A NOTE ON REFERENDUM VOTING AS POLITICAL CHOICE

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In both established and emerging democracies alike, the quest for public support has spurred the revival of interest in devices of direct democracy. Paramount among these devices are referenda employed to decide major questions of public policy, regime-level change, and supra-national governance. The use of referenda for these purposes challenges political scientists, long accustomed to studying the determinants of electoral choice, to develop and test models of referendum voting behavior.[1] To date, however, there has been a tendency to treat referenda as idiosyncratic events, and to model forces driving referendum voting in an *ad hoc* fashion. In this note, we suggest ways to improve the specification of such models.

Our argument recognizes that important referenda occur in political contexts where opposing groups of party leaders conduct highly publicized campaigns for and against the proposal at issue. The prominent roles played by these partisan political figures and the parties that they lead cause referenda to assume a number of the characteristics of national or state provincial)-level elections. Specifically, we contend that, faced with uncertainty about the consequences of alternative referendum outcomes, voters use information about the principal advocates of the "yes" and "no" sides as convenient heuristic devices to facilitate their decision-making processes. As a result, assessments of an incumbent government's performance in office, party leader images, and party identification, which do much to explain voting in elections, have statistically significant and substantively important effects on referendum balloting.

As an initial step in developing and testing a model based on this argument, we critique the results of a study of voting in a crucial referendum (the October 1995 Quebec sovereignty referendum) published recently in the *British Journal of Political Science* (Nadeau, Martin and Blais, 1999; hereafter NMB).[2] We demonstrate that the empirical case for NMB's model specification is not compelling.[3] Then, we proceed to specify and test an alternative "political choice" model of referendum voting that assesses the impact of party leader images, governmental performance evaluations and party identification, while controlling for the effects of perceived consequences of “yes” and “no” majorities and several other

variables. The model also enables us to determine if perceived costs and benefits of alternative outcomes have differential effects on referendum voting and, hence, are a source of a “status quo” bias in major referenda. Model parameters are estimated using data gathered in a panel survey of the Quebec electorate conducted before and after the October 30, 1995 sovereignty referendum.[4]

NMB's Model Versus a Simpler Nested Rival

There are five principal independent variables in NMB's model of referendum voting. Two of them measure cost-benefit assessments of the status of the economy and the French and English languages if Quebec were to become sovereign rather than remaining a member of the Canadian confederation. Two others measure the perceived likelihood of an economic crisis if Quebec became sovereign, and perceived threats to (i) the English language in a sovereign Quebec (if the respondent is an Anglophone) and (ii) the French language if Quebec remains in Canada (if the respondent is a Francophone). Although NMB label these latter variables as "worst-outcome perceptions," they clearly involve costs and, implicitly, the benefits, associated with alternative constitutional futures for Quebec. The fifth variable is general orientation toward risk taking. NMB hypothesize that the impact of the four cost-benefit/worst-outcome variables differs according to respondents' attitudes towards risk, with the effect of perceived costs/benefits and worst outcomes being greater among risk-reluctant persons. They test these hypothesized differences by constructing risk-reluctance interaction effect variables for each of the cost-benefit and worst-outcome variables. They also hypothesize that the cost-benefit, worst-outcome and risk-reluctance variables exert main effects. Control variables in their model include age, education, gender, income, language, and self-identification as a Quebecer or a Canadian. NMB estimate the parameters in their model using the SPSS logistic regression procedure. Here, we replicate their analysis using SPSS 6.14 and STATA 6.0.

NMB's model has considerable explanatory power -- the estimated R^2 equals .771[5] and the percentage of cases correctly classified is 87.6% (see Table 1, interaction effects model). This latter figure represents a 76.1% reduction in prediction error as compared to a naive guess that all cases are in the modal (vote no) category. The two main effect cost-benefit variables and the four cost-benefit/worst outcome x risk-reluctance interaction variables are statistically significant ($p < .05$) and properly signed given NMB's coding scheme (Nadeau, Martin and Blais, 1999:537-39). However, three other variables of theoretical

interest -- the two worst-outcome main effect variables and the variable measuring general orientations towards risk -- fail to achieve statistical significance.

(Table 1 about here)

In the context of a theoretical framework emphasizing cost-benefit calculations, these latter results are curious. If "normal" economic and linguistic cost-benefit calculations have significant main effects, then why do those associated worst-outcome scenarios fail to do so? If, as NMB argue, perceived economic and linguistic costs and benefits are crucially important for referendum voting, then it is reasonable to suppose that those assigning a sizable probability to a *catastrophic* economic or linguistic outcome if Quebec became sovereign would be more likely to vote no, regardless of their general orientation towards risk. Thus, although (as NMB hypothesize) the effects of such catastrophic outcomes might be stronger among risk-reluctant persons, the finding that worst-outcome perceptions have *no* main effects merits reconsideration.

Also puzzling is the finding that, net of other factors, general orientations toward risk do not exert significant effects. During the referendum campaign, pro-Canada forces repeatedly asserted that a host of misfortunes -- political, as well as economic and cultural -- would befall Quebecers if they endorsed sovereignty. The strategy prompting these sweeping claims was to frighten voters by playing on the lack of solid information regarding what would happen if Quebec were to vote yes. As Young (1998) has argued, several plausible scenarios -- some very bleak -- about the aftermath of a yes majority can be constructed, and it is very difficult to assign probabilities to the likelihood of their occurrence. High stakes and enormous uncertainty thus make it likely that risk-reluctant voters would be more apt to vote no than would risk-acceptant ones.

Why does NMB's model fail to detect the main effects of the worst-outcome and risk-reluctance variables? Given the inclusion of four interaction variables, it is possible that these main effects are obfuscated by multicollinearity.[6] Regressing the two worst-case variables and the general risk-reluctance variable on the other 15 independent variables indicates that the multicollinearity threat to inference is real. The multiple R for the worst-case linguistic variable is .73, and the multiple R's for the worst-case economic variable and the general risk-reluctance variable are even larger -- .80 and fully .93, respectively. Multicollinearity difficulties also are indicated by the determinant of the correlation matrix for the 15

independent variables, which equals only .0008. Given these diagnostics, it is plausible that the main effects of the two worst-case economic and linguistic variables and the risk-reluctance variable will become significant and properly signed in a model that omits the four interaction effects. As Table 1 shows, this is the case. In a main-effects only (MEO) model, the economic and linguistic worst-case variables and the risk-reluctance variable are clearly significant and correctly signed, with their t-ratios being -3.389 ($p < .001$), 3.256 ($p < .001$) and -2.574 ($p < .01$), respectively.

It also is not the case that the NMB model has superior explanatory power. Its estimated R^2 is .771, which is only .009 greater than that for the MEO model. Also, the NMB model correctly classifies 87.6% of the 756 cases, only three more than the MEO model. Moreover, the MEO model achieves its explanatory power with a more parsimonious specification, estimating 13 rather than 17 parameters. The Schwarz model selection statistic (Schwarz, 1978) reflects this parsimony, being smaller (better) for the MEO model (534.21) than for the NMB alternative (545.37).[7]

The failure of the more elaborately parameterized NMB model to exhibit more than extremely trivial gains in explanatory power over its simpler MEO rival, combined with the counterintuitive failures of the worst-case and risk reluctance variables to achieve statistical significance, might prompt one to conclude that the MEO model provides an adequate account of referendum voting. We believe that this conclusion is incorrect; both models omit theoretically important variables.

A Political Choice Model of Referendum Voting

NMB's decision to focus on the perceived costs and benefits of alternative political futures is a sensible *starting point* for specifying a model of voting in a crucial referendum such as the one on Quebec sovereignty. For nearly three decades, the opposing sides in the sovereignty debate had struggled to convince voters that *their* calculus of these costs and benefits was accurate, and that the opposition's tally-sheet amounted to little more than crude scare-mongering. This long-running "battle of the balance sheets" became intense in the run-up to the 1995 referendum, especially in the latter part of the campaign when polls showed a surge in support for sovereignty that made a yes majority an increasingly realistic possibility (see Clarke and Kornberg, 1996).

Although our pre- and post-referendum surveys did not include a measure of general risk orientations,

the pre-referendum survey incorporated large batteries of items to assess the perceived consequences of both passage and rejection of the sovereignty proposal (see Appendix). Some of these items concerned economic benefits and costs, whereas others dealt with various linguistic, political and socio-cultural consequences of a yes or no vote, as these possibilities were being discussed by the opposing forces during the referendum campaign. Also, recognizing that passage of the proposal did not necessarily mean that sovereignty actually would be achieved, we employed an additional twelve "agree-disagree" statements to measure perceived positive and negative consequences of sovereignty *per se*.

A principal components factor analysis reveals that the resulting 26 items were structured by five factors which collectively accounted for 51.5% of the item variance.[8] Based on the patterns of item loadings it was apparent that one of these factors organized perceptions of the benefits of a yes vote in the referendum and the achievement of sovereignty, and two other factors organized perceptions of the costs of a yes vote and the achievement of sovereignty. The two remaining factors structured perceptions of the benefits and costs, respectively, of the failure of the referendum proposal to secure passage. Five factor-score variables based on this analysis constitute the measures of the perceived costs and benefits of alternative outcomes in our referendum voting model.

Using these five factor-score variables also enables us to investigate if voters differentially weight costs and benefits when making decisions. In this regard, some analysts have asserted the existence of a *status quo bias* in major referenda (e.g., LeDuc and Pammett, 1995). A possible explanation for this bias is that voters give more weight to the possible costs than to the possible benefits of change (see, e.g., Martin, 1994). This explanation accords well with findings from studies in experimental economics documenting asymmetric reactions to forecast losses and gains (for reviews of the literature, see Thaler, 1993, 1994). Here, we ascertain if perceived costs of the passage of the referendum proposal and/or the achievement of sovereignty have larger effects than do perceived benefits of these outcomes. However, we also recognize that *rejecting* the referendum proposal has costs and benefits, and we investigate possible differential effects of perceived costs and benefits of this outcome. If there is a general tendency for forecast losses (of any sort) to dominate anticipated gains, then the perceived costs of rejecting the proposal can be expected to outweigh the perceived benefits of rejection. Alternatively, if voters simply privilege a status quo for

whatever reason, then the perceived benefits of rejecting the proposal should outweigh the perceived costs of doing so.

We also contend that referendum balloting is influenced by variables that long have played key roles in models of voting in national and state (province)-level elections. Our argument is based on the assumption that the forecast outcomes of passage or rejection of a referendum proposal on a major political question have large confidence bands in the public mind. Confronted with an ongoing barrage of sharply conflicting claims, voters must decide in a context of high stakes and enormous uncertainty. We contend that they do so by employing readily available information as a convenient cue or heuristic device.[9] In the Quebec case, voters had abundant information about the politicians and parties that were leading the campaigns for and against the sovereignty proposal. The chief proponents and opponents of the proposal were dominant players in the federal and provincial political arenas, with salient track records in government and/or opposition. Surveys indicate that most voters had developed affective, cognitive and evaluative orientations toward these politicians and parties long before the referendum campaign began (e.g., Clarke et al., 1996). These orientations could help them answer the "Who?" and "Whose argument do you trust?" questions that necessarily bulked large given the paucity of reliable information about what the future would hold should Quebec vote yes or no.

We employ summary measures of party leader affect[10] and (federal and provincial) party identification[11] in our political choice (PC) model to tap these orientations toward the pro-Canada and pro-sovereignty parties and party leaders. Although our pre- and post-referendum surveys did not include measures of voters' evaluations of the performance of the Parti Québécois government, the pre-referendum survey did include questions concerning the performance of the governing federal Liberal Party in several important policy areas. Responses to these questions are combined into an overall index of federal government performance.[12] Similar to the NMB specification, our model also includes several control variables, namely age, education, gender, income, language,[13] self-identification as a Quebecer or a Canadian,[14] and measures of national community and regime support.[15] All of these independent variables are measured using data gathered in the pre-referendum survey, and the dependent variable, referendum vote, is measured using data gathered in the post-referendum survey. Since the dependent variable is a

dichotomy (voted yes = 1, voted no = 0), probit analysis (Long, 1997:ch. 3) is used for estimating model parameters.

The analysis reveals that all five of the cost-benefit variables have statistically significant and properly signed coefficients (Table 2). Voters with high scores on the variables measuring the benefits of a yes majority/sovereignty and costs of no majority were more likely to vote yes than were those with lower scores on these variables. And, voters with high scores on the variables measuring the costs of a yes majority/sovereignty and the benefits of a no majority were less likely to vote yes than were persons with lower scores on these variables. Although the cost-benefit perceptions behave as anticipated, a Wald test (Kmenta, 1986:492-93) clearly fails to reject the null hypothesis of the equality of the coefficients for the costs and benefits of a yes majority/sovereignty (P^2 = 0.00, df = 1, p = .978). A Wald test also fails, albeit less decisively, to reject the null hypothesis of the equality of the coefficients for the costs and benefits of a no majority (P^2 = 2.41, df = 1, p = .121). Thus, the statistical evidence does not support hypotheses regarding asymmetric effects of perceived costs and benefits of yes or no majorities.

The political choice conjecture fares much better. Net of the effects of the five cost-benefit and 12 additional control variables, feelings about pro-sovereignty and pro-Canada party leaders, federal party identification, and evaluations of the performance of the federal government have statistically significant and sensibly signed coefficients. Controlling for all other factors, the more positive voters' feelings were about pro-sovereignty party leaders, the more likely they were to vote yes, and the more positive their feelings were about the pro-Canada party leaders, the more likely they were to vote no. And, persons who identified with the pro-sovereignty Bloc Québécois were more apt to vote yes than were non-identifiers or persons who identified with one of the pro-Canada parties. Persons who positively evaluated the performance of the governing (pro-Canada) federal Liberal Party were less likely to vote yes than were persons who made negative evaluations. The PC model has an excellent fit with the data; the estimated R^2 is very high, .938, and the percentage of cases correctly classified is fully 96.4 (a 91.4% proportional reduction in error).

(Table 2 about here)

The results that both the cost-benefit and the electoral behavior variables contribute to explaining voting in the sovereignty referendum are reinforced by encompassing tests (Davidson and MacKinnon, 1981;

see also Mizon and Richard, 1986). These tests pit a cost-benefit model (i.e., a model that includes the five cost-benefit variables and the several control variables but omits the party leader, party identification and government performance variables) against an electoral behavior model (i.e., a model that includes the five electoral behavior variables and the several control variables but omits the five cost-benefit variables). These rival non-nested models have considerable explanatory power, with estimated R^2's of .919 and .887, respectively. However, the encompassing tests show that the cost-benefit model encompasses the electoral behavior model ($t = 5.850$, $p < .001$), and that the electoral behavior model encompasses the cost-benefit one ($t = 5.808$, $p < .001$). The implication of these results is that both the cost-benefit and the electoral behavior variables contribute to the explanation of referendum voting. A model (such as the PC model) that jointly nests these two classes of variables is superior to either of the non-nested alternatives.[16]

But, how strong are the effects of the electoral behavior variables? Since the probit model is non-linear, its coefficients do not have straightforward interpretations similar to those produced by an OLS regression analysis. However, one may gauge the strength of a variable of interest by calculating the probability of voting yes for different values of that variable while holding other variables constant (see, e.g., King, Tomz and Wittenberg, 1999; Long, 1997: ch. 3).[17] Here, we assume a hypothetical voter who is a Francophone woman in the 34-47 age group (the average age of all voters is 43.4 years), and we manipulate the values of the electoral behavior variables, while setting her scores on other variables to their mean values.

Figure 1 illustrates that the probability of voting yes rises sharply as feelings about the sovereignty leaders (Lucien Bouchard and Jacques Parizeau) become increasingly positive. For example, if our hypothetical voter has feelings about the sovereignty leaders that are one standard deviation below average, her probability of voting yes is only .19. However, if she has average feelings about the party leaders, her probability of voting yes is .53, and if her feelings are one standard deviation above the mean, the probability is fully .85. The effects of feelings about the two pro-Canada leaders (Jean Chrétien and Daniel Johnson) also are substantial, with the probability of voting yes falling from .70 if the voter's feelings about these leaders are one standard deviation more negative than average leaders to .33 if her feelings about them are one standard deviation more positive than average.

(Figure 1 about here)

Feelings about the party leaders continue to matter if the cost-benefit variables take on more extreme values. If one assumes that the perceived benefits of a yes majority/sovereignty are one standard deviation above average, then the probability of voting yes increases from .49 to fully .97 for the voter if her feelings about the sovereignty leaders are one standard deviation below and one standard deviation above average, respectively (Figure 2A). If the perceived benefits of a yes majority/sovereignty are assumed to be one standard deviation below average, then the comparable probabilities are .04 and .55, respectively. Similarly, if one assumes that perceived benefits of a no majority are one standard deviation above average, the probability of a yes vote falls from .66 if the voter's feelings about the sovereignty leaders are one standard deviation above average to .06 if her feelings about these leaders are one standard deviation below average (Figure 2B). If one assumes that her perceived benefits of a no majority are one standard deviation below average, then the comparable probabilities that she would vote yes are .95 and .39, respectively.

(Figure 2 about here)

Impressive shifts in the probability of voting yes also are evident when the values of other electoral behavior variables are manipulated. Two brief examples illustrate this point. If the voter in our scenario has average federal government evaluation scores, then her probability of voting yes is .54. The probability falls to .41 if her evaluations are one standard deviation above average, and rises to .68 if her evaluations are one standard deviation below average. Finally, federal party identification is important. With all other variables set at their means, the voter has a .55 probability of voting yes if she does not identify with a federal party. If she identifies with the sovereignist BQ, that probability climbs to .68. But, if she identifies with one of the pro-Canada parties, it falls to only .03. Although various other scenarios might be considered, these examples demonstrate that the electoral behavior variables are substantively, as well as statistically, significant in our model of referendum voting.

Conclusion: Referendum Voting as Political Choice

In their recent article, NMB make the important point that much remains to be learned about the determinants of voting behavior in high-stakes referenda. They argue that voters' perceptions of the costs and benefits of alternative outcomes and their general risk orientations have sizable effects on voting behavior in events such as the October 1995 Quebec sovereignty referendum. Above, we have argued that, although

NMB's general case on behalf of cost-benefit and risk-reluctance variables has merit, their model is at once over- and under-parameterized. An analysis of their data demonstrates that their interaction-effects model is beset by multicollinearity difficulties. A simpler main-effects model has comparable explanatory power, and it removes the puzzling anomalies that perceptions of catastrophic economic and cultural-linguistic outcomes and general risk orientations do not exert main effects on referendum voting.

We also believe that the NMB model is theoretically problematic because of the variables it omits. In an analysis of what we term a political choice model of referendum voting, we control for the effects of cost-benefit perceptions and several other variables, and we include voters' feelings about party leaders, national and state (province)-level party identification, and evaluations of governmental performance. Consonant with NMB's hypothesis, cost-benefit perceptions of the success and failure of the referendum proposal remain influential in the political choice model. However, contrary to findings in the experimental economics literature, we do not find that potential losses are weighted more heavily than potential gains. Also, although the relative magnitude of the coefficients is consistent with the conjecture that referendum voters privilege the benefits of the status quo, this hypothesis is not supported at conventional levels of statistical significance. The political choice model further shows that feelings about party leaders, party identifications, and evaluations of governmental performance all make statistically significant and substantively important contributions to an explanation of balloting in the 1995 Quebec sovereignty referendum.

We contend that the importance of these variables stems from the fact that referenda, such as the one on Quebec sovereignty, typically offer sharply contested, ill-defined visions of alternative political futures. The electorate is subjected to a barrage of conflicting, largely unsubstantiated, claims about costs and benefits of what will happen if they accept or reject the referendum proposal. Consonant with recent literature in political psychology, we argue that in such situations of great uncertainty, people rely on readily available information to help them make up their minds. One source of relevant information concerns the politicians and parties who are the chief proponents and opponents of a referendum proposal. Voters use knowledge about these highly salient political actors as convenient heuristic devices. They resolve their decision-making problem not only by attempting to assess the merits of rival claims, but also by considering who articulates them.

Our core argument, then, is that referendum voting should be conceptualized and modeled as a type contextually embedded *political* choice. Decisions on highly significant issues such as Quebec sovereignty, the approval of the Maastricht treaty, devolution of constitutional authority to Scotland and Wales, the Irish referendum on the Good Friday Accords and, perhaps in the near future, a British referendum on a single European currency, are not abstract exercises in constitutional design subject to precise cost-benefit calculations. Since voters lack the information needed to make such calculations, they use heuristics provided by the political context in which the referendum occurs. In so doing, variables that affect choices in national and sub-national elections come into play. The importance of these variables can be expected to vary with the importance of the decision to be made and voters' need for heuristics. In situations where the stakes are not momentous and the consequences of alternative outcomes are relatively clear, e.g., state-level referenda on automotive insurance rate increases, local-level referenda on school bonds, the need for heuristics is modest, and the impact of electoral behavior variables will be weak. However, in cases such as the Quebec sovereignty referendum, where the future contours of a polity are "on the line" and uncertainty abounds, the need for heuristics is substantial, and the effects of the electoral behavior variables will be strong. Models that incorporate these variables, as well as the cost-benefit perceptions and risk orientations emphasized by NMB, can provide powerful explanations of a form of collective decision-making that may shape not only the content of major public policies, but the very structure, of democracies in the 21st century.

ENDNOTES

1. Re: the literature on referenda, see, *inter alia*, Butler and Ranney (1978); Cronin (1989); Franklin, Marsh and McLaren (1994); Franklin, van der Eijk and Marsh (1995); Hahn and Kamienieki (1987); Magleby (1984); Petterson, Jenssen and Listhaug (1996); Pierce, Valen and Listhaug (1983); and van der Eijk and Franklin (1996). On referenda and referendum voting in Canada, see Boyer (1992); Clarke and Kornberg (1994, 1996); Jeffrey (1993); Johnston, Blais, Gidengil and Nevitte (1996); LeDuc and Pammett (1995); McRoberts and Monahan (1993); Nadeau, Martin and Blais (1999); Russell (1993); Young (1998).

2. In addition to the works cited in note 1 above, other recent studies of factors affecting support for Quebec sovereignty include, *inter alia*, Blais and Nadeau (1992); Blais, Martin and Nadeau (1995); Kornberg and Clarke (1992); Martin (1994); Nadeau and Fleury (1995). The historical development of the sovereignty movement is analyzed in McRoberts (1988).

3. We wish to thank Richard Nadeau, Pierre Martin and Andre Blais for kindly sharing their data and SPSS code with us. They bear no responsibility for the analyses and interpretations of these data presented here.

4. Random probability samples of the Quebec electorate were interviewed in the two weeks before and immediately after the October 30, 1995 referendum. The post-referendum survey includes a panel of respondents (weighted N = 834) who participated in the pre-referendum survey. Fieldwork was performed by Canadian Facts under the direction of Senior Project Director, Peter Wearing, using a CATI system. Funding for the surveys was provided by NSF grant (SBR-9514385). Copies of the survey instruments may be downloaded from the authors' web site: www.psci.unt.edu/hclarke/

5. The estimated R^2 statistic used by NMB is calculated as $P^2/(P^2 + N) * 1.72$ where P^2 is calculated using the model log-likelihood, N is the sample size, and 1.72 is an adjustment proposed by Hagle and Mitchell (1992). See Nadeau, Martin and Blais (1999):534, Table 2.

6. By inflating standard errors and, hence, deflating t-ratios, multicollinearity poses the threat of type-II errors. Multicollinearity also can produce implausible signs and values for estimated parameters. Two simple tests for multicollinearity are: (i) regress each independent variable on the remaining independent variables. If any of the R^2's is close to unity, this indicates a serious multicollinearity problem. (ii) Calculate the determinant of the correlation matrix for the independent variables. This determinant is bounded between 0 and 1, and values close to 0 indicate multicollinearity difficulties. See Kementa (1986:438-39).

7. The Schwarz criterion is calculated as: -2 * model log-likelihood + number of parameters * ln(N). The Akaike information criterion (AIC) (Akaike, 1974), which imposes a smaller penalty for rich parameterizations, marginally favors NMB's model over the MEO model, the AIC values being 466.70 and 474.04, respectively.

8. Details concerning the factor analysis results are available upon request.

9. There is a large literature concerning how voters use heuristic devices to simplify decision-making tasks. See, e.g., Iyengar and Kinder (1987); Lodge, Steenbergen and Brau (1995); Lupia (1994); Lupia and McCubbins (1998); Mutz, Sniderman and Brody (1996); Page and Shapiro (1992); Popkin (1991); Sniderman, Brody and Tetlock (1991); Zaller (1992).

10. Party leader affect is measured using 100-point thermometer scales. Respondents are asked to think of a thermometer scale ranging from 1 to 100 with 50 explicitly designated as a neutral point. Scores higher than 50 indicate increasing "warmth" and scores less than 50 indicate increasing "coolness." To avoid collinearity difficulties, we average the scores for the two sovereignty leaders, Lucien Bouchard (Bloc Québécois) and Jacques Parizeau (Parti Québécois). We also average the scores for the two pro-Canada leaders, Jean Chrétien (federal Liberal Party) and Daniel Johnson (provincial Liberal Party). Missing data are recoded to mean values.

11. Federal party identifications are scored: Bloc Québécois = +1, non-identifiers and "don't knows" = 0, other federal party identifications = -1. Provincial party identifications are scored: Parti Québécois = +1, non-identifiers and "don't knows" = 0, other provincial party identifiers = -1.

12. Respondents were asked to evaluate "how well the federal government is doing" in each of 10 policy areas. Responses were scored: "very well" = 2, "fairly well" = 1, "not very well" = 0, and summed to produce a federal government performance index ranging from 0 to 20.

13. The socio-demographic variables are: (i) age cohort - six age cohorts corresponding to important periods in post-World War II Quebec political history are constructed. For purposes of the probit analysis, the oldest group (persons over 65) is treated as the reference category. (ii) education - a five-category variable ranging from elementary school or less (scored 1) to completed college or university (B.A., B.Sc. or more) (scored 5). (iii) gender - men are scored 1 and women are scored 2. (iv) language community - this variable is based on responses to a question about language usually spoken at home. French is scored 1, and English and other languages are scored 0. (v) income - an 11-category variables ranging from annual family income less than $10,000 per year (scored 1) to over $100,000 per year (scored 11). "Don't knows" and "refusals" for the income variable are recoded to the median category (5).

14. Respondents were asked if they generally thought of themselves as a Canadian, a Quebecer or what? (The terms "Canadian" and "Quebecer" were rotated randomly across the surveys). Respondents then were asked how strongly "Canadian" or "Quebecer" they felt. Responses to these two questions are used to employed to construct a variable ranging from very strong Canadian (+3) to very strong Quebecer (-3). Persons who did not think of themselves as Canadians or Quebecers or said they "didn't know" were scored 0.

15. Support for the national political community and regime was measured using 100-point thermometer scores, with 50 explicitly designated as the neutral point. National community support is measured using feelings "in general about Canada." National regime support is the mean thermometer score for feelings about the parliament in Ottawa, the civil service in Ottawa, and the courts and the judicial system. Missing data are recoded to mean values.

16. Despite estimating five more parameters, the Schwarz model selection criterion favors the PC model over the cost-benefit alternative, the SC values being 295.019 and 336.387, respectively.

17. Voting probabilities are calculated using the CLARIFY ADO routines written for STATA 6.0 by Tomz, Wittenberg and King (1999). See also King, Tomz, and Wittenberg (1999).

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Table 1

Interaction (NMB) and Main Effects Only (MEO) Models of Voting
in the 1995 Quebec Sovereignty Referendum

	Models					
	Interaction Effects			Main Effects Only		
Predictor Variables	b	s.e.	t	b	s.e.	t
Cost-Benefit - Economy	3.110	0.426	7.306****	2.271	0.244	9.298****
Cost-Benefit - Language	1.392	0.395	3.528****	0.803	0.272	2.956****
Economic Crisis if Yes	-0.608	0.676	-0.899	-1.523	0.452	-3.389****
French (English) could Disappear	0.503	0.599	0.840	1.320	0.405	3.256****
Interaction Effects:						
Risk Reluctance *						
Cost-Benefit (Economy)	-1.325	0.527	-2.515***	x	x	x
Cost-Benefit (Language)	-1.162	0.536	-2.168**	x	x	x
Economic Crisis if Yes	-1.698	0.937	-1.812**	x	x	x
Language Could Disappear	1.621	0.817	1.984**	x	x	x
Risk Reluctance	-0.250	0.611	-0.409	-0.660	0.256	-2.574***
Identity: Quebecker	1.820	0.282	6.466****	1.774	0.273	6.488****
Canadian	-0.375	0.447	-0.838	-0.570	0.440	-1.302*
Language	-1.472	0.898	-1.640*	-1.685	0.947	-1.779**
Age	-0.103	0.437	-0.236	-0.171	0.438	-0.399
Gender	-0.351	0.262	-1.339*	-0.401	0.255	-1.569*
Education	0.118	0.641	0.184	0.269	0.624	0.432
Household Income	-1.105	0.465	-2.373***	-1.124	0.449	-2.504***
Constant	0.458	0.592	0.773	0.708	0.486	1.457*
Estimated R^2 =		.771			.762	
% correctly classified =		87.6			87.2	
Proportional Reduction in error (Lambda) =		.761			.753	
Log-likelihood P^2 = 614.151, df = 16, p < .001				598.807, df = 12, p < .001		
N = 756						

x - variable not included in model

**** - p ≤ .001; *** - p ≤ .01; ** - p ≤ .05; * - p ≤ .10; one-tailed test

Table 2

Political Choice Model of Voting in the 1995 Quebec Sovereignty Referendum, 1995 Pre-Post Referendum Panel Survey

Predictor Variables	*b*	s.e.	t
Age cohort: 18-24	1.580	0.540	2.924***
25-33	1.107	0.498	2.224**
34-47	0.661	0.487	1.355*
48-56	1.064	0.561	1.896**
57-65	0.016	0.604	0.027
Educational Level	0.194	0.130	1.490*
Gender	-0.092	0.257	-0.356
Annual Family Income	-0.042	0.056	-0.764
Language (French v. Other)	0.749	0.476	1.574*
Canadian-Quebecker Identity	-0.139	0.103	-1.349*
National Community Support	-0.024	0.008	-2.834***
National Regime Support	-0.008	0.010	-0.812
Federal Government Performance	-0.101	0.045	-2.250**
Positive consequences of Yes vote and sovereignty	0.944	0.184	5.128****
Negative consequences of Yes vote and sovereignty: (1)	-0.466	0.171	-2.717***
(2)	-0.485	0.152	-3.188****
Positive consequences of No vote	-0.690	0.162	-4.261****
Negative consequences of No vote	0.392	0.168	2.330***
Federal Party Identification	0.346	0.169	2.045**
Provincial Party Identification	0.031	0.168	0.187
Federal Party Leaders: Chrétien and Johnson	-0.020	0.010	-2.056**
Sovereignty Party Leaders: Bouchard and Parizeau	0.035	0.010	3.482****
Constant	0.009	1.020	0.009

Estimated R^2 = .938
% correctly classified = 96.4
Proportional reduction in error (Lambda) = .914
Log-likelihood P^2 = 934.95, df = 22, $p < .001$
N = 781

**** - $p \leq .001$; *** - $p \leq .01$; ** - $p \leq .05$; * - $p \leq .10$; one-tailed test

Appendix

Assessments of the Consequences of Alternative Referendum Outcomes
and the Occurrence of Sovereignty, 1995 Pre-Referendum Survey

	Agree	Disagree	Don't Know
If the referendum proposal passes			
1. The federal government will accept Quebec's decision and negotiate an agreement that will lead to a politically sovereign Quebec.	60%	30%	10%
2. Businesses will leave Quebec and a lot of people will lose their jobs.	38	58	4
3. Aboriginal Peoples, like the Cree and Inuit, will try to take control of a large part of Quebec.	39	52	8
4. The federal government will enter into an economic partnership with a politically sovereign Quebec.	65	27	9
5. The value of the Canadian dollar will decline sharply.	51	42	7
6. Nothing will be settled because the federal government won't accept Quebec's decision.	35	56	9
7. The language and culture of Anglophone Quebeckers will eventually disappear.	14	81	5
If the referendum proposal is defeated			
A Non vote...			
1. will strengthen the Quebec economy.	33	61	6
2. will end uncertainty about the constitution.	25	68	8
3. will mean that Québécois language and culture will eventually disappear.	24	73	3
4. will mean that Quebec will lose its bargaining power to get a new constitutional deal with the rest of Canada.	35	59	6
5. Will protect the jobs and economic opportunities of Quebeckers.	42	52	6
6. Will mean that Quebec will lose a lot of political influence in the federal system.	38	59	4
7. the Québécois nation will be humiliated in the eyes of the world.	24	73	3
If sovereignty occurs			

1. Quebeckers will lose their access to Canada's important social programs, like health care and unemployment insurance.	37	55	9
	Agree	Disagree	Don't Know
2. For the first time Quebec will take its rightful place in the community of nations.	62	33	6
3. The federal government will make a sovereign Quebec pay a big share of Canada's national debt.	74	21	5
4. Culture and the arts will flourish in a sovereign Quebec.	61	31	8
5. There will be more jobs and economic opportunities for all Quebeckers.	32	62	6
6. Québécois will finally become "maître chéz nous."	65	32	3
7. Minorities will lose their protection under the constitutional Charter of Rights and Freedoms.	24	69	8
8. Canada will refuse to let Quebec join NAFTA, the North American Free Trade Agreement.	33	58	10
9. The Canadian Armed Forces will no longer protect Quebec.	52	38	10
10. Quebec will continue to elect members to the House of Commons.	22	69	9
11. Quebeckers will lose their rights to Canadian citizenship and a Canadian passport.	56	37	7
12. Quebec will continue to use the Canadian dollar.	58	32	11

Note: weighted pre-referendum sample, N = 1005

Figure 1. Probability of Voting Yes in Sovereignty Referendum by Party Leader Affect

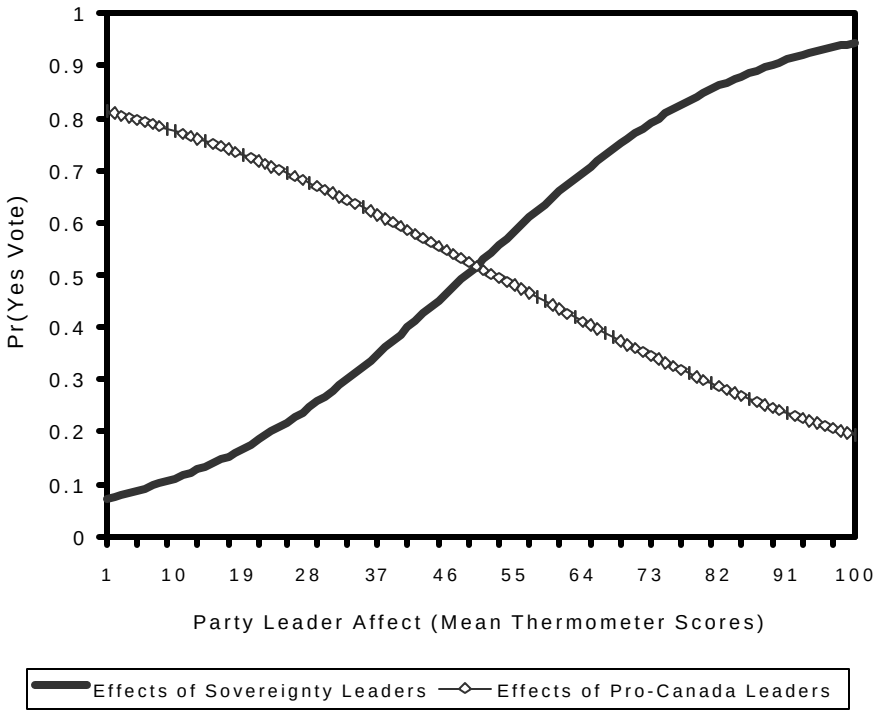

Figure 2A. Probability of Voting Yes by Sovereignty Leader Affect Controlling for Perceived Benefits of Sovereignty

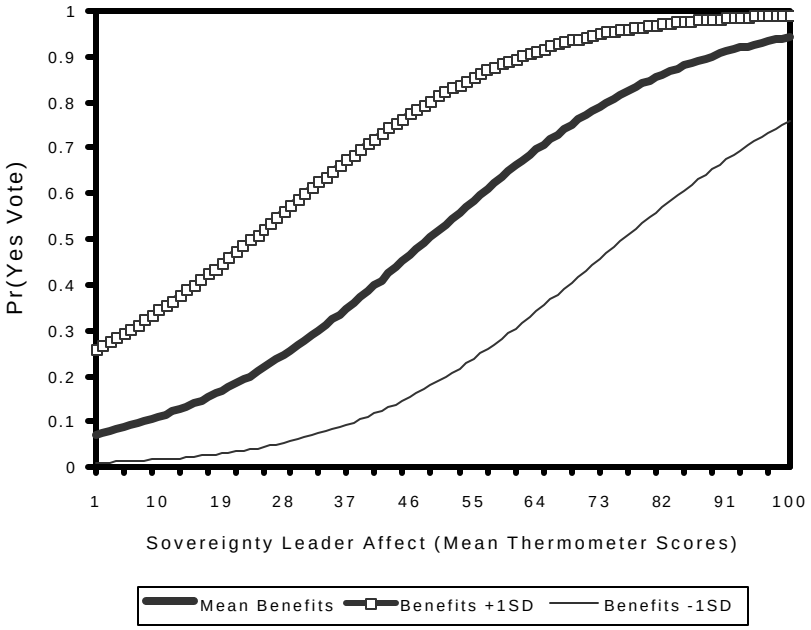

Figure 2B. Probability of Voting Yes by Sovereignty Leader Affect Controlling for Perceived Benefits of Federalism