9-2014

University Endowment Growth: Assessing Policy Proposals

Ross T. Milton
Cornell University

Ronald G. Ehrenberg
Cornell University ILR School, rge2@cornell.edu

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Keywords

higher education, endowments, distribution

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Ross T. Milton
PhD Candidate and Graduate Research Assistant
Cornell Higher Education Research Institute (CHERI)
Department of Economics
404 Uris Hall
Cornell University
rtm56@cornell.edu

Ronald G. Ehrenberg [1]
Irving M. Ives Professor
Cornell Higher Education Research Institute (CHERI)
Department of Economics
271 Ives Hall
Cornell University
rge2@cornell.edu

September 2014

[1]The authors thank Ann E. Kaplan at the Council for Aid to Education and Kenneth E. Redd at the National Association of College and University Business Officers for providing us with access to confidential data (which we are not permitted to share). CHERI receives financial support from the Andrew W. Mellon Foundation and we are also grateful to the Foundation for its support.

Abstract

The growth of college and university endowments, particularly those of elite schools, have drawn the attention of policymakers and pundits. Using a decomposition of the growth of endowments between 1991 and 2010 we simulate the effects of three prominent proposed policies had they been implemented in 1991 on endowment payouts through 2010: (1) a minimum spending rule, (2) removing full income tax deductibility of donations, and (3) taxing total endowment sizes beyond a given size. We find that a minimum spending rule increases the average size of endowment payouts for all quartiles of the endowment distribution in nearly all years of the sample period and has a modestly larger relative impact on richer schools. Removing tax deductibility decreases endowment payouts with its effect increasing over time. It has a larger relative impact on schools with smaller endowments than on richer schools.

1 Introduction

The total size of endowments held by colleges and universities in the United States increased from $103 billion in 1991 to $419 billion in 2013. However, most of this growth has gone to the very largest of these endowments. While 829 college and university endowments contribute to the 2013 total, over half of this sum, $218 billion, was held by the 25 largest endowments; the top 100 endowments held 76% of all endowment assets.[1] This inequality has increased modestly over time. Figure 1 shows the Gini coefficient for a balanced panel of institutions from 1991 to 2012 which increases from .692 to .737.

The impressive size and growth of university endowments has garnered concern from legislators and the press that most of their benefits are accruing to the wealthiest institutions and they are not being used in the public's best interest. As a result policymakers and others have suggested five major policies: (1) Enact a minimum annual spending rule as a percent of the total size of the endowment, (2) tax a portion of the total size of endowments, (3) allow donations to endowments to be only partially deductible against income taxes, (4) tax the net investment income of university endowments, and (5) limit total tax deductions, including charitable deductions, to 28% of income.

Colleges and universities have opposed all five of these policies since they either tax or otherwise constrain how they use their endowments. The first would extend a rule that currently exists for private foundations to other non-profits that requires they spend at least 5% of their total assets each year. This was first suggested by the "Filer commission" in 1975. More recently it has been championed by Senators Max Baucus and Charles Grassley.

The second would reduce or eliminate the amount of the income tax deduction given to donors to university endowments. The third would create a 2.5% tax on endowment assets in excess of $1 billion. The Massachusetts state legislature considered this policy in 2008.

The fourth, would create a 1% excise tax on net investment income from private universities that would apply only to schools with more than $100,000 in assets per student. This was a part of the tax reform package proposed by House Ways and Means Chairman, Representative Camp (2014). Finally, the Obama administration included a limit of the total size of itemized tax deductions to 28% income in its proposed fiscal year 2015 budget.[2]

[1] Author's calculations from NACUBO/Commonwealth Study of Endowments. Limiting to 359 schools reporting assets in both 1991 and 2013 yields an increase from $100 billion to $380 billion. Figures in 2010 dollars.

[2] See Private Philanthropy and Public Needs (1975) and Grassley (2008) for minimum spending rules, Reich (2007) and Piereson and Riley (2013) for arguments in favor of removing the charitable deduction for gifts to universities, Camp (2014) for

In this paper, we decompose each university's endowment level in 2010 into four components: (1) their starting endowment level in 1991, (2) the gifts that they receive and apply towards their endowment each year, (3) the share of their endowment that they spend each year, and (4) the rate of return their endowment earns each year. Previous literature has studied each of these components and their correlates separately but our paper's unified treatment and decomposition is novel.[3][4].

We use this decomposition to simulate the effects of the first 3 proposed endowment policies had they been implemented in 1992 on endowment payouts from 1992 through 2010.[5] We find that a minimum spending rate increases payouts for most of the 19 years in our sample but the higher spending rate reduces endowment sizes which eventually reduces the size of payouts. As shown by Brown et al. (2014), endowment spending rates are positively correlated with rates of return. As a result, the spending minimum tends to bind during hard times economically and the minimum would force schools to smooth their endowment spending to a greater extent than they currently do.[6] Since spending rates are negatively correlated with total endowment sizes a minimum spending policy would have a greater impact on schools with large endowments.

The two tax policies both decrease endowment payouts and sizes, however they effect large and small endowments differently. Ending the charitable deduction disproportionately affects schools with small endowments because they do not have a reservoir of past gifts to rely upon. In contrast, a tax on endowments larger than $1 billion only impacts those endowments. While these taxes reduce spending from endowments, these tax policies also generate government revenue that could be spent on higher education so it is not clear what the total impact of them on higher education spending would be.

Our policy simulations require assumptions about universities' behavioral response to these policies. Namely, we assume that they do not change their behavior except to comply with the policy. This is assuming that the university's behavior is not sensitive to the nominal size of the endowment. While this may not hold precisely, the behavioral responses to these changes are largely unknown and our analysis provides a valuable base for what the effects might be were these policies implemented. We discuss further the potential biases of

the tax on net investment income, Schworm and Viser (2008) for a discussion of the Massachusetts tax on endowment assets, and Daniels (2014) for a discussion of the deduction limit proposed by the Obama administration.

[3]For alumni or total giving see C. T. Clotfelter (2003), R. Ehrenberg and Smith (2003), Holmes (2009), and Meer and Rosen (2009). For rates of investment return see Lerner, Schoar, and Wang (2008).

[4]In a prior version of this paper (Milton and Ehrenberg 2013), we used this method to see how these factors contributed to increases in inequality in the endowment distribution. We found that the rate of return made a substatial contribution to rising inequality while the spending rate did not.

[5]The last two policies do not lend themselves well to our analysis. We cannot observe what an endowment's net investment income tax liability would be and understanding how a cap on deductions would effect giving would require individual level data on donors.

[6]Brown et al. (2014) argues that this finding is inconsistent with endowments being used to smooth spending and instead supports "endowment hoarding".

these estimates in section 3.

In the sections that follow we describe our method which decomposes the level of each schools endowments in the years 1992 through 2010 into their constituent components. Next we describe the policy simulation which, using the decomposition, simulates endowment sizes had schools followed each policy. In section 4, we describe the data we use to perform the analysis and in section 5, we provide results for the three policy simulations.

2 Decomposition

Four components determine the size of the endowment in a given year: (1) The prior year's endowment size, (2) the rate of return, (3) the rate of spending from the endowment, (4) and the amount of new gifts applied to the endowment. These are related by the identity:

$$endowment_{i,t+1} = endowment_{it}(1 + return_{it})(1 - spend_{it})(1 + \frac{gifts_{it}}{endowment_{it}}) \tag{1}$$

Empirically this identity does not always hold exactly. We allow for a fourth term, measurement error, to also effect the next period's endowment. This represents the combined measurement error in gifts, rate of return, and spending though we are unable to differentiate between them.[7] The resulting decomposition is:

$$endowment_{i,t+1} = endowment_{it}(1 + return_{it})(1 - spend_{it})(1 + \frac{gifts_{it}}{endowment_{it}})(1 + \varepsilon_{it}) \tag{2}$$

where ε_{it} represents the measurement error for that institution in that year. Repeated substitution from Equation 2 allows us to decompose each school's 2010 endowment into components from the series of rates of return, spending rates, gifts, measurement error as well as its initial 1991 endowment level.

3 Policy Simulation

To simulate the policies we use the above decomposition and impose the policy upon it. We simulate the three different policies and within each simulate a range of policy parameters.

[7] By allowing for measurement error in this way, we are assuming that reported endowment sizes are without error while other variables are measured with error.s

First, we simulate a required minimum spending rate. We simulate required rates of 3, 5, and 7 percent. This policy requires that in each fiscal year schools spend at least that percent of the market value of their endowment at the close of the previous fiscal year[8]. To simulate this we set their spending rate in each period equal to the maximum of their observed spending rate and the minimum rate. This simulation requires assuming that the minimum spending rate, and the resulting changed endowment sizes does not cause schools to change their spending rate in years they spend above the minimum, their rate of return, or their gifts. If schools reacted to the minimum spending rate by decreasing their spending rate in years we observe them to spend above the minimum, this would attenuate the impact on endowment sizes and push the impact on payouts negatively.

Second, we simulate the effect of partially ending the federal personal income tax deduction for donations to endowments. We assume that donors are in the top tax bracket in each year. In a year in which the top marginal tax rate is 35%, completely ending deductibility would increase their total cost of $1 in donation from $0.65 to $1. This is a 53.8% increase in the cost of donating. While the exact elasticity of charitable giving to tax cost is not known with certainty, we assume the elasticitiy is -1, close to the middle of estimates found in the literature[9]. Then this change would reduce gifts by 53.8%. A similar calculation is done for different allowed deductions and years in which the marginal tax rate was different. This simulation requires assuming that the reduced gifts and endowment sizes resulting from the policy does not change the spending rate or rates of return of schools.

Third, we simulate the effects of a 0.5, 1, and 2.5% tax on endowment assets beyond $1 billion in 2008 dollars. For years before and after 2008 we adjust the cutoff for inflation. This requires assuming that the reduced endowment sizes resuling from the tax does not cause changes in schools' spending rates, rates of return or gifts received.

Using the formulas for the decomposition we perform the simulations by imposing the policies each year and calculating the resuting endowment size for the following year.

[8] Proposed policies have varied in whether they require spending a percentage of current assets or an average of assets over the preceding two years. For simplicity we simulate the former; for most schools the results of the latter would be similar.

[9] Charles T. Clotfelter (2014) discusses recent evidence.

4 Data

For our decomposition and policy simulations, we require annual data for a set of institutions on their spending rates from endowment funds, their endowment rates of return, their endowment sizes, and their annual giving used to build their endowments. While data on these components have been available for some time, coverage for many institutions is not available every year and some data are not reliable. We assemble a panel of 95 schools for the period 1992 through 2010 that contains data for each variable for each year.

Endowment spending rate, return rate and endowment size data come from the National Association of College University Business Officers (NACUBO) and the Commonfund Institute. This information comes from an annual survey of colleges and universities. Surveys are available starting in 1980 for endowment returns, 1992 for spending rates, and 1990 for endowment sizes. While in recent years the survey has over 600 schools responding, in early years far fewer schools responded and did not necessarily respond annually.

Data on annual giving come from the Council for Aid to Education (CAE). The CAE provided us with annual information on the sources and uses of annual giving from 2,299 institutions. This allows us to identify the quantity of gifts an institution applied towards building its endowment in each year.

We require a balanced panel of institutions across the largest possible span of time that includes all the required variables. Due to data constraints this results in a panel of 95 schools from 1991 through 2010. While there are many more than 95 institutions of higher education in the United States, most do not generate a significant amount of revenue from their endowments. In 2010, there were 187 schools with more than $50,000 in endowment per full time equivalent student. At the average spending rate of 5% this results in $2,500 in endowment spending per student. Our sample includes 58 of these schools. So, while our sample excludes most schools, it includes a large share of those for whom endowment earnings are an important source of revenue.

A comparison of summary statistics for our sample and the entire set of surveyed institutions in 1992 and 2010 are given in Table 1. Column 1 shows statistics for all responding colleges and universities and column 2 shows only those in our sample. On average, our sample has larger endowments, receives more gifts, has similar rates of return, spends a similar fraction of their endowments, and has far more students than those institutions not in our sample[10].

[10] In 1992 and 2010 our sample has similar rates of return as all responding institutions. However, across all years, our sample has more extreme rates of return than those not in the sample. Our data includes far more schools for the gifts and FTE driving down the averages for these variables for all responding schools.

Within our sample much variation remains. The 95 schools come from 32 states. 21 are public universities or university systems and the remaining 72 are private colleges and universities[11]. The 2010 endowments of institutions in our sample range from approximately $30 million to some of the largest university endowments.

5 Results

Our policy simulations show how endowments would have evolved from 1991 through 2010 had the policies been implemented in 1991. We simulate a number of policy parameters for each policy type. The resulting mean endowment size over time is shown in Table II and mean payout from endowment in Table III. The first row of results is the baseline, ie the mean of observed endowments and payouts.

5.1 Minimum Spending Rate

Tables II and III show that a 3% minimum spending level has little effect on endowments. Universities rarely spent less than 3% of holdings and hence this rule would bind infrequently. 5% and 7% minimum spending rates have a larger effect.

The policy forces schools to spend more of their endowments thus reducing the sizes of their endowments over time, but by the end of the sample period this reduction in size has only barely caught up with the schools in terms of their payout sizes. Over a longer sample we would expect this to further decrease payout sizes. Table III shows that a negative effect on payouts in 2004 from the 5% policy but not the 7% policy. This occurs because the 7% policy binds frequently in this year while the 5% policy does not. As a result, despite smaller endowment sizes under the 7% policy, payouts are still higher. Figure II gives a comparison of the effect of the 5% and 7% minimum spending policies on the mean payout from endowments over the sample period.

These mean effects of the proposed policies bury the different distributional impacts that they have. Given that part of the justification for many policy proposals has been the belief that the benefits of endowments have accrued to the wealthiest universities, which universities are most impacted by the policies is an important consideration.

We show the distributional impacts by dividing the schools in our sample into quartiles of their endowments in 1991. For each quartile, Figure 2 shows the percent difference between their endowment payout in each

[11]Since many systems of public institutions have a system wide endowment we treat a system as a single institution. We do this using IPEDS system identifiers and combine any two schools into a system if they are ever listed as being in the same system.

year under a 5% minimum spending rule and their observed endowment payout without the policy. The policy has a similar impact on the 2nd through top quartile of endowments but a muted impact on the schools with the smallest endowments. This same pattern is shown by Figure 3 which shows the percent difference in total endowment size between the policy simulation and the baseline observed sizes.

5.2 Ending Charitable Tax Deductions

Reducing or ending the size of the tax deduction for giving to university endowments has a large effect on both endowment sizes and payouts over time. Reducing deductions to 50% of the size of the gift would reduce endowment payouts by 12.8% in 2010.

The impact of the policy is actually larger as a percent of their baseline values for schools with small endowments than those with larger endowments. Figure 4 shows this effect split by quartile of 1991 endowment size. While the 2nd through 4th quartile see very similar impacts ranging from a 11.5 to 12.5 percent decrease, the lowest quartile experiences a larger 15.3 percent decrease in endowment payouts. The effects on endowment sizes correspond to these impacts on payouts.

5.3 Endowment Tax

A 2.5% tax on endowments beyond 1 billion dollars in 2008 dollars decreases the average endowment size by 2010 by 4.8%. Table 2 also shows the impact of smaller tax rates. Since over 50% of the endowments in our sample never reach that size this effect differs dramatically by endowment size. Figure 5 shows the effect of a 2.5% tax split by quartiles of 1991 endowment size. Schools in the lowest two quartiles are not impacted at all by this policy. Schools in the 3rd quartile are impacted slightly and see a 2.6% decline in endowment payouts in 2010 while the top quartile of schools see a dramatic 17.0% decline. The effects on endowment sizes are similar.

6 Conclusion

This paper takes recent policy proposals dealing with college and university endowments and applies a novel method to simulate their effects on endowment sizes and payouts had they been implemented in 1991. We

show that all the proposed policies would have a large impact on endowments. However, they differ in how they impact schools at different points in the distribution of endowment sizes.

Any policy that impacts endowments through charitable giving will have a larger relative impact on schools with smaller endowments. Unlike schools with large endowments these schools do not have as large a cache of savings from gifts before the policy went into effect. In contrast, a minimum spending rate policy would have a greater impact on larger endowments because schools with small endowments tend to have higher spending rates. A simple progressive tax on endowment sizes, such as the tax on endowment funds exceeding one billion dollars studied here offers complete control of the distributional impacts.

Since one justification of changing tax policies on university endowments is the belief that they primarily benefit wealthy institutions, policymakers should take heed of the distributional impacts of proposed policies.

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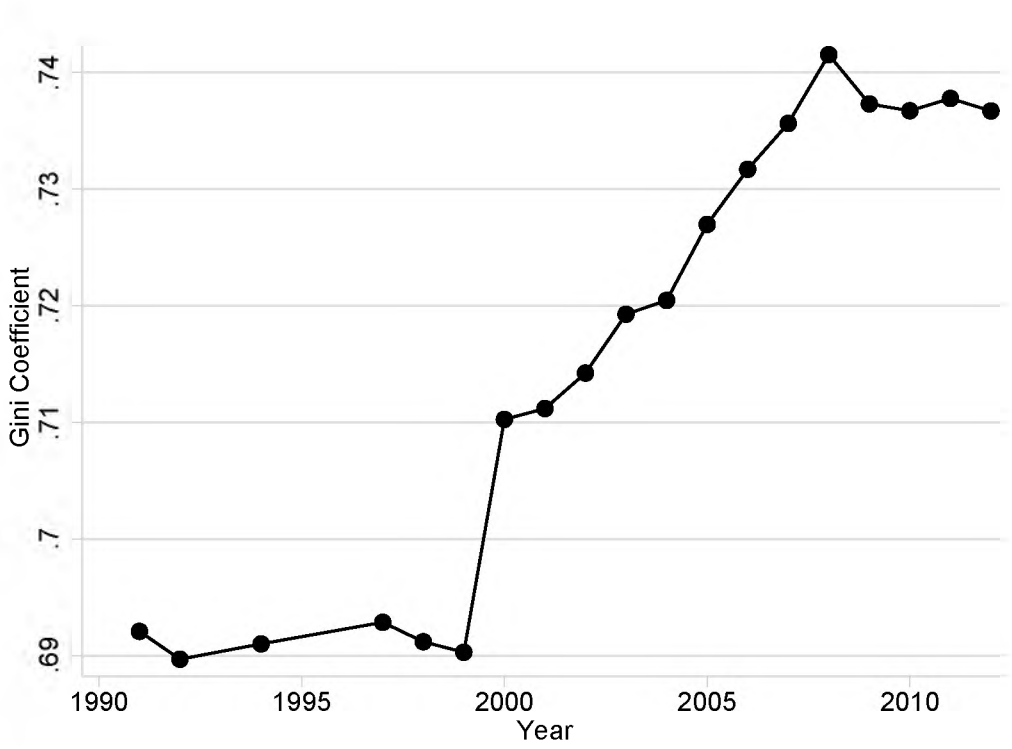
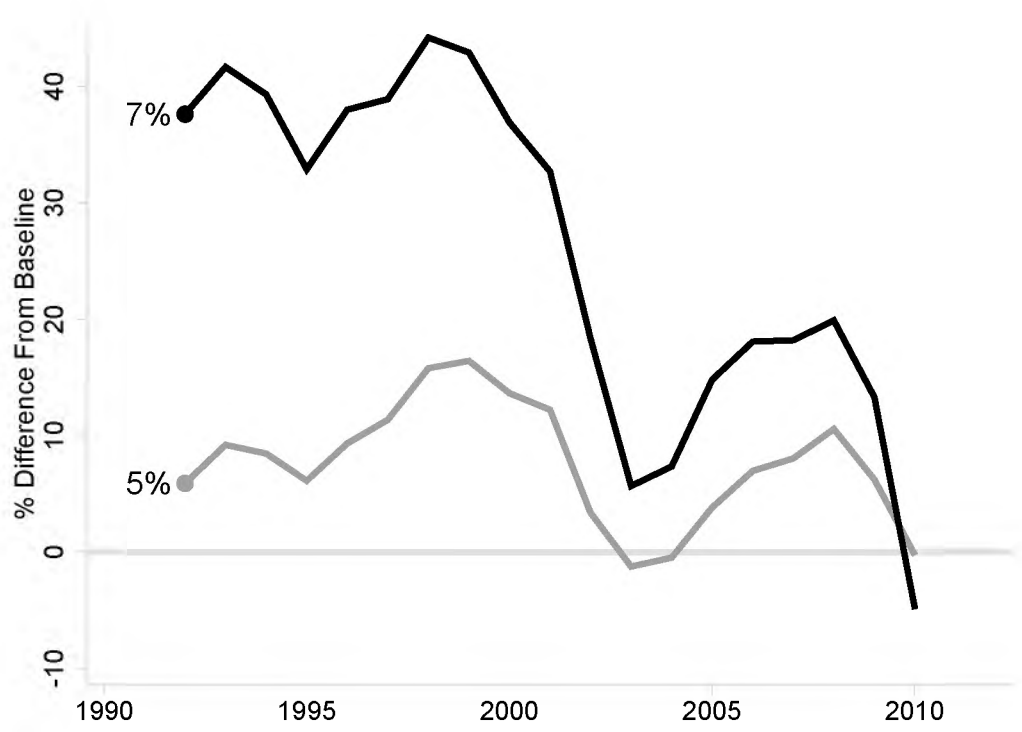
Figure I: Gini Coefficient of Distribution of Endowments Over Time



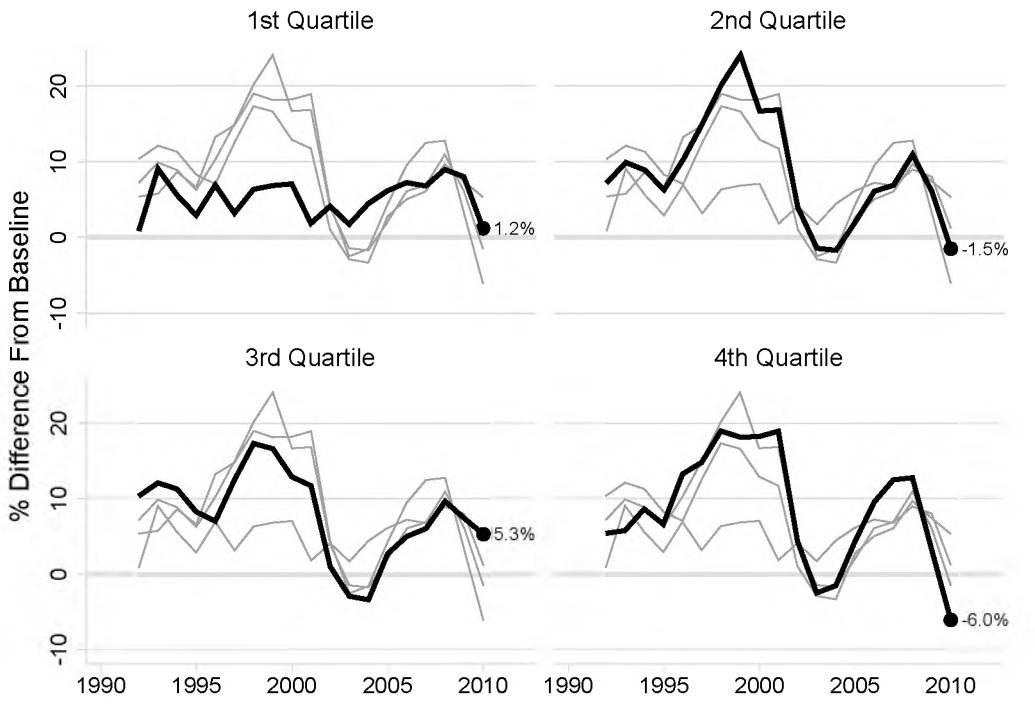
Note: Based on balanced sample of 247 schools that responded to NACUBO/Commonfund Institute endowment survey in all given years.

Figure II: 5% vs 7% Minimum Spending Rules: Effect on Endowment Payouts.



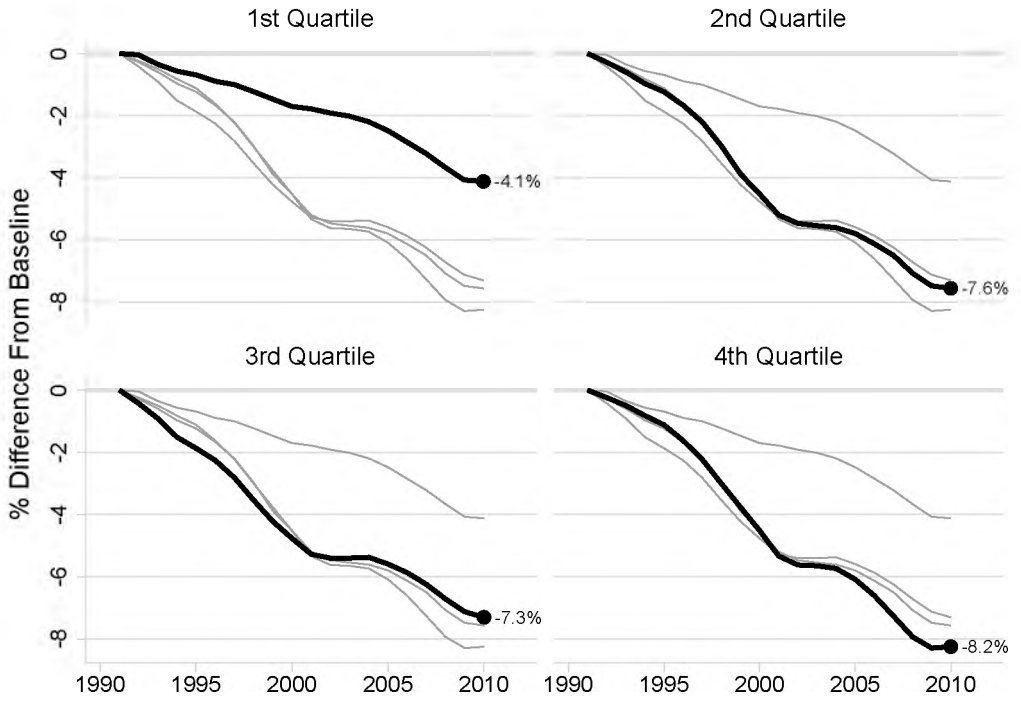
Note: Graph shows percent difference between the mean simulated payout from endowment under the 5% and 7% minimum spending rule compared to the baseline (observed) payouts.

Figure III: Effect of 5% Minimum Spending Rule on Endowment Payouts by Quartile of 1991 Endowments



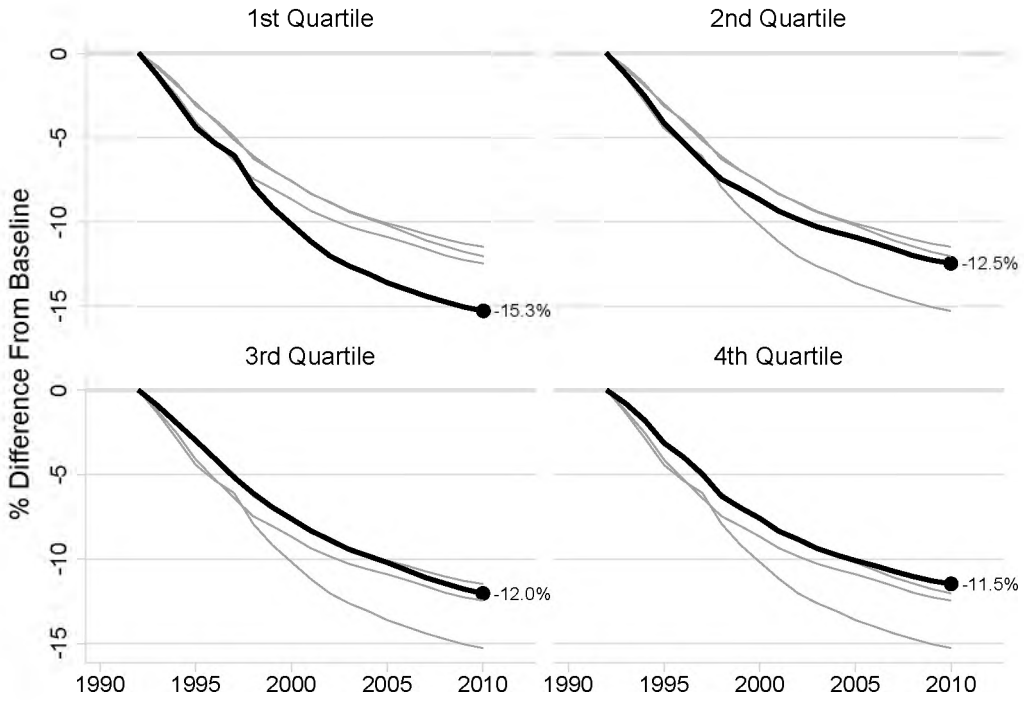
Note: Graph shows percent difference between the mean simulated payout from endowments in each quartile under the 5% minimum spending rule compared to the baseline (observed) payouts. In each graph the dark line represents the indicated quartile while gray lines are other quartiles. Quartiles are split based on endowment sizes at the beginning of the simulation period (1991). From sample of 93 schools. Simulation described in text.

Figure IV: Effect of 5% Minimum Spending Rule on Endowment Sizes by Quartile of 1991 Endowments



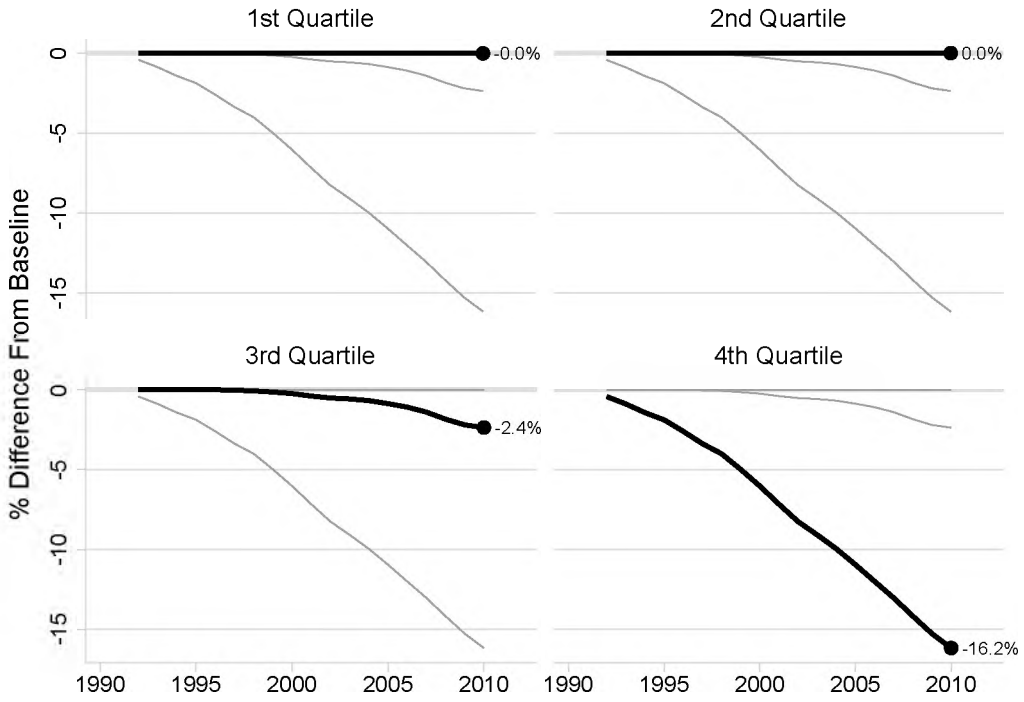
Note: Graph shows percent difference between the mean simulated endowment size in each quartile under the 5% minimum spending rule compared to the baseline (observed) payouts. In each graph the dark line represents the indicated quartile while gray lines are other quartiles. Quartiles are split based on endowment sizes at the beginning of the simulation period (1991). From sample of 93 schools. Simulation described in text.

Figure V: Effect of 50% Charitable Deduction on Endowment Payouts by Quartile of 1991 Endowments



Note: Graph shows percent difference between the mean simulated payout from endowments in each quartile under the policy limiting tax deductions to 50% of the size of donation compared to the baseline (observed) payouts. In each graph the dark line represents the indicated quartile while gray lines are other quartiles. Quartiles are split based on endowment sizes at the beginning of the simulation period (1991). From sample of 93 schools. Simulation described in text.

Figure VI: Effect of 2.5% Tax Above $1 Bilion on Endowment Payouts by Quartile of 1991 Endowments



Note: Graph shows percent difference between the mean simulated payout from endowments in each quartile under a 2.5% tax on endowment assets exceeding $1 billion compared to the baseline (observed) payouts. In each graph the dark line represents the indicated quartile while gray lines are other quartiles. Quartiles are split based on endowment sizes at the beginning of the simulation period (1991). From sample of 93 schools. Simulation described in text.

Table I: Comparison of summary statistics of analysis sample and all responding institutions.

	1992		2010	
	All	Sample	All	Sample
	All	Sample	All	Sample
Endowment Size (millions)	242	491	494	153
Gifts (millions)	3.26	10.8	9.3	26.9
Rate of Return	.133	.134	.120	.123
Spending Rate	.053	.053	.048	.056
FTE Students	2403	22468	3463	30606
N		93		93

Note: Dollar figures given in 2010 dollars. Full time equivalent (FTE) students includes undergraduate, graduate, and professional students. Gifts includes only gifts applied to the endowment. All include all available observations for that variable (N ranges from 204-4548 in 1992 and 567-4744 in 2010)

Table II: Effect of Policies on Average Endowment Level: Percent Difference from Baseline

Policy	1992	1998	2004	2010
Baseline (millions)	348	758	1152	1527
75% Tax Deduction	-0.2	-3.9	-5.6	-6.6
50% Tax Deduction	-1.1	-7.7	-11.2	-13.1
25% Tax Deduction	-1.6	-11.6	-16.8	-19.7
No Tax Deduction	-2.2	-15.5	-22.4	-26.3
.5% Tax Above $1B	0	-0.3	-0.6	-1.1
1% Tax Above $1B	-0.1	-0.5	-1.2	-2.1
2.5% Tax Above $1B	-0.2	-1.3	-2.9	-4.8
3% Minimum Spend	0	0	0	-0.1
5% Minimum Spend	-0.2	-2.7	-4.7	-6.8
7% Minimum Spend	-1.8	-12.9	-21.2	-28.2

Note: Effects on total mean endowment size given as percent difference from baseline (as observed). Policy simulations based on decomposition method described in text. From sample of 93 schools from 1992-2010. Tax Deduction policy is decreasing the tax deductibility of donations from 100% to 0,25, or 75%. Tax above policies tax all endowment assets that exceed $1B at given tax rate. Minimum spend policies enforce endowments to spend funds equal to or exceeding the given percentage of their assets as valued at the beginning of the fiscal year.

Table III: Effect of Policies on Endowment Payouts: Percent Difference from Baseline

Policy	1992	1998	2004	2010
Baseline (millions)	15.7	27.6	50.1	77.9
75% Tax Deduction	0	-3.5	-5.4	-6.4
50% Tax Deduction	0	-6.9	-10.8	-12.8
25% Tax Deduction	0	-10.4	-16.2	-19.2
No Tax Deduction	0	-13.9	-21.7	-25.7
.5% Tax Above $1B	0	-0.2	-0.6	-1
1% Tax Above $1B	0	-0.4	-1.1	-2
2.5% Tax Above $1B	-0.1	-1	-2.6	-4.6
3% Minimum Spend	0	0.1	0	0.9
5% Minimum Spend	5.9	15.8	-0.5	-0.2
7% Minimum Spend	37.6	44.2	7.4	-4.9

Note: Effects on mean endowment payout as percent difference from baseline (as observed). Policy simulations based on decomposition method described in text. From sample of 93 schools from 1992-2010. Tax Deduction policy is decreasing the tax deductibility of donations from 100% to 0,25, or 75%. Tax above policies tax all endowment assets that exceed $1B at given tax rate. Minimum spend policies enforce endowments to spend funds equal to or exceeding the given percentage of their assets as valued at the beginning of the fiscal year.