

# Roll Call Voting in the NCAA

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Economists typically view the National Collegiate Athletic Association (NCAA) as a joint marketing organization designed to advance the economic interests of member schools. Yet many journalists and much of the public reject this unidimensional view of the NCAA as an organization. In fact, the NCAA's wide authority over all aspects of the athletic side of major colleges and universities has not been limited to issues that are solely related to the financial returns of its members. In this article, we use data on NCAA convention roll call votes between 1986 and 1994, to investigate the intraorganizational decision-making process. A spatial model of voting decisions, which is similar to models used previously to analyze voting in Congress, is used to analyze the votes. We can explain variation in the decisions of schools on restructuring issues quite well. This is consistent with an economic view of NCAA voting, since restructuring of the NCAA rank and file can be thought of as an exercise in raising entry barriers. However, the same estimation procedure is only moderately successful for other issues. It thus seems unlikely that decisions on academic reform are motivated solely by economic considerations.

## 1. Introduction

Economists typically view the National Collegiate Athletic Association (NCAA) as an organization designed to enhance and protect the financial side of college athletics.<sup>1</sup> However, many journalists and much of the public reject this unidimensional view of the NCAA as an organization. This is consistent with Cave and Salant's (1987) argument that agricultural marketing boards that vote

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1. See, for example, the works by McCormick and Meiners (1987), Fleisher et al. (1990, 1992), Lawrence (1987), and Becker (1985), among others. Barro (1991) reports that a panel of economists at Harvard even selected the NCAA as winner of the first annual prize for "best monopoly in America." The courts have also found that the NCAA operates as a cartel in a 1984 case involving television restrictions, *NCAA v. University of Oklahoma* (McCormick and Meiners, 1987).

on volume restrictions only rarely act as if to maximize industry profits.<sup>2</sup> The NCAA's wide authority over all aspects of the athletic side of major colleges and universities has not been limited to issues that are solely related to the economic well-being of its members. For example, much recent debate has focused on rules about academic qualifications for student athletes. In this paper, we investigate how well a unidimensional view of individual school motivation explains votes on a wide variety of issues.

To explain NCAA decisions, we investigate the behavior of individual member schools. Each year the membership of the NCAA gathers at the national convention and votes on the forms of restrictions and rules imposed on Association members. Our goal is to investigate these votes to determine the motivation of individual schools. In an address to the NCAA national convention in 1988, Georgetown University basketball coach John Thompson stated "... I think we teach education and preach education, but we vote money." (NCAA, 1988:91) Do NCAA member schools vote according to financial interests, or are they motivated by the best educational interests of their athletes?

The focus of this article is to provide evidence as to whether the economic model or the educational model best describes actual NCAA behavior. We use data on NCAA convention roll call votes between 1986 and 1994. Following a technique previously used in analyzing votes in Congress, we estimate a set of ideal spatial locations for each school. These locations define schools according to estimated dimensions. If schools vote primarily based on their economic interests, a single dimension should explain most of the variation among voters. The power of this dimension should also not vary considerably across votes on different issues.

Like previous articles on congressional voting estimates, our results indicate very low dimensionality. However, our ability to explain variation across voters does vary systematically across types of votes. While congressional voting research offers little in the way of explanation of the resulting dimensions, we use this systematic variance to provide evidence as to the underlying factors captured by the dimensions. To determine if the recovered dimensions are consistent with an economic interpretation, we analyze these dimensions by regressing them on a vector of school characteristics. Surprisingly strong results are obtained that support economic interpretations. While these results reinforce the economic explanation of votes for certain issues, the inability of these dimensions to offer explanations for other issues indicates a more complex picture than is painted by Congressional voting patterns. Our conclusion is that we cannot attribute NCAA actions entirely to the economic motive or the educational motive.

The plan of the article is as follows. First, we provide a brief history of the NCAA and recent changes in the environment that have led to changes in its rules. Second, we describe the spatial model of voting that is used for our empirical work. We then describe our data and give the results. We close with some conclusions based on these results.

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2. Further evidence along this line is provided in Salant and Goodstein (1990).

## 2. Background

The NCAA originated as a group of eastern schools interested in ending the growing violence in collegiate football.<sup>3</sup> While many schools had tried to impose restrictions on the rules of the sport, it was not possible for individual schools, via unilateral action, to succeed in solving the problem. They needed a body to govern interregion or interconference play. By forming the NCAA, the schools could internalize the problem and successfully initiate an agreeable set of rule changes. By voluntarily joining the NCAA, schools agreed to follow the policies of this third party and to be policed similarly (Barry and Wong, 1986).

The successful internalization of the industry-wide problem of violence was followed by rapid increases in membership and in the scope of the NCAA's regulatory jurisdiction. The subsequent stability of the NCAA can almost certainly be attributed to the value of the shared public good of NCAA competitions.<sup>4</sup> While the original intention of the organizing schools was not to create the collusive arrangement that allowed joint decisions about the financial affairs of the sports programs, the growth of the NCAA made such an adjustment natural. Significant restrictions on recruiting were put in place after World War II with the passage of the "Sanity Rules" to preserve amateurism in intercollegiate sports. The NCAA also exercised complete control of college football telecasts that were enjoying immense growth during the '50s and '60s.

By the 1970s, substantial television revenues from football and basketball were being generated by a subset of the original membership. NCAA members voted in total on the rules and regulations they would impose upon each other. Thus, the small programs could exploit the larger programs by imposing organizational rules that were not in the best interest of the revenue-producing schools<sup>5</sup>. The gains from complementarities in rule-making for many schools were no longer sufficient to balance the diversity penalty.<sup>6</sup> The threat of exit by the larger programs provided sufficient incentive to support the division of the NCAA into different classes. Schools with major athletic programs would be considered Division I (235 schools in 1973).<sup>7</sup> Division II institutions, while also university or large college-level programs, were not of the same caliber. Finally, Division III contained the small colleges. Eventually, Division I was further divided into schools with large, moderate-sized and small football programs (Divisions I-A, I-AA and I-AAA, respectively).

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3. Lawrence (1987) provides a thorough treatment of the history of the NCAA.

4. Examples of the public good aspects of the administration of competitions include rule formulation, ranking of teams, scheduling and training of officials. In an interesting discussion of research in the area of legal association of firms, Porter(1991) suggests similar reasons for cartel stability.

5. This is identical to the exploitation suggested in club theory, where the poorer firms (or individuals) free-ride on the richer members. See Olson(1965).

6. While club theory would say that the upper-level programs would find it optimal to separate and associate only amongst themselves, it is also true that the smaller programs have a strong interest in continued association with these high-revenue generating institutions.

7. The number of schools with Division I football programs was 124 (Lawrence, 1987).

By adopting this internal reorganization, the NCAA was making the necessary move to keep reticent members in line. There are still many votes of the NCAA that are made by the full body (now more than 800 members). However, sensitive issues particular to the allocation of rents in Division I are now voted upon by only those members in this group. Thus, those schools that contribute more to the revenue-generation side have a stronger vote in the policies that govern *these particular activities*.

While the significant start-up costs associated with football served as a barrier to entry for most schools, increasing revenues in men's basketball during the 1980s lured many schools to move for entry into Division I. The television revenues from the 1992 national tournament exceeded \$75 million. At the 1992 convention, existing members finally reacted to this entry with a series of votes to restructure Division I. These made entry for fringe programs more difficult. Of course, these rules also had the effect of significantly increasing the costs for many existing members.

Three issues dominated the Division I NCAA calendar during the 1980s and early 1990s: *academic reform, cost-reduction and restructuring*. Academic reform was perhaps the most controversial. Schools came under sharp criticism for the graduation rates in men's football and basketball.

There are several methods by which individual schools can attempt to solve this problem. First, schools can spend money for extra academic help for athletes. Second, they can increase their requirements for admission and thus improve the probability that the athletes will graduate. Grade and course requirements for athletes to be eligible to compete can be increased. Finally, schools can force coaches to decrease the time requirements for athletes. Many individual schools and some conferences did attempt these reforms. As with the violence in football that started the NCAA, however, individual reforms place the reforming institutions at a competitive disadvantage.

While the structure of the NCAA is designed to allow athletic competitions between homogeneous athletic departments, the schools are extremely heterogeneous with respect to academics. Thus, any rule on the initial eligibility of athletes would have a different impact across Division I members. Changes in admission policy occurred in three areas: required core courses in high school, required high school grade point average and test score achievement. All were increased. If the athlete met the overall grade point but did not meet the test minimum or the core course requirement, then he or she was labeled a *partial qualifier*. The NCAA labeled an athlete who failed to meet the overall grade point requirement as a *nonqualifier*.

The major controversies arose when the NCAA voted to make nonqualifiers and partial qualifiers ineligible to compete in their freshman year. They removed first-year aid from nonqualifiers (Proposition 48) and later extended the ban on first-year aid to partial qualifiers (Proposition 42). These reforms improved the probability that athletes would succeed academically. They also reduced the cost of these athletes by denying financial aid. However, the major impact of the increased SAT/ACT test requirements fell on minority athletes. The SAT/ACT minimums were higher than the *average* test scores for *all* students

at many traditionally black universities. The increased requirements obviously gave a recruiting advantage to those schools that had traditionally recruited few athletes with disadvantaged backgrounds.

Other academic reforms did not have the same racial overtones. However, they were often opposed by coaches because the reforms either increased costs of the programs or threatened the quality of their athletic teams (by reducing practice time or the number of competitions).

Both academic reform and restructuring could often mean increases in the costs of running athletic departments and thus be in direct opposition to cost-cutting measures. Thus, we might observe schools voting against reform due to the cost implications. Cost-cutting measures also usually have impacts on the relative advantage some schools have over others. Limits on the number of scholarships, for example, would typically favor small programs.

Many of these reforms might be viewed entirely differently by different segments of the university community. The university presidents might be strongly in favor of academic reform and cost-cutting, while the athletic directors would be more concerned with the quality and size of their programs. This creates the possibility of a principal-agent problem when a representative of the athletic departments does the voting.

Each school (and each conference) that is an NCAA member has a representative to the NCAA who has one vote at the convention. The representative serves at the pleasure of the chief executive officer. While the presidents of universities could attend the convention and cast the institutional vote, historically they often allowed the athletic directors (ADs) or coaches to be their representatives.<sup>8</sup>

In 1985, the university presidents forced the NCAA to categorize certain policy issues as subject to *roll call vote*. This allowed the presidents to insure that their voting representatives voted according to the president's wishes.<sup>9</sup>

The significance of this addition of the roll call vote should not be underemphasized. Now the internal votes of each of the cooperatively organized members were on record for outside viewers. This was attractive to many groups. First, it allowed the university presidents to directly monitor their representatives at the voting convention. Second, it allowed those with particular interest in university affairs, such as legislators, to hold constituent schools responsible for their actions.

Not all votes were subject to roll call status, only those specifically designated by the Presidents' Council. We do not attempt to explain *which* votes made

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8. Starting in 1989, the representative could not be a coach.

9. The Board of Presidents forwarded a proposal to the 1984 NCAA convention. The plan called for control of the NCAA to be put in the hands of the CEOs of member universities. Later, Harvard president Derek Bok reported "We did a lot of telephoning before the '84 convention. We had the votes. Even the *Chronicle of Higher Education* said so." Of course, the athletic directors did not vote to pass away their power, prompting Bok to comment: "When it came time to vote, many athletic directors went against the instructions of their presidents who did not attend the convention." (Dealy, 1990:200).

the roll call list. Rather, our focus is on the actual voting pattern that resulted. There are several controversial policy moves for which we have data on votes; some of these issues return to the ballot in subsequent years.

These issues can be conveniently bundled into three different classes. The first we shall call *cost cutting*. These plans are straightforward moves to reduce costs of member institutions. Some of these higher costs are caused by standard prisoners' dilemma responses to nonprice competition. Also, some of the cost-cutting measures are just work rules to minimize any featherbedding that may occur as a natural by-product of not-for-profit entities.

The second group deals strictly with *academic reform*. This category includes policies that concern changes in the minimum acceptable admission standards and scholarship eligibility; eligibility of athletes once they have been admitted to the institution; and restraints on time commitments and number of contests. Votes in favor of these measures can be motivated by academic considerations. However, they can also provide competitive advantages to some schools and often have cost implications.

The final group includes votes designed to increase the minimum requirements for membership in Division I. These are the *restructuring* votes that can be explained by both club and traditional economic arguments about raising barriers to entry.

### 3. Empirical Model and Results

We view the votes of the individual member schools of the NCAA as the result of an optimization process that is influenced by two considerations. The first consideration is the direct impact of rule changes on each school's interests. The second issue is the indirect impact of these rule changes on each school's interests caused by the response of the competitors of the school.

There are many powerful forces that have a stake in the decisions of the NCAA: university presidents, faculty, athletic program officials, alumni, and state legislators, to mention just a few. The actual extent to which any individual stakeholder is able to exert power to force a particular position will vary across schools.

Some of these stakeholders will probably be motivated purely by the monetary aspects of college athletics. However, there are other stakeholders whose interests focus exclusively on the academic issues of their institution or conference. The votes of individual schools will reflect a balancing of these alternative stakeholder interests.

Certain athletic issues that concern academics also have indirect effects on university finances. In this sense, all academic issues might also be "economic." However, this is not the "economic interest" we are investigating. We focus more narrowly on the decisions that would increase the status and therefore financial presence of the athletic program at the university. For example, constraining a student athlete to a 20-hour sports week clearly supports academics at the expense of athletics.

To provide evidence on these motivations and their possible prevalence, we investigate the observed votes of each school across a variety of different issues.

These votes are recorded as simple “yes” or “no” positions, but they cover a diverse set of policies.

Traditionally, economists have estimated such “yes”-“no” decisions through standard variants of the regression model; for example, single-equation probit estimation would yield information about the determinants of a school’s voting behavior<sup>10</sup>. However, our data encompass many votes. The use of a single vote would be analogous to using a single question on an exam. If the results on many alternative votes (questions) can somehow be combined, then a clearer picture of the position of the voter (student) can be established. Even landslide votes can offer some help in identifying the position of outliers if they are used within a simultaneous system of estimation. In single-equation methods, these votes offer little variance to explain, frustrating efforts to uncover causality.

To handle these issues, we turn to another approach, a maximum likelihood technique that evaluates all votes simultaneously. Our empirical model follows the spatial model of roll call voting for legislators used by Poole and Rosenthal(1991a)<sup>11</sup>. We assume that school “type” can be represented by  $s$  dimensions in space.<sup>12</sup> These  $s$  dimensions, indexed by  $k = 1, \dots, s$ , can be interpreted as measuring such diverse concepts as profits from sports, school reputation, academic concerns, etc. Let  $p$  indicate the number of schools ( $i = 1, \dots, p$ ) and  $q$  denote the number of roll call votes ( $j = 1, \dots, q$ ). The ideal positions of each school in  $s$ -space are scaled such that they fall between  $-1$  and  $+1$  for each dimension. For each individual vote, we can compute the unique  $s$ -dimensional location of a point representing a “yes” vote and the counterpart  $s$ -dimensional location of a point representing a “no” vote (hereafter, “y” and “n”). We assume that each school attempts to maximize utility on each vote by comparing its own ideal point with these “y” and “n” points in  $s$ -space. Welfare is maximized by choosing the “y” or “n” alternative that minimizes the distance to its ideal point. Finally, we assume that each school’s utility has both a stochastic and deterministic component such that the school’s utility for outcome “y” on roll call  $j$  is

$$U_{ijy} = \beta \exp[-d_{ijy}^2] + \varepsilon_{ijy}, \quad (1)$$

where  $\varepsilon_{ijy}$  is the stochastic portion of the utility function, and  $-d_{ijy}^2$  represents the Euclidean distance between the ideal point and “y.” The utility associated with an “n” outcome is defined analogously.

We assume that the stochastic term,  $\varepsilon$ , is distributed as the log of the inverse exponential, the “logit” distribution. The probability that school  $i$  votes for

10. Fleisher, Goff and Tollison(1992) report the results of logit estimation of the voting pattern for the eligibility issues, Proposition 48 and Proposition 42. The results were not strong; school SAT scores were never significant. Enrollment and independent status were the strongest explanatory variables.

11. Technical details on NOMINATE, including lengthy discussions of standard errors and statistical issues can be found in Poole and Rosenthal (1996).

12. Using this estimation approach not only helps to solve our particular data concerns; it provides the added side benefit of allowing comparisons of our results with the expanding literature on roll call voting in other environments that also use this approach.

outcome “y” on roll call  $j$  can then be written as

$$PROB(\text{“Yes”}) \equiv P_{ijy} = \frac{\exp[U_{ijy}]}{\exp[U_{ijy}] + \exp[U_{ijn}]} \quad (2)$$

Letting  $v$  be a generic indicator of a vote outcome and “1” and “2” represent “y” and “n”, the associated likelihood function is

$$L = \prod_{i=1}^p \prod_{j=1}^q \prod_{v=1}^2 P_{ijv}^{C_{ijv}}, \quad (3)$$

where  $C_{ijv} = 1$  if choice  $v$  is chosen and  $C_{ijv} = 0$  otherwise.

We have estimated (3) using W-NOMINATE, a multidimensional version of the NOMINATE program developed by Poole and Rosenthal.<sup>13</sup> In the short time since its introduction, the Poole and Rosenthal methodology has enjoyed widespread usage in the literature on voting analysis. Their W-NOMINATE method assumes that some portion of roll call voting behavior is consistent with the spatial model just presented. However, there will be some portion that is nonspatial or random. The multistep maximum likelihood approach of W-NOMINATE allows for these errors in estimating the underlying dimensions of the model.<sup>14</sup> Using this technique, research on Congressional roll call voting has found that roll call votes can be explained by very few dimensions. This low dimensionality is a consistent pattern across many different applications to votes.<sup>15</sup>

There has been some criticism of the Poole and Rosenthal approach. In particular, the estimator can be shown to lack consistency (Poole and Rosenthal, 1991a). Heckman and Snyder (1995) and Londregan (1994) show that the NOMINATE procedure suffers from a conventional incidental parameters problems, resulting in the inconsistent estimation. However, both Heckman and Snyder, as well as Poole and Rosenthal (1991a), cite work that shows that the inconsistency is inconsequential for large legislatures. Here, “large” is any roll call with more than 80 voters. All but three of our 248 votes exceed this number, with a median number of voters of 265.

13. The current version of the program may be obtained from Keith Poole (email [kp2a+@andrew.cmu.edu](mailto:kp2a+@andrew.cmu.edu)). It will run on a variety of platforms and is quite easy to use. Full instructions are available from Professor Poole. Much more detail is available in Poole and Rosenthal (1996).

14. As shown in Snyder (1992a) and Koford (1989), the NOMINATE approach may be of little value in situations where the votes arise from error-free spatial models in a space of fixed dimensionality. Poole and Rosenthal (1991b) show that such error-free voting is not supported by the data of actual roll call votes.

15. Snyder (1992b) argues that the low dimensionality is due to the gatekeeper function of the committee system in congress. Rosenthal (1992) disagrees, arguing that many votes cannot be avoided, and that the different power of committees in the Senate and the House is not reflected in any difference in estimated dimensionality. For our case, the President’s Council does not act as a screening device, instead generating a set of issues to bring before the convention floor.

### 3.1 Voting Data

Beginning in 1986, the Presidents' Council of the NCAA designated certain votes to require roll call voting. We gathered data from all roll call votes between 1986 and 1994. Our analysis was restricted to votes on propositions that applied to Division I schools in which at least 2.5 percent of the voters were on the losing side of the vote.<sup>16</sup> This data set of 248 propositions includes votes from all 284 schools who were members of Division I in 1986.

Previous analyses of congressional voting roll call patterns maximizing a likelihood function such as (3) have found that about 83 percent of the votes in a typical Congress can be classified correctly by simply limiting  $s$ -space to a single dimension (Poole and Rosenthal, 1991a). Permitting the estimation procedure to further differentiate voting patterns by adding a second dimension increases the explanatory power to about 85 percent. Adding a third dimension has almost no effect on the explanatory power of the estimation; that is, most of the explanation of different votes by legislators can be explained along a single dimension, even though a variety of issues are included in the votes. This finding has led alternative researchers to postulate why congressional voting seems so unidimensional.

Approximately 78 percent of the votes are correctly classified with a single dimension in our data set. Adding a second dimension increases this to 80 percent, and a third dimension to 81 percent.<sup>17</sup> To provide some indication of what these dimensions involve, Table 1 lists the schools that scored at the extreme ends of the voting scales on each of these three dimensions. The lowest-scoring schools on the first dimension are all large public institutions with high-profile football programs. The highest-scoring schools are small, private institutions without football programs. The lowest-scoring schools on the second dimension include almost all the traditionally black universities. The lowest-scoring schools on the third dimension are all private, and four of the five have religious affiliations.

Figure 1 shows a scatter plot of the ideal positions of all the schools in our first two estimated dimensions.<sup>18</sup> The maximum likelihood estimation procedure finds the ideal position of each school in  $s$ -space. This position is determined

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16. The 2.5 percent rule was chosen following a rule of thumb used by Poole and Rosenthal (1991a), which they developed through trial and error with legislator votes. Although votes with minority votes of this size will be difficult to predict, the inclusion of the votes helps to distinguish the ideal points of individual members who are at the extremes of the voting dimensions.

17. Of course, the Poole and Rosenthal procedure is not the only way to approach roll call voting. An attractive alternative would be to use factor analysis to investigate the underlying dimensionality of the voting space (Heckman and Snyder, 1995). Although factor analysis can be shown to provide consistent estimates, it is difficult to use when the number of voters varies across the data set.

We conducted several different factor analyses of the voting data to compare to the NOMINATE results. We used the entire sample and also separate groups of votes based on *a priori* groupings into eleven and 3 groups. As a comparison, we reestimated the NOMINATE procedure on the same subset of votes we used for generating the factor scores. We found that it required approximately ten factors to have the same predictive power as the three dimensions generated by NOMINATE.

18. Although these points come from our estimation that included a third dimension, the position in 2-space is not very sensitive to the inclusion of the third dimension in the estimation procedure.

Table 1 Lowest- and Highest-Ranked Schools by Dimension

Dimension 1	Dimension 2	Dimension 3
<b>Lowest 5 Schools</b>	<b>Lowest 5 Schools</b>	<b>Lowest 5 Schools</b>
Texas Tech. U	South Alabama, U	Boston College
Oklahoma, U of	Texas, U of, El Paso	Detroit, U. of
Auburn U	Wichita State U	Georgetown U.
Florida, U of	Jackson State U.	St. Louis U.
Houston, U. of	Mississippi Valley State U	Miami, U of (Florida)
<b>Highest 5 Schools</b>	<b>Highest 5 Schools</b>	<b>Highest 5 Schools</b>
Canisius College	Lehigh U	Western Carolina U.
Loyola College (Maryland)	Middle Tennessee State U	Furman U.
Iona College	Clemson U.	U.S. International U.
Long Island U.-Brooklyn Center	Wake Forest U.	Nicholls State U.
Niagara U	Fordham U.	Louisiana Tech U

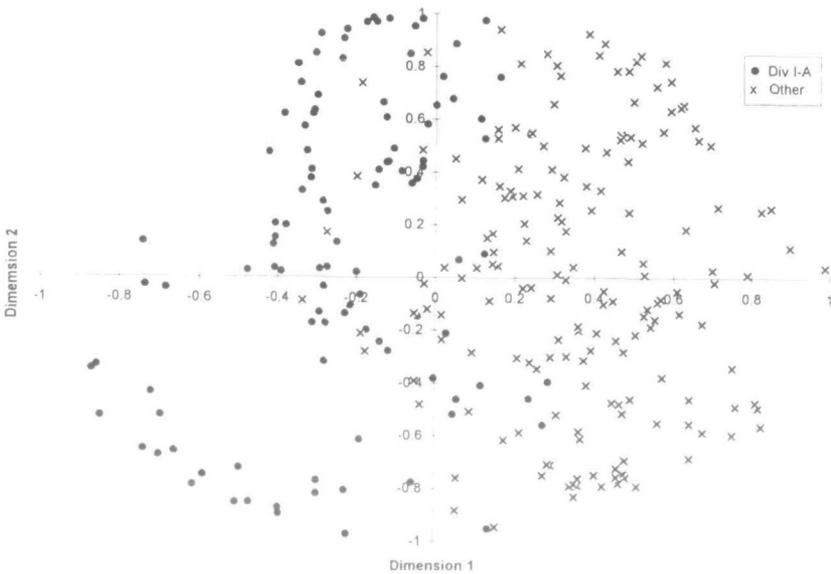


Figure 1. Estimated ideal positions—Division I-A football versus others

by maximizing (3) over all votes. A simple scatter plot of these points would be of little use by itself. In Figure 1, we add information to such a scatter diagram by differentiating schools through use of different tokens in the display of each school's position in 2-space. While the choice of school characteristics is virtually limitless, Figure 1 shows differentiation on just one characteristic: membership in Division I-A football. This figure illustrates the strong influence of the presence of a Division I-A football program on the dimension 1 position.



Figure 2. Ideal points, predicted votes and school athletics: Vote 45b-number of Division I Sports Required (1991). Football = Division I-A; Basketball = 4 of 10 years in NCAA Championship

Almost all the football schools are located on the left-hand side of the figure. However, this commitment to football has little influence along the second dimension (the vertical position of the points).

As an illustration of this procedure, it is instructive to examine a particular roll call vote. In Figure 2, we display the data for a single restructuring vote: the vote in 1991 to require more sports for men and women as a prerequisite for Division I membership (Vote 45b). The plot shows the ideal position of each school, as well as the estimated “yes” and “no” positions for the first two dimensions. These latter positions are denoted by the heavily shaded squares marked “YES” and “NO” in Figure 2. The distance between the two “yes” and “no” positions and the ideal points of each school is the determinant of the school’s predicted vote on this proposition. As noted, dimension 1 explains nearly 78 percent of the variation in votes for our data set. For the particular vote displayed in Figure 2, dimension 1 dominates dimension 2 in explaining the decision to vote “yes” or “no.” To see this, note that the “yes” and “no” positions are quite far from each other along dimension 1 (the horizontal position) although close along dimension 2 (the vertical position).

To differentiate schools on the scatter plot, we continue to identify those schools with Division I-A football programs. However, we also identify those institutions with a strong commitment to the other revenue sport, men’s basketball. To capture the intensity of the school’s effort in basketball, we restrict our attention to those schools that have appeared in the NCAA Championship tournament at least four out of ten years. Thus, an “x” on the scatterplot identifies a school with both high-level football and a winning basketball program. The predicted cutting line for deciding whether to vote “yes” or “no” is calculated as

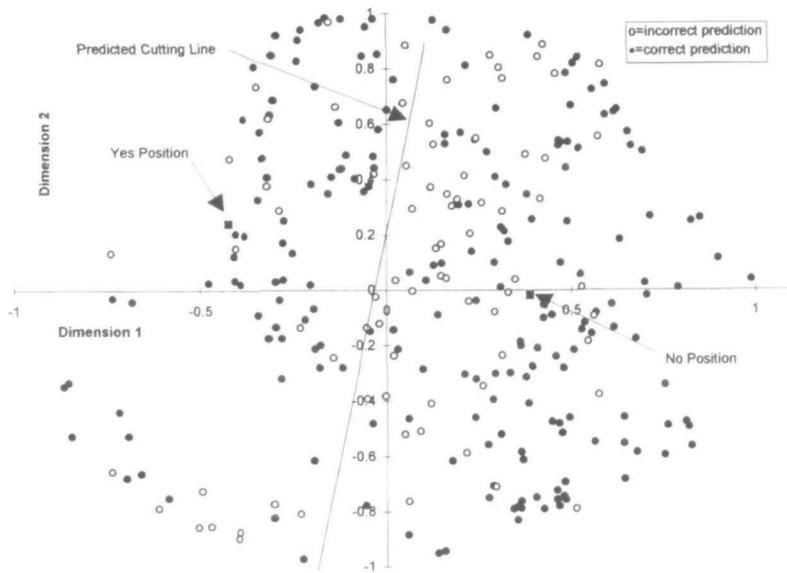


Figure 3. Predicted versus actual votes: Vote 45b (1991).

the locus of Euclidean midpoints between the “YES” position for this vote and the “NO” position (in 2-space).<sup>19</sup> Schools with only football and schools with both football and successful basketball programs fall almost exclusively to the left of this predicted cutting line. On this issue, schools with successful basketball programs, but without Division I-A football, appear indistinguishable from other nonDivision I-A schools.

Figure 3 compares the predicted votes of “yes” and “no” to the actual votes. This is the same display as in Figure 2, but the discriminating tokens have changed. Each school’s ideal position in 2-space is unchanged, since this was determined via the full estimation over all votes. However, here we have differentiated schools using our ability to correctly predict their vote. All schools that voted as our estimate predicted for Vote 45b are shown by solid dots. The hollow dots represent mistaken predictions. The estimation does extremely well. We correctly predict 215 of the 271 votes cast, even though the measure lost by only 133–138.<sup>20</sup>

19. The actual location of the “yes” and “no” position is quite sensitive to the choice of functional forms for both the utility function (1) and the error term  $e$ . However, Poole and Rosenthal (1991a) discuss Monte Carlo work that finds that both the individual voter (here, the school) location as well as the location of the cutting line is very robust to the specification of the utility function. In addition, Heckman and Snyder (1995) have results that confirm that NOMINATE’s ability to predict votes well is robust across functional form choice for both the utility function and the disturbance term.

20. The voting totals given in this paper represent the totals for the schools included in our data set. They may differ from the actual totals at the convention, since conferences have a vote. Also,



Figure 4 Actual versus predicted votes on proposition 42 (1989).

One method of judging how well the dimensions predict votes is by computing the *proportional reduction in error* (PRE) (Poole and Rosenthal, forthcoming). This measure is equal to the minority vote minus the number of classification errors, divided by the minority vote. It has a value of 1 if votes are predicted perfectly and 0 if the spatial model does no better than simply predicting that all voters voted with the majority. For the vote depicted in Figure 3, the PRE is 0.515.<sup>21</sup>

Figure 4 considers the vote on the controversial Proposition 42 (1989), which removed financial aid in the first year for athletes who qualified for admission on the basis of their grades but did not achieve high-enough scores on the SAT(ACT) exam. Again, each school's ideal position in 2-space is unchanged from our earlier plots. This time, the tokens used to plot each school discriminate on the basis of the school's actual vote on Proposition 42. The solid dots represent schools that actually voted "yes" on the issue, while the hollow dots denote a school that voted "no" on Proposition 42. All votes above the cutting line are predicted "yes;" those below the cutting line are predicted "no." This vote won 144–134. The two estimated "yes" and "no" positions for this particular vote are again shown as the shaded squares near the labels "YES" and "NO." They are spatially very close on both dimensions. It is therefore not surprising

votes for some schools who became Division I members later in the time period are not included in the votes.

21. As a guideline, a PRE in excess of about 0.4 is considered quite good.

that we do rather poorly in predicting the vote: only 157 of the 278 votes are predicted accurately (a PRE of 0.1). Visually, the scatter plot confirms our lack of precision in predicting actual votes using these two dimensions.

This difference in prediction success across different votes is mirrored throughout the data set. The overall PRE for the full estimation is 0.22. Earlier, at the close of section I, we labeled three sets of issues that our votes could be grouped under: restructuring, cost-cutting, and academic reform. Most of the votes in our data set, 226 of 248 votes, can be allocated into one of these three slots. The prediction efficiency varies across these diverse issues. The PRE's associated with the groups are restructuring (28 votes): 0.4; cost-cutting (83 votes): 0.2; academic reform (115 votes): 0.12.

The implication is that our estimated dimensions are measuring attributes that better-predict restructuring votes (and, to a lesser extent, cost-cutting votes) than votes on academic reform. Thus, while the relative unidimensionality of NCAA votes mirrors results for congressional votes, the substantial differences in predictive power across different vote groupings suggest a more complicated story about the motives of NCAA voters.

Of course, the recovered dimensions may have little to do with economic motivations. There is nothing in the procedure that constrains these dimensions to be consistent with economic interpretations. In the next section, we investigate how these estimated dimensions are related to the characteristics of the voters.

#### 4. Analysis of the Dimensions

While many researchers have worked with the Poole and Rosenthal procedure, one of the weaknesses is in the interpretation of the resulting dimensions. Most such analyses simply present the dimension and compare its predictive ability, with little reference to underlying voting utility. This is especially troublesome since most of these studies have argued that a knowledge of the past is important to predict the future. For this to hold, we need interpretation of the dimensions.

The listings of schools in Table 1 and the results in Figures 1 and 2 provide some preliminary suggestions regarding underlying determinants of the ideal positions of schools. For example, Figure 2 indicates the high correlation between our measure of dimension 1 and the school's commitment to the revenue sports. However, we wanted to investigate these dimensions in a more rigorous manner by collecting data on school characteristics to relate to these spatial locations. Our hope is that by investigating the relationship of these characteristics with the empirically recovered dimensions, we will have a better understanding of the position and slope of the cutting lines dividing schools for each vote. Obviously, the cutting line will be different for each vote, but in each case the position will be dependent on the actual characteristics that the recovered dimension is capturing.

A list of the school characteristics in our data set is given in Table 2. There are 12 variables that characterize athletics at the schools. Two variables (*FOOTBALL* and *BASKETBALL*) capture the school's commitment to the revenue-producing sports. *GRANTS* and *MINORSPS* measure the total commitment of the school to athletics. The remaining eight variables measure conference affiliations. These variables are included to control for special conference rules and

Table 2. Definitions of Variables Used in Analysis of Individual School Ideal Points

Variable	Explanation
FOOTBALL	Dummy variable for participation in Division I-A football
BASKETBALL	Number of appearances in the NCAA men's basketball championships 1982-1991
GRANTS	Number of grant-in-aid scholarships given
MINORSPS	Number of appearances in NCAA championships in sports other than men's basketball 1982-91
SW	Dummy variable for membership in the Southwest Conference
BIGEAST	Dummy variable for membership in the Big East Conference
BIG10	Dummy variable for membership in the Big Ten Conference
ACC	Dummy variable for membership in the Atlantic Coast Conference
BIG8	Dummy variable for membership in the Big Eight Conference
SEC	Dummy variable for membership in the Southeastern Conference
PAC10	Dummy variable for membership in the Pacific Ten Conference
IVY	Dummy variable for membership in the Ivy League (omitted category = all other conferences and independents)
TOP25	Dummy variable for membership in the Top 25 schools as rated by the <i>U.S. News and World Report</i>
TOP26-51	Dummy variable for membership in the Top 26-51 schools as rated by the <i>U.S. News and World Report</i>
OTHER	Dummy variable for schools ranked in other categories by the <i>U.S. News and World Report</i> (omitted category = unranked)
SAT	Average SAT score for incoming first-year students divided by 100
BLACK	Dummy variable for traditionally black universities
ENROLL	Enrollment measured in 100,000s
DOLLARS	Dollar endowment in 100,000s
PRIVATE	Dummy variable for a private university

(Sources: See Appendix)

any unmeasured characteristics of the individual schools that are homogeneous within the conferences. For example, the Big Ten recently passed legislation that requires at least 40 percent of varsity athletes to be women. Conference members would thus be likely to favor similar legislation at the NCAA level to establish comparable emphasis on men's sports with nonleague opponents.

We use eight variables to account for other characteristics of the schools. Three (*TOP25*, *TOP26-51*, *OTHER*) measure the general academic quality of the institutions, while *SAT* is a measure of the quality of students at the institution. *BLACK* is included to allow for differences between traditionally black universities and other universities on issues relating to the appropriate measurement of the quality of incoming athletes. *ENROLL*, *DOLLARS* and *PRIVATE* are designed to measure the school's size and financial capability to run expensive athletic programs. *PRIVATE* is also an inverse measure of the externalities that may be important for public universities' successful pursuits of athletic success.<sup>22</sup>

22. Much of the revenue generated by sporting events is captured by local businesses rather than the universities. In addition, citizens of the state often take pride in the athletic and academic achievements of the state university. State legislators' interests in the fortunes of the athletic department therefore tend to be out of proportion to the department's contribution to the state university.

#### 4.1 Results

Regression results are presented in Table 3. Besides the results for individual coefficients, four F-tests provide tests of groups of coefficients: F-Conference Dummies (all conference dummy variables), F-Sports (*FOOTBALL*, *BASKETBALL*, *MINORS*, *GRANTS*), F-Quality Rating (*TOP25*, *TOP26-51*, *OTHER*, *SAT*), and F-Characteristics (*BLACK*, *DOLLARS*, *ENROLL*, *PRIVATE*).

Somewhat surprisingly, the ideal positions of schools on the first dimension are estimated very well ( $R^2 = 0.78$ ) by this set of variables. In addition, the results for individual variables all seem consistent with an economic interpretation of voting behavior. Traditionally black universities (*BLACK*) and private universities (*PRIVATE*) typically have small programs and they have positive, significant coefficients. Schools with large enrollment size (*ENROLL*), sizable endowments (*DOLLARS*), large athletic programs (*GRANTS*), success in the NCAA basketball tournament (*BASKETBALL*) and presence of a Division I-A football program (*FOOTBALL*) all have negative coefficients. Schools in this latter group are better able to handle the higher cost burden imposed by the restructuring votes. The conference dummy variable coefficients will pick up effects not already captured by the individual school characteristics. The negative coefficients for *SEC*, *BIG8* and *SW* and the positive coefficients for *IVY* and *BIGEAST* are consistent with a "size-of-program" interpretation as well. However, the positive coefficient for the Big Ten conference is inconsistent with this interpretation. Finally, academic quality variables are insignificant in this specification, strengthening the economic interpretation of the dimension.

We are not as successful in explaining variation along the second dimension ( $R^2 = 0.33$ ). The only significant coefficients outside the conference dummies occur for SAT/ACT score (*SAT*), basketball appearances (*BASKETBALL*) and black university (*BLACK*). We interpret this dimension to be capturing the controversy over the academic reform. Schools that traditionally are successful in the NCAA basketball championship seem to have preferences similar to those of traditionally black universities; these preferences are opposite to those schools that tend to have students with high SAT scores. While these results suggest that the split is along expected lines, there is a great deal of variance in the scores on this dimension that remains unexplained. Just as we are not as successful in explaining variation, we are less confident in our interpretation of the characteristics dimension 2 is measuring.

We do better in explaining the variance in the third dimension than the second ( $R^2 = 0.45$ ). The coefficients for *SAT*, *FOOTBALL*, *BASKETBALL*, *PRIVATE*, *BIGEAST* and *ENROLL* are all significantly negative. The coefficients for *GRANTS*, *SW* and *IVY* are positive and significant. However, the interpretation of this dimension is more elusive. Schools with Division I-A football programs give a large number of grants, while Ivy League schools give none. Ivy League schools have the highest SAT averages of any universities and are private. Thus, there is no consistent characterization of a school that would score positive or negative on this dimension. Our only speculation is that this dimension is

Table 3. Results for Regression Analysis of School Ideal Points

School Variables	Dimension 1		Dimension 2		Dimension 3	
	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error
FOOTBALL	<b>-.210</b>	.042	-.044	.110	<b>-.231</b>	.060
BASKETBALL	<b>-.014</b>	.006	<b>-.048</b>	.014	<b>-.017</b>	.008
GRANTS	<b>-.109</b>	.034	.071	.083	<b>.003</b>	.001
MINORS	.001	.001	-.002	.002	-.001	.001
SW	<b>-.243</b>	.073	.091	.177	<b>.209</b>	.105
BIGEAST	<b>.262</b>	.071	-.201	.172	<b>-.251</b>	.103
BIG10	<b>.188</b>	.076	.395	.183	-.040	.109
ACC	.120	.083	<b>.514</b>	.202	-.059	.120
BIG8	<b>-.170</b>	.076	.287	.185	-.124	.110
SEC	<b>-.311</b>	.071	-.251	.173	-.099	.103
PAC10	.098	.079	<b>.624</b>	.192	-.181	.114
IVY	<b>.386</b>	.107	<b>.523</b>	.261	<b>.590</b>	.155
TOP25	.107	.090	.243	.218	.128	.130
TOP26-51	-.051	.063	.067	.154	.010	.091
OTHER	-.026	.032	.153	.078	.006	.046
SAT	-.017	.013	<b>.087</b>	.034	<b>-.040</b>	.018
BLACK	<b>.236</b>	.059	<b>-.478</b>	.145	.103	.087
ENROLL	-.037	.020	-.035	.048	<b>-.087</b>	.028
DOLLARS	<b>-.109</b>	.022	-.069	.053	.006	.032
PRIVATE	<b>.229</b>	.035	-.037	.085	<b>-.273</b>	.050
(Constant)	<b>.546</b>	.110	<b>-.723</b>	.267	<b>.388</b>	.159
		Significance		Significance		Significance
R2	0.779	.0001	0.329	.0001	0.450	.0001
F-Conf. Dummies	8.948	.0001	3.613	.0005	4.486	.0001
F-Sports	21.055	.0001	3.594	.0072	8.482	.0001
F-Quality Rating	1.975	.0989	4.493	.0016	1.583	.1793
F-Characteristics	26.030	.0001	3.714	.0059	9.128	.0001
Sample Size	275		275		275	

Bold = Significant at .05 italics = Significant at .10

picking up some nonlinear effects of these variables that are not captured in the first dimension.<sup>23</sup>

## 5. Summary

Our estimation distinguishes some definite voting patterns across universities. Schools in the NCAA do “vote money” for many issues; thus, John Thompson was at least partially right.

This is especially pronounced in the voting on restructuring issues. The estimated ideal positions of schools explain different votes on restructuring well. In addition, the estimated ideal positions of the schools are well-explained by variables that are proxies for a school’s ability to absorb the increased costs associated with changes in membership criteria. Yet, unlike analyses of roll call voting in Congress, there appear to be significant differences in the ability of the same set of characteristics to explain school votes across a variety of issues. In particular, votes on academic reform are not as well-explained by the same school characteristics that explain variation in votes on restructuring issues. It thus seems unlikely that decisions on academic reform are motivated solely by economic considerations as suggested by Fleisher et al. (1990). There is also no apparent influence of school quality on these decisions. Institutions with higher status in the academic community were no more likely to support academic reform than those with lesser status.

The strong, significant results for SAT score and black university status in analysis of the second dimension could favor the economic motivation hypothesis. They could also reflect systematic differences in beliefs about the value of standardized tests in predicting performance and concern about the access issues associated with testing. The latter interpretation seems more likely, given the results of the influence of school quality. For example, most schools in the Ivy League are grouped in this dimension along with the black universities—in apparent contradiction to predictions based on simple economic self-interest.<sup>24</sup>

Athletic directors from the major football conferences have recently proposed a much more radical restructuring of the NCAA. Under their proposal, decision-making through roll call voting would be eliminated. Rules would be formed by an executive body that would be primarily made up of representatives from the major conferences. While these conferences clearly do not have the votes to force such a restructuring, they may be able to initiate change through a threat to leave the NCAA. Our results indicate that there is considerable difference of opinion among the schools in these conferences on a wide variety of

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23. In addition to this regression analysis, we also performed regressions using the factor scores derived from a priori grouping of votes. These regressions produced similar results to those presented here. We also attempted to group votes on the basis of the contribution of the different estimated dimensions to their explanation. This exercise proved largely uninformative, since the power of the first dimension in explaining votes varied only slightly across votes on a variety of issues.

24. The Ivy League has often opposed measures to increase academic standards. In the ‘60s, they fought against imposition of minimum grade point averages for scholarship athletes (Fleisher et al., 1992:124).

issues that are different from restructuring. It will be interesting to see if the economics of restructuring dominate these other issues in the future structure of the organization. In that case, the ideal points estimated in this article should predict future votes on this issue very well.

## Appendix

Variable	Source
BLACK	<i>Directory of Traditionally Black Colleges and Universities in the United States</i> , September 1971.
SAT	<i>Peterson's Annual Guides to Undergraduate Study, Guide to Four-Year Colleges</i> (1991) ACT scores were converted to SAT scores following a chart of SAT-ACT equivalents provided by the University of Illinois.
DOLLARS	<i>Peterson's Annual Guides to Undergraduate Study, Guide to Four-Year Colleges</i>
PRIVATE	<i>Peterson's Annual Guides to Undergraduate Study, Guide to Four-Year Colleges</i> .
ENROLL	<i>Peterson's Annual Guides to Undergraduate Study, Guide to Four-Year Colleges</i> .
TOP 25	<i>U S News and World Report</i> (1991).
TOP26-51	<i>U.S News and World Report</i> (1991).
OTHER	<i>U.S. News and World Report</i> (1991).
GRANTS	NCAA offices.
FOOTBALL	<i>Peterson's Annual Guides to Undergraduate Study, Guide to Four-Year Colleges</i> .
BASKETBALL	<i>NCAA Championships</i>
MINORSPS	<i>NCAA Championships</i> (various years). We gathered information on all sports in which the NCAA conducted Division I championships for the years 1982 to 1991. For sports where teams qualify for the NCAA championships, we simply counted the number of years that an individual school qualified for the NCAAs. For sports where individuals qualify for the NCAA championships, but team scores are computed, we counted a school as "making" the championship if their team score finished in the top 12 percent of the teams in the nation. (This is approximately the percentage used by the NCAA in deciding the number of teams to compete in nonrevenue sport championships). For example, in 1990-91, 158 teams competed in men's swimming. To get credit for making the NCAA tournament in that sport, a team would have had to finish in the top 20 team scores (12 percent of 158).

Conference Memberships were based on affiliations in men's basketball.

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