**Single-Dimension Senatorial Scorecards:**

**A Statistical Approach to the 110th-112th Senate**

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***Abstract***

*Political scientists have argued that interest group ratings of roll call data are misleading in that they overstate the ideological radicalism and bipolarity of Congress (Snyder 1992; Poole & Rosenthal 1998). Furthermore, some scholars have suggested that roll call voting in Congress is multi-dimensional (Wilcox & Clausen 1991; Jackson & Kingdon 1992) while others have claimed that a single liberal-conservative dimension accounts for most of the variation in voting behavior and interest group scores (Poole 1981; Poole & Rosenthal 1998, 2007). Ratings for senators were collected from nine major interest groups, as well as were National Journal and DW-NOMINATE scores, for the 110th-112th sessions of Congress. Factor analysis revealed that interest group scores are not only highly correlated with each other, but also with more moderate ratings systems. Additionally, all of the ratings loaded onto a single extracted factor. Finally, ANOVA revealed that partisanship accounts for almost all of the variation in senators’ ratings, regardless of the source. These analyses suggest that interest group ratings are not as extreme as commonly believed, and that Congress is indeed polarized along a partisan dimension.*

***Introduction***

Interest groups exert a profound influence on American politics. The First Amendment to the Constitution guarantees the right to free speech, the freedom to organize and assemble, and the right to petition the government. Organized interests have increasingly exercised these rights to affect local, state, and federal governments. Environmental groups such as the League of Conservation Voters (LCV), public unions such as the AFL-CIO, business interest groups such as the National Taxpayers Union (NTU), and religious organizations like the Family Research Council (FRC) attempt to impact the decisions of elected officials. One way interest groups accomplish this is through campaign financing. In the 2010 congressional midterm elections, interest groups spent approximately $700 million to influence voters’ choices (Herrnson 2013). The Supreme Court’s decision in *Citizens United v. Federal Election Commission* (2010) to overturn elements of the Bipartisan Campaign Reform Act (2002) should undoubtedly lead these organizations to increase their campaign spending. Super PACs can now donate money to political candidates without revealing the identities of their financial supporters. Moreover, interest groups lobby legislators and rule-makers, attempting to craft favorable laws and regulations. For example, the Chamber of Commerce spent $132 million in 2010 on efforts to affect congressional legislation (Boatright 2013).

Organized interests seek to make their mark on the American government by providing information concerning the activities of elected officials to the general public as well. Numerous interest groups generate annual or biennial ratings of congressional representatives’ roll call voting records. Interest groups select a number of roll call votes to support or oppose, and they then provide scores of congressional representatives, generally ranging from 0 to 100. The ratings, for the most part, represent the percentage of time members of Congress vote in line with each group’s objectives. For example, the American Civil Liberties Union (ACLU) rated senators from the 112th Congress on five votes, including the Paycheck Fairness Act, which would have required employers to demonstrate that wage differences for employees holding the same positions was due to factors other than gender. Senators who voted in favor of the bill received 20 points on their ACLU scorecard whereas those who voted against the bill received a score of 0. Senators who voted in line with the ACLU on all 5 votes considered in their scorecards received an overall score of 100, whereas those who opposed all of the group’s positions received a rating of 0; all other representatives fell somewhere in between. Interest groups produce these ratings in hopes that they act as a decision-making heuristic shortcut for voters during elections.

The purpose of this study is to determine whether interest group scorecards can be used to discover underlying roll call voting patterns of United States senators. Specifically, we are interested in seeing if ratings generated by organized groups reveal partisan voting *or* issue-oriented voting in the Senate. Several scholars have suggested that roll call voting in Congress is multi-dimensional (Wilcox & Clausen 1991; Jackson & Kingdon 1992) while other scholars have claimed that a single liberal-conservative dimension accounts for most of the variation in voting behavior and interest group scores (Poole 1981; Poole & Rosenthal 1998, 2007). For the 110th through the 112th sessions of Congress, using senators’ scorecard data from nine major interest groups, as well as National Journal and DW-Nominate scores, we find that one single extracted factor accounts for virtually all of the variance in senators’ interest group ratings. Further analysis indicates that this underlying factor is partisan in nature and that it is not only interest groups but that the Senate itself that is polarized along this dimension. The consequence of this extreme polarization in the contemporary Senate is legislative gridlock as evidenced by the lack of productivity by recent sessions of the United States Congress.

***Literature Review***

Numerous studies have examined the relationship between ideology and interest group scorecards of members of Congress. Several scholars argue that interest group evaluations of congressional representatives exaggerate the influence of personal ideology on roll call voting and overstate the polarization existing between the two major parties (Jackson & Kingdon 1992; Snyder 1992; Poole & Rosenthal 1998, 2007). However, Krehbiel (1994) suggests that the bias in interest group scorecards is minimal, and is unlikely to lead to faulty inferences when using these data to evaluate roll call votes. In other words, interest group ratings are not as extreme as commonly believed. Brunell et al. (1999) argue that interest group scorecards are more useful in identifying partisan allies who deviate from the groups’ desired voting patterns than they are at distinguishing amongst their political enemies. They find that interest groups cluster their opponents near the bottom of their ratings, whereas they tend to make more refined distinctions among their friends in Congress. Scholars have also shown that interest group scorecards are highly correlated with each other and academic measures of congressional roll call voting (Burden et al. 2000; Poole & Rosenthal 2007). Poole and Rosenthal (1998) argue that an “economic” dimension accounts for 75% of the variance in interest group evaluations, whereas a “social issues” component accounts for 5% of the difference in scorecard ratings. However, Poole (1981) contends that a single liberal-conservative ideological dimension accounts for 80% of the variance in interest group ratings of members of Congress.

Existing scholarship on the effects of party affiliation in Congress is primarily focused on the House of Representatives. Cooper and Brady (1981) laid the foundations for the current research on the role parties play in Congress when they argued that higher levels of party unity resulted in broader grants of powers to party leaders, as was the case with Speakers Reed and Cannon (See also Brady et al. 1979). Rohde and Aldrich built on this framework and developed the theory of Conditional Party Government (Rohde 1991; Aldrich 2011; Aldrich & Rohde 1997-1998, 2009). CPG holds that party effects increase when within-party homogeneity *and* between-party heterogeneity increase. In other words, polarization is a necessary condition of strong party leadership. Furthermore, Cox and McCubbins (1993, 2005) have argued that parties act as procedural coalitions that control the legislative agenda through the adoption of formal and informal rules (See also Binder 1997; Finocchiaro and Rohde 2008).

Several academics have specifically examined the effects of partisanship on congressional roll call voting. One group argues that roll call voting occurs along a single liberal-conservative dimension (Cox and Poole 2002; Levitt 1996; Poole and Daniels 1985; Poole and Rosenthal 2007; Smith 1981). These researchers assert that ideology accounts for most of the variance in representatives’ voting patterns. By contrast, others contend that roll call voting is multi-dimensional (Koford 1989; Wilcox and Clausen 1991; Jackson and Kingdon 1992). These scholars argue that congressional representatives vote distinctly on different issues and that factors *other than party* impact roll call voting. Snyder and Groseclose (2000) have found that the effect of party affiliation on roll call voting varies from issue to issue. For example, they show that partisanship strongly influences votes on tax policy and social welfare issues, but is virtually non-existent on gun control.

There are significantly fewer studies examining party effects in the Senate. Indeed, conventional wisdom holds that the influence of parties is weaker in the Senate than in the House because the Senate’s structure and rules emphasize individualism over party government (Aldrich and Rohde 2009; Smith and Gamm 2009). Senators’ ability to filibuster is often cited as an example of the inability of parties to push through their policy agendas in the face of individual opposition (Koger 2008). However, Levitt (1996) and Smith (1981) argue that senators tend to vote along ideological lines, and Sinclair (2009) has shown that despite its individualistic nature, the contemporary Senate has become increasingly partisan and polarized. Monroe et al. (2008) made a substantial contribution to the literature with their edited volume *Why Not Parties? Party Effects in the United States Senate*. Carson (2008) and Pearson (2008) show that party unity scores have steadily risen in the Senate since the 1980s, indicating higher levels of polarization (See also Aldrich 2011). Carson adds that senators who vote along party lines are often “rewarded when voters go to the poll” (2008, pg. 33). In other words, party loyalty is positively correlated with electoral vote share. Roberts and Bell argue (2008) that majority party leaders in the Senate rarely lose in their attempts to enforce party discipline on key roll call votes. Pearson (2008) contends that senators exhibit party loyalty by fundraising for fellow party colleagues, and that party leaders use committee assignments to discipline senators who do not share in a “team-sport mentality” (pg. 119). Additionally, Aldrich et al. (2008) showed that, as expected, senators’ DW-Nominate scores are strongly associated with their party identification.

***Theory & Hypotheses***

The purpose of our study is to string together the strands of literature on roll call voting, partisanship, and interest group ratings. Our goal is to demonstrate that interest group scorecards are no longer as extreme as they once were, and that they can be used to determine whether congressional voting occurs along multi-dimensional or single-dimensional lines. The current research on interest group scorecards and congressional voting leads us to postulate three simple hypotheses, two of which are competing theories. First, the multi-dimensional theory of roll call voting suggests that senators are influenced by factors other than merely partisanship. Committee assignments, constituency, and electoral prospects are also argued to play key roles in representatives’ voting patterns. Proponents of this theory contend that members of Congress vote their issue interests and are *not* merely swayed by partisanship. We argue that, if the multi-dimensional theory of roll call voting is correct, issue-focused voting should be apparent in interest group ratings of senators. This logic stems from the fact that interest groups analyze different roll call votes due to their distinct issue concerns (Fowler 1982). Thus, our first hypothesis can be stated as follows:

*Multi-Dimensional Voting Hypothesis (H1): Senators’ scorecards will load onto separate factors according to the issues they address.*

Previous studies also lead us to expect interest group ratings of senators to be highly correlated with one another and with the non-ideological ratings provided by the National Journal and DW-Nominate (Burden et al. 2000; Poole & Rosenthal 2007). There is also reason to believe that senators vote along party lines as opposed to along issue-oriented lines. This alternative hypothesis states that all ratings systems are measuring a single dimension. Poole and Rosenthal (1998) discovered two factors underlying interest group scorecards with data from over thirty years ago. Nevertheless, Poole’s initial findings (1981), paired with the increasing polarization in the Senate, lead us to suspect that there is now only one dimension underlying interest group ratings. Therefore, our second hypothesis reads:

*Single-Dimensional Voting Hypothesis (H2): Senators’ ratings will load onto a single extracted factor.*

Our final hypothesis is contingent upon our expectation that interest group ratings are indeed highly correlated. If our analysis reveals that a single dimension accounts for how various interest groups rate senators, we would then hypothesize that this dimension is partisan in nature. In other words, partisanship should explain a significant portion of the variance in each ratings system’s senatorial scores. Factor Analysis cannot explicitly reveal the particular nature of extracted components, however, factor loadings provide insight regarding the relationships between the variables under examination. If all the conservative interest group scorecards load onto a single factor in the opposite direction than the liberal groups, then we can assume that the underlying factor can be called a partisan factor. Nevertheless, we must proceed to conduct additional tests to demonstrate that partisanship indeed accounts for the variance in senators’ interest group ratings. Hence, our last hypothesis contends:

*Party Voting Hypothesis (H2a): Party identification accounts for most of the variance in senators’ interest group, National Journal, and DW-Nominate ratings.*

***Data Collection***

In order to test our hypotheses, ratings for senators were collected from nine major interest groups, as well as were National Journal and DW-NOMINATE scores, for the 110th-112th sessions of Congress. Our sample consisted of 261 senators (n = 261) - rather than the full 300 during these three terms - because ratings are not calculated for rookie representatives with no voting records or for senators who missed a significant amount of the roll call votes under analysis. For example, several senators missed votes due to their campaigns during the 2008 and 2012 presidential election cycles. Specifically, we collected senators’ voting record scores from 2007 to 2012 as reported by Americans for Democratic Action (ADA), the American Civil Liberties Union (ACLU), the American Federation of State, County, and Municipal Employees (AFSCME), the League of Conservation Voters (LCV), the National Taxpayers Union (NTU), the Chamber of Commerce (COC), the American Conservative Union (ACU), the Club for Growth (CFG), and the Family Research Council (FRC). We also collected ratings reported from the National Journal’s composite conservative score, and Poole and Rosenthal’s DW-Nominate scores. Interest group ratings were generally obtained from the National Journal’s *Almanac of American Politics*, however, we collected data from [www.votesmart.org](http://www.votesmart.org) when not provided by the *Almanac*.

We selected these specific interest groups’ ratings during this time period for several reasons. First, these groups represent a wide variety of issues including tax policy, government spending, private business, the environment, labor interests, religious values, and abortion, among others. This is theoretically significant because if senators truly practiced issue voting as opposed to party voting, we would not expect these scores to be highly correlated or to reduce down to a single factor. In fact, we would expect each issue space to be represented by a separate factor (H1). Second, Poole and Rosenthal (2007) have indicated that their first dimension DW-Nominate scores largely capture the partisan divide in Congress. The National Journal’s composite conservative score - which is calculated by compiling roll call votes on social, economic, and foreign policy issues - functions in a similar fashion. If these measures load onto the same factor as the other interest group ratings, we can logically assert that this factor is a partisan component. In other words, the National Journal and DW-Nominate scores act as benchmarks for analyzing interest group data. This is useful for testing the partisan voting hypothesis (H2a). Finally, although there are vast numbers of interest groups that score the roll call votes of senators, many of these groups do not provide ratings at the end of every session of Congress. Interest groups come and go. Ideally, we would have liked to collect data from more groups for a longer period of time but this was, for us, not feasible. We could have collected data for various groups each year and run separate analyses. However, since the groups comprising that data would have varied from year-to-year, comparison across multiple congresses would have been impractical and would have violated a number of statistical assumptions.

***Methods & Results***

*Distribution of Ratings*

Before conducting any statistical tests of the scorecard data, we plotted kernel density estimates (i.e. smoothed histograms) for each of the interest groups, as well as the National Journal and DW-Nominate scores (See Figure 1 for examples). These graphs revealed that virtually all of the ratings systems are bimodal, the sole exception being the Chamber of Commerce, which appears to be somewhat normally distributed. Liberal senators tended to be cluster on the right side of liberal interest group distributions, such as the ADA, while conservative senators clustered on the left side of these graphs. The opposite occurred for conservative interest group ratings such as the ACU. Thus, it appears that all of the scorecard systems can be considered partisan in nature. There are very few senators located in the middle of the ratings systems’ distributions. In other words, there have only been a handful of ideologically moderate senators dating back to 2007, according to our analysis of the data. The National Journal and DW-Nominate ratings demonstrate that the Senate is polarized along party lines as well. However, the National Journal composite score appears to contain more ideologically moderate senators. This suggests that interest group ratings are currently not as extreme and bipolar as past studies would expect us to find. Though the distributions are slightly wider for the ADA and the ACU than they are for the National Journal and DW-Nominate - meaning that standard deviations are slightly larger - we believe our preliminary visual test confirms that it is not the interest groups that are polarized along a partisan spectrum, but *the Senate itself*. We believe that if senators actually practiced issue voting, we would not expect to find such uniform distributions across interest groups that analyze different roll call votes (H1).

**Figure 1: Kernel Density Estimates for ADA, ACU, National Journal, & DW-Nominate**



*Correlation of Senator Scorecard Ratings*

Kernel density estimates suggest that interest group ratings are distributed similarly to National Journal and DW-Nominate scores. In other words, these ratings systems may all be correlated and may be measuring the same underlying construct. Several scholars have already established that interest group scores are highly correlated with one another (Brunell et al. 1999; Burden et al. 2000). Poole and Rosenthal (2007) have demonstrated that many of these ratings are also correlated with their first-dimension nominate scores, which largely captures the partisan nature of roll call voting. Thus, there is reason to expect partisanship to account for most of the variance in all of the scorecards (H2a). However, there are no studies that examine these relationships using empirical data more recent than the mid-1990s. Therefore, we replicated these findings using data from the 110th-112th U.S. Senate.

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| Table 1: Relationships Between Senator Scorecard Ratings | | | | | | | | | | | |
|  | ADA | ACLU | AFSCME | LCV | NTU | COC | ACU | CFG | FRC | NJCONS |
| ADA | 1.00 |  |  |  |  |  |  |  |  |  |
| ACLU | 0.91 | 1.00 |  |  |  |  |  |  |  |  |
| AFSCME | 0.98 | 0.90 | 1.00 |  |  |  |  |  |  |  |
| LCV | 0.95 | 0.87 | 0.92 | 1.00 |  |  |  |  |  |  |
| NTU | -0.96 | -0.88 | -0.94 | -0.93 | 1.00 |  |  |  |  |  |
| COC | -0.82 | -0.82 | -0.81 | -0.77 | 0.77 | 1.00 |  |  |  |  |
| ACU | -0.96 | -0.92 | -0.95 | -0.92 | 0.96 | 0.78 | 1.00 |  |  |  |
| CFG | -0.96 | -0.90 | -0.96 | -0.92 | 0.98 | 0.78 | 0.97 | 1.00 |  |  |
| FRC | -0.94 | -0.90 | -0.94 | -0.90 | 0.90 | 0.80 | 0.93 | 0.92 | 1.00 |  |
| NJCONS | -0.96 | -0.90 | -0.93 | -0.93 | 0.93 | 0.79 | 0.95 | 0.94 | 0.92 | 1.00 |
| DWNOM | -0.97 | -0.90 | -0.96 | -0.92 | 0.94 | 0.79 | 0.95 | 0.96 | 0.93 | 0.96 |

Values are Pearson’s r coefficients

The correlation matrix in Table 1 reveals that interest group scores are not only highly associated with one another, as expected, but are also highly associated with National Journal and DW-Nominate ratings of senators. In fact, even the weakest correlations existing between the COC and the LCV (-0.77), and between the COC and the NTU (0.77), are very strong. Furthermore, the signs of the correlation coefficients are all in the expected direction. Liberal interest groups such as the ADA and ACLU are positively correlated with one another while also negatively correlated with conservative groups such as the ACU and FRC. A particularly interesting finding is the strength of the correlation between interest group ratings and the National Journal composite score and DW-Nominate. Indeed, every interest group’s correlation with the National Journal exceeded a coefficient of 0.90, with the sole exception being the Chamber of Commerce (0.79). Furthermore, the correlation between interest group ratings of senators and DW-Nominate scores is stronger for the 110th through 112th Senate than those reported by Poole and Rosenthal (2007) for the 96th Senate. For example, the correlation coefficient between the ACLU and DW-Nominate was -0.74 for the 96th Senate, whereas we find a correlation coefficient of -0.90. The relationship between LCV and DW-Nominate has also strengthened over time. Whereas Poole and Rosenthal report a correlation coefficient of -0.65, we find a higher value of -0.92. In the 96th Senate, the correlation coefficient between the AFSCME and DW-Nominate scores was -0.70. Our analysis shows that the correlation coefficient between these ratings is now -0.97. In other words, interest group evaluations of senators appear to have become far more party-oriented over time. These results lead us to believe that the scorecards are all measuring the same underlying factor (H2). In order to test the single-dimensional theory of roll call voting versus the multi-dimensional theory, we rely on exploratory Factor Analysis.

*Factor Analysis of Senator Scorecard Ratings*

We build on previous studies of scorecard data by conducting exploratory Factor Analysis with the most recently available information. As previously stated, Poole and Rosenthal (1998, 2007) evaluate interest group scorecards using figures dating back to the 1980’s. Considering the increased polarization in Congress, we believe a contemporary update of their analysis is in order. According to Tabachnick and Fidell, “The specific goals of [Factor Analysis are] to summarize patterns of correlations among observed variables, to reduce a large number of observed variables to a smaller number of factors […] or to test a theory about the nature of underlying processes” (2007, pg. 608). The purpose of our analysis is to attempt to reduce rating systems down to a few groupings. If interest group ratings of senators are as individually extreme as the literature suggests, we would expect to find that these scores would not collapse onto the same factors as the scores from the National Journal or DW-Nominate. Furthermore, if senators really did vote distinctly on different issues, each interest group rating should load onto a unique factor (H1). However, we also hypothesize that because of the current polarization in Congress, ratings of senators may in fact be reduced to a single partisan factor (H2). The highly correlated nature of the interest group scores *and* the non-ideological scores of the National Journal and DW-Nominate shown in Table 1 add further support to our theoretical expectations. We decided to consider the analysis exploratory in nature precisely because the existing literature suggests two alternative perspectives.

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| Table 2: Dimension Reduction of Senator Scorecards | | |
| Factor | Eigenvalue | Proportion |
| 1 | 10.06 | 0.98 |
| 2 | 0.15 | 0.01 |
| 3 | 0.05 | 0.00 |
| 4 | 0.03 | 0.00 |
| 5 | 0.02 | 0.00 |
| 6 | 0.01 | 0.00 |
| 7 | -0.01 | -0.00 |
| 8 | -0.01 | -0.00 |
| 9 | -0.01 | -0.00 |
| 10 | -0.02 | -0.00 |
| 11 | -0.05 | -0.00 |

Results from our Factor Analysis are located in Table 2 and graphically presented in Figure 2. Due to missing data, we used listwise deletion to reduce the number of observations included in the Factor Analysis to 228 (n = 228). A total of 11 factors are extracted because there are 11 variables included in the analysis. Strikingly, one single extracted factor with an eigenvalue of 10.06 accounts for 98% of the variance in senators’ ratings. Since no other factor exceeds the typical cutoff of an eigenvalue equal to one, we conclude that a single underlying dimension explains nearly all of the variance in senators’ interest group scorecard evaluations. Using interest group data from 1959 through 1981, Poole and Rosenthal (1998) found two underlying factors. An “economic” dimension accounted for 75% of the variance whereas a “social issues” dimension accounted for 5% of the difference in scorecard ratings. From 2007 to 2012, economic and social interest groups no longer loaded onto distinct components. We believe this evidence supports the single-dimensional roll call voting hypothesis (H2) over the multi-dimensional hypothesis (H1).[[1]](#footnote-1)

**Figure 2: Eigenvalues of Extracted Factors**



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| Table 3: Senator Scorecards Factor Loading | |
| Variable | Factor 1 |
| ADA | -0.99 |
| ACLU | -0.93 |
| AFSCME | -0.98 |
| LCV | -0.95 |
| NTU | 0.97 |
| COC | 0.83 |
| ACU | 0.98 |
| CFG | 0.98 |
| FRC | 0.96 |
| NJCONS | 0.97 |
| DWNOM | 0.98 |

Table 3 reveals exactly how the different ratings loaded onto this lone factor, and the factor loadings provide clues as to what this underlying dimension represents. Liberal interest groups, such as the ADA (-0.99) and ACLU (-0.93), loaded *negatively* onto the extracted factor, while conservative groups, such as the ACU (0.98) and CFG (0.99), loaded *positively* onto the extracted factor. Moreover, the National Journal’s composite conservative score (0.97) and the DW-Nominate (0.98) score loaded just as heavily onto this one factor as did the interest group scores. Since these systems assign higher values to conservative senators, it is not surprising that they loaded onto the component positively just as the conservative interest groups did. This provides some evidence for our hypothesis that all of the rating systems are, in actuality, measuring a single partisan dimension (H2a). In other words, interest group scores *and* non-ideological measures are merely informing us of who is a Democrat and who is a Republican.

Our findings are noteworthy because they challenge the multi-dimensional theory of roll call voting (Koford 1989; Wilcox & Clausen 1991; Jackson & Kingdon 1992). This theory asserts that congressional representatives vote in distinct manners on a diverse array issues. In other words, a conservative vote on one issue does not automatically entail a conservative vote on a separate issue. A senator may hold ideologically inconsistent positions on different issues. For example, a particular senator may be pro-choice as well as pro-Second-Amendment. Since the interest group ratings we selected for statistical analyses represent a wide variety of political concerns, the multi-dimensional theory would predict separate factors for each group of issues (H1). Instead, all of these scores, representing roll call votes on different issues, reduced down to a single dimension. Therefore, we believe that the results of our Factor Analysis support Smith’s (1981) finding of greater ideological voting alignments in the Senate.

*Analysis of Variance (ANOVA)*

Tabachnick and Fidell write of Factor Analysis that “the last, and very large, step is to verify the factor structure by establishing the construct validity of the factors” (2007, pg. 608). The previous analyses of the data suggest that there is an underlying partisan dimension to the senatorial scorecard ratings (H2a). However, we need to confirm that these systems are indeed measuring partisanship. Multivariate regression is unnecessary because the Factor Analysis has already shown that only one variable accounts for most of the variance in senators’ ratings. Therefore, we test for the amount of variance within these scores that is explained by party identification with simple bivariate Analysis of Variance. Numerous scholars have detailed the increasing correlation between ideology and party (Abramowitz & Saunders 2008; Bafumi & Shapiro 2009; Levendusky 2009; Noel 2014). The Democratic Party has become increasing liberal over time whereas the Republican Party has adopted an increasingly conservative ideology. Thus, we consider it appropriate to test the extent to which partisanship accounts for the variance in senators’ ratings, which are considered ideological in nature.

In order to confirm H2a, we ran separate ANOVA tests, treating the interest group scores of senators as dependent variables and the party identifications of the senators as the independent variable.[[2]](#footnote-2) Furthermore, we have included box plots illustrating the distribution of senators’ ADA, ACU, National Journal, and DW-Nominate scores by party (See Figure 2). Intriguingly, the box plots reveal that there are more party outliers in the ADA and ACU scores than the National Journal or DW-Nominate ratings. In other words, interest group scorecards suggest that there may be conservative Democrats and liberal Republicans - relatively speaking - whereas the National Journal and DW-Nominate ratings suggest more ideologically homogeneous parties. This finding supports Brunell et al. (1999), who argue that interest group scorecards are useful in identifying and distinguishing between their ideological allies. Again, even though the partisan outliers suggest that some senators are voting against their ideology and may be voting along issue lines, we believe this is further evidence that it is members of the Senate, and not simply interest group scorecards, that are polarized along a partisan dimension.

**Figure 3: Box Plots for ADA, ACU, NJCONS, & DWNOM by Party ID**

 

 

The ANOVA tests reveal that the strongest relationship between partisanship and senators’ ratings occurs for the AFSCME (F = 2194.15; p > F = 0.000; ƞ2 = 0.9463). Party identification also strongly accounts for the discrepancies in senators’ ADA scores (F = 1270.99; p > F = 0.000; ƞ2 = 0.9098). This pattern continually emerges. Partisanship explains most of the variance in senators’ CFG (F = 852.51; p > F = 0.000; ƞ2 = 0.8703), ACU (F = 796.47; p > F = 0.000; ƞ2 = 0.8615), NTU (F = 760.01; p > F = 0.000; ƞ2 = 0.8573), FRC (F = 692.30; p > f = 0.000; ƞ2 = 0.8445), and LCV (F = 529.30; p > F = 0.000; ƞ2 = 0.8059) ratings. The weakest relationship between senators’ party identification and their interest group scores occurs for the ACLU and the COC. Partisanship accounts for only 78% of the variance in ACLU scorecard ratings. However this relationship is still statistically significant (F = 457.49; p > F = 0.000; ƞ2 = 0.7800). The weakest relationship between party identification and ratings occurred for the Chamber of Commerce (ƞ2 = 0.6445). This confirms our prior analyses showing that the COC ratings were less correlated with others and did not load onto the single extracted factor as strongly. However, the relationship between partisanship and the COC rating is still robust and statistically significant (F = 232.05; p > F = 0.000). Thus, we believe there is sufficient evidence to support the partisan roll call voting hypothesis (H2a).

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| Table 4: Effect of Partisanship on Senator Scorecards | | | |
| Variable | F Statistic | P-Value | ƞ2 |
| ADA | 1270.99 | 0.000 | 0.9098 |
| ACLU | 457.49 | 0.000 | 0.7800 |
| AFSCME | 2194.15 | 0.000 | 0.9463 |
| LCV | 529.30 | 0.000 | 0.8059 |
| NTU | 760.01 | 0.000 | 0.8573 |
| COC | 232.05 | 0.000 | 0.6455 |
| ACU | 796.47 | 0.000 | 0.8615 |
| CFG | 821.51 | 0.000 | 0.8703 |
| FRC | 692.30 | 0.000 | 0.8455 |
| NJCONS | 635.30 | 0.000 | 0.8400 |
| DWNOM | 1002.74 | 0.000 | 0.8955 |

The literature on interest group scorecards suggests that one might expect partisanship to account for much of the difference in senators’ ratings. However, it is less clear whether or not the ratings from the National Journal would also reveal such extreme partisan divides. Nevertheless, the bivariate ANOVA tests for these data confirm that the Senate is currently *divided along partisan lines*. Indeed, party identification accounts for 84% of the variance in senators’ National Journal scores (F = 635.30; p > F = 0.000; ƞ2 = 0.8400). The relationship between partisanship and DW-Nominate scores is even stronger and comparable to the relationship between party and so-called extreme interest group ratings (F = 1002.74; p > F = 0.000; ƞ2 = 0.8955). The party identification of senators explains more of the variance in their DW-Nominate scores than it does in all but two of the interest group ratings. This is surprising because the DW-Nominate scores estimate senators’ ideological positions based on all roll call votes, whereas interest groups typically only rely upon a small sample of votes to calculate their ratings.

***Discussion & Conclusion***

The purpose of our study was to synthesize the existing scholarship on congressional parties, roll call voting, and interest group scorecards. Specifically, we tested the multi-dimensional and single-dimensional theories of roll call voting in the United States Senate using interest group ratings of U.S. senators. We collected and analyzed senators’ scorecard data from nine major groups representing a number of issue interests, for the 110th through the 112th sessions of Congress, as well as we collected National Journal and DW-Nominate scores for the same congressional sessions. We found that a single dimension accounts for 98% of the variance in senators’ ratings on various scorecards. Conservative interest groups load onto this factor positively while liberal groups load negatively. Furthermore, we have shown that this underlying factor appears to be of a partisan in nature. Thus, we believe the analyses indicate that voting in the upper chamber of Congress occurs *along party lines*. Consequently, we do not support proponents of the multi-dimensional theory of roll call voting; senators *do not* practice issue-oriented voting. Several scholars have already acknowledged that party unity scores in the Senate are on the rise (Aldrich 2011, Carson 2008; Pearson 2008). Our results suggest that the conventional wisdom on the weakness of political parties in the Senate requires revision.

Additionally, we have demonstrated that interest group ratings of senators can no longer be considered ideologically extreme. Thus, we agree with Krehbiel’s (1994) conclusion that the bias in these scorecards should not negatively impact inferences drawn by studies using these data. Interest group ratings are highly correlated with Poole and Rosenthal’s DW-Nominate scores, and are distributed in a similar bimodal fashion. These scorecards also show more heterogeneity within the parties than do the National Journal and the DW-Nominate. Therefore, we feel comfortable concluding that it is the senators, and not only interest group evaluations of Congress, that are polarized along a partisan spectrum. Future research should expand on this study by increasing the number of interest groups represented in the analysis and by collecting data covering a longer period of time, however, this requires that the same interest groups provide ratings of senators consistently.

What are the consequences of extreme party polarization in the Senate in 2015? The 113th and 112th congresses have been the least productive in history since record keeping began in 1947 (Memoli 2014). The 112th Congress passed just 284 bills, while the 113th Congress barely exceeded this number with 296. However, approximately ten percent of bills passed by the 113th Congress simply renamed local post offices (Bump 2014). In fact, the number of enacted laws has seen a sharp decline since the 108th Congress, which passed 504 bills, roughly 70 percent more than the most recent Congress. Party polarization is the primary cause of this recent phenomenon. Numerous studies have shown that the increasing ideological polarization between the two major parties has had a negative effect on legislative productivity (Binder 1999, Jones 2001, Dodd & Schraufnagel 2013). In their analysis of congressional productivity, Dodd and Schraufnagel (2013) argue that extreme polarization, as well as, interestingly enough, the complete lack of polarization, undermines policy productivity. Legislative productivity will continue to be woefully low if the Senate continues to be polarized along a partisan dimension to the extent that it has been in recent years.

**Appendix**

|  |  |  |
| --- | --- | --- |
| Table 5: PCFA of Senator Scorecards | | |
| Factor | Eigenvalue | Proportion |
| 1 | 10.12 | 0.92 |
| 2 | 0.32 | 0.03 |
| 3 | 0.14 | 0.01 |
| 4 | 0.10 | 0.01 |
| 5 | 0.08 | 0.01 |
| 6 | 0.07 | 0.01 |
| 7 | 0.04 | 0.00 |
| 8 | 0.03 | 0.00 |
| 9 | 0.02 | 0.00 |
| 10 | 0.01 | 0.00 |
| 11 | 0.01 | 0.00 |

|  |  |
| --- | --- |
| Table 6: PCFA Factor Loadings | |
| Variable | Factor 1 |
| ADA | -0.99 |
| ACLU | -0.94 |
| AFSCME | -0.98 |
| LCV | -0.96 |
| NTU | 0.97 |
| COC | 0.85 |
| ACU | 0.98 |
| CFG | 0.98 |
| FRC | 0.96 |
| NJCONS | 0.97 |
| DWNOM | 0.98 |

**Figure 4: Scree Plot of PCFA**

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1. We also conducted Principal Components Factor Analysis (PCFA) of our data. The PCFA yielded results that were almost identical to those reported in our initial exploratory Factor Analysis. PCFA revealed that one factor with an eigenvalue of 10.12 accounted for 92% of the variance in the Senate scorecard data. A second factor with an eigenvalue of 0.34 explained 3% of the variance, while several other factors each accounted for about 1% of the differences in ratings. These factors were not retained because they did not exceed an eigenvalue of one. The scorecards loaded onto the first factor similarly to how they loaded onto the factor extracted from our initial findings. Varimax and promax rotation also did not produce any differences. We have included results from the PCFA in the appendix for interested readers. [↑](#footnote-ref-1)
2. Typically, the appropriate test to use when measuring the effect of a single independent variable on multiple dependent variables is Multiple Analysis of Variance (MANOVA). However, Tabachnick & Fidell (2007) show that where dependent variables are highly correlated, as is the case in the present analysis, the power of MANOVA is significantly weakened, and therefore running separate ANOVA tests may be more appropriate. [↑](#footnote-ref-2)