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HOW DOES THE GOVERNMENT (WANT TO) FUND SCIENCE? POLITICS, LOBBYING  
AND ACADEMIC EARMARKS

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**ABSTRACT**

This paper examines academic earmarks and their role in the funding of university research. It provides a summary and review of the evidence on the supply of earmarks by legislators. It then discusses the role of university lobbying for earmarks on the demand side. Finally, the paper examines the impact of earmarks on research quantity and quality.

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## **How Does the Government (Want to) Fund Science? Politics, Lobbying and Academic Earmarks**

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### I. How is Academic Scientific Research Funded?

The United States' "system of innovation" is often touted as one of the most productive in the world. Many consider academic research – much of which is funded through the federal government – to be a key pillar supporting that system (Mowery and Rosenberg 1993). Over the past 20 years, the federal government has funded roughly 25% of all academic research. In FY2003 alone, the federal government appropriated more than \$22 billion to the scientific endeavors of universities (Shackelford, 2004), distributing the funds chiefly through the National Institutes of Health (65%), the National Science Foundation (12%), the Departments of Defense (8%) and Energy (3%), and NASA (4%).

Federal funds for university research are, generally speaking, allocated through two mechanisms. The first, and most common, is a competitive allocation mechanism, which accounts for nearly 90% of the federal funds. The most well-known of the competitive processes is "peer-review" selection in which scientists submit proposals for specific research projects to federal agencies. These proposals are reviewed by experts in the relevant fields, whose evaluations enable the agencies to rank proposals based on perceived scientific merit. Although agencies may incorporate other criteria into their decision calculus (such as, whether a particular project will likely yield a result particularly useful to the defense of the country), the peer review process is generally seen as a mechanism for allocating scarce funds toward the most promising scientific research efforts (Nelson and Rosenberg 1993).

Despite this, several critics have raised questions about the benefits of the peer review system. Prominent legislators and academics have argued that the peer review process effectively serves to concentrate research funding among a few elite schools whose scientists populate the peer review boards (Gray 1994). In the eyes of critics, the peer review process also tends to reward “safe” research projects that conform to accepted beliefs, thus starving truly breakthrough research (Silber 1987).

In recent years, and partly as a response to these types of critiques, a second means of allocating funds has assumed increasing importance. Known as “academic earmarking,” this second method is a political process that entirely bypasses the peer review described above. Academic earmarking is the process by which legislators place specific provisions in the government’s annual appropriations bills requiring specific agencies to allocate specified levels of funding to designated universities for particular projects (Savage 1999). As part of the federal appropriations bills, these earmarks become law.

In FY2003, the U.S. budget included 1,964 academic earmarks, accounting for more than \$2 billion, or just over 10% of all Federal funding for academic research (Brainard and Borrego, 2003).<sup>1</sup> More striking is the rate at which academic earmarking has grown. Since 1980, earmarks have increased 59x in real dollar terms, representing a cumulative annual growth rate (CAGR) of 19.4%, accelerating in recent years to a CAGR of 31% since 1996. In contrast, since 1980, overall federal funding of science has experienced a 2.4x growth, or CAGR of less than 4%. Together, these data demonstrate that academic earmarking accounts for an increasing share of the total federal research budget for universities, and that the rate of its share capture has increased substantially over the past decade.

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<sup>1</sup> The Chronicle of Higher Education collects and cleans data on these earmarks. We use the Chronicle’s data in the statistical studies described below. Data are available at <http://chronicle.com/stats/pork/> (registration required).

The rise of earmarking has sparked a significant debate among universities, policy makers, and political economists as to the wisdom of this approach. Many in academe have decried the growth in earmarks, fearing that increased earmarking will inevitably cut into the amount of federal funding for research that will be allocated through the peer review process. These same critics often lament the desire of elected officials to steer money toward politically beneficial projects, which may not coincide with projects of high scientific potential. Supporters have argued, however, that politicians, not peer review boards, can best represent the needs and long-term interests of the country and taxpayers. As noted above, these supporters contend that the peer review system does not allocate resources optimally, and that only radical change can help middle-and lower tier schools compete with those who have, for years, been entrenched in the top tier.

This paper sheds light on the above debate by examining the evidence related to several key questions: Are academic earmarks distributed differently than competitive funds? If so, then what determines the allocation of earmarked funds, and how productive are earmarked research grants? In answering these questions, we first examine the supply side of earmarks. We show that a university's political representation is a significant predictor of whether that university receives academic earmarks. Indeed, members of the House and Senate Appropriations committees send a disproportionate amount of academic earmarks to their home districts.

We then explore the demand side. It is here that results are somewhat striking. While some earmarks do simply "appear on the doorstep" of universities, a large portion of academic earmarks are directed to universities at the universities' request. That is, universities proactively lobby their political representatives in Washington for academic earmarks, and these

representatives then deliver upon the request. Moreover, universities who profess to eschew earmarks actually, at times, lobby and receive these exact same earmarks they profess to avoid.

The paper then examines the literature on the quality of research that emanates from peer-reviewed and earmarked research projects. The few studies to date suggest that earmarked funding leads to research with lower impact than does competitive funding, and that universities that receive earmarked funding at one point in time do not subsequently improve their research standing. Finally, we explore what this all means for the future of science funding. Namely, we discuss the pro-active role of universities in seeking academic earmarks, and what advantages and disadvantages such a system may provide.

## II. The Distribution of Academic Earmarks

Figure 1 presents data on the success of medium-sized Carnegie I universities at obtaining federal research funding through each of the two channels described: peer-review grants and earmarked grants. If allocation decisions in these channels are driven by similar processes, or based on similar university capabilities, then we would expect a strong positive correlation between the amounts of money received through each funding channel. A cursory glance at Figure 1 shows no obvious positive correlation between funding levels through competitive grant processes and funding levels through academic earmarks. Indeed, a correlation analysis confirms that these two funding levels are not correlated ( $\sigma = -.01$ ).

<INSERT FIGURE 1 ABOUT HERE>

A closer look at the figure reveals that several of the universities that fare particularly well at obtaining legislative earmarks are located in the states and districts of Senators and Representatives who have strong roles in the U.S. Congress, notably West Virginia University (Robert Byrd, Ranking Member of the Senate Appropriations Committee), University of New Mexico (Jeff Bingaman, Senate Deputy Democratic Whip; Ranking Member, Energy and Natural Resources Committee), University of Hawaii (Daniel Inouye, 2nd-ranking Democrat, Senate Appropriations Committee), and University of Missouri (Richard Gephardt, House Minority Leader). This suggests that the political power of a university's legislators may play in role in the allocation of academic earmarks.

#### II.a. Supply of earmarks

The U.S. Congress has a long tradition of legislators directing money to their districts. Historically, this has manifested itself in farming subsidies, highway grants, and other infrastructure projects. According to both the public choice theory in political economy and popular belief, such actions help legislators to enhance their re-election chances by enabling them to claim credit for creating local jobs and otherwise bringing to their districts a “fair share” of government largesse. Universities, however, are relative newcomers to this game.<sup>2</sup>

Despite the relatively recent entry of universities into this arena, there is both qualitative and quantitative evidence that earmarks are often supplied because legislators see it as in their

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<sup>2</sup> The debate over academic earmarking thus fits within the broader literature on federal discretionary spending and congressional committee structure. In this literature, there are conflicting results as to whether representation on a committee results in that committee spending more of the committee budget in committee-members' districts than in non-committee members' districts. A small group of studies finds that committee members direct spending into their districts (e.g., Ferejohn 1974, Hall and Grofman 1990, Plott 1969), while a large number of studies find no effect (e.g., Mayer 1991, Ray 1980). Others have found mixed results (e.g., Anagnoson 1980, Arnold 1981).

interest to supply such services to constituent universities. Qualitatively, Savage (1999) recounts an instance in which John Murtha (D-PA), a member of the House Appropriations Committee, wrote into an appropriations bill an earmark from the Department of Defense for Marywood College, a small Catholic college in his district, that the school did not request and for which it had no obvious use (Savage 1999: 133). Quantitatively, Table 1 offers statistical evidence concerning the unconditional means of academic earmarks allocated during the 1997-1999 period. This table shows that the average earmark awarded to a university whose Senator served on the Senate Appropriations Committee was more than double that of a university whose Senator did not serve on this committee. The average earmark awarded to a university whose Representative served on the House Appropriations Committee was higher still, roughly triple that of a university without such committee representation.

<INSERT "TABLE 1" HERE>

Figure 2 revisits the legislative earmarks obtained by medium-sized Carnegie I universities. In this figure, however, university identities are replaced by information on the HAC and SAC representation enjoyed by each school. Two features stand out from this figure. First, the vast majority of schools that receive substantial earmarks have HAC or SAC representation. Second, Senate representation appears to be more heavily associated with earmarks than does House representation; 52% of schools in this sample with SAC representation received more than \$10 million in earmarks, whereas 43% of schools in the sample with HAC representation received more than \$10 million in earmarks. As a point of comparison, 100% of schools with both HAC and SAC representation received more than \$10

million in earmarks; while only 6% of schools with no HAC or SAC representation received earmarks greater than \$10 million. The evidence in the figure (and in Table 1) suggests that academic earmarks have become much like other earmarks—a mechanism for legislators to funnel discretionary federal spending to their districts in precise and directed ways.

<INSERT “FIGURE 2” HERE-->

### II.b. Demand for Earmarks

The previous section focused on the incentive and ability of legislators to supply academic earmarks to their districts. In this section we address the role of universities in the process. Institutions of higher learning have hardly been passive recipients of earmarks. Rather, universities have dramatically increased their efforts to lobby Congress specifically to obtain earmarked funds. Although university lobbying dates back to well before the Second World War, the modern practice of lobbying for earmarks began in the late 1970s. In 1978, Tufts President Jean Mayer, keen to build a nutrition center at the university, sought out lobbyists Gerald Cassidy and Kenneth Schlossberg to press his case with their contacts in Congress. Cassidy and Schlossberg ultimately succeeded in getting into a 1979 appropriations bill a line stipulating that the Department of Agriculture should give Tufts University \$32 million towards costs of building a new nutrition center (Savage 1999: 102). Perhaps more important, this effort led Cassidy and Schlossberg, and other universities, to recognize the opportunity to lobby for the federal funding of directed academic earmarks. By the late 1990s, such lobbying had developed into a cottage industry. Nearly 300 universities lobbied during at least one year between 1997 and 1999; most of these hired professional lobbyists from one of a handful of firms dedicated to lobbying for academic earmarks, while others also maintained a staff of internal lobbyists for this

purpose. These universities spent \$160 million on lobbying during this time period (de Figueiredo and Silverman, 2006).<sup>3</sup>

To be sure, not all university lobbying is directed at obtaining earmarks. A small number of “elite” universities lobby for science policy (for example, increased budgets for the National Science Foundation; or rules that will facilitate stem cell research). Indeed, many elite schools deny that solicitation of earmarks is an integral part of their lobbying campaigns. However, a recent sunshine law, the Lobbying Disclosure Act of 1995 (and its attendant technical amendments in 1996), requires all organizations that spend more than \$20,000 in a given year on lobbying to disclose information about these lobbying efforts. One can review these lobbying reports for evidence of the locus of lobbying efforts. Three things are clear from such a review. First, middle- and lower-tier schools direct virtually all of their lobbying efforts and expenditures toward academic earmarks. Second, even those elite schools that decry the practice of academic earmarking often devote at least some lobbying effort to seeking earmarks. Third, the degree to which elite schools are engaging in lobbying, and obtaining earmarks, has been steadily increasing over time.

When the phenomenon of academic earmarking first appeared in the 1980s, the Association of American Universities – a trade association of 62 elite research institutions that account for the lion’s share of competitively-awarding federal research funding – publicly called for the cessation of such earmarks. But over time, the AAU was less able to present a united front on this issue. By the late 1980s, a number of AAU member schools began to pursue earmarked funding, and AAU members engaged in often-rancorous debate about the propriety of accepting and soliciting earmarked funds. Despite several attempts by individual schools to lead

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<sup>3</sup> Brainard (2002) finds that the total is approximately \$90 million. We have been unable to reconcile these figures with our own.

efforts to collectively refuse to pursue or accept earmarks, in FY2003 90% of the AAU membership (54 of the 60 U.S. members) accepted at least one earmark.<sup>4</sup> In 2003, AAU members received a total of \$336 million in earmarks, representing 21% of all earmarked funds.

Table 2 revisits the statistical evidence concerning academic earmarks that was first presented in Table 1, but now includes information on lobbying expenditures by universities. The table shows the statistics for all universities, and also for the “lobbier” (lobbying expenditures > 0) sub-sample. In the full sample, the results show that the average university with no representation on the SAC spent \$9,430 lobbying, and received an earmark of \$144,693, for an unconditional average return of roughly \$15 for every \$1 spent on lobbying. However, universities with representation on the SAC lobbied about 40 percent less than their non-represented counterparts, yet received just over two times the earmark, for an unconditional return on investment of almost \$56 for every \$1 spent on lobbying. Universities with representation on the HAC obtained an unconditional return on investment of almost \$25 for each \$1 spent on lobbying. Results are similar when the analysis is limited to those institutions that actually lobby.

<INSERT “TABLE 2” HERE->

While the static unconditional means provide the first glimpse of an interesting story, we can gain additional insight by examining appropriations committee “switchers.” Although there are few legislators who rise to or leave the appropriations committees in any year, there were four switchers on the Senate Appropriations Committee after the 1998 election. In that election, Senator Lauch Faircloth (R-NC) was defeated by Senator John Edwards (D-NC), while Senator

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<sup>4</sup> The AAU member institutions in the U.S. that did not receive an earmark in FY2003 are Caltech, Duke, University of Chicago, SUNY Stony Brook, Washington University in St. Louis, and Yale. Of these six schools, all except

Dale Bumpers (D-AR) retired. Both Senators thus lost their positions on the SAC, and neither North Carolina nor Arkansas had another Senator on the committee. Senators Jon Kyl (R-AZ) and Richard Durbin (D-IL) were elevated to the SAC to replace the two outgoing Senators, becoming the only Senators from Arizona and Illinois to sit on the committee. Table 3 provides the data for lobbying expenditures and earmarks for the four states affected by these switches. As the table shows, there was a large jump in lobbying by North Carolina universities in the year after Faircloth's exit, but the earmarks to North Carolina universities shrank by half in that year. Arkansas universities similarly increased their lobbying expenditures after Bumpers's exit, but also saw an increase in earmarks. Table 3 also shows that after Kyl's ascension to the SAC, Arizona universities did not change their lobbying level but did experience a 41 percent increase in earmarks. Durbin's ascension was followed by an increase in both lobbying and earmarks. Thus, in three of the four cases of committee switchers, there is evidence that both lobbying and earmarks respond to changes in SAC membership.

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The above data might suggest that there is an enormous payoff to lobbying. However, Tables 2 and 3 report unconditional means. It is unclear from these tables how large the return to lobbying is after controlling for other factors. While political scientists and economists have explored lobbying extensively, both theoretically (Austen-Smith 1993, 1995, Rotemberg 2002, Ainsworth 1993) and empirically (Ansolabahere et al 2000, de Figueiredo and Tiller 2001, Wright 1996), there has been, until recently, no successful attempt to measure the returns to lobbying in a large-scale statistical study. This has been largely due to data limitations. But de Figueiredo and Silverman (2006), taking advantage of information revealed under the Lobbying

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Caltech received at least one earmark in either FY2001 or FY2002.

Disclosure Act and of features of academic earmarks that facilitate surmounting other empirical challenges, demonstrate that universities that lobby Congress receive dramatically higher earmarks than their non-lobbying counterparts – if the lobbying university is in the state or district of an Appropriations Committee member.

<INSERT FIGURE 3 HERE>

de Figueiredo and Silverman (2006) estimate the elasticities of university lobbying to academic earmarks. Figure 3 depicts graphically their results. Notably, a 1% increase in lobbying expenditures by a university without representation on the House Appropriations Committee (HAC) or Senate Appropriations Committee (SAC) results in a 0.15% increase in earmarks, but in many specifications the point estimates are not significantly different from zero. In contrast, if the university is represented by a member of the HAC or SAC, then this 1% increase in lobbying yields a 0.43% or 0.50% increase in earmarks, respectively. These latter elasticities are statistically different from zero.<sup>5</sup> As indicated by the different Y-intercepts in Figure 3, de Figueiredo and Silverman also find that, after controlling for lobbying, the main effects of HAC and SAC representation increase the average earmark by 16% and 19%, respectively. Thus, consistent with the previous subsection's emphasis on the supply of earmarks, HAC and SAC representation result in money being sent to the university in the absence of lobbying.

In sum, universities get earmarks because they ask for them; although some earmarking would persist even without lobbying due to legislators' supply-side pressures. The above-cited statistical results suggest, and we conjecture, that the active lobbying by universities for academic earmarks is partially responsible for the high and increasing level of earmarking.

### III. Earmarks to Research

Having discussed the supply and demand for earmark funding by universities, a natural question arises: does academic earmarking lead to different research, or research of differing quality, than peer-reviewed fund allocation? A commonly raised concern about academic earmarking is that, by distributing research funds to politically connected institutions rather than those with the most competitive research proposals, academic earmarks will lead to the funding of lower-quality research than will peer review (Brainard and Borrego, 2003). de Figueiredo and Silverman (2006) find that, after controlling for SAC/HAC representation and lobbying, schools that receive earmarks tend to be lower-tier research universities (as ranked by the National Research Council).<sup>6</sup> In addition, the results also indicate that earmarking redistributes funds away from top schools toward lobbying schools with powerful political representation.

The fact that, on average, earmarks are bestowed upon lobbying universities with appropriations committee representation and on lower-tier schools is not *prima facie* evidence that earmark-funded research is of lower quality than that supported by peer-review. As noted above, some have argued that the competitive grant process systematically underrates promising projects from lower-tier schools. Although it is unlikely that this bias would systematically affect states and congressional districts of appropriations committee members, the practice of earmarking could partially rectify such a bias by funding those promising projects that are proposed by lower-tier institutions and also those that are constituents of appropriations committee members. In such circumstances, the research produced by earmark-supported research should be no less productive than competitive grant-supported research. Alternatively, it

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<sup>5</sup> de Figueiredo and Silverman (2003) discuss the details of the average and marginal returns to a \$1.00 of lobbying.

<sup>6</sup> In addition, universities with medical schools are more likely to receive earmarks, *ceteris paribus*. This may reflect the entrepreneurial nature of medical school faculty at pursuing earmarks (Richard Levin, personal communication), or it may reflect the political attractiveness of medical research.

is possible that earmarked funding to lower-tier schools today will provide resources that enable these schools to become higher-tier schools, and thus better able to compete in the peer review competition, tomorrow. One can attempt to examine these empirically.

There are two tests that can help provide insight regarding the benefits of this redistribution. First, do earmark-funded projects result in significantly better or worse research than peer-reviewed projects? Unless earmark-funded research is measurably less useful than its peer-reviewed counterpart, concerns about earmarking could be unfounded. Second, do earmarks provide an opportunity for lower-tier schools – who otherwise might not be able to obtain a large amount of peer-reviewed funding – to “catch up” to top-tier universities? If earmarking enables schools to improve significantly over the long term, then it may be justifiable even in the face of weaker research in the short term.

A number of recent studies have attempted to compare the importance of research funded by peer-review and by earmarking and set-asides. Payne (2002, 2003) finds that set-asides and earmark-funded research generates more papers per research dollar than peer review-funded research. However, the citation rates of these papers are statistically and substantially lower than that of peer-review funded projects. The author interprets this as evidence that earmark-funded papers have significantly less impact on subsequent scientific advance. Though the quantity of output is higher, the quality of output is lower when earmarks are present.

Evaluating the long-term changes in university quality that can be attributed to earmarking is difficult, given the only recent widespread diffusion of academic earmarking. However, earlier studies of the relationship between a university’s receipt of earmark funds and its subsequent change in academic ranking have generally found no systematic effect of earmark funds on ranking movement over the past 15-20 years (Savage 1999). One may argue that the

indicators of importance may be noisy, and that the results – which are based on aggregate university research productivity – would be different if analyzed on a project-by-project basis. Nevertheless, the initial finding across these studies is not favorable to earmarking. It is clear that more research is needed in understanding the productivity of earmarking.

#### IV. Conclusion: How Do We (Want to) Fund University Research?

The earmarking process is one that is now pervasive. It is clear that some of the critiques of the peer review process are addressed through earmarking. In particular, academic earmarking does result in a redistribution of federal research money away from top-ranked schools to middle- and lower-tier schools. In addition, earmarks are granted to projects that are unlikely to be funded through peer review. Moreover, the money is often allocated to construction projects, which, along with overhead, serve to maintain the infrastructure of the university.

However, these benefits are not without costs. The evidence suggests that the redistribution of money is highly influenced by political representation. That is, there is a strong redistribution effect away from universities without senior representation on the relevant appropriation committees and toward those universities with just such representation. This move to the political arena means that universities move resources into private-interest lobbying for these earmark grants. Whether lobbying for earmarks is a public good or a public bad is an open question. The current evidence, however, suggests that not only does earmarking crowd out peer-review competitive grants, but it also results in lower quality research (as measured by citation rates).

This raises the important public policy question: how do we want to fund science? It seems that the funding of science has a tipping point. To the extent that there is a nearly one-for-

one substitution of earmarks for peer-reviewed funding,<sup>7</sup> there is cause for concern that, at some point, the amount of funding allocated via earmarks will reach a “tipping point” after which we will see a rapid, wholesale shift from peer reviewed funding to earmarked funding of most academic research. Put differently, thus far many elite research schools have not pursued earmarks with full intensity, and continue to devote the bulk of their lobbying efforts to increasing the size of the federal budget for academic research. But as earmarks consume more of this budget, and peer reviewed funding concomitantly less, at some point it will no longer be in the interest of the elite research schools to go after the peer-reviewed funds because the pot of money will be simply too small.<sup>8</sup> Indeed, we already see that 90% of AAU universities receive 21% earmark funding. If earmarking becomes a sufficiently large proportion of the academic research funding pie, then all universities will begin toward lobbying for earmarks, and the federal financing of academic research may end up resembling highway appropriations, where nearly every dollar is earmarked to a particular roadway project.

Fundamentally, there is a pernicious collective action problem at work here (Savage 1999). Although it is better for the university research system as a whole to fund research through peer review systems, it is individually rational for a single university below some threshold level of research quality, to seek out an academic earmark. However, since this earmark reduces the level funding available for competitive grants, the next bottom school who

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<sup>7</sup> One university president related to us his discussion with a high-ranking official in the Bush Administration who told him that if universities would stop receiving earmarks, then the Administration would put each and every dollar back into the peer-reviewed pot of money for universities.

<sup>8</sup> The debate over earmarking thus also fits into the broader literature on “good government” and the effect of rent-seeking on productivity. Murphy et al. (1993) demonstrate that rent-seeking behavior is subject to increasing returns, suggesting that an initially small amount of rent-seeking behavior can spiral upward toward a high-rent-seeking equilibrium. High levels of rent-seeking effort can “crowd out” other, more productive efforts. One mechanism for stemming such behavior is for a government to commit to “high quality” policies that effectively preclude its giving in to rent-seeking parties (La Porta et al. 1999). Viewed through this lens, the evidence to date indicates that scholars have significant cause for concern regarding academic earmarking and its potential effect on academic research in the U.S.

pursues competitive funding finds it increasingly difficult and shifts its resources from competitive review to political lobbying for earmarked funds. Left unchecked, this process continues to raise the threshold below which universities seek earmarks until the peer review system eventually unravels. While the system can likely withstand some amount of earmarking without completely unraveling, the substantial and quick rise of earmarking seems to be pushing us closer to a tipping point.

Ultimately, the question that must be answered collectively is, “How do we want to fund science?” As the rise of earmarking shifts the basis of competition for research money, there are many questions that we should ask: Do we want the direction of science to be determined by elected officials? Will the new basis for competition enable lower-tier institutions to improve their research capability, and, if so, is this the best way to achieve that goal? And ultimately, can we maintain the extraordinary system of innovation in the United States if we move toward earmarking more and more federal science dollars?

We seem to be on the slope of moving toward increasing acceptance of, and resignation to, the earmarking of federal funds for research. We can alert policy-makers as to the advantages and disadvantages of this type of allocation of federal research dollars; it is ultimately up to the politicians (suppliers) and university presidents and their lobbyists (demanders) to set the course for the future.

## References

- Ainsworth, Scott (1993). "Regulating Lobbyists and Interest Group Influence," *Journal of Politics* 55:41-56.
- Anagnoson, J. Theodore (1980). "Politics in the Distribution of Federal Grants: The Case of the Economic Development Administration," *Political Benefits: Empirical Studies of American Public Programs*, Barry S. Rundquist (editor), Lexington: Lexington Books.
- Ansolahehere, Steven, James Snyder, and Suhas Tripathi (2000). "Are Campaign Contributions and Lobbying Expenditures Linked?" *Business and Politics* 4(2).
- Arnold, R. Douglas (1981). "Legislators, Bureaucrats, and Locational Decisions," *Public Choice* 37: 107-132.
- Austen-Smith, David (1993). "Information and Influence: Lobbying for Agendas and Votes." *American Journal of Political Science* 37: 799-834
- Austen-Smith, David (1995). "Campaign Contributions and Access." *American Political Science Review* 89: 566-581.
- Bok, Derek (2003). *Universities in the Marketplace: The Commercialization of Higher Education*. Princeton: Princeton University Press.
- Brainard, Jeffrey (2002). "Some Colleges Reap Little Return Lobbying for Pork Projects, Study Finds," *Chronicle of Higher Education*, October 18, p. A27.
- Brainard, Jeffrey and Anne Marie Borrego (2003). "Academic Pork Barrel Tops \$2 Billion for First Time," *Chronicle of Higher Education*, September 26, p. A18.
- de Figueiredo, John M. and Brian S. Silverman (2006). "Academic Earmarks and the Returns to Lobbying," *Journal of Law and Economics*, 49(2) (October), 597-626.
- de Figueiredo, John M., and Emerson H. Tiller (2001). "The Structure and Conduct of Corporate Lobbying: An Empirical Analysis of Corporate Lobbying at the Federal Communications Commission," *Journal of Economics and Management Strategy* 10(1): 91-122.
- Ferejohn, John A. (1974). *Pork Barrel Politics: Rivers and Harbors Legislation, 1947-1968*. Stanford, CA: Stanford University Press.
- Gray, William H. (1994). "Pork or Providence? A Defense of Earmarked Funds for Colleges," *Washington Post*, February 27, 1994.
- Hall, Richard L. and Brenard Grofman (1990). "The Committee Assignment Process and the Conditional Nature of Committee Bias," *American Political Science Review* 84:1149-1166.

- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert Visny (1999). "The Quality of Government," *Journal of Law, Economics and Organization* 15:222-279.
- Mayer, Kenneth R. (1991). *The Political Economy of Defense Contracting*. New Haven: Yale University Press.
- Mowery, David C., and Nathan Rosenberg (1993). "The U.S. National Innovation System." In *National Innovation Systems*, edited by Richard R. Nelson, New York: Oxford University Press.
- Murphy, Kevin M., Andrei Shleifer and Robert W. Vishny (1993). "Why is Rent-Seeking so Costly to Growth?" *American Economic Review* 83: 409-414.
- Nelson, Richard R., and Nathan Rosenberg (1993). "Technical Innovation and National Systems." In *National Innovation Systems*, edited by Richard R. Nelson, New York: Oxford University Press.
- Payne, A. Abigail (2002). "Do US Congressional Earmarks Increase Research Output at Universities?" *Science and Public Policy*, 29: 314-330.
- Payne, A. Abigail (2003). "Earmarks and EPSCoR: Shaping the Distribution, Quality, and Quantity of University Research," McMaster University Working Paper.
- Plott, Charles R. (1969). "Some Organizational Influences on Urban Renewal Decisions," *American Economic Review* 58: 306-321.
- Ray, Bruce A. (1980). "Congressional Promotion of District Interests: Does Power on the Hill Really Make a Difference?" In *Political Benefits: Empirical Studies of American Public Programs*, edited by Barry S. Rundquist. Lexington, MA: Lexington Books.
- Rotemberg, Julio (2002). "Commercial Policy with Altruistic Voters," *Journal of Political Economy* 111: 174-201.
- Savage, James D. (1999). *Funding Science in America: Congress Universities, and the Politics of the Academic Pork Barrel*. Cambridge: Cambridge University Press.
- Shackelford, Brandon (2004). "U.S. R&D Projected to have Grown Marginally in 2003," *InfoBrief*, NSF 04-307, National Science Foundation, Science Resource Statistics Division.
- Silber, John (1987). "Testimony of Dr. John Silber, President of Boston University, Before the Committee on Science, Space, and Technology, United States House of Representatives," Washington DC, June 25.
- Wright, John R. (1996). *Interest Groups and Congress: Lobbying, Contributions, and Influence*. Boston: Allyn and Bacon.

**TABLE 1: MEANS IN RECEIPT OF EARMARKS, FY1997-FY1999**

FOR ALL UNIVERSITIES IN DISTRICTS WITH AND WITHOUT APPROPRIATIONS COMMITTEE MEMBERS

	<u>Average Earmark</u>
No Senate Appropriations Committee Member n=3442	\$144,693
Senate Appropriations Committee Member n=3704	\$313,686
No House Appropriations Committee Member n=6131	\$187,331
House Appropriations Committee Member n=1015	\$503,839

**TABLE 2: MEANS IN LOBBYING AND EARMARKS, FY1997-FY1999**

FOR ALL UNIVERSITIES IN DISTRICTS WITH AND WITHOUT APPROPRIATIONS COMMITTEE MEMBERS

	<u>Average Lobbying Expenditures</u>	<u>Average Earmark</u>
No Senate Appropriations Committee Member n=3442	\$9,430	\$144,693
Senate Appropriations Committee Member n=3704	\$5,595	\$313,686
No House Appropriations Committee Member n=6131	\$7,414	\$187,331
House Appropriations Committee Member n=1015	\$7,612	\$503,839

FOR LOBBYING UNIVERSITIES IN DISTRICTS WITH AND WITHOUT APPROPRIATIONS COMMITTEE MEMBERS

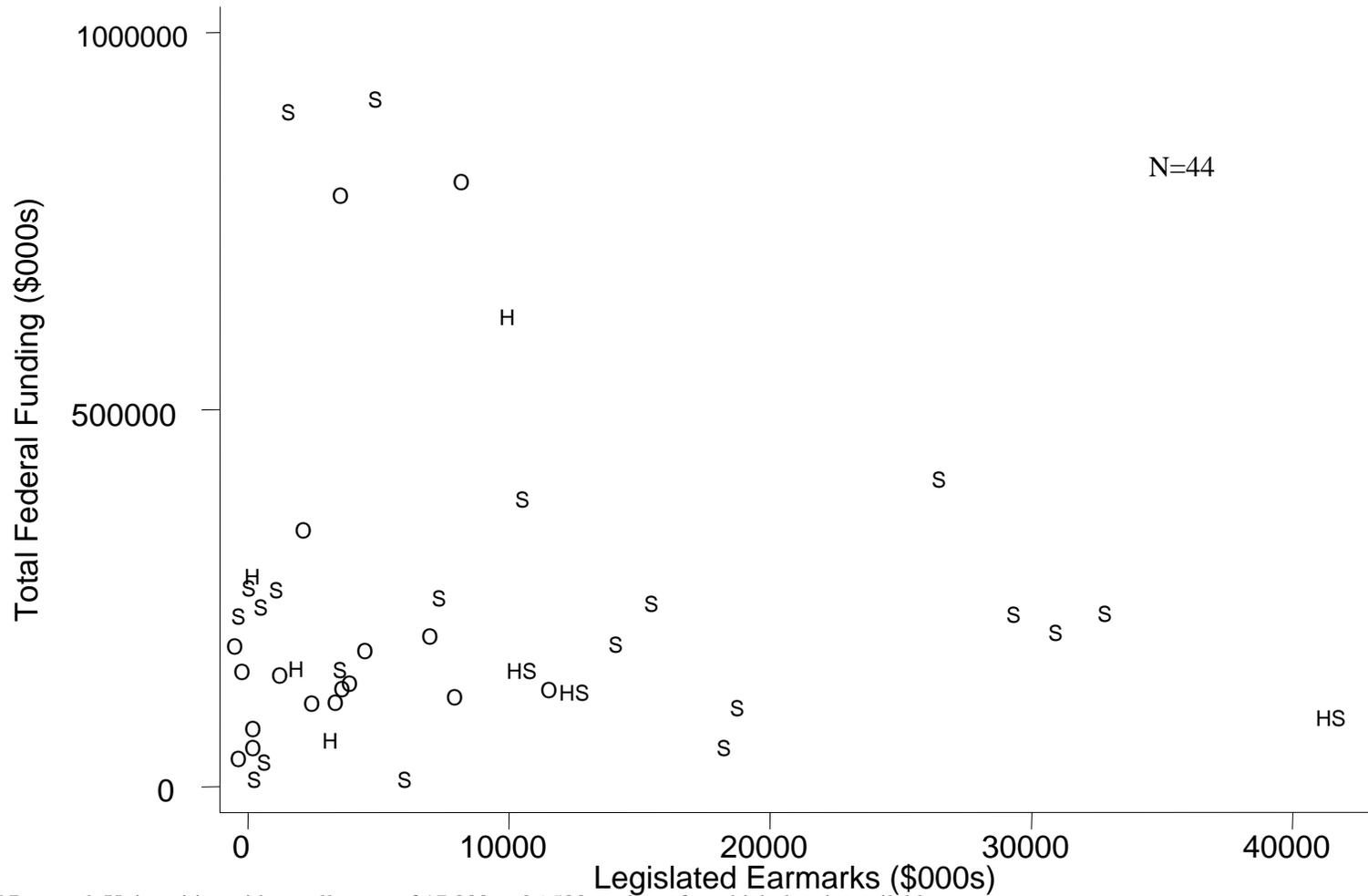
	<u>Average Lobbying Expenditures</u>	<u>Average Earmark</u>
No Senate Appropriations Committee Member n=247	\$131,410	\$1,157,920
Senate Appropriations Committee Member n=176	\$117,750	\$2,987,555
No House Appropriations Committee Member n=363	\$125,225	\$1,477,928
House Appropriations Committee Member n=60	\$128,765	\$4,588,803

**TABLE 3: SENATE APPROPRIATIONS COMMITTEE SWITCHERS  
UNCONDITIONAL MEANS FOR UNIVERSITIES IN THEIR STATES**

	<u>Faircloth R-NC</u> n= 109		<u>Bumpers D-AR</u> n = 33		<u>Kyl R-AZ</u> n = 23		<u>Durbin D-IL</u> n=109	
	<u>Lobbying</u>	<u>Earmarks</u>	<u>Lobbying</u>	<u>Earmarks</u>	<u>Lobbying</u>	<u>Earmarks</u>	<u>Lobbying</u>	<u>Earmarks</u>
1997	\$1,481	\$148,863	\$0	\$104,863	\$12,608	\$294,129	\$10,688	\$139,961
1998	\$3,425	\$164,895	\$0	\$63,037	\$14,782	\$295,275	\$9,555	\$162,745
1999	\$7,222	\$86,112	\$606	\$141,261	\$14,347	\$405,523	\$11,666	\$174,935



Figure 2: Federal Money for Medium-Sized Carnegie I Universities, based on Political Representation



Carnegie I Research Universities with enrollments of 17,000 to 26,500 students for which data is available.

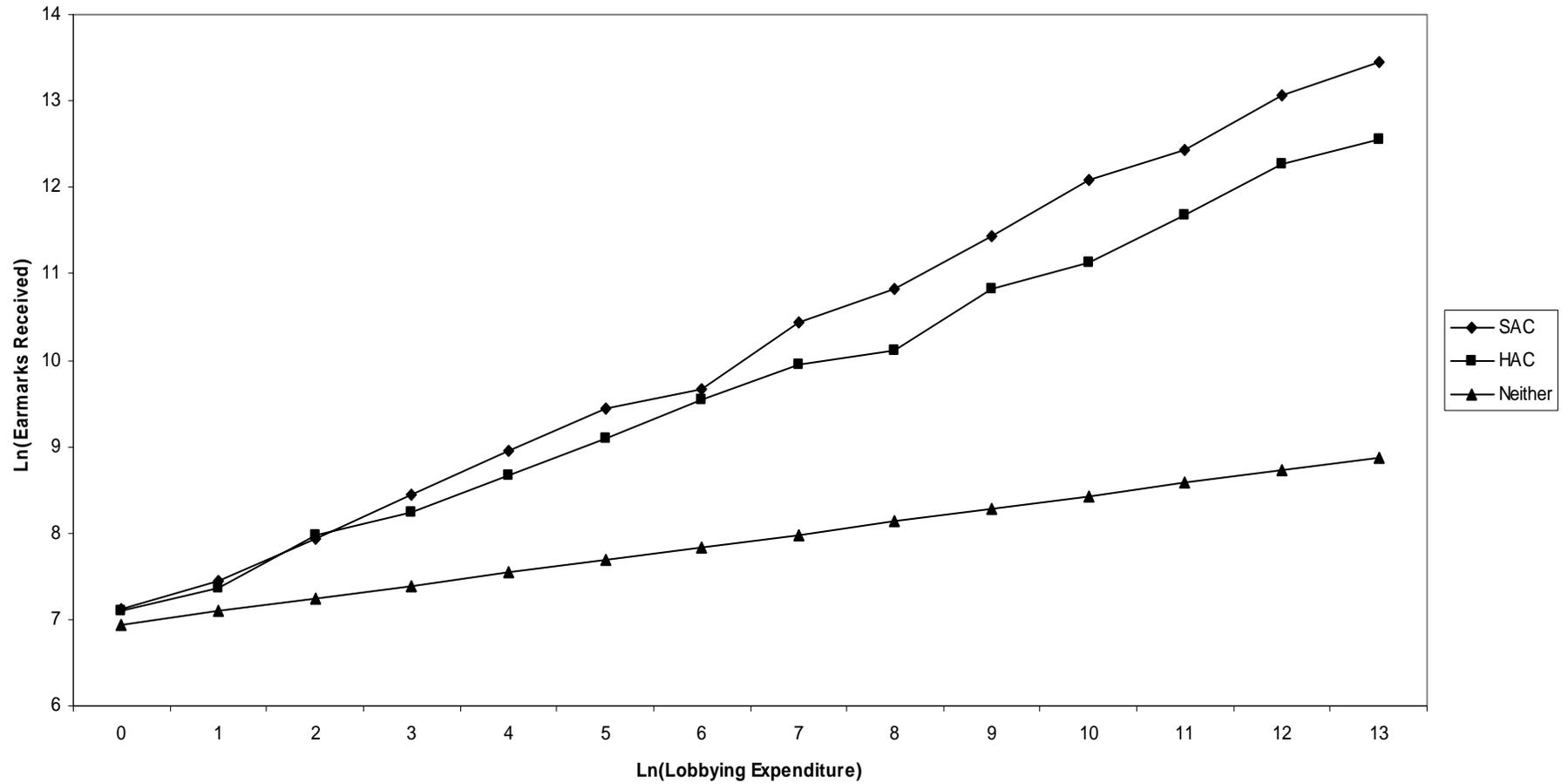
All data is cumulative 1997 to 1999 data.

Government research dollars is total government research dollars awarded to the school from all government agencies (e.g. DOD, DOE, NSF, NASA, USDA, etc.).

Almost all money is granted through a form of competitive grant-making process. This data is obtained from the NSF.

Academic earmarks is the amount of academic earmarks legislated by Congress in appropriations bills. This data is obtained from the Center for Responsive Politics.

Figure 3: Effect of Lobbying Expenditure on Earmarks Received



Note: The "Neither" category is not statistically significant from zero.