Moving Up or Moving Out: Career Ceilings and Congressional Retirement

This research note presents a theory of congressional retirement and tests it with data from the 102d Congress. The results bridge the gap between the 1970s macro retirement studies and the more recent micro-centered approaches by highlighting the importance of *career ceilings*. Defined as the interaction between formal position and years of service, the career ceilings variable can be interpreted as the degree to which the member's career in the House has stagnated. This variable dominates the traditional causes of retirement in the quantitative analysis. In light of the convergence of the unique 1992 retirement-causing factors, its power is especially surprising. Not only was 1992 the first election after redistricting and the House bank scandal, but it was also the last chance for members to convert excess campaign cash to personal income. Nevertheless, career ceilings predict retirement much better than any of the 1992-specific variables.

Congressional scholarship usually starts with the assumption that members of Congress are single-minded seekers of reelection. But this assumption, although true for a while, is not true forever. Most members, after all, at some point choose to retire. Since World War II, retirements have been "the single most important source of members' departures" (Hall and Van Houweling 1995, 132). Indeed, from 1982 to 1990, 152 members voluntarily retired; only 90 were defeated. The results from 1992 were proportionally similar: 65 members voluntarily retired (including 13 members who sought higher office), 43 members lost, and one died.²

Though the proportions were similar in 1992, the retirement class was much larger than usual. Journalists and political scientists alike had predicted more retirements because of the confluence of three events specific to 1992. First, the emergence of the check-bouncing scandal would induce those veteran legislators with many bounced checks to forego difficult reelection campaigns. Second, 1992 was the last year that members elected prior to 1980 could convert campaign contribution surpluses into personal cash. Finally, redistricting raised the uncertainty of victory for many members. This is not the first study to parse out the independent impact of these events (see also Groseclose

and Krehbiel 1994; Hall and Van Houweling 1995).

Political scientists have long been intrigued by the motivations for voluntary retirement. Studies published in the 1970s and early 1980s suggest that a decline in job desirability caused member retirement (see, for example, Frantzich 1978). Cooper and West (1981, 293) are typical of this period; they find, "The evidence presented... does not directly or definitely prove that disaffection is the primary causal factor at work. The tie must be inferred from the broad or pervasive character of the trend. Nonetheless, given the evidence, such an inference is difficult to avoid." Increased partisanship, longer hours, higher expectations, and continuous fundraising have been the chorus sung by both political scientists and members in complaining that Congress is "no fun" anymore.

Hibbing (1982a), Moore and Hibbing (1992), and Hall and Van Houweling (1995) challenge the "Congress not fun" argument. They suggest it is invalidated by the large majority of members who continue to seek reelection. Indeed, over 90% of the members since 1982 have chosen to run for reelection. Instead, these authors analyze retirements by examining the individual conditions that motivate members' retirements. Moore and Hibbing (1992) find that age is the only variable that consistently predicts retirement throughout their three decade study. The individual factors causing retirement vary throughout their study's time period.

This paper, rather than seeking to accept or reject the "Congress not fun" hypothesis, aims to find a causal mechanism underlying it. The hypothesis, as customarily framed, is undifferentiated, implying that any given member is more or less equally susceptible to disillusion as any other. By contrast, it is the primary argument of this paper that susceptibility to disillusion is differentiated, and specifically, that is a function of career ceilings. Thus, apart from variation idiosyncratic to 1992, I argue that the key mechanism underlying congressional retirement is stalled careers. In this way, I argue that the "no fun" argument should be brought down from the level of the institution to the individual members if we are to understand why members cease their single-minded pursuit of reelection.

This research note seeks to provide new answers to a simple question: Why do members of Congress retire? It proceeds as follows. In the first section, I examine the rhetoric of retirement. The second section establishes a theoretical model and reviews the major variables associated with retirement. The third section provides the methodological framework by which parameter estimates are ascertained and describes the results. I conclude with a discussion of the practical and theoretical implications of the findings.

The Rhetoric of Retirement

After the official announcement of their retirement from office. members can for the first time since they entered politics, reflect, pontificate, criticize, and/or praise without considering the political ramifications of their actions. Though the speeches may be largely rationalized, they still provide insight into the relationship between members and the institution of Congress. From them, I will extract the building blocks for a theory of voluntary congressional retirement. Frantzich (1978, 257) explains the importance of the retirement speech: "Since the congressman's constituency has the right to expect a representative with optimal effectiveness and motivation, the decision to retire requires a carefully timed and presented rationale." Hibbing (1982a, 59) also advocates an analysis of member-proffered reasons: "[Members'] views on the nature of the job, and their perceptions of their own and their colleagues' reasons for leaving the House provide the necessary inside view of retirement motivations." The primary reasons for retirement break down into three distinct groups: personal and financial, political vulnerability, and legislative burnout.³

Twenty-two of the fifty-two retiring members cited a variety of personal reasons as their justification for retirement. Nine members wanted to face life's other challenges, such as Congressman Jenkings (D-GA), who explained, "While I certainly shall miss the challenge in the future, every public official must decide for himself when the right time comes to move on to other endeavors, and for me, that time is now" (Roll Call, January 23, 1992, 8). Seven others wanted to spend more time with their families, such as Congressman Miller (R-WA): "I have a yearning to spend time playing teeball with Brett and talking more with June and Brett across the table instead of via the telephone" (Roll Call, January 20, 1992, 33). Six simply blamed old age or deteriorating health, like Congressman Gaydos (D-PA): "Age, they say, is the fire extinguisher for flaming youth. Well, I'm 65. My fires are beginning to burn a little low. It's time to think about banking the furnace to conserve some of the heat" (Roll Call, January 16, 1992, 3).

Either dirty campaigning or redistricting were political reasons provided by sixteen members who retired. Congressman Pursell (R—MI) was typical of redistricted members: "My decision hasn't been an easy one. With the impact of redistricting, we quite frankly have arrived at a point where it is time to pass on the baton to a new generation of leadership" (Roll Call, March 26, 1992, 1). In addition to the eleven members who cited redistricting as their primary cause of departure, five other members blamed the potential of ugly campaigns resulting

from the check-bouncing scandal. Congressman Weber (R-MN) articulated this rationale: "I don't want to face an entire campaign that focuses on nothing more than personal attacks, with no attention to the critical issues facing the country" (Roll Call, April 13, 1992, 6).

The third category is congressional burnout. The fourteen members in this category cited everything from meaningless roll-call votes to perpetual campaigning in complaining about Congress. Congressman Annunzio (D-IL) discussed the burnout caused by a changing workload: "Instead of answering quorum calls and attending all-night sessions of the House, I want to be with my family" (Roll Call, December 5, 1991, 15). On a more partisan note, Congressman Coughlin (R-PA) criticized the perpetual Democratic majority. "Forty years of control by a now-tired majority has led to constant carping with worn-out phrases and recycling of the same one-shot giveaways and welfare make-work programs. It has also lead to an arrogance of power that begets practices which have demeaned the institution" (Roll Call, February 24, 1992, 7). As these examples illustrate, the range of burnout and hostility varied. Though the institution has changed (see Shepsle 1989), these burnout arguments are similar to those provided by the members retiring in the 1970s (see Cooper and West 1981).

In analyzing the member-proffered reasons for retirement, it becomes obvious that a retirement model should include personal, political vulnerability, and congressional burnout measures. To rely totally on retirement rhetoric, however, is to commit an equally grievous mistake as to ignore it. Frantzich (1978, 258) warns, "Given the numerous constituencies a retiree must satisfy in explaining the decision, it is perhaps wise to take public pronouncements with a grain of salt." For this reason, I also test the effect of the variables from the previous retirement literature.

Political scientists try to explain when and under what conditions members of Congress retire. In each electoral cycle, members implicitly perform a cost-benefit analysis. They continue to run for reelection until the costs outweigh the benefits of seeking an additional term. Much of the recent literature concentrates on the cost component of the equation. As such, it largely ignores the benefit component as originally highlighted by the "Congress not fun" arguments. The decrease in benefits results from a general decline in expectations related to their conditions of employment in the House of Representatives. For members who retire, the thrill of serving is overshadowed by perpetual voting, mundane position taking, institutional lethargy, or demanding constituents. In addition to institutional factors, members also may perceive a decreased utility in their own career. The frustration of poor

committee assignments or the stagnation in political power accumulation also result in decreasing benefits. Quite simply, when benefits decline and costs remain constant, members retire.

Explanation of the Variables

For purposes of this analysis, I dichotomize the dependent variable into "retired" and "not retired." For the independent variables, I maintain the three categories that I used in analyzing the rhetoric of retirement. I first explain the variables measuring the personal reasons causing retirement. Second, I discuss the political factors relevant in members' decision analyses. Finally, I present measures of congressional burnout.

Personal and Financial Variables

The first independent variable is the age of the member on January 1, 1992. Because time variables often do not have simple linear relationships, I also include the square of the age. All else equal, older members should be more likely to retire. The next two variables measure the member's family situation. Marriage is a dummy variable that is coded "1" if the member is married and "0" if single, divorced, or widowed. The second family variable is the number of children that the member has in his or her family (including step-children). I expect that both family variables are positively related to retirement. Neither marital status, nor the number of children has been previously analyzed in retirement studies; however, their inclusion is warranted by the retirement speeches.

The fourth variable is the amount of campaign contributions that could be converted to personal cash. I hypothesize that the more money in the member's "war chest," the more likely the member is to retire. I divide the actual amount by one thousand so the statistical manipulations do not suffer as a consequence of working with very high numbers. This financial operationalization is simpler than Hall and Van Houweling (1995), who employ an elaborate model that not only includes campaign war chests, but also expected pension and honoraria.

Political Vulnerability Variables

The next four variables operationalize the member's perception of electoral vulnerability. The fifth independent variable is the percentage of popular vote the members received over their closest competitor in the 1990 House election (or special election if they were elected during the 102d Congress). I use the natural log of the margin due to diminishing returns associated with margin size.

The sixth independent variable is the incompatibility between the district and the member. I use the member's Conservative Coalition scores and the percentage of Bush vote received in that member's district in the 1988 election as ideology measures for the member and the district, respectively. I restrict the Conservative Coalition scores to the First Session of the 102d Congress to reduce model endogeneity.8 This study is not the first to use a district's vote for president as a measure of district ideology. Indeed, Powell (1993, 9) suggests, "The district presidential vote is often used as a rough proxy for either partisanship or ideology." Because the measures are from different scales, I regress the standardized Conservative Coalition scores on the standardized Bush vote to ascertain the predicted value of the members' ideology. The regression's residual, or unexplained error, serves as the incompatibility measure. I hypothesize that the higher the incompatibility score the more likely the member is to retire. This is the first attempt in a retirement study to operationalize district incompatibility.

The last two vulnerability variables are specific to 1992. First, I employ the redistricting scale used by Alford et al. (1994). ¹⁰ I suspect that a member whose new district is largely unfamiliar to her, is more likely to retire than a member whose district underwent mere cosmetic changes. Second, I include number of overdrafts the member had in the check-bouncing scandal. ¹¹ I expect that members with many bounced checks were more likely to retire than those with a few.

Legislative Burnout Variables

This is the first retirement study to isolate the importance of burnout variables in analyzing member retirement. Hall and Van Houweling (1995, 126) dismiss the significance of disaffection. They assert: "Descriptions of their own reasons notwithstanding, we doubt that the disillusionment with the institution so frequently described in member's retirement retrospectives is behaviorally significant." Although this argument is plausible, the counterargument that disillusionment does matter is plausible as well. Therefore, I test the impact of disaffection by including several variables that measure member burnout.

The ninth independent variable is party unity. I coded party unity scores determined by *Congressional Quarterly* for the First Session of the 102d Congress.¹² Maverick legislators should become more easily disillusioned with the House and the daily operations of a

congressional office than party regulars; thus, they would be more likely to retire. The next two variables measure the member's experience and position in the House. The first variable is the number of continuous years that the member has served in the House. Second, the formal position the member has in the House is a continuous variable taking on values from "1" (the speaker) to "100" (minority member of a minor committee). The expected coefficient signs on these variables are difficult to predict because long service and power are hopelessly confounded.

The twelfth independent variable, the operationalization of career ceilings, is the multiplicative interaction between experience and position. Such an interaction potentially holds significant predictive power. Consider a member with few years of service and a high position score (indicating low power) and another member with many years of service and a low position score (indicating high power). Both result in low interaction scores which is intuitively appealing because neither member is likely to retire (the first because he has not served a lengthy tenure in the institution and the second because she is a high ranking member who wields much power). Contrast these examples with experienced members who are not in powerful positions. Such members would have high interaction scores indicative of hitting career ceilings. Previous studies have examined the effect of these variables independently; however, their interaction seems to be a more useful measure of burnout. In his study, Brace (1985, 188) concludes: "Certainly age is an important determinant of retirement decisions, but we must also consider the combination of age and senjority that might work to make some relatively old members continue to pursue House service." Fenno (1973, 1) argues that members are motivated by three factors: "reelection, influence within the House, and good public policy." Career ceilings are a harsh reminder of the difficulty in fulfilling the middle of these goals. It is this note's thesis that failure to secure institutional influence mitigates the motivation for reelection. Put more simply, career ceilings cause members to retire.

The Model and the Results

Due to the dichotomous nature of my dependent variable, I used logit regression to estimate the relationships between the independent variables and the members' decision to retire. The logit regression results, summarized in Table 1, yield statistical significance with 95% confidence in eight of the independent variables—the age of the member (also age-squared), the amount of cash available for

TABLE 1
Effects on Retirement: Logit Results

Variable	Coefficient Estimate	Standard Error 5.561	
Constant	8.227		
Age	314*	.156	
Age ²	.003*	.001	
Married	.217	.521	
Children	109	.118	
Convertible Campaign Cash	.002*	.001	
Margin of Victory	342*	.178	
District Compatibility	.678*	.304	
Redistricting	1.069*	.347	
Bounced Checks	.002*	.001	
Party Unity	016	.014	
Years in the House	−.164 *	.091	
Position	041	.025	
Career Ceilings (Years in the House * Position)	.003*	.001	

^{*}Statistically significant at 0.05.

Note: Dependent variable coded 1 for retirement and 0 for seeking reelection to the House. N = 421. The fourteen cases in which members sought other office were omitted. Observations predicted correctly: 89.1%.

Log-likelihood ratio index = 0.22.

Log likelihood = -124.574.

 $Chi^2(13) = 69.55.$

Probability $> \text{Chi}^2 = 0.0000$.

personal conversion, previous victory margin, compatibility with the district, redistricting, bounced checks, experience, participation rate, and the interaction between years in the House and position.¹⁴ The likelihood ratio index (the R² equivalent for discrete choice models) is 0.22. These robust results are indicative of a relatively powerful retirement model.

Statistical significance does not relay all the information contained in the model's parameter estimates. In addition to discussing the certainty of the relationship between the independent variables and the dependent variable, we can also discuss the magnitude of the relationship. ¹⁵ A summary of these relationships is presented in Table 2.

TABLE 2
The Impact of the Significant Independent Variables
on Retirement

Variable	Minimum Value	Maximum Value	Change in Probability	Standard Deviation Below	Standard Deviation Above	Change in Probability
Age	32	83	0.397	44	65	0.026
Convertible Campaign Cas	h 0	1393	0.469	0*	246	0.037
Margin of Victory	0	4.61	-0.149	2.39	4.33	-0.045
District Compatibility	-2.48	1.32	0.147	-1	1	0.097
Redistricting	0	2	0.107	0.76	2*	0.087
Bounced Checks	0	920	0.337	0*	179	0.033
Years in House	1	51	0.566	4	20	-0.101
Career Ceilings (Years in House * Position) 28	2640	0.267	194	1691	0.136

^{*}Indicates that standard deviation calculations had to be modified so that the value one standard deviation above or below the mean fell within the range of the variables' values

Note: The "Change in Probability" column is computed by subtracting the retirement probability at the variable's minimum value (or one standard deviation below the mean) from the probability at the variable's maximum value (or one standard deviation above the mean), holding all other variables at their mean.

The numbers in the second and third columns correspond to the maximum and minimum values taken by the respective independent variables. The percentages in the fourth column indicate the total possible change created by inserting the maximum value for the minimum value in the first difference equation (see footnote 15), holding all other variable values constant. For example, the difference between the retirement probability when age is evaluated at its minimum (32) and its maximum (83) is 0.397. In words then, the retirement probability for an 83 year-old member is nearly 0.4 percentage points higher than the retirement probability of a 32 year-old member with the exact same characteristics for all other variables. Because extreme values might skew the substantive results, I provide the last three columns that show the changes in the retirement probability caused by a one standard deviation decrease and increase. I discuss both the substantive and statistical results of the model within the categories used to classify the retirement rhetoric.

Personal and Financial Variables

The results from the age variable are consistent with Frantzich (1978), Hibbing (1982a), Brace (1985), Moore and Hibbing (1992), and Hall and Van Houweling (1995), which all found age to be positively related to voluntary retirement. The effects of the family variables were negligible in this study. This should not suggest that family decisions are irrelevant to member's retirement decisions. Indeed, it was the primary reason given by seven of the 1992 retirees. More thought, however, should be given to operationalization of this potential effect.

The amount of campaign cash convertible to personal income was not only statistically, but also substantively, significant. An extremely unlikely retiree may have been induced to retire based solely on the substantive results of the convertible cash variable. Indeed, it is more salient even than age. These results are similar to the findings of Groseclose and Krehbiel (1994). However, they contradict Hall and Van Houweling (1995), who use more sophisticated financial specifications.

Political Variables

Although all of the variables in this category were statistically significant, their substantive impact upon the model was smaller than variables in either of the other two categories. The effects of previous victory margin, district compatibility, and redistricting are significant. The maximum variation in the variables can cause between a 0.10 and 0.15 point change in the retirement probability.

The results of redistricting call into question Katz's (1992, 851) assertion that "the single biggest reason that more members are retiring now [in 1992] than in recent years is redistricting." The results suggest that Katz's prediction overestimated the impact of redistricting. When the variables are evaluated at their extreme values, redistricting has the smallest impact. Even with the more conservative standard deviation change, three variables have a larger effect.

The substantive results of the bounced checks variable are interesting. When evaluated at the extremes, the variable causes over a 0.33 change in the retirement probability, yet when evaluated at one standard deviation below and above the mean, the change is significantly less (0.03). This suggests that parametric estimation was sensitive to three of the worst check bouncers—Davis, Mrazek, and Weber (together, they bounced over 1900 checks)—who all retired. In fact, the Groseclose and Krehbiel (1994) model predicts three or four retirements as a consequence of check bouncing. This analysis complements their finding.

Burnout Variables

Among the burnout variables, party unity scores and the position within the House were the only variables that were not statistically significant. Controlling for other factors, the longer the members served, the less likely they were to retire. This somewhat confusing result may be a consequence of the model's structure. The influences of years in the House and position may ultimately offset each other as suggested by their apparent inverse relationship. The interaction of the years in the House and position variables, however, had the largest substantive impact upon the retirement probability. Indeed, the interaction even overwhelms the powerful effect of years in the House. When deviating the variables by a standard deviation, the career ceilings measure has the most pronounced effect (taking into consideration the changes in the variables composing this interaction term). Consequently, in previous studies where their interaction is not included, political scientists have inappropriately dismissed their interactive influence. For example, Kiewiet and Zeng (1993, 939) conclude, "Formal committee and party leadership positions... do not appear to figure into House members' career decisions." Even a back-of-theenvelope analysis of the interaction provides powerful evidence of the variable's influence. The mean interaction score for nonretiring members was 685, whereas the retiring members' mean was over 50% larger at 1034. Additionally, the three members with the highest interaction values and fourteen of the highest fifty all retired.¹⁶

The interaction variable result suggests that the "Congress not fun" argument initially posited by Frantzich (1978) and Cooper and West (1981) should be reconceptualized. In the 1970s, members complained of nasty partisanship, impossible scheduling conflicts, and demanding constituents. Cooper and West (1981) conclude that these changes in Congress partially explain the remarked increase in the retirement rates beginning in the 1970s. Although the rhetoric from the 1992 class is similar, the data suggest a slightly different "disaffection."

Members with extended careers in the House and weak positions are significantly more likely to retire than those who are either relatively new to Congress or serving in powerful positions. The disaffection, then is not necessarily with a larger workload, more partisanship, or higher demands, but rather with a system that condones experienced members serving in institutionally weak positions. Although expectations engendered by seniority are high, the norm usually applies only within committees and not throughout the House as a whole. As such, a member could rank among the longest-serving members and not be

a committee chair because it so happens that one of the few members who outrank her in seniority also serves on the same committee (and hence, as the chair). In this instance, the lower-ranked member has hit a "career ceiling." Because the member cannot usually carry her seniority to a new committee, she can either wait for the chairperson to retire, be defeated, or die, or she can retire herself. This study suggests that, in 1992, several members opted for the last option. Additionally, when the seniority norm is not realized, the violated member has little recourse. As such, the probability of retirement looms large for these violated members because the benefits of serving significantly decrease.

Moore and Hibbing (1992) argue that the "no fun" argument is inherently flawed because the preponderance of members choose to run for reelection. My new conceptualization is not susceptible to this criticism. My hypothesis does not prescribe a behavioral pattern for all members, but rather, suggests retirement for specific, particularly unfulfilled members whose benefits have declined. This argument suggests that members are concerned with more than reelection. Indeed, they also desire powerful positions within the institution. And when they hit career ceilings, they retire.

Discussion and Conclusion

In this note, I argue that Congress is not fun for certain strategically disadvantaged members. This finding divides the difference between the early retirement studies (Frantzich 1978; Cooper and West 1982) and the latter studies (Groseclose and Krehbiel 1994; Hall and Van Houweling 1995; Moore and Hibbing 1992). From the earlier studies, we learn that retiring members are disillusioned with Congress. The latter studies encourage member-specific explanations. Bridging these two camps is the differentiated disillusion argument of career ceilings.

Political commentators thought that the number of 1992 retirees would increase due to the confluence of redistricting, campaign cash converting, and check bouncing. Though the number did increase, it has not regressed back to the pre-1992 levels. Undeniably, these events caused members to retire. If the 1992 specific variables were dropped from the logit, the resulting log-likelihood ratio index drops from 0.22 to 0.14. This study, however, finds that even in the unique 1992 retirement class, several of the variables that best predict retirement were not specific to 1992. The strong predictive performance of the member-district compatibility and disaffection with the House suggest that future retirement studies should not ignore these new formulations. In fact,

the predictive power of these two variables is roughly equal to that of the 1992-specific variables.

The question of retirement will not likely go away as retirements continue to claim over 10% of the members each electoral cycle (48 members retired in 1994 and 50 retired in 1996). Though we have gotten better at answering why single-minded seekers of reelection retire, there is still room for improvement. As such, we need to build upon the findings from the previous research as well as the new insights provided in this note to build more elaborate models of congressional retirement. The later studies of retirement are certainly correct in highlighting the individual motivations for retirement. The earlier studies, however, should not be dismissed. They contain an undeniable logic: People who are disappointed with their jobs retire.

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NOTES

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- 1. These numbers were obtained from Vital Statistics in American Politics, 5th ed.
- 2. Congressman Jones (D-NC) also died, however, he had announced his retirement nearly a year prior to his death on September 15, 1992.
- 3. I used articles from *Roll Call* and *Congressional Quarterly* to determine the reasons proffered by the members. Often, I examined the member's rhetoric prior to accepting the reasons provided by the articles' authors. When these collection methods failed, I obtained articles from the members' local newspapers.
- 4. I have deleted the 14 cases where the member chose to retire to run for a higher office. Additionally, I coded those members who lost in primaries or general elections as "not retired" because they intended to continue their service in the House. Both practices are consistent with the previous studies.
- 5. The member's age and previous victory margin were coded using information from *Politics in America*.
- 6. Marital status and the number of children were ascertained from the Almanac of American Politics, Politics in America, and The Congressional Directory.
- 7. The Center for Public Integrity's study, Saving for a Rainy Day: How Congress Turns Leftover Campaign Cash into 'Golden Parachutes,' provided the amount of money available for conversion.

- 8. A reasonable argument could be made that the retirement decision ultimately impacts the members' voting records. Because only four members announced their retirement prior to the end of the First Session, potential problems are minimal.
- 9. The incompatibility model is Conservative Coalition score = 0.6503 * Bush vote + ε . Because ε is the residual in the model, it represents the unexplained relationship between the member and her district. Hence, it is an appropriate measure of incompatibility.
- 10. See their footnote on page 792, for the coding procedure and intercode reliability score.
- 11. The April 20, 1992 issue of *Roll Call* (p.15) listed the number of checks that each member of Congress "bounced" in the check-kiting scandal. The list contains several typographical errors that were corrected by contacting the members' offices.
- 12. See the December 28, 1991, issue for their explanation and measurement methodology.
- 13. These values were adapted from Hibbing (1991, 64–65). I made two minor adjustments to his scale. First, I inverted Hibbing's original scale so that the Speaker was rated "1" and the minor committee member was "100." Second, I decreased the GOP members value by one at each level to reflect their status in the minority party.
- 14. I performed several goodness-of-fit tests on the model to determine its predictive power. An ROC curve value of 0.81 indicates that the model has some definite power. A score of 0.5 implies that no predictive power exists, and a score of 1 indicates a perfectly specified model. The log likelihood was –124.6. The Pearson X² value was 69.55.
- 15. In order to interpret the coefficient estimates, the logit values need to be transformed through the logistic first difference equation:

$$D_{\text{logit}} = [1 + \exp(-X_{j}^{(b)}b_{j} - X_{\bullet}b_{\bullet})]^{-1} - [1 + \exp(-X_{j}^{(a)}b_{j} - X_{\bullet}b_{\bullet})]^{-1}$$

where D_{logit} is the change in probability caused by a change in the independent variable that is being examined. $X_j^{(a)}$ is the variable value prior to the change and $X_j^{(b)}$ is the value after the change. The b_j is the coefficient of the x_j variable. X_*b_* are the values and coefficients, respectively, of the variables that remain constant so that the varying variable's effect upon the dependent variable may be ascertained.

16. The members with the three highest interaction values were Glenn Anderson (first elected in 1968 and in the beginning of the 102d Congress deposed as the chair of the Public Works Committee), Frank Horton (began serving in 1962 and ultimately retired when he was the ranking Republican on a minor committee—Government Affairs), and Charles Bennett (first elected in 1948, but passed over for the chairmanship of Armed Services in 1985 when Les Aspin seized control from Mel Price).

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