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Essays in the Political Economy of Higher Education Funding

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ESSAYS IN THE POLITICAL ECONOMY OF HIGHER EDUCATION FUNDING

A Dissertation
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy
Economics

by
Benjamin Hasty Compton
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Abstract

This dissertation addresses the consequences of political influence on state higher education funding at the committee level. The State of South Carolina has a long history of using a formula to determine the appropriate amount of funding that is to be allocated to its colleges and universities. I use the funding level implied by the South Carolina Commission on Higher Education’s formula as a counterfactual against which actual levels of appropriation are measured. The membership of key state legislative committees with alumni members is used to determine if colleges receive a greater proportion of their performance funding target than those colleges without alumni on those committees. I find that, in most cases, schools with alumni on the committees receive more funding from the state government than schools without representation. Senators redirect funding more effectively than do Representatives, sometimes startlingly so. Research colleges with an alumnus on the Senate Finance committee receive 128% more than the average one-year appropriations than research schools without representation. The same figure for teaching universities is 75% of the average. Also, the proclivity to increase a school’s funding appears to be stronger for alumni than for legislators who fight for university funding by dint of constituency. The local representative is redirects about 56% of what an alumnus-legislator does.

As a consequence to this tendency for legislative adjustment of budgets, it
is important to know if augmentations to university budgets by state governments crowds out private funding of public universities. Over the past decade both state funding for and private donations to institutions of higher education have exhibited similar patterns. Possibly because the recessions of 2001 and 2007 play such a dominant role over this period it appears as if state-government funding attracts private donations to universities which would constitute a startling result. In order to discern the true effect government funding has on private giving to universities, I adapt the standard Andreoni (1989) model of altruism to include income taxation. In the model, public and private universities differ only in the degree to which income taxes are remitted to them. University-level data on institutional characteristics and data on private philanthropy are combined to construct a panel of public and private institutions of higher education from 1999 to 2008. Even though the correlation between state funding and alumni giving is 0.08, the volatility of state funding leads to as much as 94% proportional crowding out of alumni donations for Doctoral universities and 55% proportional crowd out for small baccalaureate colleges.

Finally, the sensitivity of donors to changes in government funding of public universities raises the question of whether they are similarly responsive to comparable changes in other private sources of funding as they are to public sources of funding. An incredible amount of private money has been flowing into institutions of higher education over the last two decades. Yet, with one exception, no study has attempted to analyze the dynamics involved in funding higher education beyond the crowding-out effect the government has on private giving. This chapter examines the 30-year history of five universities to uncover the effect major private gifts have on the giving of other private donors to the universities. Using a comprehensive listing of all major gifts to institutions of higher education (in excess of $50 million) I am able to determine exactly when subsequent responses to the major gift should occur.
The data show that giving to most of the universities, and especially the one public institution in the study does not discernibly change during the five years after the announcement of the major gift in relation to its longer-term trend.

That donors to the public university appear to be unresponsive to a $125 million gift to their university seems contradictory to the demonstrated sensitivity alumni have to changes in government funding. This contradiction could mean private donors view the substitutability of government funding for their own giving differently than they view the substitutability of other sources private funding. It could also mean that donors recognize that only a portion of the large gift can be spent in the same manner that the entirety of the government allocation can. If this is so, it may be that $1 from the government would be worth more in the short run to the university than $1 of giving to the university’s endowment from private sources. This effect may be the source of the difference in responsiveness by donors to the changes in two sources of university income.
Dedication

I dedicate this dissertation to my wife Laura. I cannot thank her enough for her constant support during the last five years of school and beyond. She allowed me to escape a job in which I was deeply dissatisfied and return to academia. I have not regretted a day since. She has put up with more late nights than I can count and for the past two and a half years has borne the duties of earning our living and raising our children with grace and patience. With the completion of this work she has earned the long overdue reward of staying home with our three beautiful daughters Dorothy, Felicity, and Margaret.

I could not have asked for a better family in which to grow up. Without the love and encouragement of my parents I would not be the person I am today. To my brothers I say thanks for setting the bar high.

I would also like to thank Laura’s parents for raising such a wonderful woman and for all of the help they have given us over the years.

And finally to God, the source of all Truth, I owe my all. Non nobis Domine, non nobis, sed nomina tuo da gloriam. +
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I would like to thank the members of my committee for advising me in my research. I am especially indebted to Professor Dougan who indulged a first-year student when he thought he was ready for his Public Finance class. Throughout the creation of this dissertation he kept me from becoming discouraged when I thought things were coming to a dead end and deftly corrected my abuse of the English language. I thank Professor Tsui for his helpful insights without which Chapter 2 would surely be unnecessarily complicated. I thank Professor Tollison for opening my eyes to the world of Public Choice, his creativity is an inspiration. And it is with deep gratitude that I acknowledge Professor Tamura’s role in bringing me to Clemson and sparking my interest in higher education research. Without these men what merit this dissertation has would be greatly diminished.

To the professors and graduate students of the Public Economics Workgroup I extend my sincere appreciation for their indulgence in sitting through the numerous versions this dissertation. To this list I wish to add my office mates Bryan Buckley and Bai Bing. It would be difficult to have assembled a finer group to aid me in my research.

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Additionally I wish to thank Professor John Warner who, without my knowledge, paid for the data used in this dissertation. It would have presented a great hardship to procure it otherwise. I also thank Ann Kaplan with the Council for Aid to Education for her assistance in using it.

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Chapter 1

The Financial Impact of Alumni in the Legislature

1.1 Introduction

In 2008 the per-student appropriations allocated to the two flagship universities of South Carolina differed by $3000. In that same year, the disparity among the most well-funded and least well-funded teaching university was nearly $5000 per student.\(^1\) This phenomenon of inter-school disparity is not unique to South Carolina, rather the variation in per-student funding by each state government is typically very large.\(^2\) The goal of this chapter is to determine if political factors such as having alumni in key positions in the legislature can explain some of the inter-school variation in funding of public colleges and universities by the state government.

Several schools of thought have arisen over the years concerning the behav-

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\(^1\)These schools were South Carolina State University and Coastal Carolina University, respectively.

\(^2\)This variation between schools is large even when comparing schools within their own Carnegie Classifications.
ior of legislators. Adler (2000), views legislators as the “guardians” of the budget, protecting citizens from waste by accumulating knowledge and representing their constituencies reliably. Kau and Rubin (1979) view legislators as imperfectly monitored agents of their constituents shirking on their responsibility to their constituents by advancing their own interests to the extent possible while remaining in office. Weingast and Marshall (1988) view legislators as office-motivated individuals who attempt to divert as much money into their districts as possible in order to maintain the favor of their constituency.

To determine which of these views is most accurate, many studies have been done to see whether legislators divert funding at all, whether they direct it towards a particular pet project of theirs, or whether they divert it toward their districts (Stigler 1976, Crain & Tollison 1977, Alvarez & Saving 1997, Payne 2003, Aghion et al. 2005). All of these have taken the federal government as the mechanism used to divert funding to various causes. To know if funds have been diverted, one must know what would have happened in the absence of the diversion. One approach is to use the average distribution elsewhere as the norm (Payne 2003). Aghion et al. (2005) measure funding diversion by estimating deviations from their calculation of the optimal investment pattern. The burden of obtaining the detailed knowledge required to construct the necessary counterfactual is somewhat lessened if the focus is narrowed to the more manageable level of the State government.

This chapter estimates the influence that political and personal characteristics of legislators have on funding of colleges and universities in South Carolina. Particular focus is given to South Carolina because of its long history of using funding formulae to recommend annual higher education appropriations for each school to the Governor. Higher Education in South Carolina has been subject to two formula regimes since the 1980s. The original formula was based upon the calculated cost of
teaching each school’s student body. In the early 1990s a growing desire for schools to become accountable for their use of state funding necessitated the drafting of a new system of funding Schmidt (1999), Watt et al. (2004), Writer (1999), Jewler (1996). In response, the South Carolina General Assembly passed Act 359 in 1996 which required the allocation of state funds to universities to be determined by school performance ?. The Act laid out a system of university funding in two parts. One part mandated the calculation of each university’s resources required, the “Mission Resource Requirement” (henceforth MRR), to continue its mission of research and teaching. This step deviated only slightly from the previous formula. The second part of the Act detailed a method of assessing each university’s performance. The outcome of the old formula and the new MRR, in turn, is used as the counterfactual against which actual allocations are measured.

The budgetary process of South Carolina is such that tremendous power is given to committees to alter the governor’s proposal prior to a vote by the General Assembly. There are two key committees in the South Carolina General Assembly that address the budget for higher education: the Senate Finance Committee and the House Ways and Means Committee. I collect data on committee members detailing the districts represented by members, the party affiliation of the members, the identity of the chairman, and the undergraduate schools attended by the members, in order to estimate the effect committee membership has on the allocation of funds to the state’s four-year colleges and universities. Controlling for the formula’s suggestion (and later the MRR), a random-effects model is estimated specifying the type and extent of each committee member’s alma mater affiliation and district representation.

I find that, in most cases, schools with alumni on either committee receive more funding from the state government than schools without representation. Senators are better at redirecting funding than are Representatives, an effect that can be.
startlingly large. Research colleges with an alumnus on the Senate Finance committee receive 128% more than the average one-year appropriations than research schools without representation. The same figure for teaching universities is 75% of the average. Also, the proclivity to increase a school's funding appears to be stronger for alumni than for legislators who fight for university funding by dint of constituency. The local representative redirects about 56% of what an alumnus-legislator does.

1.2 Previous Studies

Several previous scholars have established the special influence members of legislative committees have over agency behavior and agency budgets (Faith et al. 1982, Weingast & Moran 1983, Anderson & Tollison 1991, Alvarez & Saving 1997). Anderson and Tollison (1991) show not only that the tendency for legislators to advance their own agenda exists, but that it has been in place since the dawn of the era of big government. They begin by noting that the distribution of New Deal spending across the states was neither uniform nor random. In fact, the states that had legislators on key committees and in leadership positions received more money from the Federal government than those states without such representation.

Alvarez and Saving (1997) analyze the effect committee membership at the federal level has on all federal outlays. They do so to test competing theories that legislators are either “distributivists” and use their positions to funnel federal money towards areas in which they benefit personally, or that they are “informationalists” who do not. Alvarez and Saving describe three basic challenges for the literature on pork-seeking: the need to account for how much funding a district would receive absent any special legislative pull, the need to differentiate formula spending that should restrict the amount of pork from project spending that would have no such restric-
tions, and the need to differentiate new outlays from previous funding commitments. The use district fixed effects while controlling for various demographic and political measures in their analysis of federal funding (as listed in the US Domestic Assistance Programs Database). They find that PAC contributions do not affect the outlays of the committees on which the PAC-funded member sits, that Democrats spend more money and that members of the Ways & Means Committee direct more funds to their districts than do members of other committees. Importantly for this study they find that, counter to their expectations, formulaic expenditures are more subject to political tinkering than is funding for discretionary projects. One shortcoming of their study is that the dependent variable is total federal spending in the legislator’s district. If a member is good at getting only one type of funding, rather than funding as a whole, the effect they seek could be masked by variation in other federal funding destined for his district. I circumvent this problem by looking specifically at higher-education appropriations to each university.

Two studies of note show the power legislators have on the agencies over which they oversee. One of these, Faith, Leavens and Tollison (1982), establishes a link between membership on the FTC oversight committee and the reduced number of cases brought by the agency in the districts of the members. The other, Weingast and Moran (1983), shows that when the ideological makeup of the FTC oversight committee changes, so too does the type of cases pursued by the FTC.

Two other previous studies specifically analyze the influence legislators have on higher education funding. The first, by Abigail Payne (2003), studies the allocation of federal research funding to universities across the country from 1972 to 1998. She treats legislators as deliverers of pork for their districts or patrons directing federal money to their alma maters. Payne uses the average funding to other universities in the region as a counterfactual against which she compares actual funding received by
the university. Funding in excess of this average is attributed to legislative finagling. If the excess funding goes to a university because it is located in a key committee member’s district, it is viewed as a form of pork. If the excess funding goes to a university because a key member is an alumnus (who is not the district representative), it is viewed as legislative shirking. Key to this concept of shirking is that the alumnus must not represent the district in which his alma mater is located, so that the funding of his alma mater does not provide a direct benefit to his constituents.

The focus of Payne’s paper is on the members of the Senate Finance and House Ways & Means Committees. Using fixed-effects models with dummy variables for representation in the form of general committee members, subcommittee chairmen, and general committee members in the majority party, she finds that having a university’s district representative on the committee does increase funding on average, but does not increase funding by as much as having an alumnus in a key legislative position.

Unlike Payne (2003), which focuses on federal higher-education funding, Aghion et al (2005) is the first to analyze (albeit not their primary focus) the influence that state legislators have on the state funding of colleges and universities. They examine cross-state differences in higher-education investment and classify states into two categories: those close to the labor-productivity frontier and those far away from the frontier. They conjecture that states far away from the frontier that invest in “high-brow” education are only training their brightest citizens to emigrate to states closer to the frontier. They consider this activity a mistake and assume that the only way for such mistakes to occur is if legislators are purposefully diverting funds to “high-brow” education away from cheaper, “low-brow” education. They track the educational outcomes of individuals born between 1947 and 1972 and investigate the effect the presence of legislators that represent the state on the federal appropriations committee had on federal spending, and the effect that the undergraduate alma mater
affiliation of each state’s Education Committee chairman has on state spending on higher education. They find that increasing the number of members on the House appropriations committee increases research expenditures in the state by $597 per person in their birth cohort. However, by focusing on the chairmen of the Education Committee they overlook the committees that actually control the budgets of the colleges and universities. I focus on the legislators who do have the power of the purse. In South Carolina, these are the members of the Senate Finance committee and the House Ways & Means committee.

Each of the studies above is based upon the supposition that it can measure the political effect that the legislative characteristics of key congressional committees have on funding without knowing what funding would be in an apolitical environment. My study does not rely on such a supposition because the legislature of South Carolina has a figure determined for it by an outside agency that dictates what the appropriate funding level should be for each school.

1.3 Higher Education Funding in South Carolina

For almost three decades now, the state of South Carolina has used an objective system designed to calculate the budget required for each university to operate and meet the legislature’s expectations. Prior to 1996, the system used only a formula to determine school budgets. After 1996 both a formula and an evaluation of each school’s performance was used to determine school funding. The original formula was almost entirely based upon enrollment levels at each school (McKeown & Layzell 1994). The instructional costs required to teach the student body and the cost of maintaining the buildings and grounds determined the bulk of the budget recommended to the Governor for each school.
Dissatisfaction with the state of higher education in South Carolina began to grow in the early 1990s. The business community was not satisfied with the quality of South Carolina graduates and the institutions were unable to convince the legislature that they were doing their jobs (Writer 1999). In addition to the lack of confidence in the schools, it was also felt that South Carolina operated too many schools for a state of its size (Schmidt 2003). There was a desire to find a way to close some of the schools. So strong was the desire to downsize the state’s higher education obligation that an eventual attempt was made by the governor to privatize some of the state’s larger public schools (Schmidt 2003).

In response to the growing concern over South Carolina’s system of higher education, South Carolina Senator Nikki Setzler - D seized the opportunity to propose a new method of funding the state’s public colleges and universities. The key requirement of the new system would be accountability to a newly invigorated Commission on Higher Education. Under the proposed plan, the South Carolina Commission on Higher Education (henceforth CHE) would be able to “take money away from low performers [in order to] lead to their closure.” Dougherty et al. (2011) The result was that in 1996 the South Carolina General Assembly passed Setzler’s plan (Act 359) which required the CHE to design and implement a system of measuring and rewarding the performance of the State’s colleges and universities. The new system consists of two phases: the first measures the financial requirements of the university to establish a baseline of funding which is nearly identical to the old formula, while the second evaluates school performance. Each year schools were to receive a score

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3 South Carolina operates 33 institutions of higher education. Included in this figure are 2 separate Medical Schools.

4 The Commission on Higher Education is comprised of fourteen governor-appointed members from the state. Six members are chosen to represent the six congressional districts, three appointed from the state at-large, three representatives from the public colleges (one trustee of a research school, one trustee from a teaching school, and one trustee from a technical school) one representative of an independent college, and one chairman to be appointed from the state at-large.
based upon their meeting of specified criteria set by the CHE that would determine funding in the following year.

The new Act calculates required funding by the state called the Mission Resource Requirement (henceforth called MRR). Much like the older formula, the MRR was greatly influenced by the instructional costs necessary to serve each school’s student body. Dropped from the MRR was the inclusion of unique costs to account for the differences in missions across the institutions. For a detailed description of how the MRR is calculated see Appendix A.

To receive all of the MRR, universities had to achieve certain performance standards meant to certify that the schools were “earning” their budgets. Every year schools are evaluated in nine focus areas. The scores from each area would be averaged together to establish an overall score for the school. Schools deemed to achieve the standards set by the CHE would receive incentive funding of either 1%, 3%, or 5% of their total allocations dependent upon how well they scored. Those schools derelict in their performance would have either 3% or 5% of their funding taken away dependent upon how poorly they performed. (For a detailed account of performance evaluations see Appendix A) Unfortunately the incentive payments were only given to schools if the higher education budget had a surplus, a rare occurrence for South Carolina. Disincentives, however, would be applied regardless of the state of the higher education budget.\(^5\)

The system had a three-year phase-in period during which each university’s base level of funding was guaranteed before the entire budget would be determined.

\(^5\)The only cases where schools failed to achieve the standards was during the initial phase-in period when schools were guaranteed to get the previous year’s funding. The failing results disturbed the Senate President Pro-Tem (and Finance Committee Chair) because one of the failing schools, Lander University, was located in his district. The rating system was subsequently relaxed to the point where no school has failed to achieve standards (Herbst 2007).
by performance in order to allow schools time to adjust to the new formula. This made South Carolina the focus of national attention because it was the first state to mandate all funding be determined by a school’s performance. The process of scoring universities, however, was halted after FY 2005 due to criticisms of its ability to address historic funding inequalities across schools and its use of difficult-to-measure performance indicators. No alternative has yet to replace the system as enacted in 1996.

1.4 The Budgetary Process and the South Carolina Legislature

The recommendations from the CHE are sent to the governor in the fall, during which time the schools have the opportunity to send representatives to a hearing held before the final budget proposal is submitted by the governor to the General Assembly. The Governor is required to submit the budget five days after the legislative session commences. The budget must be balanced, and is required by law not to increase by more than the average growth rate in personal income in the state. The proposal is sent to the legislative committees for review and alteration prior to its approval by the General Assembly and the Governor. The Governor has item veto power over appropriations. The ability of two legislative committees to alter the budget proposed prior to its approval by the General Assembly provides the possible avenue through

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Footnotes:

6 Fourteen indicators were used to allocate $4.5 million dollars in FY 1998, 22 indicators were used to distribute $270 million in FY 1999 and all 37 indicators were used to allocate the entire higher education budget by FY 2000.

7 Various difficult-to-measure indicators include the amount of Community and Public Service Activities for which the faculty receive no compensation, the elimination of unjustified duplication of administrative and academic programs, and employer feedback on graduates who were employed. (Council 2001)
which funding allocations can differ from the funding formula.

There are two committees in the SC General Assembly that oversee funding of colleges and universities: the House Ways & Means Committee and the Senate Finance Committee. The Chairmen of the Ways & Means Committee and of the Finance Committee both serve on the State Budget and Control Board which has the power to reduce budgets across the board in cases of revenue shortfalls. Members of the House of Representative serve 2-year terms while Senators serve 4-year terms.

The Committee structure allows legislators to accumulate expertise in certain areas and focus on subsets of issues. In the House, committee membership is assigned on the first day of the legislative session by the Speaker of the House. Once a representative is assigned to a committee, the members of the committees elect chairmen. Although Representatives can serve on more than one committee, members of the Ways & Means and Education and Public Works Committees are not allowed to serve on other committees.

Committee assignments in the Senate differ from those in the House. First, Senate committees must have proportional representation in party membership. Second, Senators serve on five committees and are allowed choose the committees on which they will (subject to availability) serve. The first four committee choices are made in order of seniority. The fifth committee choice is awarded by reverse seniority. Once the committee composition is determined, the Senator from the majority party with longest tenure (on the committee) serves as its Chairmen. In this way, legislators have some leeway in determining where they wish to exercise their power.
1.5 Data

The data for this study come from several sources. State appropriations come from both the CHE and the Integrated Postsecondary Data System (henceforth IPEDS). These two sources, however report different figure for state appropriations. The CHE reports an amount classified as recurring appropriations, meant to fund each schools Educational and General Expenses. IPEDS reports total annual appropriations each school receives from the state. The difference between these two figures is funding meant for “one-off” projects that are not intended to occur annually. This difference allows me to test which type, one-off or recurring appropriations, is more subject to political influence. IPEDS is also the source of data on Federal Government funding for each school. The correlation coefficient between state appropriations and federal funding is 0.89. The average research university received $59.4 million each year, while the average teaching school received only $4.3 million from federal sources. Both figures exhibited large within-university variance, showing this source of funding to be unpredictable from year to year. The period under study is 1989 - 2008 with some gaps. The CHE provided the formula figures, the MRR and the performance scores. The data describing the older formula is missing for FYs 1991, 1992, 1994, and 1997, which accounts for the gaps.

Performance funding in South Carolina was short-lived. As mentioned above, the first three years of the new performance funding system were a time of adjustment where the scores did not effect the budget (Council 2001). Difficulties in putting the system into practice caused a halt in scoring schools after 2005. Performance scores, therefore, are only used in the analysis for the years 2000-2005. The average performance score for each school during the scoring period can be found in Table 1.1. The mean score is shown as a percentage between 0 and 1. As can be seen,
the scores are all high, with very little variation across time. The MRRs for each schools are still calculated and used, as in the older system, to produce the budget recommendations from the CHE.

The South Carolina Legislative Manual is printed each year describing, among other things, lists of each committee’s members, the Rules of the House and Senate, and detailed biographical information on each legislator in the General Assembly. It is from this source that I collect data on each committee member’s undergraduate college, political party affiliation, the district he represents and whether or not he is the chairman of the two committees in question. The rules of the House and Senate from which I learned the process of committee formation reported above.

The Department of Geology of the University of South Carolina provided GIS files outlining the legislative districts and locations of the schools so I could correct for the mandated change in the legislative districts after the 2000 US Census. I denote local reps strictly as being the district representative as in Payne (2003), not at the city level. Therefore the Citadel and College of Charleston have different local representatives despite of being located 1.5 miles from each other.

I focus on the members of the South Carolina General Assembly serving on the House Ways & Means and Senate Finance Committees. Focusing on these members allows me to study four effects on the distribution of funds across the schools: the effect of having a representative as a general member of the committee, the effect that general member of the committee has if he is in the majority party, the effect he has if he is the chairman, and the effect of having multiple members on the committees. I study two types of representation that can benefit a university: alumni and the

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8This is because of the alteration in scoring criteria after the initial low performance.
9Weingast and Moran (1983) find that members of committees have significantly more influence over budgetary decisions than do members of the legislature at large, which is part of the reason for neglecting the alumni composition of the South Carolina General Assembly as a whole.

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university’s district representative.

I combine the appropriations data from the CHE and IPEDS with the South Carolina General Assembly data to determine the extent to which South Carolina colleges and universities are represented on the two committees under study. I limit the analysis to the 13 four-year schools, disregarding the two-year and technical schools. This is done because the overwhelming majority of South Carolina legislators on the appropriations committees hold degrees from four-year institutions. Of the 13 schools represented in this study, three are classified as research universities while the remaining ten are considered to be teaching schools. This distinction becomes more important during the latter period of the study because the two categories were subject to different standards in order to reflect the differences in missions.

Table 1.2 describes the extent to which South Carolina colleges and universities are represented on the two appropriations committees. Alumni representation alone is presented because all of the schools had at least one year during the sample period in which their local politician was on one of the two committees. Schools are listed in the table next to each category if they ever had an alumnus on one of the committees (as shown by the columns.) The columns labeled ∆ report how many changes of representation occurred for that school during the sample period. For example, if ∆ = 0, then the school had an alumnus on the committee during the entire period. If ∆ = 3, then the school could have begun the period without an alumnus representative, gained representation, subsequently lost it, and then regained representation for the remainder of the sample period. The Senate Finance committee is much less diverse in alumni representation than the House Ways & Means committee. It also experiences less turnover than does the House committee, no doubt because Senators have longer terms than do Representatives. The number of zeros makes estimating a

\[10\] This is how the CHE classifies the schools.
relationship between political representation and state funding with school-level fixed effects difficult, especially considering the identity of the schools who never have a change in representation. This paucity of turnover means the most reliable indicator for political influence could be the one indicating the alumnus to be in the majority party, because it has the most turnover.

Table 1.3 reports the summary statistics of state appropriations to schools delineated by those schools with and those schools without representation. The schools included in the category “Schools with Any Alumni Rep” are those that have at least one year during the sample period where an alumnus is on either committee. The column “mean” describes the average of recurring appropriations as reported by the CHE in real, year 2000, dollars.\(^\text{11}\) The raw data indicate that both research and teaching schools with at least one year of representation by alumni receive, on average, more recurring appropriations from the state than those schools without alumni representation. The same pattern holds for one-year appropriations, with roughly the same difference in funding between research universities with and without representation as they do with recurring funding, albeit with a much larger percentage difference, 295% more vs. 27% more. I report no such figures for local political representation because, as mentioned above, every school in the sample has at least one year during which its local legislator is on one of the two appropriations committees.

1.6 Empirical Investigation

Table 1.3 suggests that having alumni on the two committees that control school budgets is very valuable. It remains silent on the value to the school of having its local politician on either appropriations committee. To explore further the effect

\(^{11}\)All monetary variables have been deflated to year 2000 using the CPI-U deflater.
of committee membership of both types on appropriations I estimate the following model

\[ A_{it} = \alpha_0 + \alpha_1 Doc_i + \alpha_1 P_{it-1} + \alpha_3 P_{it-1} Doc_i + \alpha_4 F_{it-1} + \alpha_5 R_{it-1} + \beta R_{it-1} Doc_i + \gamma + \epsilon_{it} \]  

(1.1)

where \( A \) is state appropriations to university \( i \) in year \( t \) as measured by either recurring appropriations or one-year appropriations. \( R \) is a vector of Senate and House indicators denoting whether the school has any alumni (district) representation in year \( t - 1 \), \( P \) is the value of the performance score between zero and one in year \( t - 1 \) for years 2000-2005 and \( F \) is the dollar value of federal government funding in year \( t - 1 \). \( Doc_i \) is a dummy variable = 1 if the school is designated a research university and 0 if it is designated a teaching school. The performance score and vector of representation variables are interacted with the research dummy to allow for differential effects of these variables between teaching and research schools. Each of the time-varying independent variables is lagged by one year to account for the budget cycle of the state government.\(^{12}\)

The variable \( S_{it} \) is the key control variable for this study and represents two separate figures. From the 1989 - 1997 it is the funding level for each school \( i \) suggested by the old formula. After 1997, \( S \) is the result of the newer MRR formula. As mentioned above, these two figures represent, based upon observable characteristics of each school, the minimum amount of funding necessary for the schools to fulfill the expectations of the state.

If this were not part of the estimation, the coefficients of the political variables would be confounded by its absence. It would be difficult, if not impossible, to

\(^{12}\)By budget cycle I mean that this year’s legislature determines next year’s appropriations based upon the knowledge it has today.
declare whether a university received more money because it had an alumnus in a key legislative position or it received more money because it was a higher-quality school with a more expensive student-body composition.\textsuperscript{13} By controlling for what the school should objectively receive regardless of who it knows, the political dummies isolate the actual effect of having a powerful ally from other confounding factors.

There are several ways under two broad categories of political representation of schools in which I measure and estimate (in separate regressions.) The first category records whether an alumnus is a: general member of House Ways & Means Committee or Senate Finance Committee, general member of either of the two committees who are also affiliated with the political party holding the majority of seats in the House or Senate, and Chairman of either committee. The above measures treat universities who have only one member on the committee the same as a university who has three alumni on the committee. In order to differentiate these universities from each other, I also estimate a regression which controls for the percentage of the total committee who are alumni of a certain school. This way I can capture the effect of having one alumnus versus having multiple alumni on the committee. For local representation, I only estimate the effect being a general member of either committee.

Model (1.1) is estimated without university-specific fixed effects because of the omnipresence of alumni from certain schools on the two appropriations committees shown in Table 1.2. For these schools with a $\Delta = 0$, the political-representative variables are university fixed effects and would thus render fixed effects impossible. Robust standard errors were calculated, clustered at the university level.

Tables 1.4 and 1.5 report the results of the estimation of the alumni regressions.

\textsuperscript{13}As mentioned in several places, the cost of instruction is a major component of the old formula and the new MRR. This calculation is dependent upon the makeup of the student body by splitting the students by major and using a standard student to faculty ratio for each majors. A school that has less faculty-intensive majors will be less expensive to run than a school that can get by with higher student-faculty ratios.
and Table 1.6 reports the results of the regression on local representation. Missing fields in the tables occur if there was collinearity between the political dummies or if research schools as a whole or teaching schools as a whole are unrepresented. In all of the specifications, $S_u$ is always statistically significant and positive. Federal funding is almost always negative and significant, with research schools always receiving more state money than teaching schools. Scoring well is paradoxically bad for research schools. This could be because the Medical University of South Carolina is a good school, but is the least well-funded research university.\footnote{MUSC does offer limited undergraduate educations, but none of its undergraduate alumni are on either committee during the period of analysis.} A quick glance at the tables reveals a few insights. The first is that having a alumnus on the Senate Finance Committee is almost uniformly a good thing for universities. Alumni representation on the House Ways & Means committee, however appears to be a mixed blessing. For most of the specifications, research universities fare well if they have alumni on the House committee, whereas teaching schools are hurt by having alumni on the House Committee in nearly every specification. Also, Senators appear to be more important for universities than are Representative, a result reminiscent of Stigler (1976).

The coefficients of interest in Equation (1.1) are $\beta$ and $\gamma$. Interacting the research-university indicator with the vector of political indicators means that $\beta$ is the effect of representation on state appropriations for teaching universities while the sum ($\beta + \gamma$) is the effect of representation on state appropriations for research universities. In Table 1.4 Column 3 for example, having at least one alumnus as a general member on the Senate Finance committee on one-year appropriations is worth $2.4$ million for teaching universities while it is worth $41.4$ million ($2.4$ million + $39$ million) for research universities. These figures translate into an increase in one-year appropriations by 128\% of the average for research universities and 75\% of the
average for teaching universities.

The large coefficients for the percentage of the committee consisting of alumni are due to the scale in which the percentage is measured (between 0 and 1). In order to convert this figure into something useful, it is helpful to know what the percentage change would be if an additional alumnus were added to either committee. There are 25 members on the House Ways & Means Committee and an average of 20 members on the Senate Finance Committee which means that 1 seat represents 4% of the Ways & Means Committee and 5% of the Senate Finance Committee.\(^{15}\) Considering this, an additional member on the Senate Finance Committee is worth $7.85 million dollars more in one-year appropriations for research universities than it is for teaching colleges.

Recurring Appropriations have a similar responsiveness to alumni representation as do one-year appropriations. Having at least one alumnus who is a general member of the Senate Finance Committee increases recurring funding to teaching universities by $2.47 million, or around 16% of the average teaching universities recurring appropriations. Being in the majority party does not lend much of an advantage to Senators: majority members are only able to increase recurring appropriations by 18% of the average for teaching universities compared to the 16% figure for either party on the committee.

For a research university, having an alumnus who is the chairman of the Senate Finance and House Ways & Means committee means $20.4 million and $27.3 million more in funding, respectively, than those research universities who do not have such representation. Increasing the number of alumni by one on the House Way & Means Committee is worth an additional $7.1 million in recurring appropriations for research universities.\(^{15}\) The Senate figure is an average because prior to 2001 there were 18 members on the Finance Committee and after 2000 there were 23 members.
universities. For teaching universities, increased representation on the Senate Finance Committee is worth $1.72 million dollars, which is only slightly less than the value of having a general member.

With the exception of one-year state appropriations, having a university’s local legislator on the committees appears, puzzlingly, to be detrimental to both types of schools. This contradicts the anecdotal evidence referenced to above of Lander’s local legislator pushing for a drastic alteration in the performance scoring system after its less-than-stellar performance, as well as the case where the Representative from Charleston came out strongly opposed to the suggestion that the Medical University of South Carolina located in his district merge with the University of South Carolina Medical School located in the capital (Robinson 1996).

Where local representation does appear to be beneficial is for one-year state appropriations. For research universities, having the local representative on the Finance Committee is worth $22.3 million, which is about half the value of having an alumnus in the same position. For teaching colleges, having the local representative on the Ways & Means Committee is worth an astounding $7.3 million, also about half the average teaching college’s one-year appropriations.

Federal funding leads to a subsequent reduction in recurring state appropriations by between $0.14 and $0.37, depending on which representative dummies are being used. One-year appropriations, however, appear to be positively correlated with federal funding. One dollar of federal funding leads to a subsequent increase in one-year state appropriations of between $0.15 and $0.32. The nature of one-year state appropriations is similar to that of federal funding, in that the money is intended for a specific purpose over a short time horizon. This mixed result of crowd out in recurring state funding and crowd-in of one-year state funding could reflect some interesting dynamics of state financing. The Federal government would most
likely balk at continuing to fund state universities with the intent of increasing total funds if the state turned around and used the federal dollars as a substitute for its funding rather than an augmentation to it. What appears to be happening is that the state is not reducing its funding of projects that are similar to those funded by the federal government, but rather is reducing its allocation of recurring funds.

1.7 Conclusion

This chapter began with the question “Do alumni in the legislature benefit their alma maters by using their power over state budgets?” To answer the question I focused on the South Carolina General Assembly because of its long history with the use of an objective formula to guide the allocations of state appropriations to its public colleges and universities. The use of a formula, it is argued, is key to establishing a counterfactual against which actual allocations are measured. Without a counterfactual such as the formula suggestion, and later the MRR, it would be difficult to tell if one school received more funding than another because of its political connections or because of some other confounding factor such as differences in quality or expense in the delivery of its mission. The answer to the questions of the value to universities of alumni political questions is “It depends.” I found, as have others (Stigler 1976, Crain & Tollison 1977, Payne 2003), that Senators are much more valuable, in terms of their ability to redirect funding, than are Representatives. In fact, only in the case of South Carolina’s research universities do Representatives play a beneficial role. They serve, so it seems, to the detriment of the state’s teaching schools.

Another way of answering the question of whether alumni in the legislature augment the budgets of their alma maters is to compare the performance on the
committee to the performance of the school’s local representative. While having a local representative on one of the Appropriations committees is indeed a good thing for their constituent school’s budget, their value is only 56% of the value to a university of having an alumnus on either committee, regardless of which district the alumnus represents.

I am left with a new question: If alumni seek to improve their alma maters by redirecting more funding towards their schools, what are the consequences of this behavior? Will this manipulation of school budgets lead to a dollar-for-dollar increase in university budgets, or will other sources of funding be crowded out? This is precisely the question which will be taken up in the next chapter.

1.8 Tables

<table>
<thead>
<tr>
<th>School</th>
<th>score</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Citadel</td>
<td>0.801</td>
<td>0.063</td>
</tr>
<tr>
<td>Clemson</td>
<td>0.891</td>
<td>0.036</td>
</tr>
<tr>
<td>Coastal Carolina</td>
<td>0.792</td>
<td>0.067</td>
</tr>
<tr>
<td>College of Charleston</td>
<td>0.877</td>
<td>0.033</td>
</tr>
<tr>
<td>Francis Marion</td>
<td>0.781</td>
<td>0.047</td>
</tr>
<tr>
<td>Lander</td>
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</tr>
<tr>
<td>Medical University of South Carolina</td>
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<td>0.040</td>
</tr>
<tr>
<td>SC State</td>
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<td>0.048</td>
</tr>
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<tr>
<td>USC</td>
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</tr>
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<td>USC Upstate</td>
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</tr>
<tr>
<td>Winthrop</td>
<td>0.938</td>
<td>0.032</td>
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</table>
Table 1.2: Summary of School Alumni Representation

<table>
<thead>
<tr>
<th>Type</th>
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<th>∆</th>
<th>House Ways &amp; Means</th>
<th>∆</th>
</tr>
</thead>
<tbody>
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<td>Alumni as General Members</td>
<td>The Citadel 0</td>
<td></td>
<td>The Citadel 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clemson 0</td>
<td></td>
<td>Clemson 0</td>
<td></td>
</tr>
<tr>
<td>College of Charleston</td>
<td>2</td>
<td></td>
<td>Coastal Carolina 3</td>
<td></td>
</tr>
<tr>
<td>SC State</td>
<td>1</td>
<td></td>
<td>College of Charleston 2</td>
<td></td>
</tr>
<tr>
<td>USC Aiken</td>
<td>0</td>
<td></td>
<td>Lander 3</td>
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</tr>
<tr>
<td>USC</td>
<td>1</td>
<td></td>
<td>USC Aiken 2</td>
<td></td>
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<tr>
<td>Winthrop</td>
<td>1</td>
<td></td>
<td>USC 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>USC Upstate 2</td>
<td></td>
<td>Winthrop 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Winthrop 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alumni as Chairman</td>
<td>USC 2</td>
<td></td>
<td>The Citadel 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clemson 1</td>
<td></td>
<td>USC 2</td>
<td></td>
</tr>
<tr>
<td>Majority Party</td>
<td>The Citadel 0</td>
<td></td>
<td>The Citadel 7</td>
<td></td>
</tr>
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<td>General Members</td>
<td>Clemson 8</td>
<td></td>
<td>Clemson 6</td>
<td></td>
</tr>
<tr>
<td>in the College of Charleston</td>
<td>4</td>
<td></td>
<td>Coastal Carolina 10</td>
<td></td>
</tr>
<tr>
<td>SC State</td>
<td>10</td>
<td></td>
<td>College of Charleston 4</td>
<td></td>
</tr>
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<td>Lander 3</td>
<td></td>
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<td>0</td>
<td></td>
<td>USC Aiken 12</td>
<td></td>
</tr>
<tr>
<td>Winthrop</td>
<td>6</td>
<td></td>
<td>USC 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>USC Upstate 4</td>
<td></td>
<td>Winthrop 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Winthrop 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Columns 3 and 5 describe the number of times the type of representation described in column 1. For example: Coastal Carolina University was represented on the House Ways & Means Committee by an Alumnus as a general member. From 1989 - 2008 their representation on the committee changed three times, meaning that they started with no representation, gained representation, lost it, and then regained representation for the rest of the period.
Table 1.3: Summary Statistics on State Appropriations to Colleges and Universities

<table>
<thead>
<tr>
<th></th>
<th>Obs</th>
<th>Mean</th>
<th>σ</th>
<th>σ/(\text{Mean})</th>
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<td><strong>Recurring Appropriations</strong></td>
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<tr>
<td>Schools with Any Alumni Rep</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>40</td>
<td>128,000,000</td>
<td>37,400,000</td>
<td>0.292</td>
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<td>Teaching</td>
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<td>16,000,000</td>
<td>6,476,083</td>
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</tr>
<tr>
<td>Schools without Any Alumni Rep</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
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<td>101,000,000</td>
<td>18,600,000</td>
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</tr>
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<td>Teaching</td>
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<td>10,300,000</td>
<td>5,953,287</td>
<td>0.578</td>
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<tr>
<td><strong>One-Year Appropriations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools with Any Alumni Rep</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
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<td>42,300,000</td>
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<tr>
<td>Research</td>
<td>18</td>
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<td>1,676,525</td>
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### Table 1.4: Regression Analysis Alma Mater Affiliation and One-year Appropriations

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<thead>
<tr>
<th>Dependent Variable: One-year Appropriations</th>
<th>Type</th>
<th>General in Majority</th>
<th>Pct</th>
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</thead>
<tbody>
<tr>
<td>Senate Finance Committee</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Research</td>
<td>39,300,000</td>
<td>10,400,000</td>
<td>157,000,000</td>
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<tr>
<td></td>
<td>(4,452,560)</td>
<td>(8,788,154)</td>
<td>(89,200,000)</td>
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<tr>
<td></td>
<td>(1,105,725)</td>
<td>(1,093,219)</td>
<td>(8,778,904)</td>
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<td></td>
<td>9,015,005</td>
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<td>(13,300,000)</td>
</tr>
<tr>
<td></td>
<td>(1,047,697)</td>
<td>(1,293,458)</td>
<td>(24,700,000)</td>
</tr>
<tr>
<td></td>
<td>0.816</td>
<td>0.679</td>
<td>0.611</td>
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<tr>
<td></td>
<td>395.600</td>
<td>202.77</td>
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</tr>
<tr>
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<td>196</td>
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<td>196</td>
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<tr>
<td>House Ways &amp; Means Committee</td>
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<td></td>
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<tr>
<td>Research</td>
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<td></td>
<td>157.56</td>
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</table>

Notes: Robust Standard Errors are in parentheses. The first column describes the committee to which the coefficients in the table describe. Each column represents a separate regression focusing on the political effect of an alumnus representative as described in the column headings. Other control variables are: the Mission Resource Requirement, the formula funding calculation, a dummy for research universities, federal funds, and the performance funding score. The sample covers the years 1989-2008. Missing fields were dropped because of collinearity.
<table>
<thead>
<tr>
<th>Dependent Variable: Recurring Appropriations</th>
<th>Type</th>
<th>General in Majority Pct</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>6,581,483</td>
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<td>20,400,000</td>
<td>11,100,000</td>
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<tr>
<td></td>
<td>(5,130,536)</td>
<td>(7,543,993)</td>
<td>(9,031,905)</td>
<td>(85,400,000)</td>
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<td>2,682,882</td>
<td>43,100,000</td>
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<tr>
<td></td>
<td>(892,451)</td>
<td>(949,329)</td>
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<td>(11,200,000)</td>
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<td></td>
</tr>
<tr>
<td>House Ways &amp; Means Committee</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>2,960,350</td>
<td>27,300,000</td>
<td>179,000,000</td>
<td>179,000,000</td>
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<tr>
<td></td>
<td>(7,468,358)</td>
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<tr>
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<td></td>
<td>(685,559)</td>
<td>(697,776)</td>
<td>(1,073,963)</td>
<td>(17,300,000)</td>
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<td></td>
</tr>
</tbody>
</table>

$R^2$ 0.955 0.958 0.962 0.9665

$\chi^2$ 1950.270 2657.98 9643.94 2993.07

Obs 199 199 199 199

Notes: Robust Standard Errors are in parentheses. The first column describes the committee to which the coefficients in the table describe. Each column represents a separate regression focusing on the political effect of an alumnus representative as described in the column headings. Other control variables are: the Mission Resource Requirement, the formula funding calculation, a dummy for research universities, federal funds, and the performance funding score. The sample covers the years 1989-2008. Missing fields were dropped because of collinearity.
## Table 1.6: Regression Analysis with District Representation

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Notes: Robust Standard Errors are in parentheses. The first column describes the committee to which the coefficients in the table describe. Each column represents a separate regression focusing on the political effect of an alumnus representative as described in the column headings. Other control variables are: the Mission Resource Requirement, the formula funding calculation, a dummy for research universities, federal funds, and the performance funding score. The sample covers the years 1989-2008.
Chapter 2

Crowding out of Private Funding for Public Universities

2.1 Introduction

The previous chapter showed that state funding to colleges and universities, even when guided by an objective formula, is subject to the influence of powerful members of the legislature. The legislatures are presumably acting in what they perceive to be the best interest of their alma matres by using what means they can to augment the schools funding. This behavior may not be as productive as they think if the increase in funding they achieve simply causes other sources of funding to the school to diminish. The particular source of funding that is possibly affected by state funding to be analyzed in this chapter is private philanthropy to higher education.

When government at any level takes upon itself the role of benefactor, it must consider the effect of its funding decisions on private philanthropy. Since the pioneering work of Abrams and Schmitz (1978) and Roberts (1984), much has been made of the possibility that individuals may be “crowded out” of markets by government
activity in the marketplace. In the context of a public good, crowding out refers to the displacement, either fully or partially, of private funding of an organization by government funds allocated to that same organization. Evidence of this phenomenon is found in the behavior of philanthropists donating to public radio (Brooks 2003, Kingma 1989), social service organizations (Andreoni & Payne 2003) and church-sponsored charity (Gruber & Hungerman 2011).

Knowing the extent of crowding out to universities during times when government support of higher education is increasing is perhaps only of interest to economists. However in times where state funding is falling, it is imperative to wide swaths of the population whether private funds will rush in to take its place (crowd out) or flee (crowd in). If government support does crowd out voluntary donations, then a graph showing public funding of and private donations to higher education over time should depict the two series moving in opposite directions. Crowding-out is to be expected if the private donors care mostly that a university is funded rather than who it is doing the funding. Crowding in would be expected if government funding had matching stipulations. It is also expected if private donors viewed government funding as an assurance of the quality of the recipient organization. If state funds crowd in donations, then a reduction in support by the state could prove disastrous to institutions.

It is difficult to determine the relationship private philanthropy has with government because of the tumultuous nature of the economy. A cursory look at the data might lead one to conclude, as did Okten and Weisbrod (2000), that the government in fact does attract private investment. Indeed, the simple correlation between state funding and private giving to US institutions of higher education is 0.08. Before accepting this positive correlation as a causal reality, one should consider the effect a change in the total wealth of the economy has on the ability of both the state govern-
ment and the private citizenry to fund a university. During a recession, some donors lose their jobs while others see the value of their assets fall. Both of these events would cause these donors to give less to their alma mater. Similarly, both of these events cause the tax receipts of the government to fall, which hampers the ability of the government to fund university. The combination of the reduced private and public capacity to fund universities would lead to the positive correlation mentioned above.

In order to discern the effect government funding has on private giving to universities, I adapt the standard Andreoni (1989) model of altruism to include income taxation. The inclusion of the income tax formally links the income of the government to the incomes of its citizens. In the model, public and private universities differ only in the degree to which a percentage of the individual income tax is remitted to them through the state. Specifically, when the tax receipts of the state increase, public universities receive a larger percentage of the increase than do private universities. This difference in tax support to the universities translates into a difference in an individual’s predicted marginal propensity to donate to his alma mater dependent solely upon whether he went to a public or private university. The difference in the marginal propensities between public and private alumni is called the “proportional crowd-out.” The theory leads to a reduced-form donations equation that depends only upon the sources of income to universities.

To estimate the reduced-form model implied by the theory I gather data on annual alumni donations to 972 universities. I split the panel of universities into three subsamples by Carnegie Classification to control for likely heterogeneity of alumni wealth.¹ The empirical model also includes university, year, and region fixed effects. The test of the model is in the comparison of the coefficients of state income between

¹The classifications are: Doctoral Universities, Master’s Universities, and Baccalaureate Colleges.
public and private institutions. A negative sign on the interaction of state income and an indicator that the university is publicly controlled implies that public universities receive less alumni donations when state income increases than do private universities. I find 94% proportional crowding out of alumni donations for doctoral universities and 55% proportional crowding out for alumni donations to small baccalaureate colleges. Stated another way, an additional $1 of public funding crowds out alumni donations to public doctoral universities 94% more than it does alumni donations to private universities. One implication of these estimates is that the degree to which public universities can make up for a reduction in public funding is not uniform across the types of universities.

There is a puzzling feature to the behavior of donors to doctoral universities. The estimated crowd-out of 94% is not statistically different from 100%. This would imply that donors to public doctoral institutions do not increase their giving as their incomes increase because the state government is concomitantly increasing its funding as its tax receipts swell. The question then becomes why would the state increase its funding at all if, by doing so, it caused alumni of public universities not to do so in the state’s stead? Does this extreme crowd out extend to the long run, or is it just a short term adjustment to fickle government priorities? The estimated relationship explored here is intended to serve as a launch point for a much deeper question of why we have government duplication of what is already well-provided for by private citizens.

2.1.1 Background

The behavior of donors to universities has been extensively studied over the years. Many studies completely ignore the influence contributions from the govern-
ment have on donations to the endowment of a university (Holmes 2009, Cunningham & Cochi-Ficano 2002, Clotfelter 2003, Terry & Macy 2007, Okunade et al. 1994). These studies focus instead on the characteristics of individual donors that affect the amount they give. The findings of those studies that have considered the role of the government in the donor’s decision have been mixed. Okten and Weisbrod (2000), using a panel of IRS tax filings of non-profits, find that government grants to institutions of higher education attract private donations. They reason that this can be attributed to the government grant acting as a signal to donors of worthiness of a particular nonprofit for their money. This idea has been recently formalized in a working paper by Garth Heutel (Heutel 2009). Leslie and Ramey (1988) use appropriations rather than grants to analyze the change in private funding attributable to the change in government funding for 73 Carnegie Research I universities. Using data from the Council for Financial Aid to Education from 1977 and 1980, they find that a 1% increase in per-student appropriations to a university decreases alumni donations by 0.35%. This number is suspect, however, because government funding of private universities is forcibly set to zero in their study.

The conventional wisdom about higher-education funding is that it has been falling for quite some time, but the actual data on public funding of higher education in the US paint a surprising picture. Figure 2.1 shows clearly that state and local appropriations for higher education have been generally increasing over the last 40 years. In fact, real appropriations have nearly quadrupled to $1.2 billion in 2008 from $325 million in 1966. All monetary values are in year 2000 dollars.

The effects of the business cycle can clearly be seen in the breaks from the general trend in response to the recessions of 1981, 1990, 2001, and 2007. In all but the last case we can see clearly that appropriations recover after the recession.

\(^2\) All monetary values are in year 2000 dollars.
The deviations from trend in public funding shown in Figure 2.1 can be attributed to balanced budget requirements imposed upon the states. When tax income to the states falls, the legislature must look for areas in which to trim the budget. Some programs are more easily cut than others. The ability of universities to tap other sources of income makes higher education a tempting target for state legislators when the well runs dry. Increasing demands on state resources only exacerbate the problem. Currently New York’s Medicaid spending constitutes 30% of the state budget, with projections of a 50% increase in obligations over the next twenty years (Briody 2010). In addition to increasing responsibilities for Medicaid, an aging population and increasing expenditures on corrections due to factors such as mandatory sentencing laws have also contributed to the squeeze on public budgets (Rizzo 2006). What is left to be shown is the general nature of voluntary support for higher education.

While it is apparent that the extent to which public funding of higher education is sensitive to the overall performance of the economy, the total budgets of the states do not seem to share this sensitivity. Like the funding of higher education, state budgets have been steadily growing over the past few decades. During this time, the percentage of the growing state budgets allocated to all levels of education has remained steadily around 31%. It is difficult, then, to reconcile the widespread image of tight public-university budgets with the historical trend in funding seen in Figure 2.1.\(^3\)

Why is the conventional wisdom so wrong? Even when viewed on a per-student basis, average appropriations across the fifty states have not deviated much from $5000. The reason that universities are perceived to be chronically underfunded is that university expenditures have grown faster than state appropriations. In his book *What’s Happening to Public Higher Education?* Ronald Ehrenberg reports that

\(^3\)The last two years may be one of the first periods in some time where the sky actual is falling.
during the period 1974 to 2004 the Higher Education Price Index (henceforth HEPI) has grown faster than the Consumer Price Index on average by about 0.4% per year. Michael Rizzo (2004) shows that, while average state appropriations are relatively steady over the three decade period, the average total expenditures by universities has been increasing much faster.

This paper employs institutional-level data from both public and private four-year universities from across the nation to discern the effect changes in public funding have on private giving to universities.⁴ The percentage of the average university’s budget not covered by state funding has been growing at an average annual rate of around 3%. Unlike the aggregate picture, the average real appropriations to universities in the sample do not exhibit a very marked pattern. This is perhaps because the aggregate data include funding of system offices, higher education boards, community colleges, and some scholarships, whereas the sample data only account for direct funding to the university. The strongest variation occurs in the series of average real appropriations per student. This perhaps reflects the trend of students retreating to the university when confronted with poor job-market conditions (Humphreys 2000).

Like public funding, donations to universities by private individuals is sensitive to the performance of the economy. Okunade et al. (1994) find that, over the period 1976 to 1990, alumni donations reached a trough during the 1983 recession. Figure 2.3, based on data from the Council for Aid to Education, shows the historical pattern of all private giving to higher education. It is clear that, like state funding, donations are highly dependent upon the performance of the economy. The shorter series in Figure 2.1 shows the behavior of funding over the period under analysis in this paper. If aggregate income had not been so volatile over the last decade, then crowding

⁴Neither Alaskan nor North Dakotan universities appear in this data set because universities located in these states did not report any data to the Council for Aid to Education (henceforth CAE).
out would be made manifest in opposite movements of the trends in state provision and private donations. Because of the volatility, crowding out can only be found by looking at income effects.

2.2 The Model

The model used to determine the impact of secular changes in aggregate income on private donations to universities is based upon the work of James Andreoni (1989, 1990, 2006) on impure altruism. The innovate characteristic of Andreoni’s models is the inclusion of the donor’s gift in addition to the level of the public good in his utility function. This allows donors to care about the particular sources of giving as well as total level of giving. Andreoni shows that models of “pure” altruism predict near complete crowding out of any government gifts to charity, restrict giving to only the richest segment of society, and almost magically eliminate the distortion of some taxes (Andreoni 2006). By allowing the donor to care about his own contributions, the model leads to a prediction that crowding out need not be one-for-one, because one’s own donations are no longer perfectly substitutable for other sources of charitable income. The model is also more faithful to a reality in which fundraisers expend vast amounts of effort convincing the donors of exactly this fact. This self-appreciative aspect of the model is what Andreoni labels the “joy of giving.” Typical models of giving neglect the effects of taxation on private provision of public goods, and those that do restrict taxation to lump-sum form. My model, however, will make use of a proportional income tax to formalize the increase in government tax revenues that accompanies secular increases in aggregate income.

Assume that there are only two goods in this economy, a private good \((x)\) and
the budget of university \( j \) \( (E_j) \). Let \( E_j = \sum_{i=1}^{m} d_i + \gamma_j \cdot T + F_j \) where \( \sum_{i=1}^{m} d_i \) is the sum of the voluntary donations of \( m \) donors to university \( j \), \( \gamma_j \) is the share of government tax revenues \( (T) \) given to university \( j \), and \( F_j \) is all other sources of funding (tuition, fees, program revenues, patents, etc...) to the university. Taxes are proportional to individual income \( ((1 - t) \cdot M_i) \), thus let \( T = t \cdot \sum_{i}^{n} M_i \) for all \( n \) individuals in the state represent total tax revenues for state \( s \). Note that each private university has \( \gamma_j = 0 \) share of the tax revenues.

Denote \( d_{-i} = \sum_{k \neq i}^{m} d_k \) and \( M_{-i} = \sum_{k \neq i}^{n} M_k \). Each individual maximizes his own utility

\[
U_i(x_i, E_j, d_i) = (2.1)
\]

subject to \( (1 - t) \cdot M_i = x_i + d_i \), \( E_j = d_i + d_{-i} + \gamma_j \cdot T + F_j \), and \( T = t \cdot (M_i + M_{-i}) \).

A donor considers \( d_{-i}, M_{-i} \), and \( \gamma_j \cdot t \) as exogenous and can therefore choose the total amount of \( E_j \) by “topping off” the university’s budget with his own donation \( d_i \). Let \( O = \gamma_j \cdot t \cdot M_{-i} + d_{-i} + F_j \) denote the portion of university \( j \)’s budget that the individual assumes is exogenously determined. The university’s budget constraint can be rearranged to become \( d_i = E_j - \gamma_j \cdot t \cdot M_i - O \). Substituting this expression into the individual’s budget constraint and rearranging yields \( x_i = c \cdot M_i + O - E_j \) where \( c = (1 - (1 - \gamma_j) \cdot t) \).

Thus the maximization problem becomes

\[
\max_{E_j} U_i(c \cdot M_i + O - E_j, E_j, E_j - \gamma_j \cdot t \cdot M_i - O). \tag{2.2}
\]

Differentiating Equation (2.2) with respect to \( E_j \) and setting it equal to zero, (2.2) can be solved for individual \( i \)’s optimal university budget \( (E_j) \). Assuming that \( \lim_{d_i \to 0} \frac{\partial U_i}{\partial d_i} = \infty \), the solution to (2.2) can be written as a function of the exogenous
components,

\[ E_j = f_i(c \cdot M_i + O, \gamma_j \cdot t \cdot M_i + O). \] (2.3)

Recall that \( E_j = d_i + \gamma_j \cdot M_i + O \), thus (2.3) can be rewritten as

\[ d_i = f_i(c \cdot M_i + O, \gamma_j \cdot t \cdot M_i + O) - \gamma_j \cdot M_i - O, \] (2.4)

which Andreoni refers to as individual \( i \)’s “donations supply function” where the first term (a) of \( f_i \) is the pure altruism component akin to the social income described by Becker (1974), and where the second component (b) of \( f_i \) is the contribution of the “joy of giving” to the donations supply function.

Denote the first derivatives of \( f_i \) with respect to the first (a) and second (b) components \( f_{ia} \) and \( f_{ib} \), respectively. Andreoni (1989, 1990, 2006) shows that, if both private consumption and donations are normal, \( 0 < f_{ia} < 1 \). Differentiating (2.4) with respect to \( d_i \) yields \( \frac{\partial d_i}{\partial d_i} = f_{ia} + f_{ib} - 1 \). The two extremes of donor behavior are pure egoism in which donors care only about their own donations to the public good (\( \frac{\partial d_i}{\partial d_i} = 0 \)) and pure altruism in which other sources of public goods provision perfectly substitute for own donations (\( \frac{\partial d_i}{\partial d_i} = -1 \)). The model of joy of giving is one in which the donors’ behavior lies between these extremes. Hence, substituting in for what we know \( \frac{\partial d_i}{\partial d_i} \) to be, the relevant expression becomes \( 0 < f_{ia} + f_{ib} < 1 \).

To understand the effect changes in aggregate income have on the equilibrium level of donations to a university, \( \frac{dD}{dMT} \), one must first solve the system of \( m \) donations supply functions. Summing across the resultant equilibrium level \( d_i \)’s yields \( D_j \), the total donations to university \( j \).

The dynamics of the equilibrium are simply illustrated by assuming two iden-
tical donors to university $j$. Totally differentiate the system of donations supply functions to get

$$dd_1 = A \cdot dM_1 + \gamma \cdot t \cdot B \cdot dM_2 + B \cdot dd_2 + B \cdot dF$$  \hspace{1cm} (2.5)$$

and

$$dd_2 = A \cdot dM_2 + \gamma \cdot t \cdot B \cdot dM_1 + B \cdot dd_1 + B \cdot dF$$  \hspace{1cm} (2.6)$$

where $A = c \cdot f_a + \gamma \cdot t \cdot (f_b - 1)$, $A > 0$ and $B = (f_a + f_b - 1)$, $B < 0$.

Let $M_1 = \theta \cdot M^T$ where $\theta$ is individual 1’s share of total income ($M^T$) and $M_2 = (1 - \theta) \cdot M^T$. Recognizing that $dM^T = dM_1 + dM_2$, substitute $\theta \cdot dM^T$ in for $dM_1$ and $(1 - \theta) \cdot dM^T$ in for $dM_2$, solve the system, and divide through by $dM^T$ to get

$$\frac{dD}{dM^T} \bigg|_{\gamma > 0} = \alpha + \beta + 2 \cdot \sigma \cdot \frac{dF}{dM^T}$$  \hspace{1cm} (2.7)$$

where $\alpha = A + \gamma \cdot t \cdot B^2$, $\beta = B \cdot (\gamma \cdot t + A)$ and $\sigma = B \cdot (1 + B)$.

Similarly, for the case of the private school alumni, set $\gamma = 0$ and solve to get

$$\frac{dD_j}{dM^T} \bigg|_{\gamma_j = 0} = (1 - t) \cdot (1 + B) \cdot f_a + 2 \cdot \sigma \cdot \frac{dF}{dM^T}.$$  \hspace{1cm} (2.8)$$

The identifying assumption of the model is that alumni of public universities will donate less out of an increase in permanent income than the alumni of a comparable private university solely because a portion of the public alumni’s taxes is remitted to their alma mater. Recall that this is specified in the model by $\gamma > 0$ for public universities and $\gamma = 0$ if the university is privately funded. As long as $f_a + f_b < 1$ which is shown above, the model predicts that $\frac{dD}{dM^T} \bigg|_{\gamma > 0} < \frac{dD_j}{dM^T} \bigg|_{\gamma_j = 0}$. 

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2.3 Empirics

2.3.1 Empirical Equation

The theoretical model predicts that alumni from comparable public and private universities will adjust their donations in response to changes in income in systematically different magnitudes. The model requires only total income, tax funding, and all other sources of income to obtain this result. Therefore the following parsimonious equation

\[ D_{jt} = \phi_0 M_{st} + \phi_1 I_{pub} \cdot M_{st} + X_{jt} \lambda + Z_{st} \Omega + C_j + Y_t + Y_t \cdot R_j + \epsilon_{jt} \]  

(2.9)

is estimated where \( M_{st} \) is real, year 2000, GDP for state \( s \) in year \( t \), \( I_{pub} = 1 \) if university \( j \) is public, and 0 otherwise. \( X_{jt} \) is a vector of time-varying university revenue and size characteristics, \( Z_{st} \) is a vector of time-varying state characteristics and \( Y_t, C_j, \) and \( R_j \cdot Y_t \) represent year, university, and region-by-year fixed effects. Regional rather than state fixed effects are used to account for the fact that not all donors to university \( j \) live in the same state as the university. The regions reported in the Integrated Postsecondary Education Data System (henceforth IPEDS) are slightly different than the traditional census regions (see Table 2.3).

The test of the model involves the signs of \( \phi_0 \) and \( \phi_1 \). A positive \( \phi_0 \) indicates that donations to universities increases with increases to aggregate income. The effect of an increase in aggregate income on donations to public universities is \( (\phi_0 + \phi_1) \). The theory predicts that \( \phi_1 \) is negative, indicating that the increase in donations specific to public universities by their alumni is less than the increase in donations to universities in general.
One potential problem in estimating equation (2.9) is that there may well be heterogeneous responses along the income distribution attributable to a shock to aggregate income, and that alumni from public and private universities do not necessarily share placements along the income distribution. For this reason, institutions are divided into three categories based upon their Carnegie Classifications - Doctoral, Master’s Universities, and Baccalaureate Colleges - with separate regressions for each type.

I include the winning percentage of the school’s NCAA FBS or FCS football team in equation (2.9) for several reasons. First, studies have tied athletic performance directly to alumni giving, (Turner et al. 2001, Grimes & Chressanthis 1994) second there is evidence that athletic performance attracts better-quality students as measured by the SAT scores of incoming freshmen (McCormick & Tinsley 1987), which is itself a predictor of alumni donations (Coughlin & Erekson 1986). The universities classified as Master’s or Baccalaureate lack data on football team success over the course of the decade, so only the Doctoral regression uses this information.

Alumni that have fond memories of their alma mater tend to donate more than those alumni who look back on their college experience with disdain. Desirable universities have students who are willing to pay higher tuition than do those universities that offer mediocre college experience. To the extent to which out-of-state tuition measures the true price of the university, I measure this willingness to pay for desirability by the ratio of in-state to out-of-state tuition.

2.3.2 The Data

In order to estimate equation (2.9), data are collected from the successor to HEGIS (Higher Education General Information Survey), IPEDS. Unlike its predeces-
sor, IPEDS does not house any data on gifts to the university, so a secondary source was utilized to fill this void. The Voluntary Support of Education (VSE) administered by the Council for Aid to Education (CAE) is a survey that is designed to provide information about the sources and destination of private giving to private high schools and to institutions of higher education. According to the CAE, the VSE “consistently capture[s] about 85% of the total voluntary support to colleges and universities in the United States.” (CAE 2010) Universities participate in the survey for two reasons: to benchmark their fundraising efforts internally and to compare their fundraising performance to peer institutions. Each year about a quarter of all universities in the United States participate in the survey. The Higher Education Act of 1965 requires all universities that participate in federal student aid programs to fill out the various surveys annually that appear in IPEDS, which amounts to around 6,700 institutions (IPEDS 2010). Only non-profit universities that offer primarily baccalaureate degrees and above are included in the sample for the purposes of this study. This reduces the sample of universities to 2,048 from 6,700. A significant portion of universities that respond to the mandatory survey do not participate in the VSE. Indeed, even those universities that do submit data do not do so consistently every year. Upon combining the two surveys, the sample includes data ranging from 1999 to 2008 on 134 doctoral institutions, 385 masters universities and 328 baccalaureate colleges.  

Table 2.5 displays the summary statistics for the sample, broken down by broad Carnegie Classification. Each classification represents an unbalanced panel, with doctoral universities most consistently reporting their data every year. On average,

---

5These categories are based upon the institution’s Carnegie classification in 2008, which is itself an indicator, primarily, of the highest degree offered by the institution.

6The classifications “Research I and II” and “Doctoral I and II” were combined to form one broad class of “Doctoral” universities. Similarly, “Masters I and II” were combined to form “Master’s”, and “BA liberal arts I”, “Baccalaureate colleges II” and “BA colleges were combined to form the “Baccalaureate” classification.
doctrinal universities report observations in 94% of the years, which contrasts with 77% of the years for Master’s universities and 78% for Baccalaureate colleges. It is clear that alumni of Doctoral universities donate far more money than do the alumni of the other types of institution. They also receive the majority of public funding, which is most likely attributable to the high percentage of doctoral universities in the sample that are publicly controlled. All three university types receive a significant amount of revenue from non-government sources. Doctoral universities receive, on average, nearly equal shares of their total income from state government as they do from tuition and fees. Doctoral universities also receive an enormous sum from auxiliary enterprises such as residence halls, athletics, stores, and food services.

2.3.3 Results

Table 2.2 describes the variable of interest for this paper. As shown above, if public money does crowd out private donations to public universities one would expect that, ceteris paribus, the change in donations with respect to changes in aggregate income would be larger for private universities’ alumni than for their publicly-educated counterparts. An increase in GDP of $1 million in a state is estimated to increase donations to private universities in that state of around $114, whereas donations to public universities in the same state only increase by about $7. One interpretation of these estimates is that an additional $1 of public funding crowds out alumni donations to public doctoral universities by 94% more than it crowds out donations to private doctoral universities. I call this ratio the proportional crowd out. This figure translates to an elasticity of donations with respect to state gdp of 0.17 for public alumni and 1.22 for private alumni when evaluated at the sample means.

The estimated magnitude of crowding out is much lower among alumni of non-
doctoral institutions. The coefficients for small baccalaureate colleges indicate around 55% proportional crowd out. Master’s universities seem to be too heterogeneous to find any significant results that tie directly in with the prediction of the theoretical framework.

Although the estimated coefficient is statistically insignificant, having a better football team paradoxically seems to adversely impact donations by alumni. There are two possible explanations for this behavior. The first is that most large athletic programs have endowments of their own, so a winning team may draw donations away from the academic endowment toward the athletic endowment. The second possible explanation is that one study finds that only winning records of Division III teams have a significant impact on the academic endowment and finds the same negative coefficient on the winning percentage of Division I and II football teams (Turner et al. 2001).

As expected, ceteris paribus, the more equal in-state and out-of-state tuitions become, the lower will be the equilibrium level of alumni donations.

2.4 Conclusion

Over the last decade, the patterns of both state funding and private donations to higher education have been strongly affected by cyclical fluctuations in the general economy. It is for this reason that it is difficult to untangle the income effect to consumers from any possible crowd out effect. A recessions affects university budgets in two ways. First, the decline in private-sector wealth has a direct effect on giving. Second, recessions reduce state tax revenues, which in turn reduces state funding of universities. The second effect applies mostly to public universities and it is this difference in that allows me to estimate the extent of crowding out.
I estimate that the tax subsidization of public institutions of higher education leads to 94% proportional crowd out of alumni donations for doctoral institutions and 55% proportional crowd out of alumni donations to small baccalaureate institutions. I cannot estimate the extent to which alumni giving to private universities is crowded out by state government funding. This is why I call this effect proportional crowd out because it says that alumni of public doctoral institutions exhibit 94% more crowding out than do alumni of private doctoral universities.

I can say that increasing public funds to state universities does not augment school budgets dollar for dollar. In fact, it appears that there may only be a modest increase in school budgets. This leads me to conclude that the majority of the effort legislators expend in diverting extra funds to their university (see Chapter 1) may not be very productive.

In spite of alumni deriving a warm glow from donating to their alma mater, government funding seems to have a large dampening effect on alumni whose schools receive tax dollars. The next chapter will seek to discover whether this same degree of crowding out occurs if it is other private donors giving large sums to the university rather than the government.

2.5 Tables and Figures
Table 2.1: Summary Statistics

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<td>(5,840,285)</td>
</tr>
<tr>
<td>State GDP</td>
<td>347,767</td>
<td>460,952</td>
<td>344,609</td>
</tr>
<tr>
<td></td>
<td>(323,503)</td>
<td>(377,935)</td>
<td>(298,856)</td>
</tr>
<tr>
<td>Winning Pct</td>
<td>0.525</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>(0.224)</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>State Funding</td>
<td>179,000,000</td>
<td>25,200,000</td>
<td>1,528,971</td>
</tr>
<tr>
<td></td>
<td>(163,000,000)</td>
<td>(34,900,000)</td>
<td>(5,817,932)</td>
</tr>
<tr>
<td>Fed Funding</td>
<td>125,000,000</td>
<td>6,447,020</td>
<td>1,184,991</td>
</tr>
<tr>
<td></td>
<td>(133,000,000)</td>
<td>(9,282,732)</td>
<td>(1,895,182)</td>
</tr>
<tr>
<td>Hospital Rev</td>
<td>68,100,000</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>(223,000,000)</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Aux Rev</td>
<td>93,800,000</td>
<td>14,300,000</td>
<td>7,568,746</td>
</tr>
<tr>
<td></td>
<td>(84,200,000)</td>
<td>(12,300,000)</td>
<td>(5,604,980)</td>
</tr>
<tr>
<td>Tuition Rev</td>
<td>174,000,000</td>
<td>43,800,000</td>
<td>27,500,000</td>
</tr>
<tr>
<td></td>
<td>(130,000,000)</td>
<td>(32,000,000)</td>
<td>(19,000,000)</td>
</tr>
<tr>
<td>Enrollment</td>
<td>18,444,640</td>
<td>4916.294</td>
<td>1577.358</td>
</tr>
<tr>
<td></td>
<td>(9,041)</td>
<td>(4,197)</td>
<td>(1,005)</td>
</tr>
<tr>
<td>State Pop (K)</td>
<td>9625.187</td>
<td>12,281.260</td>
<td>9384.155</td>
</tr>
<tr>
<td></td>
<td>(8,279)</td>
<td>(9,470)</td>
<td>(7,468)</td>
</tr>
<tr>
<td>Pct Public</td>
<td>78%</td>
<td>46%</td>
<td>6%</td>
</tr>
<tr>
<td>Institutions</td>
<td>134</td>
<td>385</td>
<td>328</td>
</tr>
<tr>
<td>Observations</td>
<td>1134</td>
<td>2956</td>
<td>2544</td>
</tr>
</tbody>
</table>

Year 2000 dollar values, standard errors in parentheses
### Table 2.2: Main Results

<table>
<thead>
<tr>
<th>Change in Donations w.r.t Changes in:</th>
<th>Carnegie Classification</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Doctoral</td>
</tr>
<tr>
<td></td>
<td>1st Quartiles</td>
</tr>
<tr>
<td>State GDP</td>
<td>114.273</td>
</tr>
<tr>
<td></td>
<td>(62.91654)</td>
</tr>
<tr>
<td>Pub x St GDP</td>
<td>-107.5188</td>
</tr>
<tr>
<td></td>
<td>(48.72025)</td>
</tr>
<tr>
<td>State Funding</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
</tr>
<tr>
<td>Winning Pct</td>
<td>-1,796,769</td>
</tr>
<tr>
<td></td>
<td>(2,963,226)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.113</td>
</tr>
<tr>
<td>Num of Observations</td>
<td>1131</td>
</tr>
<tr>
<td>Num of Institutions</td>
<td>134</td>
</tr>
<tr>
<td>Pct Public</td>
<td>78%</td>
</tr>
</tbody>
</table>

Numbers in **bold face** are significant at least at the 10% level.

Robust Std Errors are in parentheses; all regressions have university, year, and (region x year) fixed effects.

All dollar values are in real, year 2000, dollars.

*There are no public universities with donations in the 3rd or 4th quartile.
Table 2.3: Regional Representation

<table>
<thead>
<tr>
<th>Region</th>
<th>States</th>
<th>Obs</th>
<th>Pct</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Service schools</td>
<td></td>
<td>11</td>
<td>0.14</td>
</tr>
<tr>
<td>New England</td>
<td>CT, ME, MA, NH, RI, VT</td>
<td>777</td>
<td>9.93</td>
</tr>
<tr>
<td>Mid East</td>
<td>DE, DC, MD, NJ, NY, PA</td>
<td>1,746</td>
<td>22.31</td>
</tr>
<tr>
<td>Great Lakes</td>
<td>IL, IN, MI, OH, WI</td>
<td>1,241</td>
<td>15.86</td>
</tr>
<tr>
<td>Plains</td>
<td>IA, KS, MN, MO, NE, ND, SD</td>
<td>788</td>
<td>10.07</td>
</tr>
<tr>
<td>Southeast</td>
<td>AL, AR, FL, GA, KY, LA, MS, NC, SC, TN</td>
<td>1,725</td>
<td>22.04</td>
</tr>
<tr>
<td>Southwest</td>
<td>AZ, NM, OK, TX</td>
<td>511</td>
<td>6.53</td>
</tr>
<tr>
<td>Rocky Mountains</td>
<td>CO, ID, MT, UT, WY</td>
<td>199</td>
<td>2.54</td>
</tr>
<tr>
<td>Far West</td>
<td>AK, CA, HI, NV, OR, WA</td>
<td>828</td>
<td>10.58</td>
</tr>
</tbody>
</table>

Figure 2.1: Historical Average Appropriations and Private Donations to Higher Education. The left hand scale refers to appropriations, the right hand scale refers to donations. All values are in real, year 2000 dollars.
Figure 2.2: Average Share of State Budgets Devoted to Higher Education

Figure 2.3: Changes in Giving to Higher Education in Relation to the Performance of the Stock Market and Recessions
Chapter 3

Small-Donor Responses to Major Gifts

3.1 Introduction

In the first two chapters I established that legislators use their power to augment the budgets of their alma maters and that these efforts, in the case of public universities, are mostly wasted to the extent that state funding substantially crowds out private philanthropy to public higher education. The question now becomes: “if private donors are responsive to large changes in state funding, are they also responsive to large shifts in other private donations?”

A massive amount of private philanthropy is dedicated to higher education in the United States. In the year 2010 alone, $28 billion was given to institutions of higher education from private sources. Since 1979 there have been 57 gifts in excess of $100 million given to institutions of higher education. Of those 57 mentioned by the Chronicle of Higher Education, 50 have occurred in the last fifteen years.\(^1\) California

\(^1\)The above listed gifts are all in nominal terms
Institute of Technology received the largest gift to a single university in 2001 when it received $600 million from the Gordon and Betty Moore Foundation.² Not all significant donations to higher education are exclusive to private universities. The University of Arkansas received the largest gift to a public university from the Walton Family Charitable Support Foundation in the amount of $300 million in 2002.

The two large gifts above serve to demonstrate the magnitude of private funding destined to both sectors of higher education. Yet with all of this money being given to higher education, scant attention has been paid to the effect such enormous gifts have on the motivation for other private donors to give to the same universities. Studies on the dynamics of public good funding focus almost uniformly on the interaction between the government and the individual donor (Steinberg 1991, Lindsey & Steinberg 1990, Becker & Lindsay 1994, Payne 1998, Okten & Weisbrod 2000). The justification for this focus may be because people care more about the effect government funding has on private donations because of the welfare cost of raising the necessary revenue for such funding. If a significant amount of government funding serves only to replace private funding that was voluntarily given, then alarm bells are rightly rung.

The purpose of this study is to determine the effect a major gift to a university has on the subsequent giving behavior by other donors.³ Studying the response of donors to large gifts from other private sources, however, can illuminate the motivations people have for giving. I have shown in the previous chapter that donations to public universities are extremely sensitive changes in government funding. If these same donors turn out not to be so sensitive to massive (and arguably surprise) changes in funding from other private citizens, then I will have established two interesting

²This was the largest gift not intended to found a university.
³Major gifts are those gifts that exceed a nominal value of $50 million in the year the gift is announced.
facts. The first is that donors treat the sources of budget fluctuations differently. The second fact is that donors, by demonstrating a lack of sensitivity to major gifts reveal the act of giving to be exceedingly important to them. In the language of economists, donors who behave thusly give money to public goods less for altruistic reasons than for reasons egoistic.

Using a list of all major private gifts to higher education since 1967 as compiled by The Chronicle of Higher Education I isolate 5 cases in which a single private gift was given to a university outside of a capital campaign (Writer 2010). This data is combined with a time series of private giving to individual universities spanning the period 1980 - 2010. Controlling for the health of the economy as reflected by the return to the S&P 500 index, the size of the endowment of the university and a linear time trend, I find that for most of the universities, most sources of funding show no statistically significant response to the announcement of a major donation within a five-year period. This result indicates that most donors do not view other donations from private sources as very substitutable for their own.

3.1.1 Background

To date, the only study into the possible deleterious effects of success in university fund raising is Oster (2003). She grounds her study in the warm-glow framework suggested by Andreoni (1989) in which the donor views the giving of others to a public good as imperfectly substitutable for his own giving. To the donations of others, Oster adds the income generated by the endowment as an imperfect substitute for a donor’s own giving. Hers, therefore, is not a direct test of the effect donors have on each other, but rather a test of the effect that both donations and market earnings of the endowment have on subsequent donations. The idea behind her study is that
donors may feel that billion dollar endowments could do without their help. Defining endowment growth as the percentage change in the market value of the endowment over a two-year period and using a cross section of 700 universities in 1999, Oster finds a slight negative effect of endowment growth on subsequent donations of both alumni and non-alumni. Indeed her estimates show that a 1% increase in the growth of the endowment will cause a reduction in subsequent alumni giving by 0.002 log points. Non-alumni reduce their giving by 0.004 log points in response to the same 1% increase in the growth of the endowment.

The very slight negative impact endowment success has on new donations seems to indicate that giving to higher education is more akin to a private good than an altruistic contribution to a public good. That donors to higher education would not be dissuaded from giving by massive gifts from other private donors is not surprising, given the similar findings of the literature on giving as a whole. Several reasons on why people give beyond motivations purely altruistic have included enjoying the act of giving itself (Andreoni 1989), the desire to gain prestige as a philanthropist (Harbaugh 1998, Krause 2011), to wanting to receive a “free” gift in return for donations (Vesterlund 2006).

The typical approach to determining whether giving to a public good is an altruistic or egoistic act involves estimating the degree to which government funding crowds out private philanthropy (Cornes & Sandler 1984, Posnett & Sandler 1986, Steinberg 1987, Andreoni 1989). If crowd out is near complete (a coefficient of government funding on private funding close to -1) then the motivation for giving is deemed altruistic. If the government barely induces a flight of private funding (a coefficient of government funding on private funding close to -1) then the motivation for donors is egoistic. For example, the result of 94% proportional crowding out found in the previous chapter would lead one to conclude that alumni of public universities care
very little for prestige, or the act of giving. Rather than rely on this estimate, this paper estimates the effect large private gifts to universities have on other giving to the same university to determine if there exists as substantial an estimate of crowd out, and if not, what would lead to such a dichotomy in the treatment of sources of giving to a university.

3.2 Data

In order to estimate the effect extremely large private gifts have on subsequent giving to a university I use data collected by the Counsel for Aid to Education (henceforth CAE) in their Voluntary Support of Education survey (henceforth VSE). As described in the previous chapter, the bulk of private philanthropy to higher education is captured by this survey. The VSE data include 2108 unique institutions over 30 years from 1980 to 2009. 262 institutions report data in all 30 years, while somewhere between 5 and 25% report data for just one year. The survey splits total giving into giving by different donor classes. The main classes of donors in the VSE are: alumni, foundations, corporations, other individuals, and other organizations. In 2010, the first three donors classes accounted for nearly 73% of the $28 billion of private giving to universities.

The list of major private gifts includes the details of 257 donations to higher education since 1967 as reported in The Chronicle of Higher Education (Writer 2010). The Chronicle imposes a cutoff of $50 million and lists the value of the gifts at the time the gifts were promised to the institutions. Nearly half of the gifts listed are valued at $100 million or larger. Of the universities responding to the VSE survey, 2021 never receive a major gift as defined by The Chronicle. Sixty-one of the 87 institutions that do report major gifts report data in every year of the sample and 32
of the 87 institutions receiving major gifts are public.

As mentioned above, many large gifts are spread across multiple years. The list indicates whether all of the gift has been received by the institution. Ideally the details of the disbursement of the gifts over the time frame mentioned would be used to isolate the major gift from the gifts of all other donors, however this information is rarely listed by the universities. Absent this information, the next best alternative is to split the donations to the university by donor groups (e.g. alumni, corporate, foundation etc...) and analyze the effect of a major donation in one group has on the other donor types. For example, if a foundation donated $75 million dollars to a university, the crowding-out effect of this gift would be evident by the behavior of the alumni, corporate, organization, and other individual donors in subsequent time periods.

One confounding factor that makes estimation of crowd out difficult is the occurrence of capital campaigns where much effort is made by the universities to raise funds and large donations are common. Capital campaigns typically last for several years, sometimes up to a decade, in an attempt to raise hundreds of millions of dollars. If major donations occurring during a capital campaign were analyzed, it would appear as if the large donation actually attracted other donations, where the main reason for the increase in other donations is due to fund raising. Therefore most of my effort is expended in search of major gifts that occur outside of capital campaigns.

Another critical aspect of the empirical investigation is the uniqueness of the major gifts to the university. Many universities, such as New York University, Cor-

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4It is true that large gifts during capital campaigns are used as a signal that the campaign will be successful and are announced in order to draw in other, smaller, donations (Andreoni 2006). However, this is not the effect that I am studying. I am trying to estimate the effect a large, unexpected, gift will have on subsequent “normal” giving.
nell University, and Harvard University receive many gifts in excess of $50 million. This means that, for these universities, massive gifts are not out of the ordinary and, in fact, become an expected event by other donors to those universities. To capture the surprise nature and subsequent reaction to the surprise I am searching for, I filter the list of 87 universities down to only those that receive a single major donation. Forty-nine of the 87 universities have record of receiving only one major gift during the sample period. Narrowing the list further to those gifts that occur outside capital campaigns and early enough in the period to estimate an effect (gifts on or before 2003) leaves only five institutions: Vanderbilt University, The University of Nebraska, The University of Notre Dame, and the University of the Ozarks and Furman University.

3.3 Analysis

I analyze the following time-series model of donations for each of the five universities by university:

$$D_t = \beta_0 + \beta_1 S_t + \beta_2 E_t + \beta_3 W_t + t\gamma + \epsilon_t$$

(3.1)

where $D_t$ is the category of private giving from which the major gift does not originate, $S_t$ is the return on the S&P 500 index, $E_t$ is the market value of the endowment, $W_t$ is a dummy variable = 1 in the five years after the announcement of the major gift and $t\gamma$ is a linear time trend. For example, if an alumnus donated the major gift, then four separate regressions would be estimated for the university where $D_t$ will be, in turn, corporate giving, foundation giving, other individual giving, and giving by other organizations. Each regression uses the Cochrane-Orcutt transformed regression to
correct for first-order serial correlation of the residuals.

The summary of each university’s sources of giving and growth in endowment can be found in Table 3.1. Each column represents a different university’s data. Column 1 represents data for Vanderbilt University. Column 2 describes the University of Nebraska, Column 3 Notre Dame, Column 4 the University of the Ozarks, and Column 5 describes the averages for Furman University. Every university but the University of the Ozarks reports data for all 30 years of the sample period.

The results of the different estimations of Equation (3.1) can be found in Table 3.2. Column 1 represents the estimated coefficients for the 5-year-window dummy for Vanderbilt University. Column 2 describes the coefficients for the University of Nebraska, Column 3 Notre Dame, Column 4 the University of the Ozarks, and Column 5 describes the estimates for Furman University. Each labeled row represents the source of giving for which the time-series regression is estimated. Each cell represents the “window” dummy for each regression. For example, Column 3, Row “Corporate” indicates that, in the 5-year window after the bequest to the University of Nebraska, Corporate giving to the university was up $4.2 million over the average outside of the window.

Figures 3.1 to 3.5 depict the time series of each source of giving other than the major gift. The horizontal axis describes the time line in relation to the year the major gift is reported in the VSE data. Therefore time zero represents the year in which the major gift shows up in the data and the window includes years 1 - 5.

I describe the results of Equation (3.1) for each university individually. The history of the gift as portrayed in news reports is reported, along with a discourse on the figures and summary statistics for each school.
3.3.1 Vanderbilt University

In 1998, The Ingram Charitable Fund donated $178 million in stock to the university (see Figure 3.1). Two years prior to the gift, Martha Ingram contributed 20 million shares of Ingram Micro Inc. to the charitable fund with the intention that 40% of the fund’s income and assets were to be paid Vanderbilt (Honan 1998). By December of 1998, 2 million shares had been directly released to the university with an addition 8 million shares held in trust for the university by the fund. At the time of the NYT article the stock was valued at $42.50, making the gift worth $340 million. The vast majority of the gifts listed in The Chronicle are given with express purposes of expanding the campus or endowing department. Astonishingly for Vanderbilt, there were no formal restrictions placed upon the Ingram gift. The university did, however, have to wait for the shares to be registered with the Securities and Exchange Commission prior to being able to sell them (Mercer 1998).

Table 3.1, Column 1 describes the amount of giving, in real year 2010 dollars, by donor type to Vanderbilt. On average, Alumni and Foundation give the most money to Vanderbilt University, contributing to the nearly 600% increase in the real value of the endowment since 1980. Figure 3.1 shows that both Alumni and Corporate giving drops precipitously from trend during the window after the announcement of the Ingram gift. Other individuals, however have a tremendous spike in giving in year 3 after the announcement of the gift. In spite of an exhaustive search, I could not ascertain the nature of the increase in giving of other individuals.

Because the Ingram Gift was paid from a foundation set up to disburse the gift, Row 1, Column “Foundation” of Table 3.2 is missing. Despite what looks to be a significant drop in giving by alumni and corporations described above, neither regression (Rows “Alumni” and “Corporate”) returned statistically significant results.
when controlling for the returns of the S&P 500 index, the size of the endowment, and the general trend in giving. The big spike in giving by other individuals does however lead to an estimate that giving by other individuals is $16.8 million more on average in the window than it is outside of the window.

### 3.3.2 The University of Nebraska

The status of a bequest to the University of Nebraska for $125 million, also made in 1998, was in doubt for several months after its announcement. The widow of a childless marriage, Mildred Topp Othmer, died in 1998, leaving $250 million to split between the University of Nebraska and Polytechnic University. An aging Mildred was taken in by her niece who claimed that the millionaire revoked her will in 1995. Upon the reading of the new will, the niece challenged her aunt’s mental ability to alter the will in 1995. If the courts ruled in favor of the niece, it would have meant her receiving $200 million rather than the $2 million she was to receive under the post-1995 will. In the end, the niece settled for $20 million and both universities received a payout of $125 million in Berkshire Hathaway stock which was to be sold as a requirement of the will. (The couple purchased the stock for $42 per share which , at the time of the bequest, was valued at $70,500 per share.) Unlike the Vanderbilt gift, the bequest by Mrs. Othmer was intended to endow the general fund and a professorship in chemical engineering (Haworth 1998).

Table 3.1, Column 2 describes the amount of giving to the University of Nebraska. On average, Alumni give the most money to Nebraska, although this average is inflated by the fact that the Othmer bequest was by an alumna. In spite of the size of the gift, the university’s endowment increased by only 672% increase in the real value over 30 years. Figure 3.2 shows that all giving drops in the year after the
gift, however each category except giving from other individuals quickly recovers in the following year.

Although each of the categories of donor shows a quick drop in giving, the only statistically significant result is a positive response in Corporate giving after controlling for the returns of the S&P 500 index, the size of the endowment, and the general trend in giving. This is most likely a result of the large increase in giving by corporations in years 9 and 10 that serve only to increase the linear trend in giving. In fact, dropping the last two years from the estimation for Nebraska the estimated corporate giving coefficient on the window of time after the announcement of the major gift becomes much smaller and insignificant.

3.3.3 The University of Notre Dame

Joan Kroc, wife of McDonald’s founder Ray Kroc, left The University of Notre Dame $50 million dollars in her will upon her death in 2003. This was the largest single gift to the university, the previous being the $35 million gift given to the University in 2000 to name the Mendoza College of Business. The bequest by Mrs. Kroc was restricted to fund the Joan B. Kroc Institute for International Peace Studies which was created in 1986 by a prior gift from Mrs. Kroc in the amount of $19 million (Pulley 2003).

Table 3.1, Column 3 describes the amount of giving to the University of Notre Dame. Like Nebraska, alumni give the most money on average to the university. Over 30 years the endowment of Notre Dame grew by 966%. Figure 3.3 shows there to be little discernable negative reaction to Mrs. Kroc’s gift. There is a fair amount of growth, especially in alumni giving, that occurs within the five-year window of the gift, but this is due to the $1.5 billion “Spirit of Notre Dame” capital campaign that
began its public phase in 2007.

In spite of the apparent increase in giving shown in Figure 3.3, Column 3 of Table 3.2 large, statistically significant, negative responses to the major gift. More curious still is that one of the negative coefficients comes from the alumni series that exhibits the most growth after the announcement of Mrs. Kroc’s bequest.

3.3.4 University of the Ozarks

A gift from the Walton Foundation of nearly $40 million dollars doubled the endowment of the University of the Ozarks (Writer 1998). The release of the information regarding the gift coincided with the kickoff of the university’s $55 million campaign. The gift was meant to pay off the construction of a dormitory and to strengthen the endowment in order to augment faculty pay a benefits as well as various other student programs. Figure 3.4 depicts the time series of private giving to the University of the Ozarks.

Table 3.1, Column 4 describes the amount of giving to the University of the Ozarks. The Walton gift was so substantial that the endowment grew by 1217% since 1982. Figure 3.4 shows that only noticeable decline in giving after the Walton gift was from other individuals. All other giving seems to be continuing on the same long-term path as before the gift.

With the exception of other organizations, each of the donor classes does exhibit less giving inside the five-year window than outside of it, although each decline is statistically insignificant (see Table 3.2 Column 4).
3.3.5 Furman University

John D. Hollingsworth’s bequest of $115 million to Furman University in 2001 came as a total surprise to everyone on the campus, save the university’s president. Mr. Hollingsworth attended Furman for one year during the 1930s, leaving to take over his grandfather’s textile-machinery factory. At the time of his death, some estimates of his estate were placed at $700 million. Yet despite this wealth, Mr. Hollingsworth lived in a trailer just outside of his plant, coming to work every day in the same corduroy pants and flannel shirt (Wilgoren 2001). Beginning in the late 1970s Hollingsworth donated between $35,000 and $60,000 annually. This annual generosity lead to the expectation among university fund raisers that some money would be left to Furman, but the size of the eventual bequest left everyone speechless (Pulley 2001).

Table 3.1, Column 5 describes the amount of giving to Furman University. On average, Alumni give the most money to Furman, although this average too is inflated by the fact that the Hollingsworth bequest was by an alumnus, even though he only attended the university for a single year. The university’s endowment increased by 481% increase in the real value over 30 years. Figure 3.5 shows that all giving does drop in the years after the gift, giving from foundations exhibits large increases in years 3 and 6.

Furman’s negative results in corporate giving is perhaps the most believable yet, given all of the data available. Not only is the result strongly significant (t statistic of -2.5) it is the only crowd out result that matches the visible path in its corresponding figure. Foundation giving is also significantly negative, but the series shown in Figure 3.5 shows significant increases in giving, even inside the 5-year window.
3.4 Conclusions

The purpose of this chapter was to determine if donors to colleges and universities would exhibit a similar pattern of crowding out in response to large changes in private donations as they do to large changes in public funding. The task of estimating this relationship is compounded by two factors. The first is finding an example of a large shock in private giving that is not a normal event in the lives of most of the donors to a university. This excludes many of the more prestigious universities like Cornell and Harvard because they regularly receive large gifts. The second difficulty was finding gifts that were not part of a capital campaign. This was important because the effect I wished to uncover was the normal response of donors after the university receives a large, unexpected gift. Capital Campaigns typically have a fixed goal and most small donors will not send in their gifts until the university demonstrates (by announcing large gifts) that the goal can be met. This means that capital campaigns would bias towards finding crowding in.

In spite of focusing only on universities that receive few or only one large gifts that are given outside of capital campaigns, it appears that there is no uniform response of donors to major gifts. Graphical data presented in Figures 3.1 to 3.5 do show some crowding out in the very short term, within 5 years of the announcement of the gift, giving seems to be above what it is outside of the window.

Figure 3.2 represents giving to the only public university, The University of Nebraska, in the study. With the exception of giving by non-alumni individuals, there seems to be no deviation from the long-term trend in giving by all the other donor types. This is reflected by the inability of the model to estimate any significant effect the announcement of the major gift has on giving by each group (other than corporate giving) within the five-year period after the announcement of the gift. This
seemingly contradicts the findings of the previous chapter which showed that giving to public universities was sensitive to other sources of giving.

Were one to take the traditional interpretation of the estimated crowd out found in the previous chapter, it would be believed that donors to public universities give out of mostly altruistic motivations. What the Figure 3.2 and Column 2 of Table 3.2 show is that giving does not seem to be affected by an unexpected shock in giving by $125 million in cash.

This contradiction could mean private donors view the substitutability of government funding for their own differently than they do private funding. It could also mean that donors recognize that only a portion of the large gift can be spent in the same manner that the entirety of the government allocation. If this is so, then $1 for the government would be worth more in the short run to the university than $1 of giving to the university’s endowment, which may lead to a difference in responsiveness by donors to the two sources of university income. Future research into this difference will follow.

3.5 Table and Figures
Table 3.1: Summary Statistics

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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumni</td>
<td>25,300,000</td>
<td>34,700,000</td>
<td>53,500,000</td>
<td>426,181</td>
<td>10,700,000</td>
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<td>(9,346,077)</td>
<td>(35,900,000)</td>
<td>(32,000,000)</td>
<td>(249,900)</td>
<td>(24,900,000)</td>
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<td>Corp</td>
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<td>16,900,000</td>
<td>17,400,000</td>
<td>130,320</td>
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<td>(8,577,039)</td>
<td>(6,680,840)</td>
<td>(6,387,688)</td>
<td>(71,266)</td>
<td>(1,169,048)</td>
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<td>17,900,000</td>
<td>20,600,000</td>
<td>4,968,706</td>
<td>4,497,052</td>
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<tr>
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<td>(27,500,000)</td>
<td>(10,200,000)</td>
<td>(9,982,268)</td>
<td>(11,000,000)</td>
<td>(3,845,216)</td>
</tr>
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<td>Other Indiv</td>
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<td>17,200,000</td>
<td>13,400,000</td>
<td>2,832,795</td>
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<tr>
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<td>(21,400,000)</td>
<td>(9,928,216)</td>
<td>(12,900,000)</td>
<td>(4,382,623)</td>
<td>(4,142,065)</td>
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<td>Other Orgs</td>
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<td>4,731,376</td>
<td>6,477,042</td>
<td>562,676</td>
<td>113,287</td>
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<tr>
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<td>(4,578,050)</td>
<td>(3,181,031)</td>
<td>(4,039,174)</td>
<td>(1,341,051)</td>
<td>(94,885)</td>
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<tr>
<td>Endow</td>
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<td>615,000,000</td>
<td>2,200,000,000</td>
<td>47,800,000</td>
<td>237,000,000</td>
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<td></td>
<td>(1,020,000,000)</td>
<td>(426,000,000)</td>
<td>(1,780,000,000)</td>
<td>(33,400,000)</td>
<td>(160,000,000)</td>
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<tr>
<td>Pct Chg End</td>
<td>596%</td>
<td>672%</td>
<td>966%</td>
<td>1217%</td>
<td>481%</td>
</tr>
<tr>
<td>Years</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>24</td>
<td>30</td>
</tr>
</tbody>
</table>

Notes: Standard Errors in parenthesis. Column 1 is Vanderbilt, 2 is Nebraska, 3 is Notre Dame, 4 is the Univ of the Ozarks, 5 is Furman. All dollar Values are in real, year 2010 dollars.
Table 3.2: Coefficients on the 5-year Windows After Major Gifts

<table>
<thead>
<tr>
<th>Source</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>Alumni</td>
<td>5,313,600</td>
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<td>(3,489,933)</td>
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<td>(7,791,999)</td>
<td>(188,434)</td>
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<td>Corporate</td>
<td>827,075</td>
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<td>(2,512,328)</td>
<td>(1,941,029)</td>
<td>(4,923,298)</td>
<td>(35,991)</td>
<td>(586,415)</td>
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<td>Foundation</td>
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<td>-1,221,485</td>
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<td>.</td>
<td>-3,363,869</td>
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<td>.</td>
<td>(4,740,869)</td>
<td></td>
<td></td>
<td>(1,820,165)</td>
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<tr>
<td>Other Ind</td>
<td>16,800,000</td>
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<td>(6,770,276)</td>
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<td>(11,100,000)</td>
<td>(217,000,000)</td>
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<td>(965,710)</td>
<td>(1,346,344)</td>
<td>(2,248,188)</td>
<td>(151,000,000)</td>
<td>(63,672)</td>
</tr>
</tbody>
</table>

Notes: Standard Errors in parenthesis. Column 1 is Vanderbilt, 2 is Nebraska, 3 is Notre Dame, 4 is the Univ of the Ozarks, 5 is Furman. Each labeled row represents the source of giving for which the time-series regression was estimated. Each cell represents the coefficient on the “Window” dummy. For example, Column 2, Row “Corporate” indicates that, in the 5-year window after Nebraska’s major gift, Corporate giving was up $4.2 to the university.
Figure 3.1: Private Giving to Vanderbilt (0 = year After Gift Announcement)
Figure 3.2: Private Giving to Nebraska (0 = year After Gift Announcement)
Figure 3.3: Private Giving to Notre Dame (0 = year After Gift Announcement)
Figure 3.4: Private Giving to Univ of the Ozarks (0 = year After Gift Announcement)
Figure 3.5: Private Giving to Furman Univ (0 = year After Gift Announcement)
Chapter 4

Conclusions

The essential question addressed in this dissertation is, “do legislators use their position in office to contribute to the disparities in the funding of public colleges and universities, and if they do, what are the consequences of this behavior?” The first question has been asked and answered in the affirmative at the federal level by Payne (2003) but, until now, no one has attempted to ask this question of the state legislators. To answer the first question I focused on the South Carolina General Assembly because of its long history with the use of an objective formula to guide the allocations of state appropriations to its public colleges and universities. By using the formula as a benchmark, I was able to compare funding allocations actually occurred to what would have occurred if the formula were strictly followed. I then tested whether universities represented by their alumni or represented by their local politicians on the Senate Finance or House Ways & Means committees received more money than those universities without representation. It turns out that colleges and universities in South Carolina that had alumni present on one of the two committees that control the State’s budget (House Ways & Means and Senate Finance) were much better off than those schools who had no such friends in high places. In the
case appropriations that are authorized for one-year only, having at least one alumnus on the Senate Finance Committee increased research university funding by 128% of the average research university and increased teaching university funding by 75% of the average for teaching universities. It also turns out that, while local politicians do benefit their constituent schools, they only deliver 56% of the kind of funding increase that an alumnus does, regardless of which district the alumnus represents.

Given that legislators do work to benefit their alma matres at the cost of other universities, I turned attention to the second question which address the consequences of such actions. Presumably these legislators want to increase the budgets of their alma matres, but in order to determine how effective this method of augmentation is, one must know how other sources of funding respond to changes in government funding. That is, does government funding crowd out private giving to public universities, and if it does, to what extent does private funding diminish. In order to determine whether crowding out occurred, I studied the most recent decade of private philanthropy to higher education across the United States. A difficulty arose in the analysis because of the recessions of 2001 and 2007. These recessions negatively impacted the ability of both private citizens and the state to fund institutions of higher education in a way that would lead the careless observer to conclude that public funding of higher education attracts private philanthropy. However, careful comparison between public and private universities of the way in which their alumni funding recovers from the recession show that public alumni give 94% less to their alma matres than do their privately educated counterparts upon recovery from recessions. By controlling for university-specific characteristics, this difference is attributed to the fact that, unlike private colleges, public colleges receive an increasing amount of funding from the state as it recovers from the recession as well. It is this additional source of funding accessible, in large part, only by the public universities that drives the difference in
alumni donations patterns. All of this means that government funding does indeed
decrease the level of funding from private sources, which mutes any intended benefit
legislators might have for augmenting the funding of their alma matres.

If donors to public universities were so sensitive to changes in government
funding, the question of whether they were as responsive to comparable changes in
other private sources as they were to public sources of funding arose. However, in spite
of focusing only on universities that receive few or only one large gifts that are given
outside of capital campaigns, it appears that there is no uniform response of donors
to major gifts. What did seem apparent is that giving to most of the universities, and
especially the one public institution in the study did not seem to change very much
at all in the five years after the announcement of a major gift in relation to its longer-
term trend. To have donors to the public university be insensitive to a $125 million
gift seems contradictory to the demonstrated sensitivity alumni have to government
funding. This contradiction could mean private donors view the substitutability of
government funding differently than they do private funding. It could also mean
that donors recognize that only a portion of the large gift can be spent in the same
manner that the entirety of the government allocation. If this is so, then $1 for the
government would be worth more in the short run to the university than $1 of giving
to the university’s endowment, which may lead to a difference in responsiveness by
donors to the two sources of university income. Future research into this difference
will follow.
Appendices
Appendix A  The Process of Performance Funding in South Carolina

A.1 Mission Resource Requirements

The Mission Resource Requirements (MRR) are projected for the coming academic year in nine steps. The first step determines the projected cost of instruction. A three-year moving average of student credit-hours projects enrollments, by discipline, in order to determine the number of faculty needed to teach the classes. Research and teaching schools can have their appropriations adjusted if the enrollment projection differs from actual enrollment by 2% or more.\footnote{Research Schools: Clemson University, The Medical University of South Carolina, The University of South Carolina. Teaching Schools: The Citadel, Coastal Carolina University, The College of Charleston, Francis Marion University, Lander University, South Carolina State University, USC-Aiken, USC-Upstate. USC Beaufort was reclassified in 2004 as a teaching college, but will not be used in this analysis.} The number of faculty required to cover projected enrollments is determined by established student-faculty ratios by discipline to determine the projected cost of instruction. The number of required faculty is multiplied by regional average salaries, by discipline. The cost of instruction is then augmented by 26% to cover employer contributions for healthcare, taxes and other fringe benefits. The second and third stages in calculating the MRR are intended as incentives for seeking outside support for research and public service. Sponsored research not funded by the state for the period two years prior to the projected academic year will be matched by 30% in the projected MRR. Sponsored public service activity from the same period will be matched by 25% in the MRR. Library expenditures per student and student service expenditures per student from three years prior to the projected academic year are funded at a diminishing marginal rate in the MRR. One university, for example, would receive $838 for the library for each of the
first 1500 students, $821 per student for each of the next 3500 students and so forth. Calculating the operations and maintenance of the physical plant is the sixth step of the process. The insurance necessary for buildings is evaluated at the current replacement value of the buildings, as established by the State Property Management Office. Maintenance costs are determined by the type of structure (wood construction, brick construction, etc...), while custodial costs are determined by the average hourly service wage as determined by the Department of Labor. The number of staff necessary to employ is determined by the square footage of the buildings and the acreage of maintained land on each campus. The cost of administration is calculated at 25% of the total value of the first six steps. Combining the totals for each category together yields the projected Total Education and General Cost (E&G) for a university for the pending academic year.

The final step in determining the university’s MRR is to set its target revenue. The E&G costs determined above are calculated per student. In-state students are expected to cover 20% of their school’s per-student cost while out-of-state students are expected to cover 100% of those costs. Out-of-state medical students are required to cover only 75% of their costs. Deducting the target revenue from the estimated E&G cost yields the university’s Mission Resource Requirement. It is this MRR that serves as this paper’s benchmark for state funding.

A.2 Performance Scoring

While the MRR suggests each institution’s funding target, the allocation of funds also depends upon the performance of each school. Each fall, the staff of the CHE set the standards and identifies any revisions in previous-year evaluations of schools. Data is collected from each school between October and March, which is
then used for evaluation and scoring. By April 1 of each year the scoring reports are sent to the institutions for their own review and rebuttal. Rebuttals are due back to the CHE by April 15, after which the staff of the CHE makes their recommendations to the Board Members of the CHE. The final numbers are approved by September for use in the subsequent year’s budget debate. For example, Data from the Fall 2004 are approved for use in determining the budget for the Fall 2007.

Thirty-seven indicators over nine areas of focus are used to evaluate the performance of each school. The following description comes from Burke and Associates (2002):

1. **Mission Focus**

   (a) Expenditure of Funds to Achieve Mission (combined with scored indicator 5A)

   (b) Curriculum Offered to Achieve Mission (scored)

   (c) Approval of Mission Statement (scored)

   (d) Adoption of Strategic Plan (combined with scored indicator 1E)

   (e) Attainment of Goals of Strategic Plan (scored)

2. **Quality of Faculty**

   (a) Academic and Other Credentials of Professors and Instructors (scored)

   (b) Performance Review System for Faculty (assessed for compliance with standards)

   (c) Post Tenure Review of Tenured Faculty (assessed for compliance with standards)

   (d) Compensation of Faculty (scored)
(e) Availability of Faculty to Students (combined with indicator 2B, which is assessed for compliance with standards)

(f) Community and Public Services Activities of Faculty (combined with indicator 2B, which is assessed for compliance with standards)

3. Classroom Quality

(a) Class Size and Student-Teacher Ratios (assessed for compliance with standards)

(b) Number of Credit Hours Taught by Faculty (assessed for compliance with standards)

(c) Ratio of Full-Time Faculty to Other Full-Time Employees (assessed for compliance with standards)

4. Institutional Cooperation and Collaboration

(a) Sharing and Use of Technology, Programs, Equipment, Supplies and Source-Matter Experts within the Institution, with Other Institutions, and with the Business Community (scored)

(b) Cooperation and Collaboration with Private Industry (combined with scored indicator 4A)

5. Administrative Efficiency

(a) Administrative Costs as Compared to Academic (scored)

(b) Use of Best Management Practices (assessed for compliance with standards)

(c) Elimination of Unjustified Duplication (combined with indicator 5B, which is assessed for compliance with standards)
(d) Amount of General Overhead Costs (combined with indicator 5A)

6. Entrance Requirements

(a) SAT and ACT Scores (combined with scored indicator 6B)

(b) High School Standing, GPA, Activities (combined with indicator 6A into a single scored indicator)

(c) Post-secondary Non-Academic Achievement (assessed for compliance with standards)

(d) Priority on Enrolling In-state Students (assessed for compliance with standards)

7. Graduates’ Achievements

(a) Graduation Rate (scored)

(b) Employment Rate (scored)

(c) Employer Feedback (scored)

(d) Scores on Examinations (scored)

(e) Graduates Who Continue Education (scored)

(f) Credit Hours Earned of Graduates (assessed for compliance with standards)

8. User-Friendliness of Institution

(a) Transferability of Credits (assessed for compliance with standards)

(b) Continuing Education Programs (assessed for compliance with standards)

(c) Accessibility to the Institution (scored)
9. Research Funding

(a) Financial Support for Reform in Teacher Education (scored)

(b) Public and Private Sector Grants (scored)

A score of 1 indicates “does not achieve standard,” 2 indicates “achieves standard,” and 3 indicates “exceeds standard.” A complex weighting system (that changes over the years) is used to determine the overall average score for the school. Therefore these scores are appropriate more for intertemporal comparison than for cross-time analysis. Schools receiving higher scores are supposed to receive a higher proportion of their MRR than those that do not.

The total score falls into five ranges: substantially exceeds standards, exceeds standards, achieves standards, does not achieve standards, and substantially does not achieve standards. If there is a surplus budgeted for higher education (more than the sum of all MRRs) then schools achieving in categories 1 - 3 will receive more funding than their MRR, with better scores receiving proportionally more than those with lower scores. Schools scoring in categories 4 and 5 will have their funding reduced. The cutoff between Achieves and Does Not Achieve Standards for the aggregate score is 1.99. To date, no school has failed to at least achieve the standards. See Table 1.1 from Chapter 1 for the average scores of the colleges and universities over the period 2000 - 2005.
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