

Information Heterogeneity, Complexity and the Vote Calculus

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Abstract

This paper uses data from the Australian, British, Canadian, New Zealand, and U.S. election studies (21 studies in total) to examine the effect of political information on the vote calculus. In doing so, two core questions are addressed. First, do differences in political information affect how an individual arrives at his or her vote choice? The expectation is that there will be a positive relationship between information level and the number of factors considered in the vote calculus. Secondly, this study tests the 'complexity thesis' that contends that inter-country and intra-country variation in the complexity of the electoral context, for example changes in the number of competitive parties or political party leadership, will be positively correlated with the magnitude of information effects in the decision process.

Since the earliest days of the behavioral revolution, researchers have probed, picked, and prodded ‘the’ voter in an effort to find out what prompts individuals to choose the candidates or parties they elect. This research takes issue with the notion of ‘the’ voter as a homogenous individual instead focusing on voter heterogeneity and the effect variation in political information can have on the decision process. The aim is to demonstrate vote calculus differences at two levels. The first considers the individual. The study that follows asks whether variation in levels of political information affects the vote calculus. More specifically this research explores the relationship between the number of factors considered in the decision calculus and level of political information. The second focus of this research is to examine how inter-country and intra-country variations in electoral complexity affect the information-considerations relationship. Each of these hypotheses is developed in more detail below.

The objective of this study is to add to existing literature by undertaking an in-depth examination of the information-considerations relationship within the decision process, moving beyond single country or election analyses to span a nearly 20 year period across five countries. Employing a novel methodology (see below) that takes into account information heterogeneity in the factors incorporated into the decision process from the onset, these findings advance our understanding of the influence political information has on the decision process and the contexts within which we might expect to find the greatest effect. However, prior to engaging in the research at hand, it is essential to lay out the ‘road map’ generated by earlier works.

Hypotheses and Related Research

H1: There will be a positive relationship between an individual’s information level and the number of factors considered in formulating his or her vote choice.

Direction for this research can be drawn from insights developed by the pioneers of the behavioral revolution. For example, as early as 1954 the relevance of voter heterogeneity was highlighted in the work of Bernard Berelson and his colleagues. According to Berelson et al. there:

... is an assumption that the population is homogeneous socially and should be homogeneous politically; that everybody is about the same in relevant social characteristics; that, if something is a political virtue (like interest in the election), then everyone should have it; that there is such a thing as “the” typical citizen on whom uniform requirements can be imposed. The tendency in democratic literature to work with an image of “the” voter was never justified. (Berelson et al. 1954, 313).

In line with Berelson et al.’s observations, this paper takes issue with the assumption of voter uniformity and explores how variation in political information explains differences in the vote decision process for otherwise similar individuals. In particular this work aims to advance our understanding of the role information heterogeneity plays in the decision process.

Herbert Simon's work provides further support for expectations of information heterogeneity affecting the decision process. As Simon explains, "...the task is to replace the global rationality of economic man with a kind of rational behaviour that is compatible with the access to information and the computational capacities that are actually possessed ... in the kinds of environments in which such organisms exist" (Simon 1955, 99). This reference to computational capacities and access to information fit well with the work at hand. Extending Simon's observation to the electoral arena would suggest that individuals with more information and by extension, the capacity to employ this information within the decision process, should differ in regards to their vote calculus relative to otherwise similar individuals lacking such resources.

Theoretical support for this hypothesis can also be drawn from the work of Angus Campbell and his colleagues (1960). In their seminal book *The American Voter*, the authors refer directly to the influence of information heterogeneity on the vote calculus:

[i]f someone has little perception of the candidates, of the record of the parties, of public issues or questions of group interest, his attitudes toward these things may play a less important intervening role between party identification and the vote. Presumably, among people of relatively impoverished attitude who yet have a sense of partisan loyalty, party identification has a more direct influence on behavior than it has among people with a well-elaborated view of what their choice concerns. Like the automobile buyer who knows nothing of cars except that he prefers a given make, the voter who knows simply that he is a Republican or Democrat responds directly to his stable allegiance without the mediating influence of perceptions he has formed of the objects he must choose between (Campbell et al. 1960, 136).

This observation suggests that individuals with 'relatively impoverished attitudes' are apt to employ fewer considerations compared to individuals with a broader understating of the political environment. Indeed this observation suggests that we should expect the decision process to vary as a function of awareness and information.

Although these classic works offer strong arguments favouring heterogeneous vote models there have been surprisingly limited efforts to account for heterogeneity in much of the voting literature that followed. In fact, more than 30 years passed before Douglas Rivers directly addressed the issue of voter heterogeneity, offering evidence of the misguided implications of assuming homogeneity (Rivers 1988). In an effort to test the impact of voter heterogeneity, River's employs data from the 1980 American National Election Study to demonstrate that allowing for heterogeneous vote models alters the relative importance of considerations within the decision set according to individual preferences. While River's study does not focus on political information per se, his findings support the underlying thesis of this research that focuses on the effect of a heterogeneous voting populace. Building upon River's findings, this study contends that the 'preferences' that River considers are influenced by a voter's level of political information. However, unlike River's use of a rank-ordering of preferences to adjust the weight allotted to considerations, this study focuses on inter-group differences in the number of considerations drawn into the decision process according to a voter's level of political information.

In addition to the observations highlighted above, this research is also informed by arguments put forth within the study of political heuristics (Althaus 1998; Bartels 1996; Cutler 2002; Gidengil et al. 2004; Lau and Redlawsk 2006, 2001; Lupia 1994; Lupia and McCubbins 1998; Popkin 1991; Sniderman et al. 1991; Zaller 1991). For example in their exemplary study of *Reasoning and Choice*, Paul Sniderman and his colleagues contend that “[i]t does not make sense to ask how the public as a whole reasons about political choices unless one is prepared to assume that people by and large make up their mind the same way – that is, in weighing a choice, that people take account of more or less the same considerations ...” (Snidermann et al. 1991, 9). While their focus is on the use of political heuristics to compensate for lack of political sophistication, their findings point to the possibility that the number of considerations employed vary according to political sophistication (Snidermann et al. 1991).¹

Fred Cutler’s study of voting heuristics lends further support to the arguments presented here. In his assessment of the relationship between ‘preparedness for policy voting’ and the use of ‘shortcuts’ in the vote calculus, Cutler finds that “more sophisticated voters do not transcend the use of shortcuts such as their affective orientations to parties - they simply combine more decision criteria in a broader and deeper net than the less well informed” (Cutler 2002, 483). Again while Cutler’s focus was directed towards the use of political heuristics, his findings support the current expectations; that the more informed will take into account a greater number of factors in their decision calculus (Cutler 2002).²

H2: Increased complexity within the decision environment will strengthen the relationship between an individual’s information level and the number of factors considered in formulating his or her vote choice.

The work of Simon (1955; 1978) also serves as a foundation for this second hypothesis. According to Simon’s ‘bounded rationality’ thesis, actual behavior is affected by the interaction between cognitive resources and the task environment (Simon 1978). If so, the impact of an increase in the complexity of the task environment should depend on the cognitive resources that an individual has at his or her disposal. As the complexity of the decision environment increases, the information-considerations relationship is expected to strengthen because the more informed are able to draw upon a broader array of factors to deal with the increased complexity. While it is possible that the less informed may also increase the number of factors taken into account as the decision environment becomes more complex, the argument presented here contends that group differences in ‘computational capacities’ and understanding of the task environment will limit the factors available to low information individuals relative to their more informed counterparts.

More specifically this second hypothesis contends that inter-country and intra-country variation in the complexity of the context in which the vote decision is made will affect the magnitude of information effects in the decision process. For example, in the case of inter-country variations, differences in the number of political parties are expected to affect the strength of the information-considerations relationship. As the number of parties increases and the vote choice becomes more complex, differences across information groups should become more pronounced (Gordon and Sagura 1997). As

such, the two- party configuration in the U.S. is expected to yield much weaker evidence of information effects than the multi-party Canadian or New Zealand environments, all else being equal. Similarly, intra-country changes in the number of parties across time should also produce greater information effects. For example, the 1993 Canadian election and the 1996 New Zealand election are expected to yield greater informational effects as a result of an increase in the number of choices available to voters.

Multi-level governance is also expected to increase differences in the vote calculus across information cohorts. Under federal systems the assignment of government responsibility is less clear, which makes for a more complex task environment (Anderson 2006; Cutler 2002). The expectation is that this will result in increased variation across information groups as the more informed will be better equipped to cope with the increased complexity of the decision environment.

Electoral system design is a third factor that could affect the difficulty of the vote choice. The increased probability of coalition governments under proportional systems complicates the assignment of responsibility and increases the cost of calculating each possible coalition outcome (Downs 1957; Norris 2002). In addition the increased complexity of the vote choice itself where an individual must cast multiple ballots (e.g. New Zealand's mixed member proportional system) or must rank order his or her vote preferences (e.g. Australia's preferential ballot) is likely to increase the complexity of the vote calculus. A similar intra-country effect should be observable in New Zealand with the transition to a mixed member proportional system. The increased complexity associated with the 1996 transition to a new voting system is expected to yield greater variance across information cohorts as the increased difficulty of the vote environment imposes greater informational demands.

Finally, the appearance of new leaders is also expected to result in greater gaps across information cohorts (Berggren 2001; Rahn, Aldrich and Borgida 1994). For example, an election where there is a change in leadership, particularly in the case of the incumbent party (e.g. the 1996 Australian election; the 2000 U.S. election) will make it harder for less informed voters to rely on leadership as a cue. Combining these criteria, it is possible to rank order elections in regards to complexity based on differences across countries and elections (see below).

Data and Methodology

In order to test the hypotheses outlined above, survey data from the 1996, 2001 and 2004 Australian National Election Study, the 1992, 1997, 2001 and 2005 British Election Study, the 1988, 1993, 1997, 2000, 2004 and 2006 Canadian Election Study, the 1996, 1999, 2002 and 2005 New Zealand Election Study, and the 1988, 1992, 1996 and 2000 American National Election Study are used for the cross-national and cross-time analyses.³ These countries and elections have been chosen for two main reasons. First, the institutional diversity among these countries, such as single member plurality electoral systems versus systems of proportional representation, federal versus non-federal states, two-party versus multi-party systems and so forth, allows for assessment of how institutional complexity influences the information-considerations relationship.⁴ Secondly, the selection of these data reflects the inclusion of key survey questions, such

as questions tapping level of political information, that are required to conduct the analyses presented here. The cross-time comparison offers further insight into temporal effects, including changes due to the emergence of new political parties, change in leadership, and so forth.

In order to model vote choice, a ‘bloc recursive’ design is adopted. This is similar to the modeling used by both Miller and Shanks (1996) and Blais et al. (2002). The idea behind the ‘bloc’ approach is that factors influencing the vote decision are entered in stages based on their proximity to the actual vote. By adding factors in sequence a more accurate effect of each variable is estimated that takes into account the influence of earlier considerations. For example, if party identification and leader evaluations were entered into the model at the same time, the total effect of party identification would be underestimated because part of its effect is mediated by leader evaluations. The order of the blocs used for this research begins with socio-demographic considerations, followed by underlying values and beliefs, party identification, economic considerations, issue positions, evaluation of government performance, leader evaluations, and finally strategic considerations. This is the sequence used by Blais et al. (2002). As they point out (and as argued in this paper), not all voters will pass through each stage of the causal chain, but this sequence provides a means of tapping a heterogeneous decision process while taking into account the factors most likely to influence the decision.⁵

Binary probit regression is used to model vote choice. The dependent variable is coded ‘1’ for an incumbent vote and ‘0’ for non-incumbent. The decision to employ a binary specification exclusively, as opposed to multinomial probit in the case of multi-party systems, is due to the large number of ‘empty’ cells produced by the latter. In testing cases where multinomial probit was applicable (results not reported), in some cases more than half of the cells were empty by the later stages of the models. As such, binary probit is used even where multinomial probit may be applicable (see Alvarez and Nagler 1998 and Dow and Endersby 2004 for the implications of employing alternative models under a multi-party context).

Due to survey variations as well as country-specific factors relevant to the vote, models were run separately for each country and election year (as opposed to pooling the data). Within-country analyses also help offset differences in questions asked across countries when testing key variables of interest. For example, in the case of information, differences in the number, type and difficulty of the questions asked make direct comparison between countries and across time somewhat difficult.

To create the information groups, scales based on multiple survey questions tapping factual political knowledge were generated and then used to divide the sample into three approximately equal groups for each election.⁶ The decision to employ a three division group over the more commonly used dichotomous division (see for example Bartels 1996; Bittner 2007) reflects a belief that the latter conceals important differences across information groups. This is evident in John Zaller’s (1992) analysis of low, moderate and high information groups which reveals important distinctions, especially in regards to the moderate group. According to Zaller’s findings, it is these moderately informed individuals who are the most likely to be persuaded by political campaign messages. Zaller contends that this is because these moderately informed individuals are more apt to receive the message relative to their low information counterparts as well as more likely to accept the message compared to more informed individuals. This three

group distinction is found to be significant in highlighting these effects that would otherwise be obscured under a dichotomous division.

A second reason for employing a three group division follows directly from the objectives of this research. The focus of this study is on the effect of information heterogeneity as it relates to the decision process. Incorporating a dichotomous division limits the breadth of information effects. For example, using the more typical grouping of high and low information based on the median score on an information scale would lead to distributions, in most cases, where low-information individuals would have correctly answered more than half of the knowledge questions. It seems reasonable to argue that such an individual does not represent a low-information voter.

Following the examination of information differences in the number of factors used in the vote calculus, differences across countries and elections are compared. According to the complexity thesis, not all elections will result in large informational group differences. The information-considerations gap should be most evident in cases where the context of the decision is more complex. In order to test this, complexity scores were created for each election. In total three scores were produced for each election. The first is the inter-country complexity score. To create this measure countries were assigned a score of '1' for federalism (Canada and the U.S. with Australia assigned a half point for a mixed system), multi-party competitions (all but the 2000 and 1988 U.S. elections⁷), and non-single member plurality voting systems (Australia and New Zealand).

The second complexity measure is based on intra-country variation. Elections where there was a change in the number of *effective* parties relative to the previous election, a change in the electoral system, or a change in the leader of the governing party were all assigned one point.⁸ Elections where there was a change in the leadership of the opposition party was coded a half point.⁹ Finally, the third complexity measure combines the scores of the first two to generate a total complexity score. Summing the points for each complexity measure provides a means of rank ordering each election according to complexity (see table 2 below). Using these measures, along with the informational differences in the number of factors considered in the decision process, it is then possible to estimate how informational differences in the factors incorporated into the vote choice are mediated by electoral complexity. This is done two ways: first, by using a two-tailed t-test to compare the mean information-considerations gap controlling for low and high electoral complexity and second, by using an ordinary least squares model that estimates the impact of complexity on the difference in the number of factors employed by the low and high information cohorts (high information factors – low information factors). The results for the two types of tests are then used to evaluate the complexity hypothesis.

Results

The results presented in table one provide some support for the first hypothesis. In 13 out of the 21 elections examined the most informed consider more factors than their least informed counterparts (see table 1).¹⁰ However, in five of these 13 cases the difference in the number of considerations is two or less. Given the nature of survey data such a small difference is as likely to be the result of sampling error as an indication of information group differences. Thus support for the hypothesis is really only observed in eight of the cases and even within these eight, the relationship is not linear; in three of

these cases the moderate information group matches or exceeds the number of considerations employed by their more informed counterparts.

-Table 1 about here-

Looking at the average number of considerations across groups, the more informed consider 2.3 (standard error = 0.86) more considerations than their least informed counterparts and 1.4 (standard error = 0.70) more considerations than their moderately informed counterparts (see table 1). While evidence of group differences in the number of considerations employed in the decision process is observed, the results from this first test offer only minimal support for the hypothesis.

An inspection of the results in table 1 suggests both inter-country and intra-country variations. For example, of the eight cases that clearly contradict expectations (low information individuals consider more factors than their highly informed counterparts), three of these are observed in British elections (see table 1). Conversely, a majority of cases from Australia fit the expected pattern. Canada, New Zealand and the U.S. offer mixed results with only minor information-considerations differences observed across countries. In all countries the size of the information-considerations gap varies across time suggesting the possibility of election-specific effects influencing the number of factors employed in the vote calculus. In order to further dissect these results, we turn to the complexity thesis and test for variations according to election complexity.

Table 2 presents a rank order list of elections on all three complexity measures: inter-country, intra-country, and total complexity (see descriptions above). Australia, with a preferential voting method, a hybrid form of federalism and a multi-party electoral system ranks highest on the inter-country complexity measure. Canada and New Zealand tie for the middle ranking with Britain and the U.S. being the least complex relative to the other countries considered (See table 2).

-Table 2 about here-

The intra-country variations tap changes across time. Based on these cross-time measures all countries, with the exception of Britain, place within the top half of the complexity scale for at least one of the elections considered (See table 2). The total complexity measure is a combination of the inter-country and intra-country complexity scores. Once again, with the exception of Britain, all countries have at least one election in the top half of this combined measure. According to hypothesis two, we should observe the greatest information-considerations gap in the elections ranked highest on these complexity scores.

For the preliminary test of electoral context effects elections were classified as high or low complexity by dividing the sample in half according to the mid-point value on each of the complexity scales. For inter-country complexity elections with a score lower than 2 were grouped as low-complexity (6 low complexity / 15 high complexity). For intra-country differences elections scoring below 1.5 were grouped as low complexity (12 low complexity / 9 high complexity). For the total-complexity rankings, elections scoring below 3 were grouped as low complexity (12 low complexity / 9 high complexity).

Table 3 reports the first set of results testing hypothesis two. Starting with the inter-complexity rankings, the findings indicate that the average considerations gap between the most and least informed is 0.3 in the case of countries scoring lowest on the inter-complexity measure (table 3 column 1). This is significantly less ($P < 0.05$) than the 3.1 consideration gap observed in more complex electoral contexts. The 2.8 considerations difference is substantial, suggesting that information heterogeneity is indeed affected by institutional factors. This interpretation is also supported by the regression model. The results suggest that a one unit increase in complexity has a statistically significant effect on the information-considerations gap, increasing it by 3.2 considerations (table 4 column 1).

-Tables 3 and 4 about here-

A similar result is found for intra-country variations. The average high versus low information gap is 0.7 factors in less complex competitions compared to 4.4 under more complex contexts. Even with the small number of cases the 3.7 considerations gap is found to be statistically significant at $p < 0.05$ applying a two-tailed t-test (table 3 column 2). Once again the regression model provides additional support for the complexity thesis. In regards to intra-country variation, a one unit change in complexity is found to produce a 1.8 considerations increase in the information-considerations gap (table 4 column 2).

Turning to the combined measure, the results provide further support for the hypothesis that informational differences in the number of considerations employed in the decision process will be mediated by the electoral context. Under the combined complexity measure the considerations gap averages 0.7 in low-complexity contests compared to 4.6 in more difficult environments. This nearly four-point difference is also found to be statistically significant (table 3 column 3). The results of the regression model once again offer further evidence of a complexity effect. Regressing the total complexity measure on the difference in the number of considerations results in a statistically significant increase of 2.2 considerations as complexity increases (table 4 column 3).

-Graph 1 about here-

Graph 1 presents a visual representation of this combined measure, plotting the difference in the number of considerations onto election complexity. From this graphical presentation of the data, it becomes evident that, while the overall fit is quite good, there are two fairly obvious outliers: the 1993 Canadian election and the 1996 New Zealand election (see graph 1). In both cases, the expected considerations gap is less than would be expected given the complexity of these competitions. In the 1993 Canadian election there was a substantial change to the party system (see Carty, Cross and Young 2000). The party system shifted from its traditional two-plus-one configuration to five competitive parties. In addition, there were new leaders for both the incumbent party and the official opposition. Given these changes, the complexity thesis predicts that this should have produced a much larger information-considerations gap than that observed (actual gap of 0 observed).

Although the 1993 Canadian election does not fit as anticipated, it is quite reasonable to suggest that this was a unique election in the Canadian context. Given the

failure of the government-endorsed Charlottetown Accord in a national referendum on constitutional changes, the second failed constitutional change put forth by the incumbent Progressive Conservatives (PC), as well as the unpopular and highly salient issues concerning a free trade agreement with the U.S., poor economic performance, the introduction of a Goods and Services tax (GST), along with the breakdown of the PCs' Quebec – Western Canada support base, the 1993 election was indeed a unique event. The results returned only two PC candidates to parliament compared to the 169 seats they had won in the previous election. Given the exceptional series of events surrounding this election, it seems quite reasonable that this case would stand out, especially given the overwhelming opposition to the incumbent party.

The 1996 New Zealand election might also be viewed as a unique event. This election marked the transition to a new electoral system in New Zealand, replacing the single member plurality vote with a mixed member proportional (MMP) system. This election also included a change in the number of effective parties as well as a new leader for the opposition party preceding the vote. However, while the conditions would suggest a larger information-considerations gap (compared to the single consideration difference observed), it is reasonable to assume that efforts to inform the New Zealand electorate of the changes to the electoral system in the years preceding the 1996 vote, including a national referendum on the proposed change in the 1993 election as well as a nationwide information campaign explaining the new voting system prior to the 1996 vote, helped to offset these informational differences (Vowles, Banducci and Karp 1998). In fact, the 1996 New Zealand case may offer some indication of measures that could help reduce information effects within the electorate. If the efforts directed towards explaining the new voting system did minimize informational differences at the voting booth, this would suggest that efforts aimed at informing individuals on issues concerning the vote may help to diminish the effect of information heterogeneity. However, while plausible, this is only one of many interpretations requiring further study prior to drawing such prescriptive conclusions.

If the results of the total complexity analysis were re-run excluding the two outliers, the findings supporting the complexity thesis are even stronger. Tables 5 and 6 presents the results with the outliers omitted for the total complexity measure while graph 2 reproduces the findings from graph 1 with the outliers removed. In low complexity competitions the average information-considerations gap remains the same at a gap of 0.7 considerations. However, controlling for these two cases increases the difference to 5.7 factors (compared to 4.6 see above) in the case of more complex contests. The five considerations difference is statistically significant ($p < 0.05$) suggesting strong support for the complexity thesis and a full consideration increase from the earlier estimate (see table 3). An increase in the size of the regression coefficient fits with the means test findings: with the outliers omitted, a one-unit change in complexity results in a 3.4 point increase (compared to the full model result of 2.2) in the information-considerations gap (see table 6). These findings are presented visually in graph 2.

-Tables 5 and 6 about here-

-Graph 2 about here-

While the findings hold prior to the removal of the outliers, the results omitting these cases demonstrate even greater support for the complexity thesis. The data indicate that informational-based differences in the number of considerations employed in the vote decision process are indeed influenced by the complexity of the electoral context.

Conclusion

This paper set out to test the relationship between political information and the number of factors incorporated into the vote decision process. Using data from 21 elections the results show that, on average, the more informed do consider more factors than their least informed counterparts. These results were then re-tested controlling for electoral complexity. The findings show that context matters with the information-considerations gap increasing under more complex electoral contexts. Cross-time changes in the electoral context also affect consideration differences. In combination, inter-country and intra-country variations strongly fit with expectations, indicating that as the total complexity of the election increases, so does the information-considerations gap.

The results of this study also point to potential means of offsetting informational differences. The 1996 New Zealand election offers some evidence that even under relatively complex conditions, differences can be diminished. It has been suggested that this is likely the result of efforts directed towards informing the population of the voting system change (See Vowles, Banducci and Karp 1998). It may also suggest the possibility of increased communication efforts resulting from an increase in the number of parties competing for votes. Perhaps a similar interpretation can be applied to the 1993 Canadian case. However, while this possibility is plausible, the data presented here provide no way of testing these theories. Analyzing campaign communications and information dissemination efforts across elections would be one promising avenue for future research.

As part of a larger project, the findings of this paper are very promising. Future efforts to analyze informational differences in the types of considerations applied in the vote calculus will help to further dissect informational heterogeneity and its influence on the decision process. Ultimately, these process-side effects will be considered in regards to differences in the actual vote outcome. As a preliminary test of the effect of information heterogeneity, these findings support the general thesis that informational differences affect the decision process, especially when the electoral context is more complex.

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Table 1: Number of significant factors incorporated into the vote calculus by information group and election

	Low Information	Moderate Information	High Information
Australia 2004	12	15	24
Australia 2001	19	22	17
Australia 1996	8	13	18
Britain 2005	16	12	15
Britain 2001	16	16	16
Britain 1997	22	19	21
Britain 1992	21	22	23
Canada 2006	20	15	17
Canada 2004	15	19	23
Canada 2000	16	20	19
Canada 1997	19	19	20
Canada 1993	19	14	19
Canada 1988	15	14	16
New Zealand 2005	20	22	25
New Zealand 2002	16	19	19
New Zealand 1999	23	23	23
New Zealand 1996	18	21	19
U.S. 2000	13	18	16
U.S. 1996	14	14	20
U.S. 1992	16	20	18
U.S. 1988	21	20	20
Mean Score:	17.1	18.0	19.4

NOTE: Cells contain number of statistically significant ($p < .10$) factors incorporated into the decision process by information group for each election. Elections where the number of high information considerations is greater than low information considerations in bold.

Table 2: Inter-country, intra-country, and total complexity scores by election

Complexity Score	Inter-Country Complexity	Intra-Country Complexity	Total Complexity
4.5	-	-	Australia 1996 Canada 2004 Canada 1993 New Zealand 1996
4	-	-	Australia 2004
3.5	-	-	New Zealand 2005 U.S. 2000 U.S. 1992
3	-	-	New Zealand 1999
2.5	Australia	Canada 2004 Canada 1993 New Zealand 1996 U.S. 2000	Australia 2001 Canada 2000 New Zealand 2002 U.S. 1996 U.S. 1988
2	Canada New Zealand	Australia 1996	Britain 2001 Britain 1992 Canada 2006 Canada 1997 Canada 1988
1.5	-	Australia 2004 New Zealand 2005 U.S. 1992 U.S. 1988	Britain 2005 Britain 1997
1	Britain U.S.*	Britain 2001 Britain 1992 New Zealand 1999	-
0.5	-	Britain 2005 Britain 1997 Canada 2000 New Zealand 2002 U.S. 1996	-
0	-	Australia 2001 Canada 2006 Canada 1997 Canada 1988	-

* Note that the 1992 and 1996 U.S. elections were coded as multi-party based on Ross Perot's candidacy

Table 3: Mean difference in the number of high information versus low information vote choice considerations controlling for electoral complexity

	Inter-Complexity	Intra-Complexity	Total-Complexity
Low Complexity	0.3 (0.71) N=6	0.7 (0.72) N=12	0.7 (0.73) N=12
High Complexity	3.1 (1.11) N=15	4.4 (1.54) N= 9	4.6 (1.49) N=9
Difference	2.8 (1.32)*	3.7 (1.70)*	3.9 (1.66)*

NOTE: Cells contain mean difference in the number of considerations employed in the decision process between high and low information individuals. The difference and statistical significance is estimated using a two-tailed t-test. Standard errors reported in parenthesis.

*** p<.001 ** p<.01 * p<.05 ^ap<.10

Table 4: OLS regression of complexity on the difference in the number of high information versus low information vote choice considerations

	Inter-Complexity	Intra-Complexity	Total-Complexity
Complexity Coefficient	3.2 (1.51)*	1.8 (.92) ^a	2.2 (.71)**
Constant	-3.38 (2.80)	0.29 (1.30)	- 4.16 (2.17) ^a
N	21	21	21
R2	0.19	0.17	0.35
Adjusted R2	0.15	0.13	0.31

NOTE: Cells contain OLS regression coefficients with standard errors reported in parenthesis.

*** p<.001 ** p<.01 * p<.05 ^ap<.10

Graph 1: The Impact of Electoral Complexity on the Number of Vote Considerations

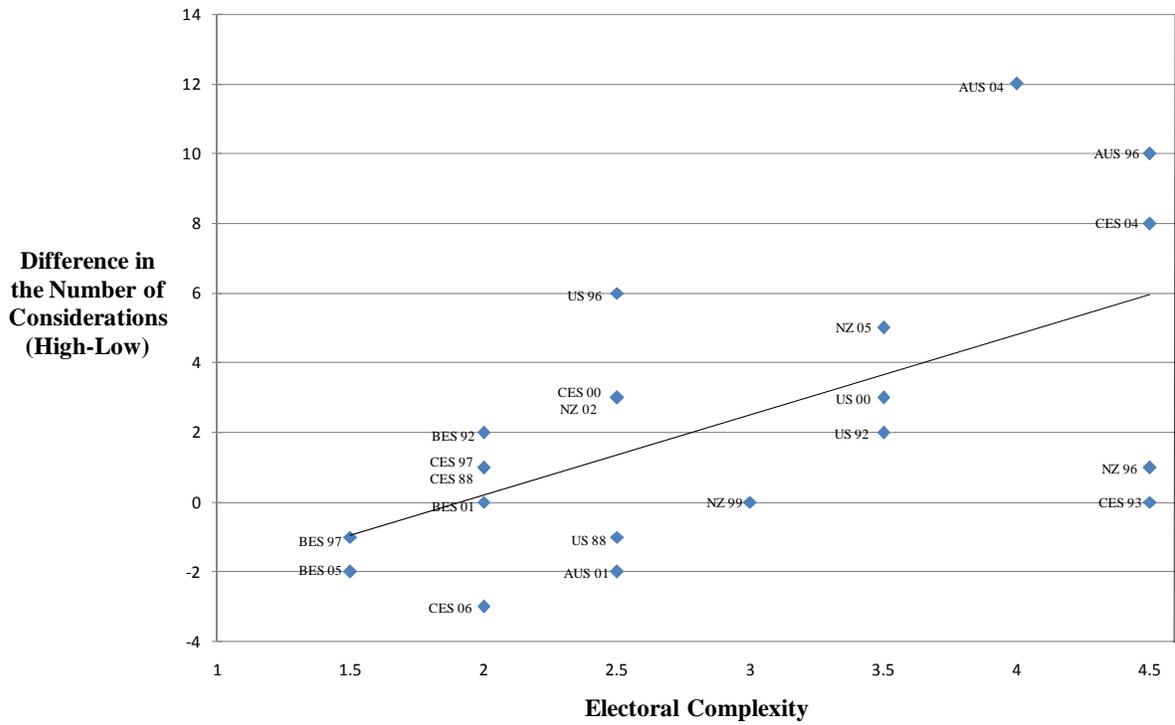


Table 5: Mean difference in the number of high information versus low information vote choice considerations controlling for electoral complexity with outliers omitted

	Total-Complexity
Low Complexity	0.7 (0.73) N=12
High Complexity	5.7 (1.67) N=7
Difference	5.0 (1.83)*

NOTE: Cells contain mean difference in the number of considerations employed in the decision process between high and low information individuals. The difference and statistical significance is estimated using a two-tailed t-test. Standard errors reported in parenthesis.

*** p<.001 ** p<.01 * p<.05 ^a p<.10

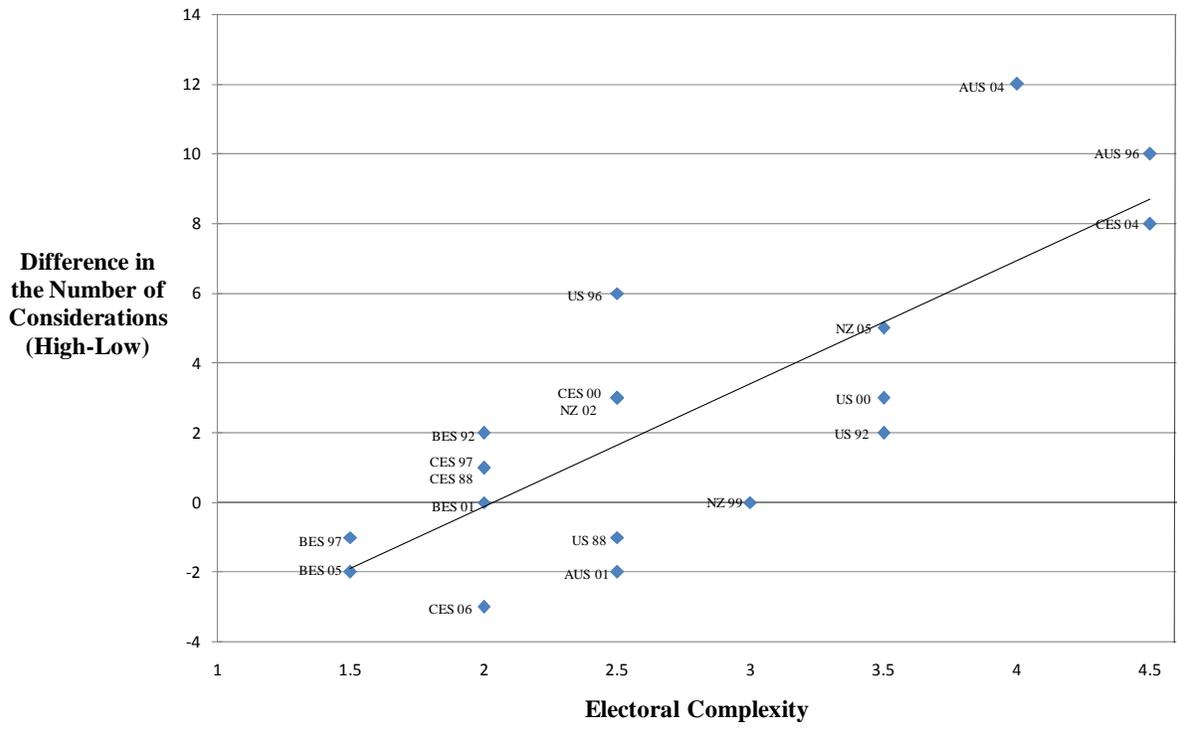
Table 6: OLS regression of complexity on the difference in the number of high information versus low information vote choice considerations with outliers omitted

	Total-Complexity
Complexity Coefficient	3.45 (.65)***
Constant	-6.91 (1.88)***
N	19
R2	0.62
Adjusted R2	0.60

NOTE: Cells contain OLS regression coefficients with standard errors reported in parenthesis.

*** p<.001 ** p<.01 * p<.05 ^a p<.10

Graph 2: The Impact of Electoral Complexity on the Number of Vote Considerations Controlling for Outliers



Appendix 1: Number of cases by information group and election

	Low Information	Moderate Information	High Information
Australia 2004	229	301	345
Australia 2001	310	393	294
Australia 1996	243	348	330
Britain 2005	447	318	537
Britain 2001	287	292	273
Britain 1997	503	722	651
Britain 1992	689	675	903
Canada 2006	514	395	624
Canada 2004	396	593	513
Canada 2000	327	419	389
Canada 1997	452	475	402
Canada 1993	450	570	474
Canada 1988	364	559	521
New Zealand 2005	432	747	609
New Zealand 2002	402	397	265
New Zealand 1999	757	1197	1015
New Zealand 1996	441	874	840
U.S. 2000	242	267	190
U.S. 1996	220	187	288
U.S. 1992	199	360	326
U.S. 1988	222	188	282

Appendix 2: Sample of variables and coding used in models (CES 2004)

Socio-Demographics (dummy variables):	
Age	Under 35 = 1; Over 54 = 1
Region	Atlantic Resident = 1; Western Resident=1
Religious Affiliation	Catholic = 1
Type of Community	Rural Resident = 1
Education	University Graduate=1
Income	High Income (\$80 000+) = 1
Values and Beliefs:	
Support Free Market	A 3-point scale (-1 to 1) where 1=strong support for free market, constructed by combining responses to: Leave jobs to the private sector; Blame yourself for no work; When business wins we all win; Move to where the jobs are; Pro big business; Anti-union Alpha = 0.56
Regional Alienation	A 3-point scale (-1 to 1) where 1=belief that respondents province is treated worse based on response to: Does the federal government treat your Province: better, worse, or about the same as other provinces?
Cynicism	A 3-point scale (-1 to 1) where 1=cynical, constructed by combining responses to: Satisfied with the way democracy works; Parties keep their promises; Feel about politicians in general; Feel about political parties in general; Politicians don't care what I think; Parties are all the same; Politicians lie Alpha = 0.70
Do More for Gender Equality	A 3-point scale (-1 to 1) where 1=do more for women, constructed by combining responses to: How much should be done for women; Feelings towards feminist . Alpha = 0.43
Party Identification:	
Party Identification (dummy variable):	Fairly strong or very strong Liberal identifiers = 1
Issues:	
Taxes (dummy)	Decrease Corporate taxes = 1; Decrease Personal taxes = 1
Scrap Gun Registry (dummy)	Scrap Gun Registry = 1
Anti-War	Staying out of war right decision =1
Immigration	Increase Immigration =1
Private Medicare	A 3-point scale (-1 to 1) where 1= oppose private medicare, constructed by combining responses to: Support for private hospitals; Pay for medical services Alpha= 0.66
Same-Sex Marriage	Support Same-Sex Marriage = 1
Sponsorship Scandal	A 3-point scale (-1 to 1) where 1= angered by Sponsorship Scandal, constructed by combining responses to: Angry over Sponsorship Scandal; When

	Chrétien was Prime Minister lots of corruption; Martin did a bad job handling Sponsorship Scandal; No confidence that it won't happen again. Alpha: 0.67
Leaders:	
Harper Evaluation (pre-election)	Positive evaluation=1
Martin Evaluation (pre-election)	Positive evaluation=1
Layton Evaluation (pre-election)	Positive evaluation=1

Appendix 3: Political Information Scales

Election	Questions	Alpha
Australia 2004	9 Questions: Cost of fine if don't vote; Party with second largest number of seats; Proportion tax paid on low income; UN Security Council Members; Who is entitled to vote in elections; Maximum years allowed between elections; Who was 'Pig-iron Bob'; Political party formed by former Liberal minister; Most recent Australian Labor Party Prime Minister	0.58
Australia 2001	6 Questions: Quiz: Aust became federation in 1901; Quiz: 75 membs House of Reps; Quiz: Constitution changed by High Court; Quiz: Senate proportional representation; Quiz: Stand for Parli must pay deposit; Quiz: Longest time between elections is 4 years	0.68
Australia 1996	10 Questions: Quiz Aust a federation in 1901; Quiz Howard leader of Liberals; Quiz 75 in House of Reps; Quiz High Court change Constitution; Quiz Senate proportional rep; Quiz Pay to stand for Parliament; Quiz Four years between elections; Quiz Parliament before sign treaty; Quiz Senators not in Cabinet; Name of local Federal MP; Party of local Federal MP;	0.78
Britain 2005	8 Questions: polling stations close 10 pm; liberal democrats favour pr; minimum voting age is 16; std income tax 26p in pound; chancellor exchequer sets interest rates; labour-students pay 3000 pounds; conservatives-strick limits asylum seekers; get postal vote-call local council;	0.52
Britain 2001	6 Questions: polling stations close 10 pm; official conservative policy never join eu; liberal democrats favour pr; minimum voting age is 16; unemployment fallen under labour; only taxpayers allowed to vote	0.41
Britain 1997	7 Questions: m.thatcher was a conservative pm?; number of mps is about 100?; longest time bet. g.elections 4yrs?; gb's electoral system is p.r.?; mps different parties in parl.comm.?; gb separte elections gb/euro parl.?; no-one stand for parl.ls pay deposit	0.67
Britain 1992	11 Questions: neil kinnock is leader of labour party; number of mps is about 100; longest time between gen. election is 4years; gb electoral system is proportional representation; mps different parties on parliament committees; no-one on electoral roll in two different places; gb has separate elections for euro+gb parliaments; women not allowed sit in house of lords; queen appoints gb prime minister?; no-one stand for parliament unless pay deposit; mininister of state senior to secretary of state?;	0.64
Canada 2006	7 Questions: Know Liberal Leader (post); Know Conservative Leader (post); Know NDP Leader (post); Know provincial premier; Know British PM; Know name	0.72

	of a female cabinet minister; Know name of judge in the Sponsorship case	
Canada 2004	14 Questions: Know Liberal Leader (post); Know Conservative Leader (post); Know NDP Leader (post); Know party planning to get rid of gun registry; Know party planning to cut federal sales tax; Know party planning to spend \$2 billion on military; Know party planning to spend \$250 million to fight AIDS in poor countries; Know party planning to spend \$4 billion to cut hospital wait times; Know party planning an inheritance tax; Know provincial premier; Know minister of finance; Know British PM; Know female cabinet minister who ran against Paul Martin; Know which level of govmt. has PRIMARY responsibility for healthcare	0.79
Canada 2000	14 Questions: Know Liberal Leader (post); Know Alliance Leader (post); Know PC Leader (post); Know NDP Leader (post); Know provincial premier; Know minister of finance; Know PM at the time of FTA; Know capital of US; Know party planning a single tax rate; Know party planning a National prescription drug plan; Know party proposing a law to pay back National debt; Know party planning to use half of the surplus to pay back National debt; Know party saying high taxes have produced a brain drain; Know party saying a strong FED govmt. is essential for HC	0.84
Canada 1997	10 Questions: Know Liberal Leader (post); Know Reform Leader (post); Know PC Leader (post); Know NDP Leader (post); Know provincial premier; Know minister of finance; Know party planning to lower personal taxes by 10%; Know party planning to cut UI by half; Know party against distinct society; Know first female PM	0.74
Canada 1993	10 Questions: Know Liberal Leader (post); Know Reform Leader (post); Know PC Leader (post); Know NDP Leader (post); Know Campbell's cabinet position; Know party that supports GST; Know party that promised to drop NAFTA; Know party that promised to eliminate deficit in 3 years; Know party that promised to eliminate deficit in 5 years; Know party that promised to increase public works spending	0.73
Canada 1988	7 Questions: Know Liberal Leader (post); Know PC Leader (post); Know NDP Leader (post); Know Liberal Candidate; Know PC Candidate; Know NDP Candidate; Know what Liberals will do with FT agreement	0.59
New Zealand 2005	8 Questions: recall parties in government; knowledge voter enrolment; knowledge citizenship and vote; Know how parties cross threshold; respondent knows electorate mp name; respondent knows electorate mp party; knows list mp names; identification of list mp party	0.56
New Zealand 2002	11 Questions: recall parties in government; since 1981	0.76

	national has been in government for at least 5; the term of parliament is 4 years; enrolling as voter in nz is compulsory; respondent knows electorate mp name; respondent knows electorate mp party; knows list mp names; identification of list mp party; Voting under MMP is like two separate elections; The party votes usually decide the total number of seats; The party with the most votes is more likely to get the most seats	
New Zealand 1999	8 Questions: the term of parliament is 4 years; cabinet ministers must be mps; upper house; respondent knows electorate mp name; respondent knows electorate mp party; knows list mp names; identification of list mp party; The party votes usually decide the total number of seats	0.65
New Zealand 1996	6 Questions: Knows name of previous local mp; knows party previous mp; Clive Matthewson is leader of the United Party; there are 99 mps; cabinet ministers must be mps; upper house	0.63
U.S. 2000	14 Questions: Know names of candidates running for congress; recall names of House candidate; Identify Trent Lott; identify William Rehnquist; identify Tony Blair; identify Janet Reno; In what state does Bush live; What is Bush's religion; What state is Gore from; What is Gore's religion; In what state does Cheney live; What is Cheney's religion; In what state does Lieberman live; What is Lieberman's religion	0.77
U.S. 1996	6 Questions: Does R remember names of House candidates in R's district; Does R recall names of congressional candidates; Know Al Gore; Know William Rehnquist; Know Boris Yeltsin?; Know Newt Gingrich?	0.66
U.S. 1992	10 Questions: Recall HSE; Recall SEN; Quayle office; Rehnquist office; Yeltsin office; Foley office; Law Constitnl; Nominate Judge; In HSE-PTY; In SEN-PTY	0.76
U.S. 1988	10 Questions: Does R remember names of congressional candidates; Does R remember Senate candidates; Does R know what job/ office Rehnquist; Does R know what job / office Gorbachev; Does R know what job Kennedy; Does R know what job / office Schultz; Does R know what job / office Thatcher; Does R know what job / office Arafat; Does R know what job / office J. Wright; Which party had most in HSE before election; Which party had most in SEN before election	0.79

¹ It is important to note that this study takes exception to some of the methodological decisions made by Sniderman et al. In particular, the use of education as a proxy for political sophistication as well as a dichotomous division for political sophistication are two points that are contested within this study.

² See Johnston et al. 1996 as well.

³ The 1990, 1993, 1998 Australia elections, the 1990 and 1993 New Zealand elections, and the 2004 U.S. election were also considered in the preliminary analyses. However due to limited or no data available on key measures (such as political information) as well as too few cases (e.g. the 2004 U.S. data), these data were omitted. See appendix 1 for number of cases for each election study. Further information on the data used along with question wording and technical descriptions are available through the respective election study research organizations.

⁴ As separate analyses will be performed in each country, direct comparison of coefficients will not be possible. However, based on the design of this study, differences between information groups within each country can be compared with the differences observed under alternative contexts / across time.

⁵ See appendix 2 for a sample of variables and coding included at each stage of the model.

⁶ See Althaus 1998; Bartels 1996; Delli Carpini and Keeter 1993, 1996; Price and Zaller 1993; Zaller 1992 for discussions pertaining to the validity of factual political knowledge questions as an indicator of political information. See appendix 3 for questions used in the creation of each election's knowledge scale along with the corresponding distributions and alpha scores.

⁷ Note that the 1992 and 1996 U.S. elections have been coded as multi-party based on Ross Perot's presidential candidacy.

⁸ Parties winning 5 % or more of the vote share were considered 'effective'. In the case of coalition governments, leadership change in the majority party coalition partnership was coded as '1'.

⁹ The decision to award opposition leadership change a half point is based on the belief that such change may not be as significant as a new leader for the incumbent party, especially given the use of incumbency as the dependent variable. All models were tested granting opposition leadership change a full point which produced nearly identical results to those reported here.

¹⁰ It is important to note that this is not an artifact of unequal sample sizes: in the majority of cases (14 out of 21) the moderate information group has more cases than the high information group, but fewer factors have significant effects.