). Schick and LoStracco (2000) noted that while subcommittee leaders wield considerable power in the authorization of earmark amendments, distributive benchmarks inform the process of adding such fund allocations to weightier legislation.

Two Philosophies of Research Funding: Competitive versus Allocated Funding

Newman (1985) framed the discussion of competitive versus allocated funding for research at the university level by comparing the role of academe in the conduct of both basic and applied research. Central to Newman's discussion is a general understanding of the diversity of the research enterprise in the United States and the entities that conduct this research. Newman indicated that a summary of the federal budget identifies seven types or categories of research organizations, which include: (a) federal agencies, (b) universities, (c) federally funded research and development centers (FFRDCs) operated by universities, (d) non-profit organizations, (e) FFRDCs operated by non-profit organizations, (f) industry, and (g) FFRDCs operated by industry.

Research conducted in the larger FFRDCs and in government facilities is classified as "targeted" according to Newman (1985, p. 132), thus denoting a large-scale research effort with centralized administration of operations and goals, thereby focusing the resources and expertise of many researchers on a specific problem. In comparison, Newman suggested that research at the university level is characterized by a more narrow

scope, objective, and size, and features a more competitive, peer selection funding process than that of larger, FFRDC research organizations. Further, Newman referenced the unique character of research in America, in which both competition and cooperation are lauded, and through publications and conferences, information and advancement are shared.

Newman (1985), writing in the mid-1980s, identified the trend of greater targeting in research proposals in the United States and described proponents' justification for the practice. First, Newman discussed the prevalent argument that in an expanding number of fields, as a result of increased complexity and size of emerging research projects, targeted research funding is more appropriate and applicable than a competitive, peer review funding process. Further, Newman posited that proponents' argument for increased targeting in contemporary research in the United States is more accurately described as a strategic attempt to remain competitive globally, since nations such as Japan and France had adopted targeting as a leading model of research funding.

Newman (1985) acknowledged that the ethos of research in the United States is evolving and emphasized the importance of maintaining several fundamental criteria for the awarding of federal funding for research: (a) adaptability and willingness to reprioritize by shifting funding and human resources to current, more relevant, and in-demand research projects; (b) openness and willingness to consider new concepts, methods, and opportunities; and (c) investment of effort and quality of research proposal. Newman acknowledged that, globally, the federal government's funding of research at the university level in America, which is primarily a peer review, competitive funding process, comes closer than any other national system at meeting these funding decision

criteria. Additionally, Newman warned that the increased fervor for targeting–funding research through allocation–may overshadow the advantages of the peer review process, particularly the avoidance of political and bureaucratic influence. In summary, Newman advocated for maintaining a balance between competitive and targeted funding for research and reiterated that federal funding for research at the university level should always be merit-based, while relying heavily on the peer review process.

Earmarking as a Response to the Peer Review Regime

Newman's (1985) discussion of competitive and allocated funding models made basic distinctions between these two primary research funding modalities employed by the federal government in its investment in R&D. While peer review or competitive funding models are the dominant schemes in research, earmarking is a model of distributive funding which relies on an alternative set of goals, processes, and outcomes (Savage, 1999). Moreover, Savage (1999) contended that it was due to the perceived inequities in the peer review system of science funding in America that gave rise, in part, to earmarking. Savage also noted that the emergence of earmarking was an indication that under the regime of the peer review system, the federal government had failed to adequately fund the upgrades and expansions demanded by a rapidly developing research infrastructure. Congressional earmarking not only serves to offset funding disproportions created by a well-established system of competitive funding, but also alerts the executive and legislative branches of government that a federal solution is needed to address the insufficiency of funding for research facilities and infrastructure (Geiger, 2001; Savage, 1999).

Earmarks Through the Lens of Institutional Theory: An Organizational Phenomenon

Tierney (1988) noted that demographic, political, and external economic forces, along with strong internal forces, exert power and influence within an institution and, ultimately, shape the culture of the organization. The organizational culture of an institution, as Tierney contended, is manifested in a myriad of organizational behaviors, not limited to, but including the action, methods, and individuals related to institutional actions (Dill, 1982). Additionally, Tierney suggested that organizational culture is associated with the manner in which institutional communications and decision-making are conducted, both instrumentally and symbolically. A greater understanding of the role of organizational culture in the development of improvement strategies for institutional management and performance may contribute to increased efficacy of higher education leaders as they address complex challenges in their institutions and the field (Tierney, 1988). While Tierney noted that leaders in academe may benefit from a greater understanding that colleges and universities are cultural organizations, he also warned that such an understanding must not be considered a panacea for all problems and challenges faced in higher education administration.

Tierney (1988) offered several fundamental strategies to employ in the application of organizational culture as an institutional assessment tool. In this context, Tierney suggested that administrators should:

1. evaluate conflicts, either actual or hypothetical, through the broad lens of institutional life rather than in isolation;
2. identify contradictions in organizational structure or operation that suggest the presence of tension;

3. make decisions with an awareness of their influence on the organizational culture of the institution;
4. recognize the impact and symbolism associated with ostensible key decisions and actions;
5. consider various perceptions of institutional performance held by different groups of organizational stakeholders.

Institutional Theory and Earmarking

Before the myriad dimensions of Institutional Theory can be understood, thoroughly explored, or applied to a specified context, such as earmarking in higher education, an adequate definition should be established. Scott (2001) stated that while institutions are comprised of norms, rules, and cultural beliefs, they, too, are shaped by the material resources and behaviors of organizations. The behavioral and material resource components of Scott's notion should not be underestimated when one considers the various elements encompassed within an institution. Moreover, Scott contended that through interactions, institutional meanings, and norms, rules arise that are then, through varying modes of human behavior, preserved and modified.

Scott's (2001) position, rooted in the literature of sociology, suggested that institutional identity cannot be adequately observed or defined in isolation from human behavior exhibited in interaction (Berger & Luckmann, 1967; Geertz, 1971). Further, the role of resources is important in the development of institutional identity since viable rules, norms, and schemas are related to material resources; and, conversely, these resources are related to the sanctioning power that reinforces, authorizes, and legitimizes

these rules, norms, and schemas (Brousseau, Garrouste, & Raynaud, 2011; Giddens, 1979, 1984; Scott, 2001; Sewell, 1992).

The Dynamics of Organizational Fields

DiMaggio and Powell's (1983) suggestion that organization fields represent an organized dimension of institutional life is foundational to the cooperation among organizational stakeholders with opposing commitments and homogeneity among organizations that comprise a specific organizational field. This notion served as the central theme in their exploration of organizational theory and diversity, as well as reinforced their description of isomorphic processes (DiMaggio & Powell, 1983). DiMaggio and Powell contended that an organizational field is a collective group of organizations that is representative of a specific dimension or aspect of institutional life. Further, DiMaggio and Powell suggested that a group of organizations that offer similar services or products, consumers of a particular product or service, and regulatory agencies each constitutes an organizational field.

Laumann, Galaskiewicz, and Marsden's (1978) discussion of inter-organizational networking and White, Boorman, and Breiger's (1976) exploration of structural equivalence among similar organizations, in the aggregate, informed DiMaggio and Powell's (1983) development of organizational field. Laumann et al. emphasized that the linkages established between organizations during their transactions are fundamental to the process of interorganizational networking. These transactions may include the formation of relationships between organizations due to a variety of exchanges including formal contractual agreements, membership or participation in professional associations, or trade unions (Laumann et al., 1978; DiMaggio & Powell, 1983).

DiMaggio's (1986) reference to structural equivalence relied on White et al.'s (1976) use of blockmodels in an explanation of how the presence or absence of ties between two organizations may be used to identify structural equivalence. Blockmodeling is a technique employed in social networking research that allows for the grouping and interpretation of patterns of shared relationships with others among organizational actors (Borgatti & Everett, 1992). A blockmodel may be used as a tool to identify roles and positions of individuals within a given social context (Knoke & Kuklinkski, 1982). Moreover, White et al. noted that structural equivalence exists among two organizations, even if they are not directly connected, if they share the same ties with other organizations. Further, DiMaggio made the distinction between environments of organizations and organizational fields. In so doing, DiMaggio offered the following justifications for, or perceived benefits of, studying organizational fields rather than environments alone: (a) opportunity for exploration of the sources of organizational behavioral dynamics and not merely the observed behavior, (b) observation of environmental factors that contribute to the position of an organization within a greater organizational hierarchy, (c) examination of inter-organizational structure effects on organizational field variables; and (d) establishment of a bridge between a society and organizations in studying the impact of community and social change (DiMaggio, 1986).

In an explanation of structural-equivalence analysis, also known as blockmodeling, DiMaggio (1986) identified seven fundamental components that are essential for effectively mapping the structure of an organizational field. These prerequisites of organizational field mapping identified by DiMaggio include:

1. Mapping of a structural field should rely on ties or patterns of relationship between organizations in a given field rather than on characteristics or social definition.
2. Organizational field mapping should result in the identification of organizational subgroups that may be examined for their influence on other dimensions of the field or contribute to organizational actors' impact on social change.
3. An effective mapping strategy should be sensitive to the cohesion and internal networks that exist between organizations in a field.
4. Organizational field mapping should be sensitive to the presence of structural equivalence between organizations in a field.
5. Sound structural field mapping is capable of identifying a structure or system of domination, which is based on patterns of non-reciprocated ties.
6. Effective organization field mapping strategies accommodate open-ended definitions of fields.
7. Organization field mapping should facilitate the analysis of multiple subgroups or networks with varying relations between them, simultaneously.

DiMaggio and Powell (1983) emphasized the importance of empirical investigation in the identification and description of an organizational field's structure and referred to this process as structuration. The structuration process is comprised of four elements: (a) greater and more frequent interaction among organizations in a given field, (b) emergence of inter-organizational structures related to dominance and the development of coalitions, (c) greater volume of information to be organized and

familiarized, and (d) mutual awareness of shared ideology, goals, values, or practices among organizations in the same field (DiMaggio & Powell, 1983). According to DiMaggio and Powell, once structuration, which may be considered as institutional definition, is complete, powerful influences within the field will gain authority and ultimately, through innovation and other institutional behaviors, lead individual organizations to become more similar.

Similarly, institutionalization is a process that Selznick (1957) described as one that impacts an organization over time. Selznick argued that the process of institutionalization reveals several distinctive attributes of an organization including its history, human capital, constituencies, interests, and adaptability to both internal and external influences, historically. Further, Selznick contended that no organization is wholly free of institutionalization. Even institutions of higher education are susceptible to institutionalization, despite their (a) greater institutional freedom when compared to other businesses, (b) documented ability to adapt to shifting cultural nuances, and (c) extension of greater latitude to internal factions (Selznick, 1957).

Scott (1994, 2001) indicated that organizational fields are typically examined as a group of institutional conditions or contextual factors that influence the processes and structures of an organization and are treated as independent variables. Further, Scott expanded this notion of field by rejecting the idea that organizational environments are mere collections of schemes, resources, and detached dimensions of institutional life, which have randomly evolved or developed. Rather, Scott argued that environments or fields of organizations are, in fact, organized themselves and that individual associations with an organizational field do not occur through random assignment.

The relevance of the organizational field conception in the context of this study is based, in part, on the notion that while organizations—institutions of higher education—may operate within the same field, the geographic location of these institutions impacts the relational/cultural system of the organizations and bears considerable influence on their sustainability (DiMaggio, 1986; Scott, 1994). This concept, when applied to American academe, translates into the influence of regional or state-level socio-political, cultural, economic, and governance factors on specific institutions or systems of higher education within the organizational field.

Isomorphism and the Pursuit of Legitimacy in American Higher Education

Central to the concept of institutional isomorphism is a paradox that emerges after an organizational field is well established, and serves as a practical tool for identifying the political implications and practices that are pervasive in contemporary organizational behavior (DiMaggio & Powell, 1983). DiMaggio and Powell (1983) explained that this paradox presents as rational actors—individuals in an organization that wield power and influence—endeavor to affect institutional change and in so doing, make their organization more similar to other institutions in its respective organizational field. Summarily, as an organizational leader attempts to influence or change one or multiple dimensions of an institution, the institution will actually become more like other organizations in its organization field, resulting in increased homogeneity (DiMaggio & Powell, 1983; Hawley, 1968). Further, Hawley (1968) described the development of isomorphism in a given organization field as a constraining process that drives a single institution to assimilate to the behaviors and structure of other organizations in the field.

Hannan and Freeman (1977) expanded Hawley's (1968) description of isomorphism by offering two additional practices that may lead to increased homogeneity among organizations in an organizational field. Hannan and Freeman contended that the development of isomorphism is enhanced when individuals, who are either unwilling or unable to assimilate or conform to institutional standards, are removed from an organization. Additionally, Hannan and Freeman suggested that when organizational leaders adjust their behaviors and responses to align with learned, appropriate responses of the organizational field, isomorphism results.

The constraints of institutional legitimacy were described by Hannan and Freeman (1977) as emanating from the external environment. When an organization is able to establish legitimacy in its organizational field, this legitimacy develops into an asset that can then be wielded by the organization to manipulate its environment (Hannan & Freeman, 1977). Conversely, when institutional legitimacy is destabilized, an organization may suffer considerable costs or adverse effects (Hannan & Freeman, 1977). Hannan and Freeman offered the example of a public university's elimination of undergraduate instructional programs and degrees as a scenario in which institutional adaption may erode legitimacy in the field.

While myriad factors may contribute to the presence of institutional isomorphism in American academe, the pursuit of legitimacy among organizations within the field appears to be a considerable motivator. This process of achieving legitimacy within the higher education community, specifically among universities and colleges, mimics that of the social constructions observed and explained by Meyer (1977). Meyer (1977) described the legitimizing power of education, generally, in its role as a highly developed

societal institution. Further, Meyer suggested that education is central in the creation and establishment of professions and the legitimizing of professionals, the construction of professional competencies, and the general organization of society.

Meyer's (1977) development of legitimation theory served as a more generalized form of Institutional Theory that advanced the notion that modern education has the authoritative power, through the introduction of new societal constructs and the allocation of new roles and statuses, to transform the behavior of individuals independent of personal educational experiences. Moreover, Meyer's treatment of education established it as an institution with the authority to transform society through the creation of new classes of individuals that possessed new types of knowledge. Thus, the institution of education, by allocating and defining legitimacy, advances and maintains societal constructs that perpetuate a class system of haves and have-nots (Goldston, 2007; Meyer, 1977). Meyer's aforementioned notion is apparent in Martino's (1992) description of the stratification of research funding levels and perceived elitism present in contemporary higher education.

In further examination of the power of legitimacy in organizational structure and behavior, DiMaggio and Powell (1983) introduced three mechanisms of isomorphic change at the institutional level: (a) coercive isomorphism, (b) mimetic isomorphism, and (c) normative isomorphism. Coercive isomorphism develops within an institution as external pressures, either from societal or cultural expectations or from other organizations on which the institution is dependent, result in organizational change (DiMaggio & Powell, 1983). Further, DiMaggio and Powell suggested that these external pressures are not necessarily force, but may rather be a result of persuasion or

even an opportunity to join in collusion. By comparison, DiMaggio and Powell noted that mimetic isomorphism leads to organizational change due to uncertainty or ambiguity of goals, or an inadequate understanding of relevant technologies, resulting in the imitation, through modeling, of other organizations in the field. Further, organizations that are affected by mimetic isomorphism may borrow behaviors or practices from another organization in the field unintentionally or intentionally, as is the case with the adoption of innovation or best practices (DiMaggio & Powell, 1983). DiMaggio and Powell held that with mimetic isomorphism, an institution will pattern its behaviors or structure after another organization in the field that is perceived as successful or legitimate. Lastly, DiMaggio and Powell described normative isomorphism as a type of organizational change resulting from the professionalization of an organizational field. Central to DiMaggio and Powell's conception of normative isomorphism is Larson's (1977) contention that professionalization occurs as workers endeavor to define their work conditions and methods, control production or output, and strive to establish legitimacy for their pursuit of occupational autonomy. Additionally, DiMaggio and Powell (1983) discussed this latter facet in their examination of the functional role of the university as an agent of normative isomorphism through its power to confer legitimacy through formal education and its influence in the proliferation of professional networks, which, subsequently, establish new organizational standards.

Cultural Boundaries – The Ins and The Outs

Martin (2002) emphasized the use of cultural boundaries to explore a particular culture and to make determinations as to which individuals are inside or outside a designated boundary. In the context of Martin's discussion, individuals are specific participants, members, or persons who belong to a specific activity, group, or organization. When applied to an organizational field, such as research universities in the United States, the individuals featured in Martin's conception of cultural boundaries may be representative of specific institutions of higher education. Central to Martin's concept of cultural boundaries is the notion that every boundary establishes an inside and an outside grouping. For the purposes of this study, Martin's concept of cultural boundaries is applied to research funding schema in American higher education and, specifically, the pursuit of external funding of research. Hypothetically, in the organizational field of research universities in the United States, a cultural boundary may exist in relation to an institution's participation in lobbying efforts to procure external funding for research activity. Moreover, those universities that participate in lobbying to procure external funding for research may be considered to be inside the cultural boundary, while those institutions that do not participate may be considered as beyond or outside of the boundary (Goldston, 2007).

Additionally, Martin (2002) contended that cultural boundaries in an organizational context should be seen as fluctuating, permeable, ambiguous, and in some instances, dangerous. When applying Martin's cultural boundaries theory to the context of the historical development of the federal government's evolving role in the funding of academic research, several possible boundaries become apparent. Greenberg's (2007)

identification and acknowledgment of the existence of a top tier comprised of fifty leading research universities in America created one such cultural boundary. Greenberg explained that another fifty institutions are struggling to ascend to this group of top tier research institutions. In this example, Greenberg clearly established a boundary or delineation between those institutions of higher education inside this elite group and those striving to gain access. Continuing with this example, Greenberg's discussion of tiers among research universities left open the possibility that institutions in the second tier could, at some point, permeate the boundary and be elevated to top tier status, thus, confirming Martin's suggestion that cultural boundaries are fluctuating and permeable.

Institutional Culture Changes in Higher Education - On a Global Scale

The notion that intensifying stratification in society contributes to shifting priorities in the field of higher education is a conception not limited to American academe. Around the world, status hierarchies are emerging among institutions of higher education of various types and missions, shaped by both national and international policies (Brennan, 2008). Brennan argued that once these status hierarchies are well established in a higher education field, the process of making determinations as to which institutions within the organizational field derives the most benefit becomes an increasingly complex endeavor and may redirect attention away from other significant field dynamics. This notion is central to the discussion of the haves and have-nots among groups of institutions of higher education on a global level and supports the need for further research associated with diversity, homogeneity, and differentiation among universities (Brennan, 2008). The global dimension of shifting culture in higher education is pertinent to academia in the United States as increasing globalization stands

as a strong prohibitive force against closed institutions or national systems of higher education.

Globally, leaders and developers of higher education policy are increasingly integrating quasi-market factors in their decision-making processes (Brennan, 2008). Brennan (2008) referenced the work of Texeira, Jongbloed, Dill, and Amaral (2004) as an example of emerging market-driven forces impacting higher education policy. Texeira et al. examined the intensification of competition, privatization, and promotion of economic independence as market-based elements impacting institutions of higher education at an increasing rate. Calhoun (2006) noted that the contemporary pursuit of academic reputation among institutions of higher education could easily become an isolated, institutionalized goal. These emerging trends in the field of higher education align with the conceptions of isomorphism, structuration, and legitimation, each a tenet of Institutional Theory.

Shifting Research Culture – A New Zealand Comparison

Intensified competition and integration of other market-driven forces in academe, in specific relation to institutional research culture and applicable research policy, have been studied internationally (Billot, 2011; Billot & Codling, 2011, 2013; Billot & Smith, 2007). Within the educational system in New Zealand, increased pressures on research performance and activity are transforming its research culture and contributing to heightened scrutiny of internal processes and research outcomes by external policymakers (Billot, 2011). Billot and Smith (2007) conducted research among academic staff at two institutions of higher education, both of which were endeavoring to advance within the New Zealand higher education sector, to assess assimilation efforts at

the institutional level to new policy benchmarks established by the Performance-Based Research Fund (PBRF). The PBRF in New Zealand assesses research performance among faculty and has contributed to increased levels of institutional pressure for faculty to produce more research or become more research active (Billot & Smith, 2007). These heightened internal pressures on New Zealand faculty to become more research active mimic those prevalent in American higher education that are fueling a movement in the field towards competitive funding models.

Competitive Research Funding and Economic Development

Discussion of the relationship between increasing governmental support for competitive research and economic development, specifically, in the federal governments' funding of initiatives such as the Experimental Program to Stimulate Competitive Research (EPSCoR), is present in the literature (Bozeman & Gaughan, 2011; Dietz, 2000; Feller, 1999; Hauger, 2004; Leath, 1991; Melkers & Wu, 2009; Payne, 2003a; Wu, 2010). Payne (2003a) discussed distinctions in funding intent and distribution between set-aside programs like EPSCoR and those associated with earmarking. Set-aside programs, such as EPSCoR, prioritized assistance to universities in underfunded states to develop and expand a research infrastructure that will help these institutions of higher education reposition themselves to be more competitive in the research market (Melkers & Wu, 2009; Payne, 2003a).

Most EPSCoR universities are located in twenty states that receive the lowest amounts of federal funding for research and development, a cumulative 6% of all federal R&D expenditures (Feller, 1999). Mississippi was designated an EPSCoR state in 1987, along with Idaho, Louisiana, and South Dakota, as part of a third group of states deemed

eligible for EPSCoR funding (Payne, 2003a). While earmarks also typically fund the demands of expanding infrastructure needs in higher education, set-aside programs like EPSCoR seek to establish partnerships with a specific university, state government, or private industry that will assist in the development of strategic and sustainable improvement plans for research infrastructure and economic development (Payne, 2003a).

Hauger (2004) noted that the foundation of the EPSCoR program resulted from congressional pressure on the National Science Foudation (NSF) to implement a more equitable distribution of competitive federal funding for academic research. Hauger also traced the evolution of EPSCoR's inadvertent role as a significant funding source for economic development based on science, technology, and innovation.

Wu (2010) reported on findings of an empirical study that examined the impact of EPSCoR funding of R&D in academic science and engineering at institutions of higher education among all fifty states during the period 1979-2006. Moreover, Wu noted that the persistence of states in the EPSCoR program during this period is an indication that the research funding initiative has contributed to increased levels of competitiveness and research capacity among institutions of higher education. Additionally, study findings revealed that the EPSCoR program has done little to improve disparities that exist in the distribution of competitive funding awards among universities. Wu reported that the heaviest concentration of research funding continues to be allocated among only a few states.

The Political Dimensions of Earmarking

The financial involvement of the federal government in the funding of research inevitably introduces a political dynamic in the allocation of this funding (Martino, 1992). The literature associated with the role of Congress in the earmarking process and the extensive social, political, and economic implications related to congressionally directed spending for research is voluminous (Lazarus & Steigerwalt, 2009). Multiple dimensions of congressional influence in earmarking have been examined including the party affiliation (Balla, Lawrence, Maltzman, & Sigelman, 2002; Bickers & Stein, 2000; Carsey & Rundquist, 1999; Crespin & Finocchiaro, 2008; Evans, 2004; Lazarus, 2009, 2010; Lee & Oppenheimer, 1999; Lee, 2000, 2003, 2004; Shepsle & Weingast, 1981), seniority (Balla et al., 2002; Roberts, 1990), committee assignments and service (De Figueiredo & Silverman, 2006; Ferejohn, 1974; Payne, 2003b; Savage, 1991), chamber distinctions (Atlas, Gilligan, Hendershott, & Zupan, 1995; Lazarus & Steigerwalt, 2009; Lee, 1998, 2000, 2003, 2004), and electoral vulnerability of members of Congress (Baker, 1999; Bickers, Evans, Stein, & Wrinkle, 2007; Bickers & Stein, 1996; Ferejohn, 1974; Frisch, 1998; Lee & Oppenheimer, 1999; Mayhew, 1974; Stein & Bickers, 1994).

Lazarus and Steigerwalt (2009) noted that while earmarking is a bicameral enterprise in the United States Congress, most of the research dedicated to the topic has been directed at the U.S. House of Representatives, while relatively little attention has been given to this practice in the Senate. Lazarus and Steigerwalt offered the work of Atlas et al. (1995) and Lee (1998, 2000), as examples of the limited discussion in the literature that specifically addresses the earmarking process as it relates to the U.S. Senate.

Atlas et al. (1995) conducted a retrospective study of the relationship between the per capita representation in the U.S. House and Senate and the net, per capita federal spending allocations (federal outlays) in all states for each legislative body. Through the application of an empirical test that relied on federal outlay data from the period 1972 to 1990, Atlas et al. compared the expenditures to per capita representation ratios of both the House and the Senate and identified the presence of a nationwide disparity in per capita representation in both houses of Congress. Further, Atlas et al. reported that, in the Senate, a wide distribution of per capita representation across all states exists, despite the fact that each state is represented by an equal number (two) of senators. Therefore, the conclusion may be drawn that states with lesser populations are overrepresented in the Senate and, consequently, representatives from these states procure greater federal outlays in terms of per capita population than those of more populous states (Atlas et al., 1995; Lee, 1998, 2000, 2003, 2004; Lee & Oppenheimer, 1999). From a broader perspective, this finding is relevant to the current study of federal funding of research in Mississippi, as the state is ranked 31st in population among all fifty states by the United States Census Bureau (2012) with a population of approximately three million citizens.

Through an examination of the dimensions of coalition building and geographic factors in the distributive political process of U.S. Senate reauthorization of transportation infrastructure funding in 1998, Lee (1998, 2000) expanded Atlas et al.'s (1995) notion that less populous states are in a more favorable position than states with large populations to receive Senate-originated outlays. In relation to coalition building in the Senate, Lee (2000, 2003) suggested that representatives can apportion funding and benefits for states with smaller populations at less expense than for states with larger

populations. Lee (2000) contended that the vast disparities in state population, coupled with the equal weight of representation in the Senate, creates a unique environment for the building of coalitions and confirms Lee and Oppenheimer's (1999) position that while the votes of all members of the Senate are equitable when building a coalition, they are not necessarily equal in terms of the potential outlays or apportionment they may represent. Moreover, Lee and Oppenheimer, in their examination of a suggested small-state advantage in federal distributive spending, found that when the need for federal funding is controlled, small states are likely to receive greater federal outlays per capita than larger states.

Lee (2003) re-examined the 1998 federal reauthorization of funding for transportation infrastructure programs to assess the influence of geographic politics and coalition-building in the U.S. House of Representatives. In reference to this legislation and the associated political process, Lee referred to several editorials that characterized the transportation apportionment process and programs as "an all-you-can-eat pork buffet" (Editorial, 1998a, p. B8) and "100 percent lard" (Editorial, 1998b, p. 12A). Lee noted that despite heavy criticism of their existence, their controversial nature, and the claims of wasteful spending they evoke, earmarks have minimal impact on the federal budget (Schick & LoStracco, 2000). In FY 1999, earmarks accounted for only 0.1% of all nondefense federal expenditures, while other nondefense governmental grants constituted 22% of total federal outlays (Lee, 2003). Further, Lee contended that since most nondefense funding is awarded in the form of grants-in-aid directly to state governments, it is thereby distributed by means that do not afford members of Congress the opportunity to claim credit for the appropriation. Earmarks, then, serve as a

mechanism for members of the House of Representatives to claim credit for the allocation of funds for special projects in their respective districts in a way that is relatively inconsequential to cumulative federal outlays (Lee, 2003).

Lazarus and Steigerwalt (2009) argued that considerable earmarking literature disproportionately concentrates on earmarking in the U.S. House with limited attention given to the process in the Senate. In an effort to address this imbalance, Lazarus and Steigerwalt identified four notable differences between the House and Senate that may influence the distributive spending practices among these two legislative entities, and consequently, public perceptions of earmarking in Congress. These differences explained by Lazarus and Steigerwalt include the fundamental variance in the organization of each chamber, electoral motivations, majority party influence, and intrastate spillover effects.

Lazarus and Steigerwalt (2009) also explained that the more rigid organizational hierarchy of the House of Representatives lends itself to a more uneven distribution of power among members, while the established hierarchy of the Senate is considerably less restrictive, allowing rank-and-file senators to wield greater influence than their counterparts in the House. Further, Lazarus and Steigerwalt indicated that, procedurally, the function of the Senate agenda, rules, and schedule is much more egalitarian than that of the House, which presents an entirely different set of complexities, including the filibuster. Opportunities to secure funding for constituencies are more readily available for rank-and-file members of the Senate than those in the House (Lazarus & Steigerwalt, 2009). Funding procurement opportunities are more prevalent for House members with higher rank and influence, such as those with greater seniority or party leadership

positions (Balla et al., 2002), serve on prestigious committees (Ferejohn, 1974), or serve as committee chairs (de Figueiredo & Silverman, 2006).

Another difference between the House and Senate distributive spending practices is associated with the electoral distinctions formed around unequal terms of service and constituent representation (Lazarus & Steigerwalt, 2009). Members of the Senate are elected to six-year terms, while House members are elected for only two years. Further, while each member of the House of Representatives represents constituents in a single congressional district, senators represent the entire population of their respective states. Lazarus and Steigerwalt (2009) contended that members of the House are much more concerned with reelection on a daily basis than senators, and therefore, are more readily focused on the procurement of benefits for their constituent districts. Jacobson (2001) confirmed Lazarus and Steigerwalt's notion that increased electoral vulnerability translates into intensified effort and activity associated with the procurement of constituent benefits. Additionally, Lazarus and Steigerwalt noted that only senators in close proximity to a bid for reelection would concern themselves with how the procurement of benefits for their constituencies may impact their reelection campaigns.

Historically, earmarking literature has suggested that majority party affiliation positively impacts procurement opportunities regardless of congressional chamber. Carsey and Rundquist (1999) confirmed that members of the majority party have successfully procured a greater number of projects funded by distributive funding initiatives. Lee (2003) reported that in terms of total earmarked expenditures, majority party members received more than did members of the minority party. Further, Balla, Lawrence, Maltzman, & Sigelman (2002) established that among projects funded by

distributive spending, members of the majority party were more successful at procuring projects of higher value than their counterparts in the minority party. Lazarus and Steigerwalt (2009), however, identified differing levels of majority party influence between the House and Senate. Membership in the majority party is less advantageous in the Senate than it is in the House of Representatives due to Senate rules that require unanimous consent for most scheduling and a 60-member voting majority to enact cloture (Lazarus and Steigerwalt, 2009). This is an important consideration, which likely informs Lazarus and Steigerwalt's criticism of a generalized suggestion present in the literature that majority party membership equates to a real advantage in distributive spending, irrespective of which house of Congress is being considered.

Differences in intrastate spillover effects in the House and Senate were also identified by Lazarus and Steigerwalt (2009). Intrastate spillover effects are collectively shared benefits enjoyed by all representatives in a specific state delegation and are procured by a single senator or congressman among that group (Lazarus & Steigerwalt, 2009). Moreover, Lazarus and Steigerwalt contended that among members of a state delegation, an individual member who has a powerful position within the respective house or committee, is a member of the majority party, or is electorally vulnerable may procure benefits shared by other members of the delegation, thus, generating intrastate spillover effects. Lazarus and Steigerwalt suggested that members of state delegations have incentive to collaborate with each other in the procurement of distributive benefits because every member of a state delegation may benefit when a single member of the delegation secures an earmark that positively impacts the respective state. Further, Lazarus and Steigerwalt suggested that the likelihood of intrastate spillover effects are

greater in the Senate since both representatives in that house represent the same constituent state-wide constituency.

Based on their review of the literature and the identification of notable differences between the House and Senate that influence the distributive spending process, Lazarus and Steigerwalt (2009) formulated several interchamber earmark hypotheses:

1. *Chamber Hierarchy Hypothesis:* Intrachamber authority is more effective at predicting the level of earmark distribution in the House than in the Senate.
2. *Election Hypothesis 1:* Electoral vulnerability is more effective at predicting the level of earmark distribution in the House than in the Senate.
3. *Election Hypothesis 2:* Reelection proximity is more effective than electoral vulnerability at predicting the level of earmark distribution in the Senate.
4. *Majority Party Hypothesis:* The majority party of the House has a greater and more consistent advantage in the procurement of benefits for its members than the majority party in the Senate.
5. *Spillover Hypothesis:* Potential intrastate spillover effects within state delegations will be more substantial and less partisan in the Senate than in the House.

Earmarking and Electoral Vulnerability

The electoral vulnerability of members of Congress is another dimension of earmark spending discussed in the literature (Bickers et al., 2007; Bickers & Stein, 1996; Ferejohn, 1974; Frisch, 1998; Lazarus, 2009; Lee & Oppenheimer, 1999; Mayhew, 1974; Stein & Bickers, 1994). Mayhew (1974) noted that earmarking offers congressional representatives the opportunity to take credit for the procurement of distributive awards

for their constituent districts. Stein and Bickers (1994) used distributive funding data related to earmarks awarded to specific districts, personal information about congressional representatives, and data associated with the political affiliations and awareness of voting constituencies of these representatives, in the testing of hypotheses aimed at assessing the electoral connections to incumbents. Moreover, Stein and Bickers argued that incumbents who are most electorally vulnerable are likely to pursue new earmarks for their constituent districts, an action viewed favorably by politically attentive interest groups and voters in their district, thus translating into higher favorability of the incumbent.

Ferejohn (1974) offered three fundamental considerations that encourage a member of Congress to pursue allocated funding for special projects in a constituent district. First, Ferejohn affirmed that distributive spending on localized projects is useful because it bolsters the congressional record and relationships with influential constituents in the district of an incumbent. Additionally, an incumbents' pursuit of distributive benefits for their constituent districts or state translates into increased influence in legislative policy and appropriations (Ferejohn, 1974). Further, Ferejohn noted that members of Congress hold the position that securing federal funding for localized programs and projects is an uncomplicated action that solidifies the possibility reelection.

Bickers and Stein (1996) explored the implications of the relationship between congressional incumbency and earmarking as it relates to the emergence of a quality candidate in advance of a reelection cycle. Bickers and Stein conducted a survey of district-level earmark data associated with election outcomes and margins, open-seat contests, and the receipt of campaign funding from political action committees. The

review and analysis of this earmark data informed Bickers and Stein's position that high levels of earmarking early in the term of an incumbent member of Congress are related to a decreased presence of quality challengers in subsequent elections. Further, Bickers and Stein contended that newly-elected members of Congress, when elected from an open-seat district, particularly from one in which the seat was aggressively contested, procure higher levels of distributive awards for the district early in their terms when compared to representatives who won their seats in alternate election scenarios.

Frisch (1998) noted that the rational choice perspective, prevalent in the literature associated with the study of distributive spending in Congress, characterizes the legislative body as one that in organization, structure, and practice creates opportunities to maximize gains associated with federal spending in localized districts. Moreover, through the lens of rational choice, reelection serves as a primary goal for members of Congress who will capitalize on opportunities to minimize their electoral vulnerability (Fiorina, 1977; Mayhew, 1974). Frisch contended that this general perception of distributive spending by Congress, present in the literature, contributes to a prominent conception that the legislative branch of the federal government is preoccupied with earmarking at the expense of a reasonable and effective national spending policy. Specifically, congressional members take advantage of a decentralized committee appointment process that has evolved to allow for the self-selection of members to committees they believe will be most conducive to the procurement of distributive benefits for their respective constituent state or district (Frisch, 1998; Shepsle, 1978).

Bickers et al. (2007) expanded the study of the relationship between earmarking and the electoral vulnerability of members of Congress explored by Stein and Bickers

(1994) and Bickers and Stein (1996). Specifically, Bickers et al. examined the impact of incumbent representatives' claims of credit for earmarks and other distributive benefits on the success of their 2006 House reelection bids through a survey of data presented in Ansolabehere's (2006) *Cooperative Congressional Election Study*. Bickers et al. found that credit claiming by House members seeking reelection frequently led to adverse effects, particularly with party identification serving as a determinant for some voters, who, irrespective of party affiliation, penalized the claiming of earmarks. Further, Bickers et al. noted that the survey data revealed another unpredicted effect: a tendency among Republicans to reward earmarking among Democratic incumbents.

Earmarking and Political Party Influence

The influence of political parties on earmark policies and practice in Congress are also discussed in the literature (Balla et al., 2002; Bogardus, 2008; Carsey & Rundquist, 1999; Crespin & Finocchiaro, 2008; Evans, 2004; Lee and Oppenheimer, 1999; Lee, 2000). Balla et al. (2002) studied the political advantages that members of the majority party in either house of Congress may have had in the distribution of federal funding in the years 1995-2000. Specifically, Balla et al. constructed an empirical test to assess the influence of partisan advantage in academic earmarking. Further, they argued that despite any actual advantage held by the majority party in the allocation of federal resources in either the U.S. House or Senate, the party is adept at shielding itself from internal accusations of wasteful spending by including members of the minority party in coalitions responsible for the funding of earmark expenditures. This behavior of the majority party has been characterized as partisan blame avoidance (Balla et al., 2002). Moreover, Balla et al. suggested that majority party advantage exists primarily in the

House of Representatives with minimal to no influence in the Senate. However, Balla et al. acknowledged that their study was specifically limited to the study of partisan advantage in academic earmarking and that alternative conclusions may be drawn in a broader application of their test.

Crespin and Finocchiaro (2008) explored partisan effects on earmarking in the U.S. Senate and noted that the unique elements of the chamber's appropriatory process, in addition to its other distinct characteristics (Lazarus & Steigerwalt, 2009), merit the study of partisan influence on the practice of distributive politics among members of the Senate. Moreover, Crespin and Finocchiaro use earmarking in the Senate as a tool to measure the level of majority-party advantage and theorized that a relationship exists between strong internal party affiliation and increased advantage of the majority party, which ultimately translates into the procurement of greater distributive benefits for constituents. Additionally, Crespin and Finocchiaro argued that the majority party, through procedural maneuvering, is able to secure higher levels of distributive spending for its members as compared to that of the minority party.

Seniority Translates to Earmarking Authority

Members of Congress who begin their service determined to pursue spending reduction initiatives, such as the newly empowered representatives of the Republican House caucus in 1995, often shift priorities to a position of support for earmarks as they gain seniority (Schick & LoStracco, 2000). Additionally, Schick and LoStracco (2000) reported that internal self-studies conducted by conservatives in Congress revealed that as members' terms of service increase (seniority), so does their inclination to earmark. Balla et al. (2002) and Roberts (1990) noted that seniority in Congress translates to a real

advantage in the procurement of distributive benefits for a senior member's constituent districts as these representatives have greater opportunity to participate in and build coalitions that advance earmarking.

The American Research University as Lobbyist

A review of the literature indicates that universities have actively participated in the political process of lobbying, a notable reversal from the field of higher education's previous stance on the activity and public declamations opposing this practice (de Figueriredo & Silverman, 2007; DiMaggio & Powell, 1983; Lazarus, 2010) (Appendix B). Present in the literature is also the notion that university lobbying has contributed to the rise of earmarking in academe (de Figueriredo & Silverman, 2007). Lazarus (2010) noted that earmarks are typically conceived when members of Congress receive requests for federal funding for a specified purpose from constituents or organizations in their local districts, which may include institutions of higher education.

The Resuscitation of Earmarking?

Since the implementation of a congressional moratorium on earmarking in 2010, Kennedy and Gelber (2012) reported that both the cost and number of earmarks has experienced a significant decline. Kennedy and Gelber indicated that the number of earmarks has fallen from 9,129 in FY 2010 to 152 in FY 2012, a decline of 98.3%. When this decline in earmarking is translated into actual cost, the amount of earmark dollars expended has dropped precipitously from $16.5 billion in FY 2010 to $3.3 billion in FY 2012, which represents a cumulative loss of 80% (Kennedy & Gelber, 2012). Additionally, Kennedy and Gelber challenged congressional claims that appropriations legislation, since the enactment of the moratorium, has been wholly free of earmarks

based on two primary arguments. First, definitional standards in earmark criteria are not consistent with those of Congress (Kennedy & Gelber, 2012). Kennedy and Gelber's second argument, which is based on the Citizens Against Government Waste (CAGW) definitional standards for earmarking, indicated that recent legislation categorized as an earmark must relate to the funding of an initiative that had previously been funded as an earmark.

In their research on contemporary earmarking policy and practice, and in subsequent identification of enacted earmarks between FY 2010 and FY 2012, Kennedy and Gelber (2012) relied on seven earmark criteria published by GAGW. Kennedy and Gelber noted that to be categorized as an earmark, congressional spending must meet only one of these seven criteria

- requested by either the House or Senate, not both;
- not awarded competitively;
- not authorized specifically;
- not requested by the President;
- greatly exceeds previous year's appropriations or a Presidential budget request;
- not the subject of congressional inquiry or hearing; or
- serves only a special or local interest.

Kennedy and Gelber (2012) explained that the recent moratorium on earmarking, which has now expired, is not a permanent ban on the distributive spending mechanism. Consequently, a congressional consortium proposed legislation in 2012 in the form of a Senate amendment that would implement a permanent ban on earmarking in response to

the call from a select group of influential members of both chambers of Congress, including Senate Majority Leader Harry Reid (D-Nevada), Senate Appropriations Committee Chairman Daniel Inouye (D-Hawaii), Senate Appropriations Committee Ranking Member Thad Cochran (R-Mississippi), and Representative Ron Paul (R-Texas), to lift the ban on earmarks.

Further, Kennedy and Gelber (2012) discussed formal action that has advanced transparency in the earmarking process in recent years. For example, an Executive Order issued by President George W. Bush on January 29, 2008 established a mandate that all agencies of the federal government disclose congressional communications associated with earmarks (Exec. Order No. 13,457, 2008). Additionally, President Barack Obama, in a weekly address to the nation in November 2010, reemphasized the need for transparency and reductions in earmarking (The White House, Office of the Press Secretary, 2010). Kennedy and Gelber referred to further action taken by President Obama in his dissemination of a 2011 executive memorandum among federal agencies in which he emphasized greater transparency in government and ordered the disclosure of communications from members of Congress to federal agencies featuring project or program funding directives.

Mississippi as Chief Earmark Beneficiary

Relying on data compiled by CAGW, Crespin and Finocchiaro (2008) confirmed significant growth of earmark spending in the United States between 1991 and 2005. Crespin and Finocchiaro indicated that this remarkable period of annual growth in distributive spending regressed only twice; first in 1992 and again during a two-year period in the late 1990s, 1998-1999. Further, the number of total earmark projects

climbed from approximately 1,000 in 1991 to more than 14,000 in 2005 (Crespin & Finocchiaro, 2008).

Further, Crespin and Finocchiaro (2008) described the level of earmark spending among the fifty states by forming five distinct groupings, each comprised of ten states for each of three dimensions of distributive spending. Table 3 reports total earmark spending with a unit measurement of $10,000. The state of Mississippi was ranked among the grouping of states receiving the highest level of earmark funding between 1995-2005.

Table 3

Total Earmark Dollars, 1995-2005

TOTAL EARMARKS IN $10,000	STATE GROUPINGS
$200,001 – 501,553	Alabama, Alaska, California, Florida, Hawaii, Mississippi, New York, Pennsylvania, Texas, West Virginia
$120,001 – 200,000	Illinois, Kentucky, Louisiana, Missouri, New Jersey, New Mexico, Ohio, South Carolina, Washington
$92,001 – 120,000	Colorado, Georgia, Iowa, Michigan, Maryland, Massachusetts, Nevada, North Carolina, Oklahoma, Tennessee
$65,001 – 92,000	Arizona, Indiana, Kansas, Minnesota, Montana, New Hampshire, Oregon, Utah, Wisconsin
$12,511 – 65,000	Connecticut, Delaware, Idaho, Maine, Nebraska, North Dakota, Rhode Island, South Dakota, Vermont, Wyoming

Note. From "Distributive and Partisan Politics in the U.S. Senate: An Exploration of Earmarks" by M. H. Crespin and C. J. Finocchiaro, 2008, In N. W. Monroe, J. M. Roberts & D. W. Rohde (Eds.), *Why Not Parties? Party Effects in the United States Senate*, pp. 229-251. Chicago, IL: University of Chicago Press.

Table 4 reports the total earmark spending per capita for all fifty states. The state of Mississippi was again ranked among those states receiving the highest level of earmark funding per capita between 1995-2005.

Table 4

Total Earmarks Per Capita

ALL EARMARKS PER CAPITA	STATE GROUPINGS
$575 – 5,284	Alaska, Hawaii, Mississippi, Montana, New Mexico, South Dakota, Vermont, West Virginia
$337 – 574	Alabama, Idaho, Iowa, Kentucky, Louisiana, Nevada, New Hampshire, North Dakota, Rhode Island, South Carolina, Utah
$240 -336	Arkansas, Colorado, Kansas, Maine, Missouri, Oklahoma, Virginia, Washington, Wyoming
$148 – 239	Arizona, California, Indiana, Maryland, Michigan, Ohio, Oregon, Pennsylvania, Tennessee, Wisconsin
$97 – 147	Connecticut, Georgia, Illinois, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, North Carolina, Texas

Note. From "Distributive and Partisan Politics in the U.S. Senate: An Exploration of Earmarks" by M. H. Crespin and C. J. Finocchiaro, 2008, In N. W. Monroe, J. M. Roberts & D. W. Rohde (Eds.), *Why Not Parties? Party Effects in the United States Senate*, pp. 229-251. Chicago, IL: University of Chicago Press.

Table 5 indicates total earmark spending that originated in the U.S. Senate with a unit measurement of $10,000. Again, for the period from 1995-2005, Mississippi was ranked in the state grouping which received the highest level of Senate-originated earmark funding.

Table 5

Total Senate Earmark Dollars, 1995-2005

SENATE EARMARK IN $10,000	STATE GROUPINGS
$66,001 – 249,087	Alabama, Alaska, Hawaii, Mississippi, Missouri, New Mexico, Pennsylvania, South Carolina, Washington, West Virginia
$36,001 – 66,000	California, Kentucky, Louisiana, Maryland, Montana, Nevada, New Hampshire, New York, Texas, Virginia
$29,001 – 36,000	Florida, Iowa, Kansas, Michigan, Oklahoma, Oregon, South Dakota, Tennessee, Utah, Vermont
$20,001 – 29,000	Arkansas, Colorado, Georgia, Idaho, Illinois, Maine, New Jersey, North Dakota, Ohio, Wisconsin
$5,458 – 20,000	Arizona, Connecticut, Delaware, Indiana, Massachusetts, Minnesota, Nebraska, North Carolina, Rhode Island, Wyoming

Note. From "Distributive and Partisan Politics in the U.S. Senate: An Exploration of Earmarks" by M. H. Crespin and C. J. Finocchiaro, 2008, In N. W. Monroe, J. M. Roberts & D. W. Rohde (Eds.), *Why Not Parties? Party Effects in the United States Senate*, pp. 229-251. Chicago, IL: University of Chicago Press.

Table 6 reports the total earmark spending per capita for all fifty states that originated in the U.S. Senate. From 1995-2005, the state of Mississippi was ranked in the state grouping with the highest level of receipt of Senate-originated earmarks per capita.

Table 6

Total Senate Earmarks Per Capita, 1995-2005

SENATE EARMARKS PER CAPITA	STATE GROUPINGS
$241 – 3,973	Alaska, Hawaii, Mississippi, Montana, New Hampshire, New Mexico, North Dakota, South Dakota, Vermont, West Virginia
$121 – 240	Alabama, Delaware, Idaho, Maine, Missouri, Nevada, Rhode Island, South Carolina, Utah, Washington
$61 – 120	Arkansas, Iowa, Kansas, Kentucky, Louisiana, Maryland, Oklahoma, Oregon, Virginia, Wyoming
$28 – 60	Colorado, Connecticut, Georgia, Michigan, Nebraska, Pennsylvania, New Jersey, Tennessee, Texas, Wisconsin
$16 – 27	Arizona, California, Florida, Illinois, Indiana, Massachusetts, Minnesota, New York, North Carolina, Ohio

Note. From "Distributive and Partisan Politics in the U.S. Senate: An Exploration of Earmarks" by M. H. Crespin and C. J. Finocchiaro, 2008, In N. W. Monroe, J. M. Roberts & D. W. Rohde (Eds.), *Why Not Parties? Party Effects in the United States Senate*, pp. 229-251. Chicago, IL: University of Chicago Press.

Lee and Oppenheimer (1999) suggested that Mississippi has a small-state advantage in distributive funding practice in the U.S. Senate. Lee and Oppenheimer's reported measurement of state representation in the Senate indicated that Mississippi is overrepresented in the upper chamber of Congress with a representation index of 0.52. This measure of state representation yields an index score for each state, which is based on the ratio of a state's population to one-fiftieth of the national population (Lee &

Oppenheimer, 1999). Lee and Oppenheimer explained that if a state's index score is equal to one, that state is neither over- or underrepresented and is thereby aligned to the one-man, one-vote standard. However, an index score of less than one indicates that a state is overrepresented in the Senate, and conversely, when a state has an index score higher than one it is underrepresented (Lee & Oppenheimer, 1999).

Based on Lee and Oppenheimer's (1999) state representation measurement formula, as well as 2010 population estimates for the nation and Mississippi, the state has a Senate representation index of 0.48, signaling a higher level of overrepresentation in the Senate, now, when compared to its 1990 index score of 0.52. Population estimates from the 2010 Census report that the respective populations for Mississippi and the United States are 2,967,297 and 308,745,538 (U.S. Census Bureau, 2012). A comparison of levels of population growth for both the nation and Mississippi indicate that the United States is outpacing the state in the rate of population growth. This trend has significant implications for the level of representation held by each state in the U.S. Senate. According to Lee and Oppenheimer's (1999) state representation index model, the conclusion may be drawn that as long as national population growth exceeds that of a state with an index score of less than one, the level of overrepresentation of that state will progressively rise. Consequently, Mississippi may expect to maintain disproportionately favorable influence (overrepresentation) in the Senate based on the model advanced by Lee and Oppenheimer.

Earmarks and the Culture of Research at Mississippi's Research Extensive Universities

Mississippi's public system of higher education features eight universities, four of which have received a Research University/High (RU/H) rating from the Carnegie

Foundation for the Advancement of Teaching (Carnegie Foundation, 2013): Jackson State University (JSU), Mississippi State University (MSU), University of Mississippi (UM), and The University of Southern Mississippi (USM). This is an indication that these four institutions of higher education in Mississippi are part of the larger organizational field of American academe and have likely been impacted by systemic and field-level shifts in research funding, culture, and policy discussed in this review of literature. By applying several dimensions of Institutional Theory, including institutional isomorphism, dynamic of organizational field, and organizational structuration and legitimation, an assessment of the impact of earmark reductions and cessation in Mississippi public higher education may be possible.

Multiple dimensions of earmarking presented in this review of literature, specifically those associated with the political dynamics of the earmarking process in Congress, are particularly relevant to Mississippi. The state has had favorable influence in regards to seniority (Balla et al., 2002), particularly in the U.S. Senate. Further, in recent decades members of Mississippi's congressional delegation, such as former Senate Majority Leader Trent Lott and former Senate Appropriations Committee Chairman Thad Cochran (current ranking member of the same committee), have held prominent leadership positions or served on appropriations committees (De Figueiredo & Silverman, 2006; Ferejohn, 1974). Moreover, the state may have benefited from majority party affiliation (Balla et al., 2002; Carsey & Rundquist, 1999; Crespin & Finocchiaro, 2008; Evans, 2004; Lee & Oppenheimer, 1999; Lee, 2000), as Mississippi's congressional delegation was majority-Republican during an extended period of earmark

growth, 1980-2006. Mississippi also possesses a small state advantage as discussed in the literature (Lee & Oppenheimer, 1999).

In a pilot study, Young (2012) interviewed institutional and system administrators with knowledge of research funding policy and processes to initially assess the financial impact recent reductions and cessation of earmarking in Congress have had on RU/H institutions of higher education in Mississippi. A president at one RU/H university in the state indicated that subsequent to the enactment of a moratorium on federal earmarks, the university experienced a loss of $22 million between FY 2010 and FY 2011 (Young, 2012). Additionally, Young reported that prior to the earmark moratorium, general research funding for that university constituted one-third of its operational budget, while earmarks represented 6-7% of total operational costs.

An official at Mississippi's state college board, IHL, stated that reductions of earmarks do not necessarily translate into a demise of university research in the state but will impact sources of funding (Young, 2012). The director of research centers and institutes at a Mississippi RU/H university indicated that the shift to a more competitive model of research funding is a result of the recent loss of earmarks but that this transition may prove beneficial (Young, 2012). Further, Young noted the director's argument that competition among research universities leads to greater innovation and ingenuity, and consequently, more beneficial research.

The Development of a Localized Research Culture: An Isomorphic Journey at USM

In a second pilot study, Young explored the historical development of federal research funding procurement policy and practice at The University of Southern Mississippi by conducting interviews with former institutional leaders with relevant

knowledge of the topic. Participants in Young's study included two former USM presidents, Drs. Lang and Parrilla, and a former vice president for research, Dr. Temple, with knowledge and experiences related to the research funding process, as well as the development of the institution's research culture across nearly half a century, beginning in the early 1960s.[1] Young reports that Dr. Temple self-identified as a strong proponent of research throughout his tenure in the university system and identified research as the fundamental element that distinguishes universities from colleges. This notion is rooted in various dimensions of organizational culture theory that may be applied to the enterprise of research in higher education as a means by which to achieve increased institutional legitimacy and improved competitiveness in the field of higher education (DiMaggio & Powell, 1983, 1991; Hannan & Freeman, 1977; Meyer & Rowan, 1977; Scott, 1987, 1995, 2004). Drs. Parrilla and Lang confirmed that university research is significant in both the establishment and maintenance of institutional legitimacy.

Participants in Young's study also acknowledged the transformative power of research and research funding in the evolution of USM's institutional culture over time, and moreover, the expectation of faculty involvement in research endeavors. Dr. Temple contended that the culture within a true university must be heavily vested in research and rooted in the understanding that research is an important part of the university's identity and mission. Further, Dr. Temple noted that USM should aggressively pursue an expansive research agenda not only to strengthen its institutional identity, but to sustain its mission, goals, and growth.

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[1] To protect the confidentiality of study participants, pseudonyms are used to report study findings.

Dr. Parrilla indicated that USM was the first institution of higher education in Mississippi to engage in active earmark procurement with a member of Congress. This finding is aligned with discussion in the literature of institutions of higher education assuming the functional role of lobbyists in the procurement of external funding for research (de Figueriredo & Silverman, 2007; Lazarus, 2010). Additionally, each study participant confirmed that USM's entrée into the procurement of congressionally directed research funding, specifically, through earmarking, began in the late 1970s and facilitated the expansion of research infrastructure and facilities. Drs. Lang and Parrilla also noted that most of the congressionally directed funding for research at USM allocated throughout the last three decades originated in the United States Senate. This trend is in alignment with discussions, prevalent in the literature, of a Senate-based, small state advantage in the earmarking process (Atlas et al., 1995; Lee, 1998, 2000, 2003, 2004; Lee & Oppenheimer, 1999), as well as the notion that congressional seniority translates to increased distributive benefits for senior members' constituent districts (Balla et al., 2002; Roberts, 1990). Moreover, each study participant concurred that the role of research as a function of the institutional culture of the university has become more significant since the late 1970s and contributes to greater financial, public relations and marketing, and faculty recruitment success.

Young's (2012) interviews with former USM administrative officials also signaled possible distinctions between Mississippi RU/H universities in the application of earmarked research funds. Drs. Lang and Parrilla noted that while USM pursued earmarked funds to expand campus infrastructure, specifically research facilities, other research universities in the state may have allocated these funds in different ways, such as

funding additional research personnel. Moreover, Dr. Lang, in reference to research facilities constructed with earmarked dollars, described the beneficence associated with expending earmarked funds on infrastructure as more influential on the sustained growth and research potential of a university than the funding of expanded research-related human capital.

Each participant identified the academic areas of polymer science and technology, marine sciences, and the Gulf Coast Research Laboratory (GCRL) as leading recipients of earmarked research funding within the university. Drs. Lang and Temple contended that these academic programs and departments were, at that time, particularly vulnerable to adverse funding affects associated with the 2010 congressional moratorium on earmarking. Study participants also suggested that these programs, as well as select programs in the liberal arts and music, while more likely to experience adverse effects related to earmark cessation, were largely responsible for USM's advanced research stature, both nationally and internationally.

Findings of Young's (2012) recent study identified several additional areas for further research related to the influence of academic earmarks and research funding, generally, in Mississippi. These potential areas for further research include the examination of distinctions in earmark expenditures among the four RU/H universities in the state, as well as morphing patterns of faculty research involvement in these institutions. Additionally, study of the evolution of both the type and length of research programs aggregated by research funding sources may inform a more concentrated exploration of possible shifts in institutional research culture. These research considerations may be informed by data collected, managed, and analyzed by

institutional research offices and sponsored programs administrations at JSU, MSU, UM, and USM.

Young's (2012) study explored the historical emergence and subsequent rise in influence of the federal government's funding of research at USM. Participants indicated that this federal investment, particularly through research earmarks, has significantly influenced the existing research infrastructure and facilities at the university. Moreover, USM's participation in this expansion of research, as a means to achieve greater academic status or legitimacy in the field of American higher education, may be characterized as isomorphic.

CHAPTER III

METHODOLOGY

Overview

This chapter offers a description of the methods that were employed in this study. The description features information related to the research questions that were explored, selection of study participants, development of interview guides, qualitative interview and data collection processes, data analysis, and the acquisition of formal approval to conduct research from The University of Southern Mississippi's Institutional Review Board (IRB).

Purpose

This study had two primary purposes. First, this study described the knowledge, attitudes, opinions, and practices associated with academic earmarks in Mississippi among a sample of government and university representatives. Second, this study investigated institutional culture regarding grant funding among university administrative officials and faculty. Five primary research questions were used to guide this study:

1. What knowledge, attitudes, opinions, and practices regarding federal research funding and academic earmarking in the state are held by governmental representatives in Mississippi?
2. What knowledge, attitudes, opinions, and practices regarding federal research funding academic earmarking in the state are held by higher education administrators at the four RU/H universities in Mississippi?
3. What knowledge, attitudes, opinions, and practices regarding federal research funding academic earmarking in the state are held by faculty principal

investigators (PIs) on externally funded research programs or projects at the four RU/H universities in Mississippi?

4. How do faculty and administrators at the four RU/H universities in Mississippi believe that knowledge, attitudes, opinions, and practices associated with federal research funding academic earmarks have influenced the institutional culture at their respective institutions?
5. How are these RU/H institutions, as well as these university and government officials, similar to one another in relation to the knowledge, attitudes, opinions, and practices associated with federal research funding and academic earmarks in Mississippi?

Participants

For the purposes of this study, a purposeful sample was used. This purposeful sample allowed for the intentional selection of participants with knowledge of a specific phenomenon (McMillan & Schumacher, 2001), which, for this study was academic earmarking at public institutions of higher education in Mississippi that are heavily vested in the enterprise of research in Mississippi.

The research questions used to guide the study, along with the multiple dimensions and stakeholders involved in academic earmarking at the four RU/H universities in Mississippi, dictated the formation of three distinct participant groupings: state and federal government officials, institutional officials and administrators, and university faculty. These groups are distinguishable from one another based on the participants' relationship to, and involvement in, the academic earmarking process. Moreover, participants were assigned to groupings based on specific academic

earmarking activity. Table 7 identifies selected participants and participant groupings.

Group 1 was comprised of state and federal governmental officials representing Mississippi in both houses of the United States Congress, the Governor of Mississippi, as well as the state's Commissioner of Higher Education. Participants assigned to Group 1 were identified by any or all of these criteria: (1) heavily vested in the development of governmental policy and regulation associated with earmarks, (2) wield legislative appropriatory and political power, (3) maintain the authority to submit and vote on earmark legislation before Congress, and (4) do not serve as an official representative, employee, or designee of any single institution of higher education.

Group 2 was comprised of officials and administrators at the four public RU/H universities in Mississippi. These higher education officials will include university presidents, vice presidents for research, and directors of sponsored programs administrations (SPAs) at Jackson State University (JSU), Mississippi State University (MSU), The University of Mississippi (UM), and The University of Southern Mississippi (USM).

Group 3 was comprised of current members of the faculty who are serving or have served as principal investigators (PIs)/program directors (PDs) on externally-funded research programs or projects at JSU, MSU, UM, and USM. Participant selection for Group 3 was based on a cumulative $250,000-minimum procurement of external research funding, on which the selected participant is serving or has served as PI/PD. Further, potential Group 3 participants were identified through consultation with the sponsored programs administrations (SPA) at each of the four RU/H universities in Mississippi, as well as through a review of relevant financial reporting data and reports.

Table 7

Proposed Participants and Participant Groupings

Participant Group	Proposed Participants
Group 1: State and Federal Governmental Officials	District 1-Representative – U.S. House District 2-Representative – U.S. House District 3-Representative – U.S. House District 4-Representative – U.S. House Senior Senator from Mississippi – U.S. Senate Junior Senator from Mississippi – U.S. Senate Governor of Mississippi Commissioner of Higher Education Assistant Commissioner of Higher Education for Government Relations
Group 2: Institutional Officials and Administrators	Jackson State University President, Vice President for Research, and Director of Sponsored Programs Mississippi State University President, Vice President for Research, and Director of Sponsored Programs The University of Mississippi President, Vice President for Research, and Director of Sponsored Programs The University of Southern Mississippi President, Vice President for Research, and Director of Sponsored Programs
Group 3: University Faculty (PIs/PDs)	Principal Investigators/Program Directors at Jackson State University Mississippi State University The University of Mississippi The University of Southern Mississippi

Subsequent to approval from the university's IRB, qualitative interviews were conducted with participants selected from each of four levels of individuals associated with academic earmarks: (1) Mississippi congressional representatives; (2) state leaders

and Institutions of Higher Learning (IHL) officials, including the commissioner of higher education; (3) institutional officials and administrators at the four research extensive universities in Mississippi; and (4) university faculty and research principal investigators as shown in Table 1.

Instrumentation

In an effort to address adequately the previously identified research questions, the study necessitated the development of three unique qualitative instruments based on participant categorical groupings. These qualitative instruments were constructed from a phenomenological perspective in order to extrapolate meaning from the lived experiences of study participants, specifically, participants' interactions with federal research funding and academic earmarking in the context of higher education in Mississippi. Moustakas (1994) noted that phenomenology and the phenomenological approach strive first to eliminate all prejudgments of a specific phenomenon by neglecting presuppositions and firmly establishing an uncluttered, open perspective.

A preliminary interview guide comprised of approximately twenty items was developed and subsequently, adapted for each participant group. Each interview guide began with a question posed to participants asking them to describe their career path and relationship with higher education in Mississippi or their respective university. All other qualitative instrument items were related to varying dimensions of external research funding process, institutional research culture, and involvement in research activity, funding, or policy. Group 1 participant interviews featured questions found on The Government Official's Opinions and Attitudes of Institutional Research Culture and Earmark Cessation Effects – An Interview Guide (Appendix E). Questions found on

The University Research Administrator's Opinions and Attitudes of Institutional Research Culture and Earmark Cessation Effects – An Interview Guide (Appendix F) were posed to Group 2 participants. Group 3 participants responded to questions found on The Research Faculty Member's Opinions and Attitudes of Institutional Research Culture and Earmark Cessation Effects – An Interview Guide (Appendix G).

Phenomena are the fundamental tenets of human science and the foundation of knowledge and understanding (Moustakas, 1994). Fundamental to the phenomenological approach is what Moustakas referred to as an unfettered way through which to consider a specified phenomenon of everyday experience, free from the influence of prejudices, preconceptions, and prevalent cultural beliefs, attitudes, or customs. Van Manen (1990) suggested that the transformation of lived experience into a textual representation of its meaning is central to the phenomenological approach. Moreover, as lived experiences have a temporal structure, they cannot be understood in the moments that follow their occurrence, but rather, through reflection after some measure of time has passed (Van Manen, 1990).

The phenomenological approach as discussed in the literature (Cassell and Symon, 2004; Creswell, 2009; van Manen, 1990; McMillan and Schumacher, 2001; Merriam, 2009; Moustakas, 1994) and in the context of this study, were employed to derive meaning from experiences of participants as they relate to the procurement, policy, and practices associated with the external funding of research at RU/H universities in Mississippi. Moustakas (1994) contended that perceptions of reality related to observations of, or experiences with, a specified phenomenon are dependent on the subject. This concept, when applied to parameters of this study, justifies the study of

participants' knowledge, attitudes, opinions, and practices associated with external research funding and research culture in higher education in Mississippi.

The development of interview guides for interviews of participants in groups 1 and 2 took into account that selected participants assigned to these groupings were what Cassell and Symon (2004) referred to as the "high-status interviewee" (p. 19). Further, McMillan and Schumacher (2001) referred to such high-status individuals as "elites" (p. 445) and explained that they are persons in a community or organization that are typically considered to be prominent, influential, and well informed.

The limited number and accessibility of participants in Group 1 made pilot-testing of this data collection instrument impractical. However, the interview guide constructed for this group of participants was similar in structure and content to those constructed for Groups 2 and 3. Interview guides constructed for Groups 2 and 3 were pilot-tested prior to administration.

Data Collection

A significant consideration in the conduct of these interviews, particularly, those among participants in groups 1 and 2, was the high-profile and public status of some participants. Cassell and Symon (2004) emphasized the importance of establishing the appropriate level of interaction or rapport with high-status interviewees. Cassell and Symon also explained that high-status interviewees may be accustomed to a considerable level of deference in most interactions; therefore, the interviewer must achieve balance between an appropriate level of confidence and respect in order to obtain more than surface-level responses to posed interview questions.

Upon receipt of approval from the Institutional Review Board at The University of Southern Mississippi (Appendix A), potential study participants were contacted using written correspondence, telephone, and e-mail communication modalities. Initial contact with potential participants in groups 1 and 2 was made through written correspondence. Potential participants in Group 3 were contacted initially via e-mail. In this initial communication, potential study participants in all three groups were informed of the purpose and protocols associated with the study, extended an invitation to participate, and provided a copy of the letter of intent and informed consent document (Appendix H). Interviews were scheduled at a date, time, and location that was convenient for the participants. At the time of interview, participants who chose to participate were instructed to review and sign the informed consent document and return it to the researcher. Subsequent to the researcher's receipt of the signed informed consent document, the interviews were conducted.

At the time of interview, the researcher reoriented the participants to the implications and protections associated with informed consent and offered a verbal reminder of the participant's right to withdraw consent and discontinue participation at any point during the interview. Additionally, the researcher reminded study participants that while no guarantee of anonymity could be offered, confidentiality would be ensured. The researcher then explained the steps that would be taken to ensure participant confidentiality and asked for the participant's permission to make an audio recording of the interview for the purpose of transcription generation and subsequent data analysis. Prior to the interviews, participants were given an opportunity to ask any questions related to the research process. The interview relied on questions from the applicable

participant group interview guide and focused on the experiences of the participant as they relate to the procurement, policy, and practices associated with the external funding of research at RU/H universities in Mississippi. Interview times ranged from 20-90 minutes, depending on the length of responses given by the individual participants. The average interview length was 35 minutes.

Ethical Considerations

Due to the high-status interviewee designation (Cassell and Symon, 2004) that applies to some study participants, anonymity could not be assured and was not offered. However, steps were taken by the researcher to ensure that confidentiality was maintained. These measures included the storage of digital audio recordings, as well as interview notes and related documents, in a secure location at the home of the researcher. Further, the researcher in all data reporting and associated discussion did not make direct references to any specific participant. Rather, references were made generally, to a participant group or position shared by more than one participant. Upon completion of this study, all audio recordings, transcripts, and related documents and research materials were destroyed.

Data Analysis

Upon completion of the interviews, audio recordings were transcribed and analyzed. Interview transcripts were reviewed and coded in the identification of prevalent themes. The data analysis process was achieved by employing a qualitative research process present in the literature, specifically, the phenomenological reduction process advanced by Moustakas (1994). Generally, this process aligns with the five fundamentals of qualitative analysis described by Creswell (2012), which include: (1)

exploring data by reading through transcripts and writing memos, (2) coding data and labeling text, (3) developing themes by similar codes, (4) connecting themes, and (5) developing a narrative.

Following the construction of interview transcripts, the phenomenological reduction process described by Moustakas (1994) was employed to extrapolate themes and contextual meaning from participant interview responses. The steps in Moustakas's Phenomenological Reduction process include: (a) bracketing, (b) horizontalizing, (c) clustering horizons identified in the horizontalization step into themes and (d) organizing these themes in textural descriptions of the topic or phenomenon being studied. This analytic process begins with the reduction of specific phenomena or bracketing of the interview topic (Moustakas, 1994). Van Manen (1990) described this act or process of bracketing as the intentional suspension of one's beliefs in natural world reality in order to examine fundamental structures of a specific environment, culture, or phenomenon. Further, Hycner (1985) described bracketing as essential in the identification of units of basic meaning. As part of this bracketing process, and prior to each interview, the researcher reviewed the appropriate interview guide and aligned his thinking to the contextual frame of the specific university and position of the interview participant.

The phenomenological technique of horizontalization was then applied to bracketed data to appropriate equal value to each participant response. In this dimension of Phenomenological Reduction, Moustakas (1994) noted that the goal of the researcher is to assign equal value of each of the phenomena discovered while attempting to disclose the essential meanings. Moreover, Moustakas noted that only after transcripts have been bracketed and horizontalized can thematic coding be achieved by clustering and

organizing themes. Once relevant themes have been identified, a research narrative may be developed, which explains identified connections between themes and study research questions. Additionally, a constant comparison technique defined by Glaser & Strauss (1967), which is a system of comparisons and contrasts among categories and topics of themes in the identification of new, distinctive characteristics, complemented the Phenomenological Reduction analytical approach.

CHAPTER IV

RESULTS

Overview

Qualitative data, generated from transcripts of face-to-face and telephone interviews conducted among a sample of university and government representatives in Mississippi, were collected over a six-week period from July-September 2013. Interviews were conducted with participants from three unique participant groups: (1) federal and state government officials in Mississippi; (2) institutional officials at the research extensive universities in the state; and (3) members of the faculty at these institutions who have each served as PIs/PDs on a cumulative minimum of $250,000 of externally funded research. These interviews were conducted at various locations throughout the state, primarily in the offices of interview participants. In some instances, particularly among Group 1 participants, interviews were conducted at their regional/district offices or at a neutral location identified by the participant. Further, some interview participants in Groups 2 and 3 requested to participate in phone interviews rather than in face-to-face meetings.

Data Analysis

Study Participants

Participants invited to participate in the study were selected primarily for their experiences with the external funding of research and its associated processes and policies in Mississippi's four RU/H institutions of higher education. Further, participant selection relied on the assumption that the selected participants possessed a general knowledge of earmark practices and processes. Participants were also assumed to have

well-established attitudes and opinions related to external research funding processes and academic earmarking in the context of higher education.

Invitations to participate in the study were extended to individuals who belonged to one of the three aforementioned participant groupings because of their assumed knowledge and insight that could potentially inform the following research questions:

1. What knowledge, attitudes, opinions, and practices regarding federal research funding and academic earmarking in the state are held by governmental representatives in Mississippi?
2. What knowledge, attitudes, opinions, and practices regarding federal research funding academic earmarking in the state are held by higher education administrators at the four RU/H universities in Mississippi?
3. What knowledge, attitudes, opinions, and practices regarding federal research funding academic earmarking in the state are held by faculty principal investigators (PIs) on externally funded research programs or projects at the four RU/H universities in Mississippi?
4. How do faculty and administrators at the four RU/H universities in Mississippi believe that knowledge, attitudes, opinions, and practices associated with federal research funding academic earmarks have influenced the institutional culture at their respective institutions?
5. How are these RU/H institutions, as well as these university and government officials, similar to one another in relation to the knowledge, attitudes, opinions, and practices associated with federal research funding and academic earmarks in Mississippi?

The Use of Pseudonyms and Data Reporting

In compliance with the IRB proposal submission protocol, informed consent documents, and methodology, when referring to individual study participant responses and the reporting of results of qualitative analysis, pseudonyms were used to protect the identity of individual participants. This measure was taken to ensure confidentiality and minimize the risk to participants, some of whom may be categorized as elites or high-status interviewees based on the description of such individuals forwarded by McMillan and Schumacher (2001) and Cassell and Symon (2004). Moreover, where data analysis revealed commonality among participants within or across specific participant groups, responses are referred to in the aggregate. Table 7 presents the lists of pseudonyms assigned to each participant group. The assignment of pseudonyms is intended to be random and not suggestive in any way.

Table 8

Participant Groupings and Listing of Pseudonyms

Participant Group	Participants
Group 1: State and Federal Governmental Officials	Kraemer McGee Stovall Chaney

Table 8 (continued).

Participant Group	Participants
Group 2: Institutional Officials and Administrators	Allen Arentsen Davis Carroll Finklea Ross Rummells White
Group 3: University Faculty (PIs/PDs)	Bynum Cross Emidy Flanagan Irons Lang

Group 1 Participation

Among the eight proposed Group 1 participants, four participated in interviews and subsequently, these interviews were transcribed and analyzed. These participants included three members of the U.S. House of Representatives and Mississippi's Commissioner of Higher Education. Three proposed participants declined to participate either through written correspondence or phone notification from a staff representative. The potential participants who declined to participate included both U.S. Senators from Mississippi as well as a member of the U.S. House of Representatives. Both Senators, either in writing or through notification by a staff representative, indicated that the complexity of their schedules and ongoing work in the U.S. Senate made their participation in the study impractical. A limited data collection period, coupled with the significant scheduling demands of the eighth proposed participant, the Governor of Mississippi, were prohibitive to his participation in this study.

Group 2 Participation

Among the 13 proposed Group 2 participants, eight participated in interviews and subsequently, these interviews were transcribed and analyzed, with the exception of one interview in which the participant failed to grant approval for the audio recording of the interview. To analyze the data captured in this interview, the researcher relied on detailed notes taken during the interview. The proposed list of Group 2 participants included university presidents, vice presidents for research, and directors of sponsored programs administrations at the four research extensive universities in Mississippi. Upon initial contact to the offices of the president at these institutions, staff representatives offered referrals to the vice presidents of research at each institution. No further action was taken by the researcher to secure interviews with the presidents of these universities. Among the vice presidents or chancellor for research at the RU/H institutions in Mississippi, four participated. Among directors of sponsored programs administrations at JSU, MSU, UM, and USM, three SPA directors participated. Additionally, an assistant director of sponsored programs at one of these institutions participated in the study. The research administration officials at one of these universities requested to participate in a joint phone interview, which included the vice president for research, director of sponsored programs, and assistant director of sponsored programs.

Group 3 Participation

Among the eight faculty members invited to participate in the study, six participated in interviews and subsequently, these interviews were transcribed and analyzed. These participants served as members of the faculty at one of the research extensive universities in Mississippi and have also served as PI/PD on a cumulative

minimum of $250,000 of externally funded research. Potential participants were identified through consultation with directors of sponsored programs administrations at each institution as well as by a review of relevant data related to external research funding at the institutional and system level. This consultation and review allowed the researcher to make distinctions between the types of research activity these faculty members had participated in. Specifically, the researcher determined whether the external funding secured by the faculty member had been awarded through either a competitive, peer-review process, or through congressionally directed funding. These distinctions informed the participant selection process. A faculty member with experience with competitive research funding procurement and one with experience with directed funding for research at each RU/H university were invited to participate in the study. Among the eight faculty invited to participate, six responded and participated in interviews.

The following themes were identified in the thematic coding and analysis of the data:

1. The federal government's fundamental role in funding basic research
2. Leading research initiatives and dynamics in Mississippi
3. Criteria for noteworthy research programs
4. Recent trends in federal research funding
5. Significant external funding awards quantified
6. Earmarks and institutional culture
7. Economic and political forces were prevailing factors that led to the 2010 moratorium on earmarking

8. Benefits and detrimental effects of the moratorium on earmarking for higher education in Mississippi
9. Administrative considerations
10. The future of federal funding for research earmarks

Theme One: The Federal Government's Fundamental Role in Funding Basic Research

The data indicate the prevalence of a well-established belief among all participant groups that the federal government does and should continue to maintain a significant role in the funding of basic research in the United States and in American academe, specifically. Moreover, participants noted that the federal government's investment in research and development is fundamental to the global competiveness of the United States in science, technology, and health fields.

Federal Funding Capacity

The funding relationship between government and research is not a novel concept. Stovall, a Group 1 participant, offered perspective as to the historical development of government investment in research, generally. Stovall commented,

> This is the first example I've been able to find of government being heavily involved in research. There was an Italian explorer who had a theory. He believed you could reach the Spice Islands that were located in the east by sailing to the west. And he wanted to test his theory. Unfortunately, he didn't have the personal resources. So, that Italian explorer went to his own government. They didn't have the resources to back him so Christopher Columbus went to Queen Isabella of Spain, who believed in his research project and invested heavily in it. In 1492, Christopher Columbus sailed the ocean blue and he changed the history

> of the world. For the next century and a half, Spain became one of the dominant players in the western hemisphere because Queen Isabella invested in the Columbus research project. And I think we've seen time and time again, the effect of government investment in research.

Stovall's reference to the Christopher Columbus mnemonic called to mind a fundamental lesson in world history and presented an early example of governmental funding of a research endeavor. Additionally, Stovall's example directed emphasis on the superior funding capacity of government when compared to personal or institutional resources. This notion was a common justification given across all groups for the research funding mandate assigned to the federal government.

Federal Government: A Patron of Basic Research

Several participants discussed the federal government's essential role in the funding and advancement of basic research. Specifically, most Group 3 participants made clear distinctions between the funding roles of governmental and commercial interests as they relate to basic research. Cross established the most rigid of these distinctions by noting that federal research funding should be directed at basic research and that "the minute that a commercial interest is interested in it then it should be hands off." Cross explained that if commercial interests or the private sector are interested in research, they are likely to advance the research further as market forces establish demand for the research product.

While a high level of risk is not a fundamental assumption of basic research, a higher risk is typically associated with basic research when compared to applied research

endeavors. Stovall suggested that high-risk research is the type of research the federal government has a responsibility to invest in. Further, Stovall commented,

> The characteristic of federal investment in research is you've got to take on high-risk projects. . . . once research becomes successful and has identified that this is a commercially viable product, the federal government needs to get out of the picture very quickly and let the private sector take over the manufacturing and distribution.

This broad view of the federal government as a catalyst for research and development through its ability to invest heavily in basic research was held by all participants in the study. Moreover, most participants' responses indicated agreement with the notion that once federally funded research endeavors yield a commercially viable product, technology, or discovery, the private sector should assume responsibility for affiliated research, applications, and marketing.

Participants in each group also acknowledged the significance of federal funding for research as an essential element in the maintenance and advancement of a national competiveness in a diverse, emergent, international research market. A general view was shared by study participants that the federal government's continued investment in research is essential to the United States maintaining competiveness in a rapidly expanding, highly technical, global market.

Theme Two: Leading Research Initiatives and Dynamics in Mississippi

Numerous examples were given across participant groups of leading research initiatives at the four RU/H universities in Mississippi that have made significant contributions to various academic and industrial fields. Collaborative research ventures between these research universities were also lauded by institutional and government officials. Several recurring research initiatives at various institutions in the state were referenced throughout the study. Table 9 presents a list of the research initiatives or centers that were mentioned most frequently in participant interviews.

Table 9

Leading Research Endeavors and Affiliated Universities in Mississippi

Research Project/Program/Center	University(s)
Jackson Heart Study	Jackson State University University of Mississippi Medical Center (UMMC) Tougaloo College
National Center for Natural Products Research (NCNPR)	The University of Mississippi
Gulf Coast Research Laboratory (GCRL)	The University of Southern Mississippi
National Institute for Pharmacy Science and Technology	The University of Mississippi The University of Southern Mississippi
National Center for Computational Hydroscience and Engineering (NCCHE)	The University of Mississippi
Mississippi Agriculture and Forestry Experiment Station (MAFES)	Mississippi State University
Forrest and Wildlife Research Center (FWRC)	Mississippi State University
Center for Advanced Vehicular Systems (CAVS)	Mississippi State University
High Performance Computing Collaboratory (HPCC)	Mississippi State University
Polymer Science Research Center (PSRC)	The University of Southern Mississippi

An example of a collaborative research endeavor in Mississippi, referenced repeatedly throughout this study, was the Jackson Heart Study, a collaborative research

endeavor funded by the National Institutes of Health and managed by a partnership between Jackson State University, University of Mississippi Medical Center, and Tougaloo College. According to Chaney, the Jackson Heart Study "looks at heart disease among African Americans and is the longest standing study of its kind in the country."

Study participants indicated that while each of these research programs is presently funded by competitive means, considerable infrastructure for the programs, specifically, facilities, equipment, and staff were, at program origination, made possible with congressionally-directed funds. These research initiatives are examples of research leveraging, a concept that was referenced repeatedly by participants in each participant group and is discussed in more detail later in this chapter. Research administrators at the institutional level consistently referred to leveraging as effectively repositioning resources and infrastructure, such as facilities and equipment funded by congressionally directed funds, into an increased capacity to attract and secure additional research funding by competitive means. This study identified several examples of successful leveraging among Mississippi's research extensive universities. Participants in all groups emphasized the significance of research earmarks and federal funding for research, generally, as a driving force in emerging technological innovation.

Training the Next Generation of Scientists

Participants in all groups discussed an inherent, fundamental mandate for research, generally, to ensure that the educational component of research programs not be neglected. Several participants, most notably in Groups 2 and 3, suggested that strong research programs should honor a commitment to teaching and effective training of the next generation of scientists, scholars, and researchers. Further, a quality research

program, regardless of funding sources or type, should effectively integrate opportunities to educate and train new researchers into the established research agenda of a specific program or project.

An important consideration related to the educational dimension of federally funded research is the significant number of students who study, train, and receive funding or financial assistance through some research endeavor. Carroll, a Group 2 participant, commented on the considerable number of students in the state that are involved in some dimension of research taking place at the research extensive universities in Mississippi. According to Carroll, these research opportunities include

> Training the next generation of scientists and scholars, who when that funding for research is cut, whether it is earmark cessation, sequestration, or leveling out of budgets, or any of those things, it has an effect on how many students can avail themselves of these opportunities.

Diminished funding for research, both in earmarks and competitively-awarded funds, has negatively influenced the number of graduate-level researchers and undergraduate workers that universities have been able to employ in research units. Participants in each participant group noted this trend.

Theme Three: Criteria for Noteworthy Research Programs

Interdisciplinary Focus

Study participants were asked to elaborate on criteria relied on in making subjective determinations as to the characteristics or factors of leading research programs. Specifically, participants were asked to describe what they thought made the research programs they had previously identified, noteworthy. Responses varied across

participants groups. Allen, a Group 2 participant, indicated that the noteworthy programs he had mentioned were all approached from a multi- or interdisciplinary perspective. In explaining this interdisciplinary approach, Allen offered this example:

> When you can get an Office of Naval Security grant that takes somebody in computational visualization and ties them to somebody in psychology to understand how a heads-up display for a naval pilot could be redesigned so they don't have to experience information overload when they're in battle, then that's a pretty cool project. And neither one could do it without the other and that's what I think this institution really focuses on – how we can find areas in which we can bring electrical engineers and agronomy people and a social scientist together in ways to address a big, national or global problem that no single discipline could possibly try to address.

Training the Next Generation of Researchers and Expanding Knowledge

Additionally, study participants in each of the participant groupings noted that noteworthy research programs expand knowledge in a given field and train the next generation of researchers. Davis, a Group 2 participant, noted that making decisions about the significance of a research program should not be based solely on financial indicators. Davis noted that financial "significance doesn't generate a publication, doesn't generate student training, doesn't generate some new knowledge for faculty. . . . To me that's significant." This acknowledgement of student training and the creation of new knowledge in a given field expanded the dimensions by which research significance may be measured. Further, Davis expanded this position and commented, "other people might say, well a half million dollars is significant. Well, I've seen a half million dollars

turn out nothing." Davis's comment may serve as a warning against basing judgments about the worthiness of a research program or project on financial considerations alone.

Allen, a vice president for research, echoed Davis's reference to the impetus for federal investment in higher education, as a means by which to train the next generation of researchers. Allen remarked,

> I think the beauty of investment in higher education is that it's investing in the best and brightest from a faculty standpoint, but more importantly, from a graduate education standpoint . . . I think without the development of the next generation of scientists and engineers that have been trained on new and innovative ideas and the ability to create new ideas, then we become very inward gauging and so the challenge that we run into, I think, is if we invest in federal government scientists only, then we're not creating the next generation.

Theme Four: Recent Trends in Federal Research Funding

Despite an extended period of exponential growth in federal funding for research, which study participants indicated began in the late-1990s, participants across all groups acknowledged declines in the last several years in the competitive funding for research, generally, in addition to the absence of academic earmarks in Mississippi higher education. Several participants referred to the influence of federal sequestration on the declining amount of competitive funding that is available through various federal funding agencies. While sequestration does not directly influence higher education in the state, it does limit the amount of competitive funding that can be awarded on the national level, reducing the total amount of research funding for which the RU/H institutions in the state can compete. Chaney, a Group 1 participant, remarked,

> If you have sequestration and NSF takes a hit and NIH takes a hit … you know, the agencies that typically have large research budgets. So, I do worry about this sort of double-hit of direct appropriations going away and the amount of competitive dollars being limited.

A sponsored programs director, Davis, referenced the expiration of American Recovery and Reinvestment Act (ARRA) funding as a contributing factor in the overall decline in federal funding for research in academe in recent years. In reference to this decline in funding, Davis noted, "it is down . . . last year it was down from the year before. It's explainable. It's still disappointing." Several study participants acknowledged that the loss of earmarks was exacerbated by cuts mandated by federal sequestration and the expiration of limited, short-term funding initiatives. Allen, a vice president for research, indicated, "we have hit a plateau now because of federal funding cuts, and you know, we're fighting to stay stable. We've slipped the last two years because of the earmark ban and because of the tightness of the federal budget." Despite this funding plateau in federal funding for research, other institutional officials suggested that overall, general funding levels for research in higher education were higher than they have ever been.

Another vice president for research, Carroll, confirmed that recent losses in research funding are a result of stagnant budgets among the major funding agencies. The stagnation of these agency budgets, Carroll noted, "has had sort of a corollary effect on the universities." Over the course of the last fifteen years, Carroll argued that Mississippi universities experienced exponential and consistent growth in federal funding for

research "because we continue to grow our research and scholarship and facilities, and recruit great scientists and those folks do more research."

Theme Five: Significant External Funding Awards Quantified

Disparities existed between participants' quantifications of what level of external funding constituted a significant award. No clear definition or measurement standard was identified from participant responses. Three vice presidents for research commented on the subjectivity and difficulty at the institutional level in quantifying a base level of funding that should be considered significant. One of these vice presidents for research shared that they caution members of the university community that, "if you're looking just at numbers of dollars, it's not a fair comparison." Further, this vice president for research contended that looking at dollar amounts in isolation does not allow you to capture a complete picture of the significance of a specific research award. For example, Carroll commented, "you know, somebody in the arts that gets a $5,000 grant from the National Endowment for the Arts – that may be a huge amount of money, but may not even be enough money to buy a month's supplies in some of the sciences."

A Group 3 participant, Irons, approached the question of what level of funding qualifies as significant from a different perspective. Irons suggested that making a determination about how much money is required to effectively fund the type of research program or agenda the researcher hopes to achieve should, consequently, establish what a significant level of funding is for that specific research initiative. Irons commented, "if you can fund a successful program that produces high quality science and alters the success, efficiency, or profitability, or stewardship of the resources that your stakeholders are using, then you only need as much money as it takes." Additionally, Irons noted that

in some disciplines, $20,000 might be an adequate funding level for a specific research project, while in a different academic discipline, with a more complex research agenda or equipment needs, $1 million annually might be required. Irons did indicate, that from a personal perspective, an annual research award of $250,000 constitutes a large award. Other Group 3 participants suggested that a $1 million-funding award would be considered significant at their respective universities. This sentiment was echoed by a majority of Group 2 participants.

Some participants suggested a funding range or an estimate of what might be considered a significant award at their respective institutions. A sponsored programs administrator noted an incentive program for research active faculty, which featured individual recognition for the procurement of external research funding at a base level of $500,000. This institutional official also reported that the university regularly secured $500,000–$1 million research awards. Recognition of faculty who secure external funding for research at varying levels was reported as a common practice at each of the RU/H institutions in Mississippi.

Distinctions Between Significance Levels of General Research Awards and Earmarks

A distinction emerged between the level of funding deemed significant when considering externally funded research programs or projects as compared to individual earmark awards. In regards to significant levels of congressionally directed funding, a vice president for research indicated that "as a rule of thumb for us – it's the same for a lot of people – a million is kind of the floor for what we look at." Participants in all three participant groups echoed this $1 million-estimate, as a base level for an earmark award being categorized as significant. Another vice president for research noted that, "most of

the time congressionally-directed funds or earmarks would hover around $1 million a year. Some may have been more, some less, but I think that was a good average." Allen suggested that this million-dollar threshold for earmarks is based, in part, on strategic decisions made by officials at the institutional level.

Allen's comments alluded to the complexities associated with seeking and securing a research earmark in Congress. "It's just as hard to get a million as it is to get $20,000, and, so, a lot of times, we really don't feel like anything less than that is something that we really want to try to trouble our congressional delegation with." Inherent in Allen's comment was a notable distinction in the scope, direction, and funding capacity of academic earmarks when compared to other externally funded research awards. The nature of some research projects, programs, or infrastructure require considerable, highly specific funding that might not be available by any competitive means. Participants in all groups acknowledged that competitive funding agencies or sources typically did not award funds for the development or expansion of research infrastructure.

Theme Six: Earmarks and Institutional Culture

Through a series of questions, participants in all groups were asked to share their opinions on the influence of earmarks on the institutional research culture of the RU/H universities in Mississippi. A common theme identified at the institutional level, either among university research administrators or research faculty, was that the loss of earmarks for research has yielded a redirected, more concentrated focus toward competitive research funding and the leveraging of infrastructure developed or

constructed with earmarks, into strategic research capacity that may attract competitive or other external funding. Flanagan, a Group 3 participant, suggested

> The loss of earmarks has made us a lot more aware about the competitive sources . . . looking at the competitive avenues and trying to be responsive to those and it's also kind of pushed us to be more attentive to the private sector, you know to passing things, getting them licensed, getting the commercialization work done on them, doing more private development work.

The findings of the study indicated that the absence of earmark funding has compelled the comprehensive research universities in the state to explore alternative sources of research funding. Consequently, both federal and private funding agencies, as well as the private sector and industry have begun to garner greater attention as potential research partners.

Study participants expressed the view that the RU/H universities in the state will become much more focused on the pursuit of funding from the private sector for research and development. Chaney noted, "part of the reason that we have never—and I could be wrong—that we've never chased a lot of private dollars is because we haven't had to. I think it is going to force us to change where we look for opportunities." Chaney's speculation is indicative of a shift in the institutional research culture currently underway at Mississippi's research extensive universities.

Academic Earmarks are Catalytic Investment Tools for Future Research

A strong commonality was observed among participants from each participant group in relation to the belief that academic earmarks, when applied and managed effectively, and their maximum benefit derived, allow research institutions and individual

researchers to strategically position themselves to conduct further externally funded research. This phenomenon was characterized in several different ways. Kraemer, a Group 1 participant, repeatedly referred to earmarks as "catalyst investments." Institutional research administrators referenced the effectual and strategic use of these catalyst investments as leveraging. Participants offered institutional capacity to leverage research infrastructure into increased research productivity as a leading indicator of the influence of earmarks on the institutional research culture of RU/H universities in Mississippi. Specifically, the participants attributed this increased capacity and productivity to the expansion of existing projects, research partnerships with industry and the private sector, and increased competitive research awards.

Theme Seven: Economic and Political Influences as Prevailing Factors That Led to the 2010 Moratorium on Earmarking

Study participants were asked to reflect on the factors each thought led to the passage of a congressional moratorium on earmarking in 2010. Consistently, participants indicated that the moratorium on earmarking resulted from considerable economic factors, specifically, the recent economic recession, and the political dynamics in Congress. The latter factor presented more readily than did the economic considerations and was referenced with more fervor by participants in Groups 2 and 3 than those in Group 1.

Political Dimensions

Davis, a sponsored programs administration director indicated that "fights on the floor" led to the passage of the earmark moratorium. Davis offered that the partisan divisiveness that exists in Congress, as well as between the executive and legislative

branches of government, reveal the "schizophrenic nature of politics." Further, this SPA director suggested that legislative action such as the moratorium on earmarking was not necessarily dependent on which party was in the majority and wielded the greatest power. For example, the majority party in one Congress might support an action that it would be adverse to if it held the minority status in a previous or subsequent Congress.

In referencing the political dimensions of the earmark moratorium, Davis noted that the action was "Congress's way to show, oh look what we're doing to help be transparent and fight corruption and all this." This opinion was shared across each participant group and underscored the heightened sensitivity to or the demand for greater transparency in congressionally-directed spending.

A participant in Group 3, Cross, a faculty member with considerable experience in the procurement of both competitive and congressionally directed funding for research, remarked that the cause of the congressional moratorium on earmarking was "politics, strictly politics." Cross also expressed an opinion that was shared by participants in all three participant groups noting that despite the considerable public and internal congressional attacks on earmarking that emerged in 2007 and have remained prevalent ever since, the practice of directing federal funding to specific infrastructure or initiatives has not been abated. "There are still earmarks. There are still congressional directions. The total amount of money being spent and appropriated has not decreased," Cross commented. This suggestion challenged the claims of earmark critics that a prohibition on the practice translates into actualized savings in federal outlays.

Shift to Administrative Earmarking

The notion that directed funding remained, despite the 2010 moratorium on earmarking, was one that was referenced by participants in government, institutional, and faculty positions alike. The distinction between directed federal research funding pre- and post-moratorium, was centered on the authority, or source of the funding directive. Prior to the earmark moratorium, members of Congress unopposed to the practice of earmarking, directed funding to specific research initiatives through earmarks. Since the enactment of the moratorium on earmarking, federal funding for specific programs, projects, and infrastructure was still allocated, but from an alternative directive.

Participants' knowledge and experiences with directed funding indicated that administrative directives have become common practice in the federal executive branch of government. These directives, issued through federal funding agencies such as the National Science Foundation (NSF), National Institutes of Health (NIH), and National Oceanic and Atmospheric Administration (NOAA), have assumed a new role in the directing of federal funds for research in the United States. Cross suggested further, "we have not put any money back in the treasury because of not having earmarks." This suggestion served as a marked contradiction to public declarations made that the moratorium on earmarks represented considerable cuts in federal spending. A Group 1 participant noted that the moratorium on earmarking was more about political rhetoric than any real cost savings to the American taxpayers. Vice presidents for research, as well as research active faculty, echoed this sentiment.

Discrediting of Earmarks

McGee noted that abuses in Congress contributed to the cessation of earmarking. "Some members were submitting and receiving funding for projects that didn't seem defensible." This reference to wasteful spending as a function of earmarking served as an example of a fundamental criticism of congressionally directed spending. Additionally, McGee suggested that only a few unexplained or wasteful projects are necessary to discredit an otherwise effective funding mechanism. McGee referred to the infamous "Bridge to Nowhere," an earmark project sponsored by former Senator Ted Stevens of Alaska, as an example of the discrediting power of wasteful earmark spending. Participants in each participant group referred to this same example as a leading case of bad earmarking practice. McGee added that when members of Congress direct spending they "have a responsibility with tax-payer money not to waste it and to make sure it is an appropriate function of that federal dollar." This opinion was expressed by all study participants, irrespective of their participant group.

Consensus-Building with Earmarks

Another dimension of the political dynamics associated with the absence of earmarks was discussed by Arentsen, a vice president for research, and offered as a contributing factor to the climate of political gridlock that currently plagues Congress. Arentsen referenced conversations with members of Mississippi's congregational delegation in which earmarks were characterized as a form of political currency that was used in discussions across the aisle to build legislative consensus and move legislation forward despite partisan or ideological differences. Further, Arentsen noted that earmark "money helped lubricate the discussion among ideological opposition blocks." This

legislative dynamic, according to Arentsen, is largely unknown or misunderstood by the public. Moreover, a public ignorance of the legislative benefits in Congress, as well as an unawareness of the significant contributions to research infrastructure, scientific and technological discovery, and health-related research funded by earmarks was eluded to but not directly referenced by several study participants.

Transparency in Earmarking

McGee, referred to the significance of transparency in establishing criteria for making determinations as to which funding requests should be considered by a member of Congress. McGee commented, "I think that it is important when you are looking at earmarks. . . . It is very much about transparency. It was clear, for us—we got hundreds of request for earmarks, but we only submitted a small portion of those." Further, this notion of transparency in earmarking was referenced by participants in each group, particularly among those that noted a potential reemergence or redefinition of the practice.

Economic Dimensions

A recessed national economy was offered by a majority of study participants as a primary factor that led to the moratorium on earmarking. One research administrator noted, "with the current climate of the economics for this country, I think they had to look at some cost saving measures." This sentiment was shared by a majority of participants in the study. Consistently, economic factors were offered as a primary motivation for the self-imposed moratorium on earmarking enacted by Congress in 2010. Excessive federal spending was one such economic factor offered by Irons, a Group 3 participant, as a precursor to the passage of the moratorium. Irons noted that, "our

federal spending is unsustainable in relation to federal revenues. And the only way to balance that is to spend less or take in more revenues." This underlying dimension of federal fiscal policy was, as Irons remarked,

> Coupled with just an impatience on the part of the American people with the political process that seems increasingly detached and removed from the will of the people, I think there was a kind of uprising in terms of public opinion.

This dynamic fueled the growing momentum in Congress to regulate spending. The resulting action taken, specifically, in the case of the passage of the moratorium on earmarking by members of Congress, was taken with expediency. The impetus for financial reform created by public opinion fueled continuing threats of sequestration, a politically volatile, divisive means of government expenditure reduction in which broad spending cuts are made in the federal budget or programs without respect to need, efficacy, or efficiency of programs. In reference to the enactment of the earmark moratorium and the looming threats of sequestration, which have been prevalent in the ethos of contemporary American government and politics, Irons commented that,

> Instead of doing it kind of strategically, it was just easier to take a butcher knife to it and say we're going to whack off some of the fat everywhere and, in that atmosphere, earmarks made an easy target because, unfortunately, some earmark funding, in the present and the past, has been pretty questionable. Not all, by any means, but there have been dumb things that were funded with congressional earmarks.

In contrast, Arentsen's stance was a departure from those held by the majority of participants. Arentsen, a vice president for research, emphasized that the prevalent,

general consensus about earmarking held by the public was "that a tremendous amount of federal funding was being misappropriated to a good ole boy system." Further, Arentsen noted that earmarks constituted only 1% of all federal outlays, indicating their relative insignificance in proportion to total federal spending. This position affirms the suggestion that the cessation of earmarking in Congress was largely a symbolic action taken to demonstrate fiscal restraint and transparency, but in actuality had an insignificant economic impact when compared to total federal expenditures.

Theme Eight: Benefits and Detrimental Effects of the Moratorium on Earmarking

All study participants expressed opinions related to potential benefits resulting from the 2010 congressional moratorium on earmarking. Participants also discussed detrimental effects, either potential or observed, which resulted from the moratorium.

Benefits of Earmark Moratorium

Consistently, participants in Groups 2 and 3 acknowledged a single benefit derived from the moratorium on earmarking. These participants noted that in the absence of earmark funding for research, the research institutions and faculty in the state that had previously been recipients of this congressionally-directed funding, were forced to reposition themselves and reprioritize their research agendas to align with a more competitive research stance. Both research administrators at the institutional level and faculty acknowledged that this shift presented researchers with the opportunity to improve or enhance the quality of research proposals and activity. As the peer-review research award process is highly competitive, the improved quality of proposals and research outcomes may contribute to the continuity of funding for a specific line of research.

By comparison, Group 1 participants indicated they were not aware of any benefit for the state, RU/H institutions in Mississippi, or specific research programs, which derived direct benefits from the 2010 earmark moratorium. Kraemer noted, "No. Obviously, a reduction in the availability of research dollars through earmarking in the long-term will have an adverse impact on all those universities." As participants in Group 1 have primarily a funding role only, they may be unfamiliar with institutional dynamics associated with the research culture of the comprehensive research universities in Mississippi. This consideration may account for the alternative stance held by Group 1 participants when compared with the attitudes of Group 2 and 3 participants.

Detrimental Effects of Moratorium

When asked to describe detrimental effects other than the obvious financial losses associated with the moratorium on earmarking, study participants in each participant group indicated job losses and the resulting community and economic impact as a significant effect that has negatively altered campus and community dynamics in myriad ways and to varying degrees.

Chaney, a Group 1 participant, offered another potentially detrimental effect that may result from the moratorium on earmarks.

> We are a very poor state. Having the opportunity to get directed appropriations has put us in a place, from a facility point of view that we can be competitive with states that are better resourced than we are. And so, I do worry about 5, 10 years down the road since we don't have a dedicated stream of dollars from the state, how we maintain those facilities and expand them when we do.

Chaney's remarks, while largely positive, identified a potentially negative dimension associated with this research infrastructure, developed with federal earmark funding, at Mississippi comprehensive research institutions. The costs of maintenance, expansion, and renovation of these facilities and equipment will create a financial burden that must be met by state funding. As Chaney indicated, Mississippi is currently not well positioned financially to meet such challenges.

Theme Nine: Administrative Considerations

Commonalities among participant responses were identified across each participant group in relation to university administrators' stances on research expectations of faculty, incentives for faculty involvement in research activity and procurement of external funding for research, the role of research in university marketing and recruitment, and interactions between university officials and members of Mississippi's congressional delegation.

Expectations of Faculty

Group 2 and 3 participants were asked to comment on the expectations of university administrations as they relate to the faculty engagement in research, generally, as well as in the process of securing external funding for research programs. An important consideration referenced by participants, particularly among those in Group 2, was the comprehensive research status or designation of the universities included in this study. Carroll remarked, "our institution is a comprehensive research university and so it is part of our mission. . . . It's part of who we are, it's part of our DNA. It's expected of faculty in a research university." This sentiment was echoed by each vice president for

research who participated in this study, as well as among several of the research active faculty participants.

Views of administrative expectations of faculty involvement in external research funding procurement were more varied. Some participants indicated that the expectations of faculty to seek out and secure external funding for their research was heavily tied to the academic discipline and nature of the research program or project. For example, Carroll noted, "the expectation for external funding varies depending on field and things like that. It's part of the culture, particularly, in the sciences." Consequently, one might assume that the expectation for a faculty member in select academic disciplines to secure external funding for research was minimal, while in other disciplines, such as the hard sciences, for example, the expectation of faculty to participate in the external funding process was much greater.

A Group 3 participant, Irons, shared a more rigid view of a university administration's expectations of faculty participation in external research funding procurement. In reference to faculty participation in funding procurement, Irons remarked, "the expectation is there that they will. There is no other expectation. They will." Further, Irons suggested that this expectation held by the university administration has become "more abundantly clear." Flanagan, another Group 3 participant expressed a similar view that "seeking competitive funding is an important part of a faculty member's role."

Faculty Research Incentives

Group 2 and 3 participants were asked to discuss any incentives offered to faculty to encourage research activity and the procurement of external funding for research. All

participants in both of these groups acknowledged that at a comprehensive research university, such as those included in this study, research is a fundamental component of acquiring tenure. Bynum, a Group 3 participant, responded that "tenure" is the primary incentive offered to faculty to encourage research activity. Bynum noted that peer-reviewed publications are essential for tenure, particularly in the sciences, and without publications, tenure is not a reality. Therefore, members of the faculty are incentivized to be research active in pursuit of tenure.

Another Group 3 participant, Emidy, referenced the financial incentive associated with recovered research expenses through facilities and administration (F&A) fees. Emidy remarked, "the F&A—the university gets some of it, the department gets some of it—and some departments, not all, the individual faculty members have accounts. So a small percentage may go to the faculty account." Recovered costs that are redirected to faculty are typically used for research-related travel and supplies. Emidy noted that while these funds in most cases are by no means substantial, they can, however, help advance an individual faculty member's research agenda.

Participants in Group 2 identified a variety of faculty incentives including tenure and recovered F&A funds. Arentsen, a vice president for research at one of the RU/H institutions in the state, referenced one such incentive program that "allowed a faculty member to get a portion of the money that the university saved by paying part of their salary through a grant." Further, Arentsen suggested that most comprehensive research universities have some variation of the MIDAS program, which promotes research activity, recognizes outstanding research, and supplements the research faculty member's salary.

Research as a Marketing and Recruitment Tool

At least one participant in each of the three participant groups commented that research, at the university level, had and continued to be used for the recruitment of talented faculty and students, external fundraising, accreditation, and public relations. In reference to research as a tool in faculty recruitment, Carroll, a vice president for research, commented, "your best . . . your top talent . . . smart people want to be with other smart people. And the top talent wants to be where there is a commitment and support for them using their talent to make the world a better place." As a marketing tool, research can be used as a mechanism to connect a research university with its local community and beyond. Irons, a Group 3 participant, noted, "we need to be recognized for high quality research . . . research that results in changes . . . changes in knowledge, changes in capabilities, changes in circumstances of people in Mississippi, the United States, and around the world." Participants expressed a common opinion that when research universities are effective in communicating and connecting their research to societal needs, contributing to the public good, and expanding knowledge, they, in essence, formulate a highly impactful marketing strategy for their local community, state, and region.

University and Congressional Interaction

Study participants were asked to describe the type and level of interaction that existed between the RU/H institutions in the state and members of Mississippi's congressional delegation. This involvement most typically involved participants in Groups 1 and 2; however, the faculty researchers in Group 3 noted that, in the past, they

had the occasional interaction with members of Congress that was arranged by the research administration units at the comprehensive research universities in the state.

All Group 1 participants shared the view that the relationship between Mississippi's congressional delegation and its universities was strong, with an open dialogue and regular discussions with research administrators. Stovall, a member of Congress, commented, "I communicate on a regular basis with the heads of those research universities and the heads of their research departments." Stovall's comment emphasized the importance of communication in maintaining strong partnerships between government and higher education. Additionally, Kraemer characterized the relationship between members of Congress and Mississippi's RU/H institutions as "an excellent relationship." Group 2 participants indicated regular communication with and accessibility to members of the congressional delegation.

Theme Ten: Future of Federal Funding for Research Earmarks

Group 1 participants shared a common expectation that a redefinition of earmarking was likely in the years to come; however, they were noncommittal towards the notion of a resurgence. Kraemer noted that it was reasonable to expect "a redefinition; you might call it directed spending. You might say, well, we'll only do earmarks for public entities—and I don't have a problem with that." Another Group 1 participant signaled a redefinition of the role between members of congress and higher education constituencies in their respective states or districts. Stovall remarked,

> My role can no longer be to slip in an earmark to get a dedicated funding source for any of the research universities. My role is to bring the researchers and the

research administrators together with the source of federal funding dollars, because we still have those dollars.

Stovall's comment supported other study findings, which indicated a shift to a more competitive research funding model. If this model were to be adopted, targeted research initiatives would likely become research line items in the budgets of the major federal funding agencies. Even with a new funding model, the federal government would have an essential role in facilitating and funding research and development in the United States and, specifically, American academe. Kraemer, a Group 1 participant, commented further, " I believe there is a role for government to play."

Participant responses, particularly those of Group 1 participants, indicated that the contemporary ethos of the political landscape in Congress does not bode well for a resurgence of earmarking. Chaney suggested that if earmarks do experience a resurgence in Congress, "I don't think it is the near future." McGee commented, "for the foreseeable future, I don't know that you will see a return of earmarks." However, study participants across all participant groups acknowledged that congressionally-directed funding, formally known as earmarks, is likely to undergo a redefinition, rather than a resurgence.

Rummells, a sponsored programs director noted, "I think they'll come back and be redesigned and renamed. They won't be considered congressional earmarks, but I do see them coming back." Participants indicated that if congressionally directed funding does, once again, become common practice in Congress, directives are likely to be much more strategic and transparent, as to avoid unwelcomed scrutiny.

In the event that earmarks do experience a resurgence or redefinition, Flanagan indicated that the university's position has become "even more targeted." In a new era of

redefined earmarking, institutional requests for research funding submitted to Congress, from Mississippi's RU/H universities, will be thoroughly vetted at the institutional level and will represent strong, interdisciplinary, and meaningful research agendas.

CHAPTER V

SUMMARY

Discussion and Conclusions

This study described the attitudes, opinions, and practices among a sample of government and university representatives associated with the federal government's role as a leading research patron in higher education. Specifically, this study identified commonalities that exist in the attitudes of state and federal government officials, university research administration officials, and research active faculty at the RU/H institutions in Mississippi in relation to the influence of academic earmarks on the institutional research culture and infrastructure at the research extensive universities in Mississippi. Additionally, this study identified participants' views on the prevailing factors, benefits, and detrimental effects associated with the 2010 congressional moratorium on earmarks, as well as expected trends in federal research funding in the coming years.

The findings of this study, which are based primarily on participants' opinions, indicated that the practice of academic earmarking may have influenced the institutional research culture of the RU/H universities in Mississippi at both the institutional and system levels. When studying and analyzing this phenomenon through the lens of Institutional Theory (Selznick, 1948, 1949, 1957; DiMaggio & Powell, 1983, 1991; Oliver, 1991; and Scott, 1987, 1995, 2004), the various dynamics associated with academic earmarking may be aligned with the central tenets of Institutional Theory's assessment dimensions: consensus, conformity, conflict, change, and institutional emergence.

Academic Earmarking and Consensus

Study participants indicated that in this culture of divided government, consensus represents one of only a few ways to advance an agenda or legislation through a complex legislative process. The findings of this study support the suggestion that the enactment of the 2010 moratorium on earmarking is an example of consensus. Additionally, the study findings suggest that each of the research universities represented have invested considerable time in developing institutional missions and associated objectives. Within the context of higher education, this development process relies heavily on consensus to effectively prioritize programs, allocate resources, and clearly define and measure institutional goals and benchmarks. These institutional dynamics and their relationship to the procurement of earmark funding by each of the participants in the study were discussed in varying forms throughout the data.

Academic Earmarking and Conformity

The findings of this study support the notion that university pursuits of external funding for research, either through a competitive process or the pursuit of congressionally-directed funds, are a means to an end. In the highly competitive, highly technical research market which is prevalent in contemporary higher education, universities in Mississippi conform to complex procedures, rules, protocols, deadlines, and budget restrictions, all in hopes of securing additional funding, achieving greater prestige, and lauding the latest scientific discovery or technological innovation. Study participants consistently referenced the pervasive influence of this trend on Mississippi's research extensive universities, their institutional leaders, as well as faculty researchers.

Academic Earmarking and Conflict

Some degree of conflict is inherent in any organizational system. This study supports the notion that the enactment of the moratorium on earmarking is symbolic of the conflict that pervades the American political system. Partisan debate, rancor, and divisiveness have culminated in congressional gridlock and an effectual stalemate over contentious policies that are signs of a divided government. Moreover, the findings of this study reinforce the notion that it was, in fact, conflict over accusations of wasteful spending that resulted in the passage of the earmark moratorium.

Academic Earmarking and Change

The findings of this study indicated that state and federal government representatives, university administrative officials, and research faculty at Mississippi's research extensive universities have not only observed changes in academic earmarking in recent years, but have made adjustments in response to these changes. Further, study participants noted that the 2010 congressional moratorium on earmarking affects higher education and research in Mississippi in myriad ways. Specifically, research administrators at the institutional level emphasized that continued changes will be required as the RU/H universities in Mississippi prioritize, organize, and develop strategies that make them more sustainable, impactful, and competitive.

Academic Earmarking and Institutional Emergence

An argument can be made, based on the findings of this study, that the leveraging of research capacity is indicative of the formation of a new institutional dynamic or institution type that is emerging in Mississippi: one that competes for external research funding from a stronger, more competitive position. Repeatedly, study participants

indicated that in this post-moratorium era, the RU/H institutions in the state cannot depend on congressionally-directed funding to supplement their research infrastructure. Rather, these university research administrators and faculty understand they must find innovative ways to accomplish more with less until they achieve a return on their leveraged research investments.

Federal Government as Research Patron

The findings of this study supported the well established position in the literature that the federal government of the United States, for nearly a century, has been a significant patron of academic research and development, and stands as the largest financial investor in the research endeavors of contemporary academe (Forman, 1987; Geiger & Feller, 1995; Greenberg, 2001, 2007; Lucas, 2006; Martino, 1992; McCarthy, 2011; Mumper et al., 2011; Newman, 1985; Savage, 1999; Stevens & Moore, 1980; Thelin, 2004). The conclusion, then, may justifiably be drawn that the influence of the federal government's financial investment in academic research has influenced the culture of American higher education in significant and multifaceted ways. The economic power of the federal government in the funding of research has shaped the organizational culture of institutions and systems of higher education. Tierney's (1988) notion that political, demographic, and external economic forces, coupled with strong internal forces, shape organizational culture, is affirmed by the findings of this study. When one considers that the federal government has funded 60% of academic research at the university level (Payne, 2003a), this study, its participants, and the institutions of higher education they represent, in the aggregate, are a testament to the influence of the federal government on the organizational culture of higher education.

Contradictory Dynamics in Earmarking

The researcher calculated that prior to the 2010 moratorium, earmarks, as a percentage of total government expenditures, constituted less than 1% of federal spending. Herein lies a contradiction associated with the extensive debates surrounding the practice of earmarking. Despite the prevalent criticisms and significant press coverage garnered by the practice, earmarking represents what some individuals may consider a negligible financial impact in relation to total federal spending. This dynamic serves as impetus for the exploration of those factors that contribute to the negative associations with earmarks. Further, as higher education has benefited considerably from earmarking and the federal funding of research, generally, other derivations in this apparent contradiction between the actual economic footprint of earmarks and the notable public negative perceptions of them become clear.

Another dimension of this earmark contradiction may be rooted, in part, in the long-standing debate between the two primary research funding models associated with the federal funding of research: competitive (peer-review) funding and earmarking. The debate between proponents of the peer-review research funding model and supporters of earmarking has been discussed in the literature (Geiger, 2001; Newman, 1985; Savage 1999), with elements of the debate evident in this study as participants referenced their experiences with both competitive and earmark research funding. Those participants with more competitive research funding experience tended to favor a peer-review model, but were not wholly dismissive of academic earmarking. Participants who shared this perspective suggested that research funded by competitive means yielded higher quality and more meaningful research. Those participants with considerable experience with

earmarks repeatedly referenced the development of extensive research infrastructure in Mississippi made possible by earmarks. Several participants who expressed this view argued that such research infrastructure development and expansion could not have been achieved by any competitive means. While a divergence in participants' opinions along these lines was evident in study data, all participants acknowledged that in the absence of earmarking, researchers and institutions of higher education must become more competitive in their pursuit of external funding.

A Shift to More Targeted Research

The findings of this study support the suggestion that as higher education becomes more reliant on external funding to make up for budgetary shortfalls resulting from rising costs and reductions in public funding, the institutional culture of the contemporary research university has been affected. A new institutional dependency on external research funding may be indicative of an obvious re-alignment of financial policy and practices related to research, but other changes associated with this re-alignment may also be underway. The procurement of external funding for research may also contribute to a shift from basic research investment to more applied research initiatives. Culliton (1984) discussed a re-alignment in federal research awards from an exploratory research model to an exploitative one nearly 30 years ago.

While academic research funded by the federal government has traditionally concentrated its efforts primarily on basic research (Martino, 1992), financial pressures and increased dependence on external funding may give rise to more targeted research directives in academe. The findings of this study indicated that participants still are of the opinion that the federal government has an essential role in funding basic research.

However, several participants referenced notable applied research projects or programs, contracted with agencies of the federal government, in which research outcomes were explicitly identified at the outset of the research project. Has there been a shift from an exploratory to exploitative research focus in higher education due to greater dependence on federal funding for research? This study affirms that while such a shift is possible, it is more likely that the research extensive universities in Mississippi maintain a dualistic approach to research in which basic research remains fundamental and yields innovation and research capacity that translates into universities' enhanced ability to attract applied research projects and investors.

State Funding in Decline

Greenberg's (2007) contention that in a recessed economic climate, state governments are inclined to emphasize the contributions their public universities can make to the economic development of the state through research and development, is supported by the findings of this study. Most participants acknowledged that the research extensive universities in Mississippi contribute to the economic development of the state. Through research and development programs and projects, these universities have capitalized on federally funded research opportunities, creating the potential for regional and state economic development and the subsidization of university E&G budgets.

Greenberg (2007) noted that state governments take note when universities secure increased levels of external funding and may use this development as a justification for reducing state support for public universities, even in periods of economic vitality. This sort of logic serves as another contradiction associated with federal funding for research and specifically, earmarks. Participants referenced increases in the level of federal

funding for research in Mississippi and earmark funding for the development of state-of-the-art research infrastructure in the state, a trend that has only been in decline in recent years.

Organizational Fields and Isomorphism in the Mississippi Academic Research Enterprise

Central to this study are the associations between research funding and the organizational (institutional) culture of the RU/H universities in Mississippi at both the organizational field and institutional levels. The concept of organizational field (DiMaggio & Powell, 1983) in the context of this study, is useful in describing the unique, interorganizational dynamics which exist among institutions of higher education in the state that are not only competing institutions, but collaborators in research as well. These two roles assumed by the research universities in Mississippi may initially present as counterproductive to one another, but actually confirm the existence of an organization field that has emerged over time to advance academic research in the state.

As previously noted, DiMaggio (1986) not only distinguished between environments of organizations and organizational fields, but offered justifications and benefits in studying organizational fields rather than environments alone. When studying the organizational field that is comprised of the research extensive universities in Mississippi, DiMaggio's approach is valuable because it allows the researcher to: (1) explore the sources of organizational behavioral; (2) observe environmental factors that contribute to the position of an organization within a greater organizational hierarchy, (3) examine the interorganizational structure effects on organizational field dynamics; and (4) establish a bridge between a society and organizations in efforts to explain or describe the impact of community and social change. These dimensions of organizational life

provide a framework for studying the influence of earmark cessation and trends in federal research funding, generally, as well as a variety of other field dynamics associated with academic research funding in the state.

The relationships that exist between the four RU/H universities in Mississippi are aligned with notions of interorganizational networking dynamics present in the literature (DiMaggio & Powell, 1983; Laumann et al., 1978) that emphasize the linkages established between organizations at points of transaction or collaboration, as is the case with the research extensive universities in the state. The findings of this study suggest that Mississippi's comprehensive research universities function as an organizational field as evidenced by a number of collaborative research initiatives and projects. The professional interactions between university research administrators on the Mississippi Research Consortium (MRC), as well as the formation and longevity of MRC, are indicative of an organizational field (DiMaggio & Powell, 1983). Several participants in this study offered MRC membership or activity as an example of the collaborative relationships that exist between competing institutions in Mississippi's system of higher education.

In addition to reinforcing the notion that the research extensive universities in the state function as an organizational field, this study also supports the presence of structural equivalence (DiMaggio & Powell, 1983; White et al., 1976) in Mississippi higher education. Structural equivalence is an important dynamic in this organizational field as it facilitates collaboration among universities. The findings of this study supported the conclusion that structural equivalence does exist between the RU/H universities in Mississippi. White at al. (1976) argued that this structural equivalence is present between

two organizations even if they are not directly connected to each other but they share ties with other organizations. In several instances, study participants provided examples of research collaboration between universities in the state. For example, the Jackson Heart Study, a nationally-recognized minority heart health study, is a collaborative research endeavor between JSU, UMMC (UM), Tougaloo College, and the National Institutes of Health. While MSU and USM are not participants in the Jackson Heart Study, they are still structurally equivalent with both JSU and UM, as all of these institutions have research ties with the National Institute of Health. This example reinforces the significance of structural equivalence in the organization field central to this study.

Institutional isomorphism (isomorphism) as presented in the literature and applied to the context of this study, is a tool that may be used to identify and explain political dynamics and implications in organizational leadership and behavior that emerge in an established organizational field (DiMaggio & Powell, 1983), such as the research extensive universities in Mississippi (Appendix D). This concept of isomorphism is rooted in a paradox that emerges when powerful, influential institutional leaders attempt to advance their respective organizations by implementing institutional changes aimed at establishing a distinct brand or identity and consequently, these organizations become more similar to other institutions in the organization field (DiMaggio & Powell, 1983; Hawley, 1968).

This increased homogeneity in an organizational field is emblematic of the development of isomorphism in the system or field and represents what Hawley (1968) described as a constraining process that leads organizations to assimilate to the dynamics, practices, or behaviors of other organizations in their respective fields. The findings of

this study confirmed the existence of isomorphism among the RU/H universities in the state. A description of isomorphism in the system or organizational field is made in an example in which USM began pursuing NSF funding for a specific research program that may potentially enhance the research stature of the university, while JSU, MSU, or UM had already secured or were also seeking funding from NSF for the same purpose. The pursuit of research funding in this example may also be categorized as a pursuit of institutional legitimacy in the field (Hannan & Freeman, 1977). Participant responses, particularly at the institutional level (Group 2), indicated that institutional legitimacy in the state, nation, and academic discipline, serves as a significant motivator for what was characterized in the study as a comprehensive research agenda.

Among DiMaggio and Powell's (1983) three mechanisms of isomorphic change at the institutional level—coercive isomorphism, mimetic isomorphism, and normative isomorphism—the latter two forms are the most applicable to this study. Mimetic isomorphism involves the imitation of another organization's practices in the given field, by adoption of a specific innovation or best practice either intentionally or unintentionally (DiMaggio & Powell, 1983). The findings of this study support the notion that if one RU/H university in the state were to implement an enhanced bonus or incentive program for increased faculty research activity and grant proposal submissions, then, it is likely that other RU/H institutions in the field would follow suite and adopt similar initiatives.

Additionally, while institutions of higher education have the power to confer legitimacy to individuals, they also seek legitimacy as a means of establishing occupational autonomy in the field through professionalization and greater adherence to field-level definitions of legitimate standards, practices, methods, or productivity (Larson

1977). Institutional pursuits of legitimacy within an organizational field align with DiMaggio and Powell's (1983) normative isomorphism classification. An example of normative isomorphism in the organizational field represented in this study is the maintenance, at the institutional level, of the Carnegie Foundation's RU/H designations assigned to JSU, MSU, UM, and USM. These universities had to meet specific standards established by the Carnegie Foundation to acquire the RU/H designation and subsequently, must participate in strategic practices to maintain this designation.

Political Dynamics Confirmed

As previously referenced, the literature associated with political dimensions of earmarking is extensive (Atlas et al., 1995; Baker, 1999; Balla et al., 2002; Bickers et al., 2007; Bickers & Stein, 2000; Carsey & Rundquist, 1999; Crespin & Finocchiaro, 2008; DeFigueiredo & Silverman, 2006; Evans, 2004; Frisch, 1998; Ferejohn, 1974; Lazarus & Steigerwalt, 2009; Lee, 1998, 2000; Lee & Oppenheimer, 1999; Martino, 1992; Mayhew, 1974; Payne, 2003b; Roberts, 1990; Shepsle & Weingast, 1981). Several of these political dimensions were confirmed by this study. While both of Mississippi's senators declined to participate in this study, participants from each participant group confirmed that the state and specifically, higher education in Mississippi, has benefited significantly from the seniority of Senator Cochran. This finding is consistent with the suggestion presented in the literature that congressional seniority translates into an advantage in the procurement of earmarks (Balla et al., 2002; Roberts, 1990). Further, the findings of this study are aligned with Schick and LoStracco's (2000) holding that increased seniority in Congress is positively correlated with an increased propensity to earmark as evidenced by

the levels of congressionally directed funding secured by Senator Cochran prior to the enactment of the 2010 moratorium on earmarking.

Study findings also confirmed the lobbying role of higher education institutions as participants in each participant group referred to institutional requests for funding directives made by representatives from the research extensive universities in Mississippi (Brainard, 2007; de Figueriredo & Silverman, 2007; Lazarus, 2010). Participants noted that an open dialogue exists between the RU/H universities in the state and the congressional delagation, facilitating communication in regards to the funding and research needs and objectives of these institutions of higher education.

Earmark Resurgence?

While the findings of this study indicate a strong consensus among participants that a resurgence in the practice of earmarking in Congress is not expected in the near future, most expressed the view that a redefinition of congressionally directed funding is likely. If a resurgence or redefinition of earmarking does occur in the coming years, the political dynamics of Congress will be markedly different than they were in the period that gave rise to the practice. During this period, 1980-2006, Mississippi may have benefited from a majority-party affiliation (Balla et al., 2002; Carsey & Rundquist, 1999; Crespin & Finocchiaro, 2008; Evans, 2004; Lee, 2000; Lee & Oppenheimer, 1999). The study affirmed this suggestion as participants indicated that the balance of power in Congress during the most significant period of earmark growth favored Republicans, with the composition of Mississippi's federal congressional delegation majority-Republican, as it remains, today.

Further, the study confirmed that the leadership roles held by Senators Thad Cochran and Trent Lott during this period benefited public higher education and particularly, the research extensive universities in the state, in significant ways. This supports the suggestion in the literature that service in prominent leadership positions or membership on appropriations committees by members of Congress translates into increased distributive benefits for the constituent districts of those members (De Figueiredo & Silverman, 2006; Ferejohn, 1974). Moreover, during the latter years of this earmark growth cycle, Senator Cochran served as Chairman and later, Ranking Member, of the Senate Appropriations Committee. Senator Lott served as Majority Leader, Minority Leader, and Minority Whip in the U.S. Senate, during the same period.

Should earmarking in Congress experience a resurgence in the near future, Mississippi's significant political influence wielded in Congress in terms of the seniority of its Senate representation, membership on appropriations committees, and level of majority-party benefits experienced during the era of exponential earmark growth, would be considerably diminished. Further, the political, social, and economic dynamics of contemporary America present unique challenges to the resurgence of earmarking. This study supports the likelihood of a redefinition of congressionally-directed funding, rather than a resurgence.

Limitations

Several limiting factors influenced varying dimensions of the study. These limiting factors were categorized into one of several primary groups, which include (1) the lack of participation from members of the U.S. Senate; (2) the inaccessibility of several potential study participants; (3) the challenges related to the scheduling of

interviews and time constraints; (4) the inherent political implications associated with the study; and (5) the limited diversity among Group 3 participants. These limitations contributed to a more complex and demanding data collection process.

Lack of U.S. Senate Participation

The lack of participation from all proposed participants, particularly from Mississippi's representation in the United States Senate, limited the breadth and richness of the description of the earmarking process and the related attitudes, opinions, and practices of Senators Cochran and Wicker. As a matter of public record, both Mississippi Senators have been leaders in congressionally-directed funding, securing hundreds of millions of dollars for research and development programs, projects, and infrastructure in Mississippi (Balla et al., 2002; Rushing, 2009). Study participants across each participant group repeatedly referenced the significant influence of both the state's U.S. Senators, particularly that of Senator Cochran, on the research enterprise in Mississippi. Further, participants indicated that Senators Cochran and Wicker's involvement in securing congressionally-directed funding targeted at developing the current research infrastructure that exists in Mississippi today has contributed to the state's enhanced research position to compete nationally and internationally for competitive research funding. The experience and perspective of these government officials would likely have enhanced this study.

Accessibility of Potential Study Participants

Due to the nature of the study and the public office or elite status associated with several of the proposed participants, particularly those individuals in Groups 1 and 2, accessing these individuals in most instances required indirect initial contact with a staff

representative in the respective office of each participant. In the most complex accessibility scenarios, multiple contacts or referrals proved necessary to access the individual participant or designated representative. Significant demands on their time, both in official and unofficial capacities existed for a considerable number of study participants. Most participants, if not all, in the study had a support staff that included, at a minimum, one individual responsible for scheduling requests. Making contact with some proposed participants required varying levels of research to determine the appropriate staff member or scheduler with whom scheduling requests were made.

Scheduling Dynamics and Time Constraints

The relatively short, six-week data collection period presented several limiting factors. Among these was the time spent waiting for responses to scheduling requests. The response times associated with scheduling requests ranged from three days to in excess of one month. A considerable number of study participants maintain rigorous executive schedules that require significant travel, which contributed to their limited availability without an appropriate amount of lead-time. With few exceptions, participants and schedulers were accommodating and flexible in the scheduling process.

While the session/recess calendar of the U.S. Congress was not a consideration in the planning and design phase of the study, data collection actually occurred at a favorable time, particularly for confirming interviews with members of the congressional delegation, as Congress was on its summer recess for most of the data collection period. The timing of the study allowed for interviews with members of Mississippi's congressional delegation to be conducted in the district office of these government representatives in the state. This dynamic significantly reduced the costs of travel

associated with conducting this research. Further, the institutions of higher education at which a majority of study participants are employed, were on break between the summer and fall academic terms for a considerable portion of the data collection period.

Inherent Political Implications

The inherent political dynamics fundamental to the earmarking process and varied conceptions of the practice in myriad forms of public media, have contributed to the development of a cautionary disposition among study participants with knowledge of or involvement in earmarking. Some participants were initially reluctant to share their attitudes and opinions related to earmarks in the context of Mississippi higher education due in part to the political sensitivities associated with this controversial funding mechanism.

Field Diversity of Group 3 Participants

The delimiting of Group 3 participation to a $250,000-minimum research award procurement resulted in the selection of a group of participants comprised of research active faculty in only science, technology, engineering, or mathematics (STEM) fields and affiliated departments at their respective universities. While the participants' insight was informative and beneficial, the study may have been enhanced by increased diversification in the participant selection that included faculty researchers in the liberal arts, education, and psychology fields. Such diversification may have been achieved by lowering the minimum research award level from $250,000 to an amount more representative of typical research awards in the liberal arts and humanities. A comparison of the academic disciplines of liberal arts and the humanities and STEM fields may reveal differing external research funding procurement policies. Moreover,

fundamental views of research and its appropriate influence in a university's institutional research culture may vary across academic disciplines. Additionally, administrative expectations of liberal arts faculty research activity, particularly as they relate to levels of external research funding procurement and award value, may be dissimilar within a specific institutional research culture.

Recommendations for Practice

Based on the findings of this study, the following recommendations for practice in the field of higher education policy are made:

1. Study participants indicated the significance of research leveraging capacity and its contributions to institutional advancement and an enhanced competitive research position. The development of an institutional research leveraging plan may benefit the institutional research agenda and capabilities. An institutional assessment of research capacity, which includes an inventory of research infrastructure, funding trends, human capital resources, research support services, external funding history, and grant availability, would allow university leaders to more effectively manage resources and plan strategically. The results of this assessment may be used to address weaknesses and capitalize on strengths, realigning the institution to its research goals, and strengthening its position to compete for additional research funding.
2. Study findings support the suggestion that research is both an integral and effective promotional tool for universities in Mississippi. Further, the findings of this study reinforce the role university research endeavors play in the broader context of community and economic development both locally and

statewide. Therefore, efforts should be taken to enhance the marketing and promotion, at the institutional level, of research support units that offer general research support such as assistance in preparing research proposals for submission, searching for appropriate external funding sources and opportunities, and identifying potential for collaborative, multi-disciplinary research opportunities both at university and system levels.

3. The study identified strong intercollegiate, collaborative partnerships which exist between the research extensive universities in Mississippi. This finding supports efforts at the state level that aim to capitalize on the research development potential of these intercollegiate partnerships. Therefore, a system-wide consortium of university research administrators, research active faculty, state legislators, and a designee appointed by the commissioner of higher education should be formed and charged with the design and coordination of a study aimed at determining the feasibility of establishing a state-funded research match or investment program, similar to those found in other states (Board of Higher Education Act. 110 ILCS 205/9.26). This consortium should also include designees from the Mississippi Development Authority (MDA) and the Office of the Governor. The consortium should draft a report of the feasibility study findings and develop a broad, long-term research recruitment and expansion plan to attract future research and development funds from both the public and private sectors to Mississippi's research extensive universities. The establishment of innovative,

collaborative, multi-disciplinary research partnerships would be the aim of the consortium.

4. New or enhanced faculty training programs could be implemented that would connect incoming faculty to research support units, experienced research faculty mentors in their academic discipline, and campus research protocols. Study findings indicate that the conduct of research is a fundamental expectation for faculty at the research extensive universities in Mississippi. As such, institutional leaders should provide enhanced research support and resources, as well as the facilitation of research mentorship programs, to encourage and equip new faculty in their research activity.

Recommendations for Future Studies

Based on the findings of this study, recommendations for future research include:

1. An expansion of this study to include a larger, more representative sample of participants would be beneficial. All participants in Group 3 were research active faculty researchers in science, technology, engineering, or mathematics (STEM) fields and departments at their respective universities. While their insight was informative and beneficial, the study may have been enhanced by increased diversification in the participant selection that included faculty researchers in the liberal arts, education, and psychology fields, for example.
2. The efficacy of leveraging resources associated with an externally funded research infrastructure as a means of strengthening an institution of higher education's competitive research stance may be examined. Such resources include research facilities, laboratories, essential equipment and mechanics,

and human capital. This dimension of higher education finance, policy, and administration may be studied at the institutional or system level, but also could be expanded to include state, regional, or national dimensions.

3. A faculty research involvement study may be developed to describe multiple dimensions of faculty involvement with research, including attitudes associated with research expectations, priorities and research objectives, time allocation in research activity, and challenges and expectations of faculty related to fulfilling institutional research mandates. Additionally, this study may assess research productivity, grant activity, and interdisciplinary and collaborative research potential. Results of such a study may be used to inform the design of research faculty support and mentorship, training, and research recognition programs.
4. A comparative study of state-funded research investment funds may inform the literature and practice in the field. Some states in the United States do not have publically-funded research investment funds. A relevant research question is whether this trend is indicative of a depressed economic climate or a result of some other factors. This study of public research investment funds may examine the political and economic factors that influence state decisions in the allocation of funding to research investment funds, specifically, for the development of research as a function of public higher education.

Conclusion

Through the application of multiple dimensions of Institutional Theory, this study informs the literature of higher education policy, governance, and finance by providing a

description of the influence of federal research funding and specifically, academic earmarks on the institutional research culture of the RU/H universities in Mississippi. A sample of government and university representatives shared their opinions, attitudes, and practices associated with the federally funded research enterprise in Mississippi. Based on the data presented in this study, participants and the institutions of higher education they represent, comprise an organizational field which presents isomorphic tendencies in response to the federal funding of research and specifically, research earmarks. The conclusion may then be drawn that the RU/H universities in Mississippi have successfully sought, procured, and directed external funding for research to establish institutional legitimacy in their organizational field. Consequently, federal research funding and academic earmarks influenced the institutional research culture of the state's research extensive universities.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI.

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

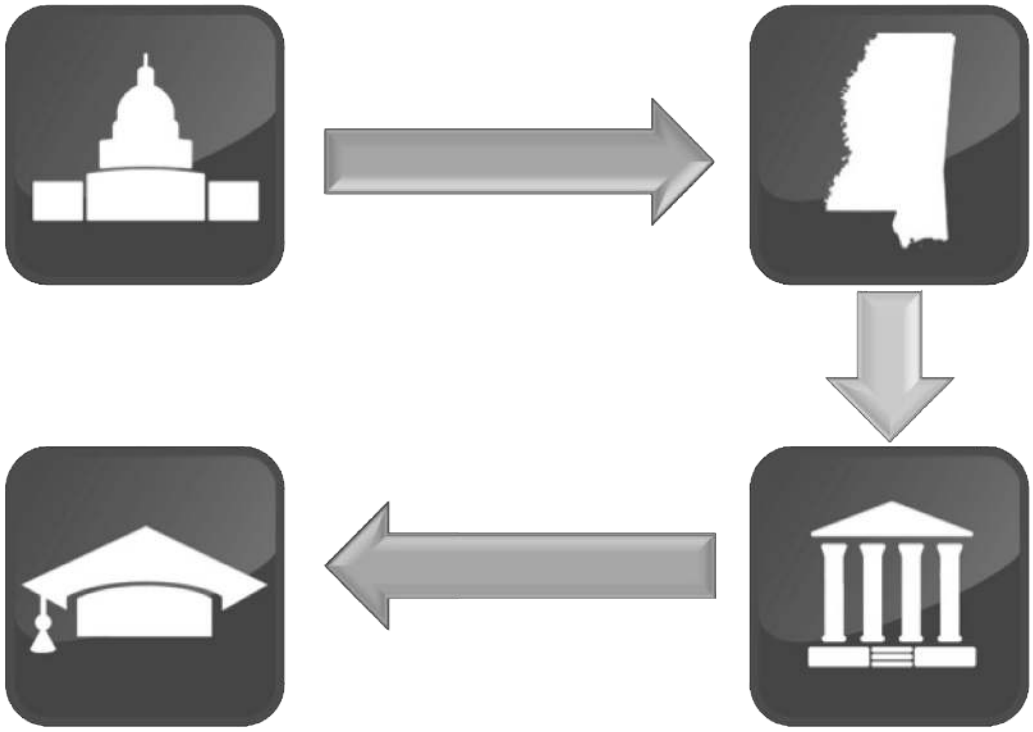
- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **13070302**
PROJECT TITLE: **A Study of the Development, Influence, and Cessation of Federally Funded Academic Earmarks at RU/H Universities in Mississippi**
PROJECT TYPE: **Dissertation**
RESEARCHER(S): **James Young III**
COLLEGE/DIVISION: **College of Education and Psychology**
DEPARTMENT: **Educational Studies and Research**
FUNDING AGENCY/SPONSOR: **N/A**
IRB COMMITTEE ACTION: **Exempt Approval**
PERIOD OF APPROVAL: **07/15/2013 to 07/14/2014**

Lawrence A. Hosman, Ph.D.
Institutional Review Board

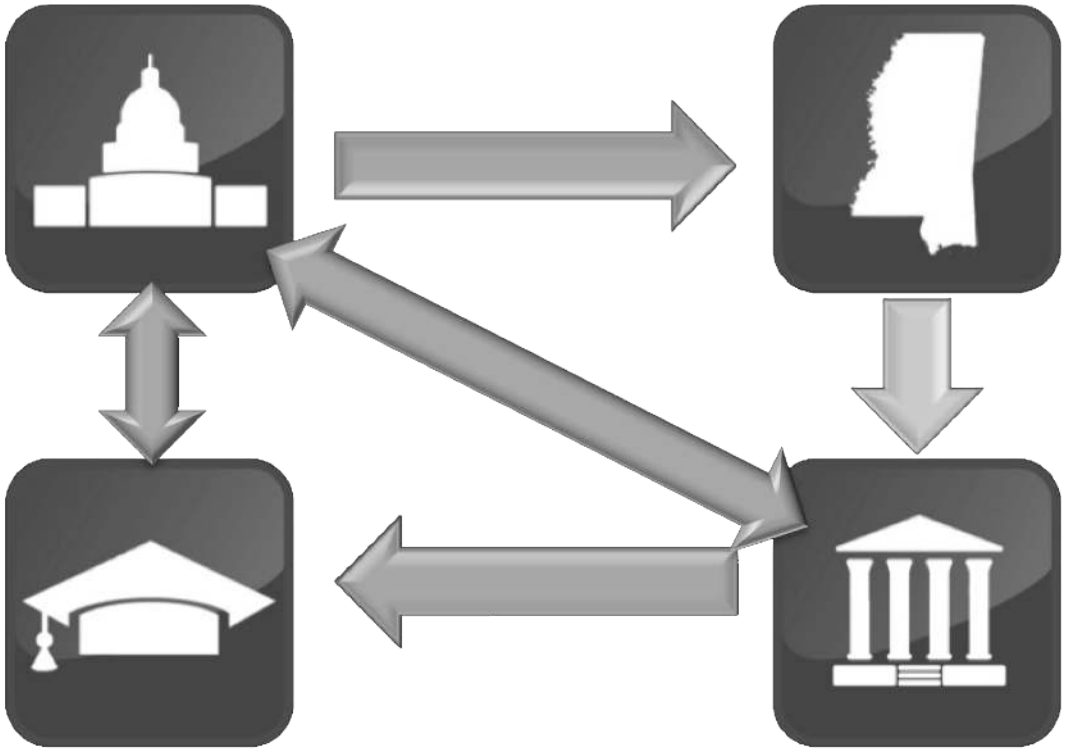
APPENDIX B

GRAPHIC REPRESENTATION OF TRADITIONAL ACADEMIC EARMARK FUNDING PROCESS



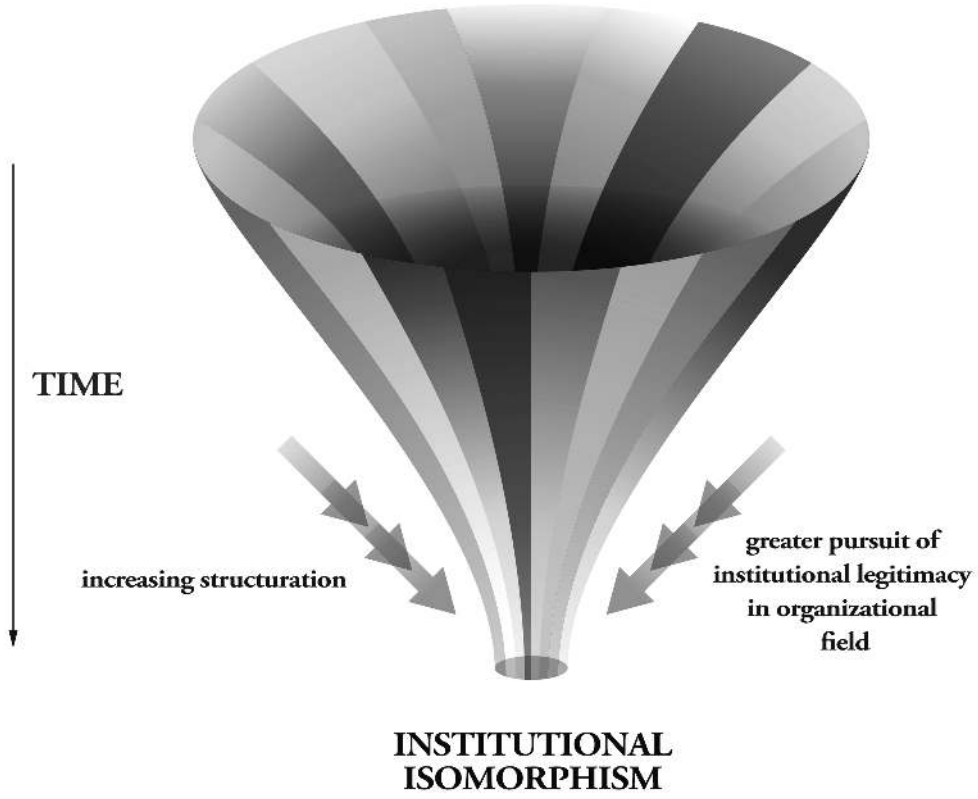
APPENDIX C

GRAPHIC REPRESENTATION OF ISOMORPHIC ACADEMIC EARMARK FUNDING PROCESS



APPENDIX D

GRAPHIC REPRESENTATION OF THE INFLUENCE OF EXTERNAL FUNDING OF RESEARCH, SPECIFICALLY, ACADEMIC EARMARKS ON THE INSTITUTIONAL RESEARCH CULTURE OF RU/H UNIVERSITIES IN MISSISSIPPI



APPENDIX E

QUALITATIVE INSTRUMENT USED FOR GROUP 1

DATA COLLECTION

The Government Official's Opinions and Attitudes of Institutional Research Culture and Earmark Cessation Effects – An Interview Guide

1. Will you please describe your career path and your current relationship with higher education in Mississippi?
2. What do you think **is** the role of the federal government in the funding of research? In higher education, specifically?
3. What do you think the role of the federal government **should be** in the funding of research, specifically, in the context of higher education?
4. Of what programs or research endeavors, which receive(d) funding from federal appropriations or congressionally directed funding at the research extensive universities in Mississippi (JSU, MSU, UM, and USM), are you aware? What makes these programs or endeavors noteworthy?
5. Describe your professional interaction with higher education in Mississippi as it has developed throughout your career? Specifically, can you describe the level at which you have been involved in the external funding of research in Mississippi's public universities?
6. How has your level of involvement in research development and funding in Mississippi higher education changed over time?
7. What programs, projects, or facilities associated with research, at these institutions of higher education, are you aware of that were funded through congressionally directed funding, specifically, through earmarks?
8. How do you think this funding has influenced the level and quality of research in Mississippi's research universities?
9. What do you think has been the economic and community impact of the federal funding of research in Mississippi higher education?

10. Describe what you think the federal government's role should be in regards to its investment in academic research in the future?
11. What shift(s) have you observed in federal research funding levels directed at Mississippi higher education in the last five, ten, twenty, or thirty years?
12. What shift(s), if any, have you observed in earmark fund allocation for research in higher education in Mississippi and at the national level?
13. What effect do you think reductions or cessation of earmark funding have on institutional culture, programming, and staffing at the research extensive universities in Mississippi?
14. What effect do reductions or cessation of earmark funding have on the local and state economies?
15. During your career, how has your interaction with university leaders in Mississippi been related to the procurement of federal funds for research, and more specifically, earmark funding? How has the nature of these interactions changed over time?
16. During your career, how has your interaction with university faculty/principal investigators in Mississippi been related to the procurement of federal funds for research, and more specifically, earmark funding? How has the nature of these interactions changed over time?
17. How do you think the 2010 congressional moratorium on earmarking benefits research in higher education? To what extent do you think it has been detrimental? What do you think were the prevailing factors that led to the implementation of this moratorium?
18. What do you foresee as the future of the federal research funding enterprise in academe and in Mississippi, specifically? What do you foresee as the future of academic earmarking in higher education and in Mississippi, specifically?
19. What role, if any, do you think research funding plays in the advancement, public relations, and marketing strategies of Mississippi's research extensive universities? How has this role has changed over time?

APPENDIX F

QUALITATIVE INSTRUMENT USED FOR GROUP 2

DATA COLLECTION

The University Research Administrator's Opinions and Attitudes of Institutional Research Culture and Earmark Cessation Effects – An Interview Guide

1. Will you describe your tenure at the university and your career path?
2. What do you think **is** the role of the federal government in the funding of research? In higher education, specifically?
3. What do you think the role of the federal government **should be** in the funding of research, specifically, in the context of higher education?
4. Of what programs or research endeavors, which receive(d) funding from federal appropriations or congressionally directed funding at the university, are you aware? What makes these programs or endeavors noteworthy?
5. During your tenure at the university, can you approximate the total revenue the institution received in federal research funding on an annual basis? How has this level of funding changed over time?
6. Among research earmark awards, at what level of funding would you consider this support significant?
7. During your tenure, what programs have received this significant level of funding?
8. Can you estimate how many people (faculty & staff) are currently employed on federally funded research grants, projects, programs, or administration? How has this changed over time?
9. What research infrastructure at the university has been constructed with federal earmark funds?
10. During your tenure at the university, how many university faculty or other institutional personnel have been funded exclusively with earmark funds?
11. What shift(s) in research funding levels at your university have you observed in the last five, ten, twenty, or thirty years?

12. What shift(s) have you observed in earmarked fund allocation at the university, in the state, and on the national level?
13. What effects have reductions or cessation of earmarked funding had on institutional culture, programming, and staffing at the university?
14. What effects have reductions or cessation of earmarked funding had on the local and state economies?
15. During your tenure, what was the position of the administration as to the institution's role in the procurement of federal funds for research, and more specifically, earmark funding? How has this position changed over time?
16. During your tenure, what was the expectation of faculty in relation to the procurement of federal funds for research, and more specifically, earmarked funding? How has this expectation changed over time?
17. What incentives have been offered to promote faculty involvement in the procurement of federal funds for research?
18. How significantly has federal research funding, and more specifically, earmarks, influenced the economic sustainability, recruitment, and community impact of your institution? How has this influence changed over time? At what levels would you deem reductions or cessations of this type of funding to be significant?
19. How do you think the 2010 congressional moratorium on earmarking benefits research in higher education? To what extent do you think it has been detrimental? What do you think were the prevailing factors that led to the implementation of this moratorium?
20. What do you foresee as the future of the federal research funding enterprise in academe and at the university, specifically? What do you foresee as the future of academic earmarking in higher education and at the university, specifically?
21. What role, if any, do you think research funding plays in the advancement, public relations, and marketing strategies of the university? How has this role has changed over time?

APPENDIX G

QUALITATIVE INSTRUMENT USED FOR GROUP 3

DATA COLLECTION

The Research Faculty Member's Opinions and Attitudes of Institutional Research Culture and Earmark Cessation Effects – An Interview Guide

1. Will you describe your tenure at the university and your career path?
2. What do you think **is** the role of the federal government in the funding of research? In higher education, specifically?
3. What do you think the role of the federal government **should be** in the funding of research, specifically, in the context of higher education?
4. Of what programs or research endeavors, which receive(d) funding from federal appropriations or congressionally directed funding at the university, are you aware? What makes these programs or endeavors noteworthy?
5. How do you think the level of federal research funding has changed over time?
6. Among research earmark awards, at what level of funding would you consider this support significant?
7. During your tenure, what programs have received this significant level of funding?
8. How has the number of people (faculty & staff) employed on federally funded research grants, projects, programs, or administration changed over time?
9. What research infrastructure at the university has been made possible with federal earmark funds?
10. What shift(s) in research funding levels at your university have you observed in the last five, ten, twenty, or thirty years?
11. What shift(s) have you observed in earmarked fund allocation at the university, in the state, and on the national level?
12. What effects have reductions or cessation of earmarked funding had on institutional culture, programming, and staffing at the university?

13. What effects have reductions or cessation of earmarked funding had on the local and state economies?
14. During your tenure, what has been the position of the administration as to the institution's role in the procurement of federal funds for research, and more specifically, earmark funding? How has this position changed over time?
15. During your tenure, what has been the administration's expectation of faculty in relation to the procurement of federal funds for research, and more specifically, earmark funding? How has this expectation changed over time?
16. What incentives have been offered to promote faculty involvement in the procurement of federal funds for research?
17. What changes have you observed in institutional mission and administrative position in relation to the pursuit of external funding for research? Specifically, earmarks?
18. How significantly has federal research funding, and more specifically, earmarks, influenced the economic sustainability, recruitment, and community impact of your institution? How has this influence changed over time?
19. How do you think the 2010 congressional moratorium on earmarking benefits research in higher education? To what extent do you think it has been detrimental? What do you think were the prevailing factors that led to the implementation of this moratorium?
20. What do you foresee as the future of the federal research funding enterprise in academe and at the university, specifically? What do you foresee as the future of academic earmarking in higher education and at the university, specifically?
21. What role do you think research funding plays in the advancement, public relations, and marketing strategies of the university? How has this role has changed over time?

APPENDIX H

INFORMED CONSENT DOCUMENT

Informed Consent for Interview Participants

Purpose
The purpose of this research is to describe the knowledge, attitudes, opinions, and practices associated with academic earmarks among a sample of government and university representatives at research university/high research activity designation (RU/H) universities in Mississippi. Further, this study will investigate institutional culture regarding grant funding among university administrative officials and faculty.

Description
You are being asked to participate in a personal interview. It should take 30-45 minutes to complete. A student researcher will conduct the interview. By agreeing to participate in and scheduling an interview, you are giving consent to participate in this study. While the participants interviewed cannot be guaranteed anonymity, confidentiality will be assured.

Risks
Foreseeable psychological or physical risks expected as a result of participating in this study are minimal. You may become frustrated as you recall your experiences associated with the increase and reduction of federal earmark funding at the University. You may withdraw from participating in this study at any time during the process without penalty or other consequence. Furthermore, you may choose not to answer any question to which you object.

Confidentiality Alternative Procedures
You, as a participant in this research study, are guaranteed confidentiality. Group information, as well as pseudonyms, will be used to inform this research study. Future scholarship and academic research related to this topic may reference your identity only if you indicate your agreement with such action and provide authorization by initialing the "Confidentiality in Subsequent Research/Reporting Statement" below.

Subjects Assurance
Your participation in this study is completely voluntary. You may decline to answer any questions that make you uncomfortable. All information gathered during this process will be kept confidential. All audio recordings of the interviews will be destroyed upon completion within a period of 6 months of the study.

Contact Persons
Questions concerning this research should be directed to Jim Young at (601) 420-4840. This project and consent form have been reviewed by The University of Southern Mississippi's Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about your rights

as a research subject should be directed to the Administrator of the Institutional Review Board at The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406, (601) 266-6820.

Legal Rights

This consent form is a copy of your legal rights. By signing the informed consent form, you are agreeing to participate in this research. You are not waiving any legal rights by participating in this interview. Further, by expressing your agreement with the subsequent research/reporting statement following the signature lines, you authorize the researcher to reveal your identity in future scholarship or academic research related to this topic. However, for the purposes of this dissertation research, only pseudonyms or group information will be used. You may agree to participate in this dissertation research but decline to have your identity revealed in future research.

_____ _____

Signature of Participant Date

_____ _____

Signature of Researcher Date

Confidentiality in Subsequent Research/Reporting Statement

I, as a participant in this research study, **AGREE / DO NOT AGREE** (circle one) that my identity may be referenced in subsequent scholarship or academic research related to this topic.

_____ (initial)

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