Candidate Performance and Voter Learning in Presidential Nomination Campaigns

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Abstract

Candidates' viability and momentum are important features of the presidential nomination process in the United States, and much work has examined how both influence the outcome of the nomination campaign (e.g. Aldrich 1980*a*; Aldrich 1980*b*; Bartels 1988; Brady and Johnston 1987). Previous treatments, however, have focused upon candidates' expectations of winning or losing the nomination. A critical feature that has been mentioned (e.g. Aldrich 1980*a*, 116), but not addressed directly is the volatility of these expectations. In this paper, I use a view of viability and momentum that considers both expectations and the variance of the public's perceptions about candidates' viability which allows us to examine how voters use new information to update their beliefs about both elements of candidates' viability and provides a basis for assessing candidates' *potential momentum.*

Candidates seeking the presidency try to win a majority of delegates to their party's nominating convention. But candidates cannot accumulate all of the delegates they need to win in one grand stroke. Rather, the nomination process takes place over a period of months, if not years. In examining how this process develops, Paolino and Roberts (1996) have described the nomination process as one of elimination. In this view, most candidates worry initially less about winning and more about not losing. Put simply, candidates want to be seen as serious contenders for the nomination because candidates who are written off by voters, other party elites, the media, and financial contributors will not be able to generate the resources necessary to remain in the race. Just as candidates want to avoid elimination, voters, the media, party elites, financial contributors, and even political scientists studying the nomination process, do not want to waste resources on sure losers.[1] So if other political actors can identify which candidates almost certainly will not win, they can also identify, by a process of elimination, a viable set of candidates upon which to concentrate their resources.

This is not an easy problem. How can we determine who is a sure loser when we know that most candidates who have been in single-digits through much of the pre-primary period lose, but that some, even those who eventually lose, have been able to mount strong challenges to established front-runners? One answer is that we cannot, but that leaves our research agenda dependent upon luck rather than design. Furthermore, it implies that political participants are content to react to changes in the campaign, rather than to anticipate those changes; after all, if we presume that we cannot anticipate accurately which candidates will gain momentum, why should we believe that other politically astute observers can? While journalists and campaign contributors may be able to get by well

[1]Given that political scientists can only record the public's opinion at a given point in time once and there are usually limits on the number of candidates about whom we may ask an extensive set of questions, asking about the "wrong" candidates can hinder greatly our ability to examine the nomination process. The 1984 Continuous Monitoring Survey, for example, has only the most basic questions about Gary Hart prior to his victory in New Hampshire. As a result, we can get a very good picture of what Hart did once he gained momentum, but we have significantly less idea about *how* he gained momentum.

enough by simply reacting to such changes — although such behavior implies a willingness to bear certain costs as well as to forego opportunities for reward unnecessarily — campaign managers and party leaders can pay significant costs by failing to anticipate these changes. For these reasons, an ability to separate the field accurately into contenders, potential challengers, and sure losers can greatly aid our ability to understand the nomination process.

This is also not a trivial problem. Given that the front-loading of the primary season gives tremendous advantages to candidates who acquire vast resources during the pre-primary period — to the point that we have seen many reasonably well-qualified candidates withdraw from the competition well in advance of the first meaningful votes — we can only evaluate the efficacy of the current nomination process to the extent that we can distinguish candidates who would not win under any circumstances from those who might have had they been able to gather enough resources. To determine if the media, fund-raising, and party elites behave in ways that preempt voters' choices, and thereby greatly reduce voters' ability to determine the nominee, we need to determine which candidates probably do not have much chance and those that "coulda been a contenda."

To illustrate this question's importance, consider the argument that we can predict which candidate is most likely to win by identifying the early front-runner (Mayer 1996). It is one thing to make this statement, but quite another to know *why* these candidates win. For this, we need to understand how the process unfolds, which requires understanding which candidates have the potential to generate momentum.[2] We may hypothesize, for example, that party elites have learned to coordinate their support behind a single "establishment" candidate, making it difficult for candidates other than "non-establishment" candidates, who draw support largely from those outside the regular pool of party activists and require fewer resources to continue their mostly quixotic campaigns, to emerge.[3] If the

[2]From this point of view, political scientists and the media may differ from financial contributors in that the latter may be less interested in candidates who do not win, but are important to understanding the race.

[3]By non-establishment candidates, I am referring to "maverick" politicians (such as Paul Tsongas) as well as issue activists (such as Pat Buchanan).

candidates best positioned to survive the initial winnowing period are also those least likely to generate significant momentum, then we can explain the dominance of front-runners in terms of coordinated behavior on the part of party elites and financial contributors during the pre-primary period intended to structure the race such that voters are given a choice of the "establishment" candidate against a non-viable outsider. Such behavior might be perfectly rational if elites decided that they wanted to avoid the fragmentation of support among a variety of "acceptable" candidates, allowing a plurality winner, but Condorcet loser, conceivably someone like George McGovern or Jimmy Carter, to win.[4] After all, if momentum is a potentially destabilizing force for parties (Polsby 1983), why not act to minimize the impact of momentum? This view, however, presumes that party elites can identify those candidates least likely to generate momentum and also requires that political scientists have some means of identifying those candidates so we can test this particular hypothesis.

While the argument of this paper can be applied to examining the behavior of party elites, financial contributors, and the media, the focus is squarely on the mass public's perceptions. For one thing, the behavior of these elite actors should be conditioned upon their beliefs about voters' attitudes. If we believe that elite actors make their decisions based upon their beliefs about candidates' viability, it should be voters whose beliefs are most important.[5] Of course, if the elite are not concerned with the mass public's perceptions, but that their actions can greatly influence the nomination before the public can act, then we need some way to determine which candidates the public believes cannot win and those who could have won if they had stronger elite backing and the resources that such backing provides. In such cases, we may learn that the current nomination system gives the public only slightly greater influence in determining the nominee than the pre-McGovern-Fraser

[4]Define a Condorcet loser as someone who would lose in pairwise votes against all other alternatives.

[5]It is only because Gov. George W. Bush's job approval rate among Texas voters was over 70% in October 1998 that was seen as a strong candidate for the Republican nomination.

system. Toward the end of answering such questions, this paper provides a first step.

This paper first briefly discusses the existing view of momentum in the nomination process before presenting an expansion of that view to include the variation in people's beliefs about candidate viability as a means of estimating candidates' *potential momentum.* Second, the paper provides some tentative empirical support for this argument. Third, the paper presents an empirical model in support of the validity of the argument that variation in perception is a viable means of estimating candidates' potential momentum. In particular, this section shows that as the public gains more information about candidates' chances of winning the nomination, they adjust not only their average expectations, but also the range around which that average is dispersed. At this point, the paper then moves to show how one can use information about variation to predict which candidates are most likely to generate momentum and which probably will not. Finally, the paper will present some conclusions about how voters learn from the nomination process and how elite actors' behavior in the pre-primary period can preempt such learning.

Volatility and Potential Momentum

Previous Research

Many studies on momentum in the nomination process (e.g. Aldrich 1980*a*; Bartels 1988; Brady and Johnston 1987) have been able to identify those lower-tier candidates who *were able* to capture momentum to move into the top-tier of candidates, but they have been less explicit about how we could go about *predicting* which candidates could gain momentum. Why do some candidates benefit from a "better-than-expected showing," while others are ignored? There are certainly a number of ways that we might approach this.

We could look at which candidates are doing best among other ideologically-similar candidates (Aldrich 1980*a*; Brams 1978). As one of the candidates appealing to an ideological constituency appears more viable than the others, voters with these particular ideological

beliefs will strategically defect to this candidate, away from the less viable candidates. In this sense, the process by which candidates gain or lose supporters early in the nomination campaign resembles the "tipping game" about which Schelling writes. If candidates do not reach a "critical mass," they will not be viewed as viable, prompting their supporters to look for acceptable, more viable alternatives, and the race devolves to a two- or three-candidate race among the various representatives of the major ideological factions within the party. But how do we know when a candidate has reached some critical threshold? Candidates who have appeared to be the representative of a particular faction, John Glenn and moderate Democrats in 1984, for example, have failed to remain strong until the beginning of the primaries, while other candidates, like Gary Hart, have emerged only at the end of the pre-primary period.

Alternatively, we could also look at the candidates' past political experience (Aldrich 1980*a*) or current resources to determine which ones "look like" previous presidential nominees based upon our knowledge of what kinds of candidates successfully generated momentum. From this, we might assume that activist candidates who have not previously held elective office are unlikely nominees, but what about high-profile former generals or Cabinet officials who are not activists? And even if we could establish a rule that said "viable only if previously elected to some high office," we still might not be able to distinguish between the "possibles" and the "hopeless" (Robinson and Sheehan 1983) from the current or previously elected officials in the race. Is there any way to determine if a slightly conservative, former Southern governor is a Jimmy Carter or a Reubin Askew?

Finally, we could look at candidates' resources, such as media coverage and fund-raising. While we know that candidates need money to win the nomination, having a great deal of cash on hand does not guarantee momentum (John Connally and Phil Gramm) and a lack of cash has not necessarily prevented candidates from generating momentum (Gary Hart).[6]

[6]While I personally believe that a candidate with little money on hand at the beginning of primary season will not be able to generate much momentum given a heavily front-loaded primary calendar, discussion with

In general, such bases for predicting which candidates are likely to generate momentum leave much room for idiosyncratic interpretation and are really a step removed from the phenomenon in which we are interested, voters' willingness to support candidates. As long as enough voters believe that certain candidates can win, they will be less likely to abandon those candidates for others. To determine how candidates who had not been seen as viable can use momentum to become viable — and why some candidates do not generate momentum despite finishing better-than-expected in a particular contest — we should look at how the public perceives candidates' viability.

A New Approach

This paper argues that one way to understand candidates' potential momentum is to examine the variance across people's beliefs about candidates' viability. When there is little consensus about a less viable candidate's chances of winning, that candidate will be better able to take advantage of an unexpectedly strong performance early in the nomination process than a candidate about whom people agree has no chance of winning. By looking at the variance, in addition to the central tendency, of people's beliefs, we can better understand candidates' ability to generate momentum and the factors that help create momentum.

There are two underlying aspects to the argument. First, greater variance may indicate greater volatility because people have less information upon which to base their beliefs. With less information, it is reasonable that people will disagree because individual expectations will be more subject to personal beliefs, rather than common data. When people have less information about a candidate's chances, one significant piece of information will have a relatively greater influence upon their current beliefs. One can view this as similar to arguments about information processing expressed by Popkin (1991) and Zaller (1992). Second, the simple fact that there is disagreement among people about a candidate's via-

others who study the nomination process leaves me quite certain that my view is far from universal.

bility indicates that while there are some people who have written that candidate off, there are others who still believe that the candidate might not be a lost cause, and therefore, possibly worthy of support. This is simply the sophisticated voting argument (Abramson, Aldrich, Paolino and Rohde 1992).

Momentum exists because the media make "harsh judgments" of candidates' viability (Brady 1993) after the outcomes of the early contests. If the media did not do this, the primary campaign might not determine a winner, and the convention would be left to pick the nominee. Many candidates have a base of loyal supporters who will stand by their candidate, but such a loyal base may not be large enough to win the nomination. Rather, candidates need to attract other party voters who may be attracted to any one of several candidates. These voters will only remain with a candidate so long as that candidate has a chance of winning the nomination because there may be some danger of dividing support among a number of acceptable candidates, which could then result in the nomination of an unacceptable candidate (Abramson et al. 1992). Momentum allows for a manageable number of candidates to remain in the race after a brief "winnowing period" allows supporters of losing candidates to re-allocate themselves to other candidates.

This final winnowing period, however, rarely happens until the first primaries (and caucuses) have taken place. Until then, the field often consists of five or more candidates who could conceivably become the nominee. Before some of these candidates lose their supporters, it would be valuable to predict where these supporters might go. Campaign managers of a leading candidate, for example, might want to know which of the less viable candidates would be positioned to pick up that candidate's supporters, should that candidate stumble in the early races. It probably will not be to a candidate who most people are agreed will not win the nomination. It could be, however, to some candidate about whom people do not have very firm beliefs, meaning that some significant group of people are not willing to write off that candidate's chances, allowing that candidate to remain in the race. One could

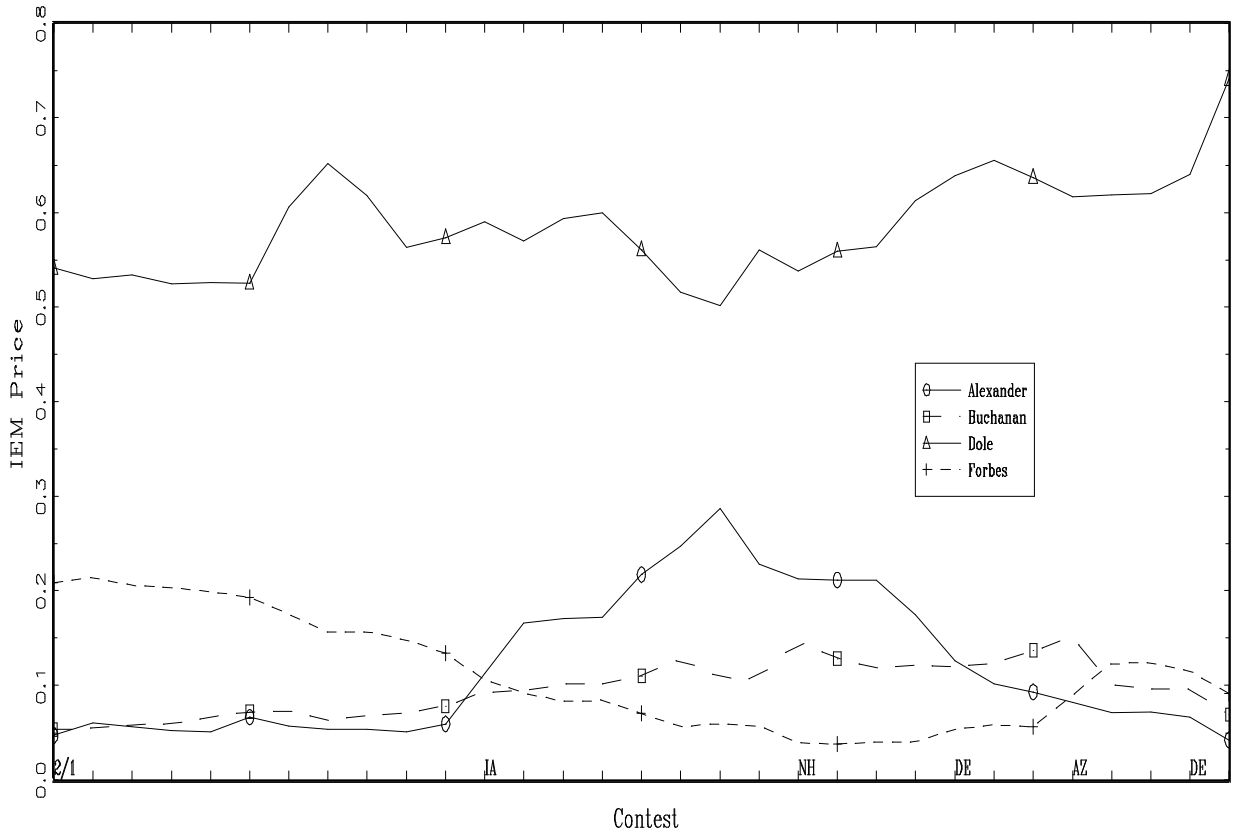
argue, for example, that Bob Dole's 1996 campaign needed to attack Lamar Alexander's campaign because he was more likely to remain in the race than someone like Richard Lugar and because he, not Steve Forbes or Pat Buchanan, would be the one most likely to inherit weaker supporters of Dole's campaign. But if Dole could convince people that Alexander could not win, Dole's supporters would have little choice but to continue on with Dole — allowing him to pick up Alexander's defectors — so as to defeat the less acceptable Forbes and Buchanan.

We might have been able to identify Alexander as a potential challenger to Dole by ideology, because he was competitive with the Senate majority leader for mainstream Republicans, or by traits, because he was a former governor. But we would be in a better position to identify Alexander as a potential recipient of momentum if we could identify an incipient volatility in the public's perception of his viability that could become manifest given a favorable set of circumstances. Figure 1 shows the daily average prices in the Iowa Electronic Markets (IEM) Republican Nomination winner-take-all market from February 1, 1996 to March 2, 1996, with significant primaries and caucuses noted along the x-axis. In this market, traders buy and sell contracts that pay $1 per contract for the winning candidate and nothing for all other candidates. The price of a contract, therefore, roughly approximates the buyer's and seller's belief at the time of the sale about a candidate's probability of winning the nomination.[7] The average price, therefore, provides a good day-to-day tally of the public's perception of each candidate's viability.

These data allow us to see how the set of traders, on average, change their beliefs about each candidate's probability of winning the nomination, given changes in the campaign

[7]In actuality, the price probably overstates the seller's belief and understates the buyer's because the current expected value of the contract should be lower and higher, respectively, if the seller and buyer expect to gain money by the transaction. Between the two and across all pairs of buyers and sellers on a given day, we probably have a good estimate of a candidate's expectations on that day.

Figure 1: Daily Prices, IEM Republican Convention, 2/1/96-3/2/96



environment. It is clear from the data, that few traders believed that Sen. Robert Dole ever had less than a 50-50 chance of winning the nomination. It is also clear that Pat Buchanan's chances of winning the nomination were never perceived to be much greater than .15, despite his close finish behind him in the Iowa caucuses and subsequent victory in the New Hampshire primary. Instead, the greatest change between the days before the Iowa caucuses and those after the Delaware primary, a mere two weeks, was the rise and fall in expectations of Lamar Alexander, whose average price eclipsed Buchanan's, despite managing to finish no better than third, consistently behind Buchanan, over that period.

Why should Alexander's viability change so dramatically when he was not able to put together a finish ahead of Dole or Buchanan? I believe the answer involves the underlying volatility of his expectations. People had little way of estimating Alexander's viability with

any certainty. In the absence of any important events, few people gave Alexander much chance of winning the nomination. But they also probably had less information about him than they did about Buchanan, so any change in the campaign might make them re-evaluate his prospects. As we can see from Figure 1, the average estimate of Alexander's viability was about .05 in the days leading up to Iowa, roughly the same as Buchanan's. But despite getting fewer voters on February 12, the big winner in Iowa appears to be Alexander, not Buchanan, and that boost continued the following week, as Buchanan, not Alexander, was challenging Dole in the New Hampshire polls. But just as quickly as he rose, Alexander's hopes fell as he was not able to finish higher than fourth in Delaware, Arizona, or South Carolina.

The difference between Alexander's and Buchanan's changing fortunes is clearly related to differences in candidate characteristics, Alexander had been elected to public office, and ideological considerations, Buchanan was probably unacceptable to a significant number of people within his party, not to mention the American electorate. But these data show that there were a greater number of people willing to buy up shares in Alexander than Buchanan, thus bidding up the price, reflecting a belief that Alexander's chances of winning the nomination were more substantial than Buchanan's. But for every buyer of an Alexander contract, there also had to be sellers. People who were only willing to buy Alexander at .05, but who were happy to sell to others at .10, .20, up to .320 (the highest price paid for an Alexander contract during this period). By contrast, the same people who had bought Buchanan at .05 were only able to find buyers willing to pay as much as .183 for Buchanan during this period when, by any objective measure, he had outperformed Alexander.

Through all of these changes, it is *possible* that all people's beliefs were changing more rapidly for Alexander than for Buchanan; if this were not the case, the price for Alexander contracts would not have been bid up higher than .05. But it is also probably true that some people who believed Alexander had only a .05 chance of winning the nomination paid

more than 5 cents for a share of Alexander, if for no other reason than they believed that there were other people out there ("the greater fools") who would pay much more.

Whatever the case, these data clearly show that there was greater disagreement among the public about Alexander's viability than Buchanan's.[8] In the case of changing beliefs, why was the public more responsive to Alexander's mediocre showing than Buchanan's first and second-place finishes? New information simply did not shake many people from their prior beliefs at Buchanan. In the case of the "greater fool" scenario, sellers were able to take advantage of buyers' mistaken belief that Alexander was more of a viable candidate than he was.[9] Either way, there was greater disagreement about the true value of Alexander's contracts.

The general point of this is to show that candidates about whom there is more disagreement within the public are going to have more volatile swings in their perceived viability when voters gain new information about their standing in the race. These are the candidates who are going to be better able to generate momentum. Using the IEM data, I have been able to provide some prima facie evidence that the candidates who appear to have the characteristics we would associate with being more likely to generate momentum — ideologically acceptable elected (or formerly elected) officials, even with low viability — will have greater volatility in their perceived viability than other, less favorably positioned candidates. We cannot, however, use these data to predict in advance which candidates have greater potential momentum. In the first month of the 1996 nomination campaign, the average difference in the high and low prices of Alexander and Buchanan were very sim-

[8]One can also see this in that the maximum difference between the high and low prices for Buchanan during this period was .083, when the media mistakenly projected Buchanan to a second-place win in Arizona. By contrast, the maximum comparable difference for Alexander was .137, after Alexander finished third in New Hampshire, and the average difference in the high and low prices for Alexander over the period between February 1 and March 2 was .042, compared with only .023 for Buchanan. Because these differences were also evident on days when no event had taken place that day, this probably favors the disagreement scenario more than changing beliefs.

[9]Of course, had Alexander won, I would be saying that the buyers took advantage of the sellers' lack of foresight.

ilar, .0071 and .0067, respectively. Furthermore, we need data that will allow us to identify which people disagree in order to determine the prospects of those people defecting from a candidate as they obtain new information. In short, we need another approach.

Heterogeneity In Assessments of Candidate Viability

The previous treatments of momentum have focused upon the changes in a candidate's viability given some change in the campaign environment. This treatment of momentum is concerned with the point estimate (or expectation) of a candidate's viability; a snapshot in time, but one that does not tell us what to expect in the future. In the previous section, the equal perceived viability of Alexander and Buchanan going into Iowa obscured a spread of point estimates among the public indicating greater volatility in opinion about Alexander's viability and, therefore, our ability to predict which candidate had the greater potential to generate momentum. Getting at potential momentum, thus leads us to two places: the period before the first primary and the variance of the candidates' viability among the electorate.

In order to examine the public's perceptions of candidates' viability, I use data from the 1988 NES Super Tuesday study that asked respondents about the viability of candidates in both parties. Specifically, the question asks:

> Now, thinking about these nominating conventions, who do you think is likely to win the Democratic nomination for President. We will be using a scale which runs from 0 to 100, where 0 represents no chance for the nomination, 50 represents an even chance, and 100 represents certain victory. You may use any number between one and one hundred. What do you think ALBERT GORE's chances are?

There are, of course, similar questions for all 13 candidates in the Democratic and Republican fields. The dependent variables for all analyses are normalized scores from this

question.[10]

The analysis in this paper revolves around the 1988 Democratic and Republican nomination campaigns. 1988 is a good year to examine the nomination process because both parties had competitive races. Beyond that, 1988 is also a good year because the two races represent the most typical kinds of nomination campaigns — one, the Democratic, where no established candidate starts the race as a well-known front-runner and the other, where a single well-known candidate, in this case, then Vice President Bush, begins the race as the clear front-runner. As Bartels (1988) has argued, the number of well-known candidates in a field affects the dynamics of the race, so these two races should provide two different ways that the variance can help us see potential momentum. Finally, the 1988 races are good cases because the basic structure of the nomination process has changed only in degree, but not substance.[11]

To establish what we might learn from the variance of people's beliefs about viability, it is useful to examine quickly the mean and variance of people's beliefs about candidate viability as expressed in response to the above question on the Super Tuesday study (Table 1). One can see that people's beliefs about candidates' viability do appear to respond well to changes in the campaign environment. Starting with the Republicans, it is clear that people believed that Bush and Dole were the class of the field, with the remaining candidates in the back.

While the variance is going to tend to be larger the closer a candidate's average viability is to the .5 mark, we can see evidence of the variance as reflecting growing agreement over time as people obtain more information about a candidate's viability. Note, for instance, that Bob Dole's average viability is (almost) the same in the periods before Iowa and after Super Tuesday, but the standard deviation has become smaller. If people are updating their

[10] Because the raw scores for most respondents sum to greater than 100%, I followed Bartels's (1988, Appendix A) approach in converting the raw scores into probabilities.

[11] The 2000 campaign might show a greater effect of the pre-primary period because of the extreme front-loading, but Paolino (1995) shows that the need to generate momentum in the pre-primary period was already well-established by 1988.

Table 1: Changes in Candidate Viability — Expectations and Standard Deviation

Republicans			
Candidate	Pre-Iowa	Post-Iowa	Post-Super Tues
Bush	.533/.226/.051	.485/.219/.048	.658/.191/.036
Dole	.248/.179/.062	.340/.192/.037	.244/.143/.020
DuPont	.025/.035/.001	.025/.035/.001	NA
Haig	.083/.109/.012	.061/.102/.010	NA
Kemp	.061/.082/.007	.056/.091/.008	.019/.033/.001
Roberston	.090/.117/.014	.126/.139/.019	.098/.114/.013
Democrats			
Candidate	Pre-Iowa	Post-Iowa	Post-Super Tues
Babbitt	.037/.066/.004	.035/.066/.004	NA
Dukakis	.161/.224/.050	.245/.274/.075	.362/.264/.070
Gephardt	.098/.170/.029	.197/.232/.054	.116/.135/.018
Gore	.108/.201/.040	.092/.157/.025	.174/.193/.037
Hart	.321/.312/.097	.184/.257/.066	.027/.079/.006
Jackson	.232/.258/.067	.229/.260/.068	.306/.276/.076
Simon	.092/.149/.022	.081/.142/.020	.055/.091/.008

Source: 1988 NES Super Tuesday Survey. The entries in each cell are mean/standard deviation/variance of viability. Descriptive statistics based upon responses of each party's own identifiers. Post-Iowa scores for DuPont, Haig, and Babbitt based only upon respondents who finished their interviews on or prior to February 18, February 12, and February 18, respectively, the dates when each candidate dropped out of the race.

beliefs based upon the events of the campaign, then we would expect greater agreement as the information is more confirmatory of prior beliefs. We can also detect a slight amount interdependence between candidates in the data for the Republicans. Note that as Kemp's average viability went down after Iowa, the standard deviation increased, perhaps reflecting some opportunity for Kemp to become a credible contender if Bush was not as strong as some people had thought. Generally, the data from the Republican race is not terribly different from what we might expect in a race with a dominant front-runner and only one moderately strong challenger.

The Democratic race, by contrast, looks potentially more volatile than the Republican

campaign. First, notice that all of the standard deviations for the Democratic candidates tend to be higher than those for the Republicans. For instance, compare Babbitt's .066 with DuPont's .035. The two candidates' mean viability is in the same neighborhood, but Babbitt's standard deviation is almost twice as great. In a race without an established front-runner, we should expect more fluidity in the campaign, such that even the trailing candidate, especially a former governor, cannot necessarily be counted out. Unlike the Republican race, there was still a fair amount of disagreement about candidates' viability following the Super Tuesday primaries. Dukakis has established himself as the front-runner, but unlike Bush, his nomination is by no means a certainty at this point.

Like the Republican race, the changes in the standard deviation do appear to reflect voters responding reasonably to changes in the campaign environment. Even as Gephardt's mean viability score went up from before Iowa to after Super Tuesday, there is much greater agreement that Gephardt probably will not win the nomination. Similarly, Michael Dukakis's performance on Super Tuesday helped convince people that his win in neighboring New Hampshire was not a fluke. The reduction in the standard deviation appears to reflect a confirmation that he had at least been winnowed into the field by demonstrating strength outside his home region.

But again, while these data provide more evidence that the variance of people's perceptions of candidates' viability provides some measure of potential momentum and how people respond to the campaign, we still need a more informative way of examining viability. For instance, it might come as a surprise that Gary Hart had such a high viability rating going into the Iowa caucuses. Surely, given his earlier scandal there was no way that he could quickly resurrect his campaign. But one needs to remember that this, perhaps elite, view was not matched by his standing in the polls at this time. Polls conducted in the last week of January and reported a week before the Iowa caucuses placed Hart first nationally, behind Jackson for second in the South, within the margin of error behind Simon

for second in New Hampshire, and fourth in Iowa. While the politically sophisticated might be able to see beyond Hart's standing in these polls as reflecting little more than public familiarity, respondents in this survey (voters in the Super Tuesday states) might not have been aware of Hart's standing in Iowa or other woes. Given information that he was among the leaders, who could count him out with any level of certainty when he had surprised many politically sophisticated observers only four years previously?[12] Understanding how the campaign influences this heterogeneity that will concern us in the next section.

Sources of Heterogeneity in Perceptions of Viability

Estimating the Model

The view that I have discussed so far, that there are two dimensions of candidates' viability, the *expected value* and *dispersion* around that value, indicates that we can predict which candidates have the best chance of generating momentum. At this point, though, we need to go beyond simple descriptive statistics to a means of estimating heterogeneity in the electorate's view of candidates' viability. The value of using a multivariate model to estimate factors influencing heterogeneity in the perceptions of candidate viability is that we will be able to isolate sub-groups in the electorate to see how, controlling for other influences, these groups differ in both the assessment and the degree to which they deviate from that predicted assessment. For the purposes of this paper, the main sub-groups of interest are those that have information about the outcome of the Iowa, New Hampshire, and Super Tuesday contests and those who do not.

The starting point for this is to introduce the beta distribution as an appropriate probability distribution for estimating which factors influence voters' views of candidates' viability using maximum likelihood estimation, making an assumption about the probability

[12] One must also note that Hart's average viability rating may be inflated because the normalizing procedure depicts people who had heard of Hart, but no other candidate, as believing that Hart is a sure thing, even if their true belief is that there must be some candidate who has a better chance than Hart.

distribution, and then specifying the expected value and variance of the distribution as the function of two sets of independent variables (King 1989). In this case, the dependent variable, respondents' perceptions of candidates' viability, is bounded by 0 and 1 (by adding .01 to the normalized probabilities and dividing by 1.02), so it makes sense to assume that the beta distribution:

$$f(y|\alpha,\beta) = \frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} y^{\alpha-1}(1-y)^{\beta-1} \tag{1}$$

where $0 < y < 1$ and $\alpha, \beta > 0$ (DeGroot 1986), is appropriate.

The beta distribution is well-suited to estimating probabilities. First, because probabilities are bounded by 0 and 1, using an unbounded distribution, like the normal, makes less sense theoretically.[13] Second, the mean and the variance of the beta distribution, unlike the normal, are not completely independent of one another. Unlike the normal distribution, the parameters of the beta distribution, α and β, do not correspond directly to the mean and variance of y. Instead,

$$\mathrm{E}(y) = \frac{\alpha}{\alpha+\beta} \tag{2}$$

$$\mathrm{Var}(y) = \frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}. \tag{3}$$

As with the Bernoulli distribution, one can see that as the expected value of a beta distributed variable approaches 0 or 1 (that is, as α or β approach 0, respectively), the variance approaches 0. Similarly, the variance of the beta distribution is maximized for $\alpha = \beta$; when the expected value is .5. Unlike the Bernoulli distribution, the variance of the beta distribution is not a direct function of the expected value because the beta distribution can accommodate differences in variance, given the same mean. For example, if $\alpha = \beta = 1$, the expected value is .5 and the variance is 1/12, but if $\alpha = \beta = 2$, the expected value is

[13] Estimation of the models using OLS allowed me to reject the null hypothesis of normal errors for most candidates using the Jarque-Bera test (Judge, Hill, Griffiths, Lutkepohl and Lee 1988). The results are available from the author upon request.

still .5, but the variance is now 1/20.[14] The fact that the mean and variance are related is useful in that we should expect, other things equal, there to be greater disagreement about the viability of a candidate who is seen as having an even chance of winning than a candidate who most people agree is likely to lose. Or to put it more clearly, once a candidate has won a majority of the delegates in the primaries, few people will believe that a candidate's chances of being nominated are much less than .999, even though there will be *some* variation, depending upon one's beliefs about a candidate's probability of having poor health, being tainted by scandal, being the victim of a "Manchurian Candidate" scenario, or whatever else that could lead to another candidate's nomination.[15]

In order to estimate the model, we need to specify α and β. Since α and β must be positive, an obvious specification is

$$\alpha = \exp(\mathbf{X\Gamma}) \tag{4}$$

and

$$\beta = \exp(\mathbf{X\Phi}) \tag{5}$$

where $\mathbf{X}$ is an nxk data matrix of explanatory variables and $\mathbf{\Gamma}$ and $\mathbf{\Phi}$ are kx1 parameter vectors. Note that the same set of explanatory variables are used in both expressions even if a variable is thought to affect only the mean or variance because both the mean and variance are functions of both α and β.[16] From here, one takes the log of equation 1 and obtains the log-likelihood function for the beta distribution.

$$\log L = \sum_{i=1}^{N} \ln\Gamma(\alpha+\beta) - [\ln\Gamma(\alpha) + \ln\Gamma(\beta)] + (\alpha-1)\ln(y) + (\beta-1)\ln(1-y) \tag{6}$$

[14] For a unimodal density of y ($\alpha > 1$, $\beta > 1$), $Var(y) < 1/12$ (Johnson, Kotz and Balakrishnan 1995, 217).

[15] "The Manchurian Candidate" is a 1962 film whose story involves a plot to assassinate the presumptive nominee at the national party convention.

[16] It is possible to derive expressions for α and β that allow one to specify certain variables as affecting only the mean or the variance, but these expressions require one to make certain restrictive assumptions about the variance. I estimated the models below under both procedures, and the results from each were generally similar.

where α and β are specified by equations 4 and 5, respectively.

The drawback to this method is that the parameters cannot be interpreted directly as having a statistically significant effect upon either the mean or the variance.[17] At a minimum, the effects of the independent variables upon the mean and the variance can be examined only with respect to substantive effects using the method of first differences (King 1989). One way of assessing statistical significance, however, is to calculate the first differences and Wald statistics for the mean and variance of the independent variables.[18] In this approach, the hypothesis that an independent variable does not have any effect upon the mean or variance is accomplished in two steps. First, set $\mathcal{D}$ equal to the first difference, a two standard deviation difference around the mean or, in the case of dichotomous independent variables, the difference between the minimum and maximum values, F as the partial derivative of $\mathcal{D}$ with respect to the parameters, and Σ as the variance-covariance matrix of the parameters. Then, calculate

$$\mathrm{W} = \mathcal{D}(F'\Sigma F)^{-1}\mathcal{D} \tag{7}$$

where W is the Wald statistic, which, in this case, is distributed as a χ^2_2 variable.

The above equations provide the likelihood function, but one still needs to specify $\mathbf{X}$. The core part of the model for all respondents is:

$$\begin{aligned}\mathbf{X\Gamma} \quad = \quad & \gamma_0 + \gamma_1 \widehat{\text{Preference}}_{i,j} + \gamma_2 \text{Party} + \gamma_3 \text{Pref/Party Interaction} + \\ & \gamma_4 \text{Best in State}_{i,j} + \gamma_5 \text{Political Information}_i + \gamma_6 \text{Media Use}_i + \\ & \gamma_7 \text{Number of Candidates}_i \end{aligned} \tag{8}$$

with a similar specification for $\mathbf{X\Phi}$.

"Preference," as denoted by the hat, is the predicted feeling thermometer score for each candidate. Using the predicted values of preference from instrumental variables addresses

[17] This is the advantage of estimating a model that directly specifies the mean and the variance.

[18] My thanks to Walter Mebane for suggesting this approach.

the simultaneity problem (Bartels 1985).[19] "Party" is a dummy variable for respondents who do not identify with the relevant candidate's party. Introducing the dummy and interaction ("Pref/Party Interaction") variable is necessary for isolating the effects of preference upon the respondent's perception of a candidate's viability for only respondents who are likely to vote for the candidate in question because we would expect less of a relationship between expectations and preferences for out-partisans.

"Best in State" is a dichotomous variable indicating whether or not the respondent felt that candidate$_j$ was the candidate most likely to win his party's contest in the respondent's state. For this and the remaining variables, it is not necessary to include partisan interactions because there is little reason to believe that the effects of these variables should vary by partisanship.

"Political Information" is a 5-point index of each respondent's ability to place Ronald Reagan, George Bush, Gary Hart, and Jesse Jackson on ideological scales accurately with respect to one another (cf. Luskin 1987). A major problem with the 1988 Super Tuesday survey is a total absence of variables for measuring respondents' political information. The only objective measures of political information are whether or not the respondent can correctly identify each party's winners in the Iowa and New Hampshire contests. Unfortunately, these direct measures of information are available for only respondents interviewed after the beginning of the primary season and are domain specific to the hypotheses being investigated. The scale that I have chosen to use is not without problems because three of the four political figures are candidates in the 1988 race – and, so this measure may not be totally free of domain specificity – but, this problem is minimized to the extent that all three candidates were familiar to most voters going into the 1988 race. As such, information

[19] The reduced form equation for preference included respondents' proximity to candidates' ideological position, evaluations of candidate traits, party identification, race, educational level, whether or not the respondent described herself as a born-again Christian, age, union membership, and dummy variables for the south and living in a candidate's home state. The estimates generated for each candidates from instrumental variable models are available from the author upon request.

about these candidates is more likely to reflect a general level of political information than any other measure available in the survey.

"Media Use" is a 13-point scales of a respondent's self-reported attention and frequency of exposure to politics through the television and print media. "Number of Candidates" measures the number of candidates in the relevant party for whom the respondent assess the chances of winning the nomination. This variable is another measure of political information. Following Bartels (1988), respondents will only evaluate a candidate's viability if their knowledge of the candidate surpasses a threshold. This measure of political information should tell us the degree to which respondents more familiar with the field of candidates can assess each candidate's viability accurately.

The above model, estimated for respondents interviewed prior to the Iowa caucuses, is modified for later interviews. While the estimates of pre-Iowa respondents will be important later, the immediate emphasis is upon estimates from respondents interviewed in the first wave after the Iowa caucuses and from all respondents re-interviewed after the Super Tuesday races. For respondents interviewed after the Iowa caucuses, equation 8 is altered to include two dummy variables for whether or not the respondent could correctly identify the winner of the Iowa caucuses and New Hampshire primary. For estimates based upon the data collected after Super Tuesday, the above model is modified by using the actual feeling thermometer rating the respondents gave for the candidate in the first wave of the survey and substituting a dummy variable for their correct knowledge about the winner of the Super Tuesday contest in their state for their expectation about which candidate would finish "best in state." The effect of respondents' information about the outcomes provides the basis upon which we can evaluate how people's learning during the campaign influences candidates' current viability as well as their potential momentum and is the focus of the next section.

Results

The results in Table 2 and 3 show the effect, in terms of the first differences, holding the other variables at their means, of respondents' correct information about the outcomes of the early races in their estimates of each candidate's viability, both in terms of the effect upon the expected value and heterogeneity of the public's perceptions of candidates' viability. Concerning the expected value, none of the effects from the early races are particularly surprising. Candidates who won were rewarded, while those who lost were penalized.

Examining the variances, however, gives us a better sense of how heavily the candidates were penalized or rewarded for their efforts. If we think of changes in the variance as clarifying or confounding people's beliefs about a candidate's viability, then we can say that a candidate whose average expectation increases is not rewarded as greatly if that gain in estimated viability is not accompanied by any greater clarification of that candidate's position. By contrast, if a candidate gains a higher predicted viability from a victory and the variation around that estimated viability is narrower among those who know the candidate won than those who do not know, then the information about the outcome is much more valuable because that candidate's viability is in less dispute.

Looking first at the Republican results (Table 2) note that while those who were aware of the Iowa results differed in their assessment of Bush's viability from those who did not know who won Iowa, they were no more likely to agree upon what those results meant for Bush's candidacy. Similarly, while Dole's victory led to an increase in his expectations, people did not appear to give it much weight in clarifying his position in the race. Iowa had similar effects upon people's perceptions of Robertson's and Kemp's chances, as Robertson's second-place finish created some additional questions about his viability, while Kemp could reasonably be argued to be helped by a result that case some doubt on Bush's lead.

The outcome in New Hampshire, however, went a long way toward clarifying the candidates' viabilities. Bush's win was consistent with people's prior beliefs about his lead

in the polls, but still did not necessarily significantly increase agreement about his greater viability. It is important to note, however, that Dole's momentum was stopped, as people's expectations of his viability were reduced and the consensus about those beliefs was also greater, almost reaching, $p < .05$. To the extent that the nomination process is about elimination, this may have been as important for Bush as a finding that his victory increased the consensus about his probability of winning the nomination. Finally, New Hampshire effectively provided a winnowing point for Kemp and Robertson. People who could identify Bush as the New Hampshire winner downgraded their already low probability of winning the nomination and deviated less in that belief than those who were not aware who had won. The Super Tuesday results finished off the winnowing, with Dole's prospects further damaged, while Bush's were greatly enhanced and clarified.

The Democratic results (Table 3) illuminate in greater detail how attention to changes in the variance with which candidates' viability is viewed can provide clues to potential viability. As with the Republican case, the winners and losers on the days of Iowa, New Hampshire, and Super Tuesday were rewarded and punished in terms of the public's average expectations about candidate viability. Similarly, Iowa did not do much to clarify perceptions about candidate's viability. Gephardt was rewarded for winning, but his victory did not produce any clearer sense of increased viability. Likewise, the losing candidates' viability was no more agreed upon by people aware of the Iowa winner than those unaware. While the media may operate under the belief that Iowa eliminates some candidates, but does not select a nominee, it seems possible people do not give as much weight to the results in Iowa, perhaps because the results in New Hampshire so quickly provide more, and often countervailing, information. If so, it may be the case that Iowa is more important for how the media view the nomination contest than for how the public views it.

Rather, it appears as though New Hampshire has a greater effect upon people's assessments of candidates' viability. As in the Republican race, New Hampshire appears to have

pushed at least two, if not three, candidates out of the race: Hart, Jackson, and Simon. In all three cases, the knowledgeable public's perception of these candidates' viability was reduced and they held that belief with a greater consensus. Gore's decision not to actively contest either race also appears to have diminished his standing in the public's mind prior to Super Tuesday. Going onto Super Tuesday, Jackson and Gore could rely upon strength in the Southern primaries that was not available to either Hart or Simon. While people who were aware of the winner in their state on Super Tuesday did not have appreciably higher assessments of either Jackson's or Gore's viability, neither were there great declines nor any increase in the consensus that these candidates were or were not viable.

Finally, while Gephardt's second-place finish in New Hampshire hurt his candidacy, it again seems likely that his drop in viability was not accompanied by either a great clarification of either his or Michael Dukakis's standing in the polls. This result makes some sense if you consider that one way of viewing the Iowa and New Hampshire results was that each had won on their home territory, while the other finished respectably in the other's region. Dukakis may have come out slightly better, but without any additional knowledge, there was little basis for saying that either gained much advantage over the other from these races. From these results, one might argue that Gephardt should have been a more competitive candidate on Super Tuesday and would have if he had greater resources to compete against both Dukakis and Gore (Abramson, Aldrich and Rohde 1990; Hadley and Stanley 1996).

Despite the similarities between the two races, there is a big difference. Michael Dukakis, like George Bush, was punished for a loss in Iowa, but was rewarded for victories in New Hampshire and on Super Tuesday. But unlike Bush, none of Dukakis's victories had much effect in creating any consensus about his chances of winning the nomination. Dukakis had not moved into a position where there was widespread agreement about his winning the nomination. Rather, he remained vulnerable, as questions about his viability could have

been raised after he lost the Michigan caucuses to Jesse Jackson.

This raises some interesting points about the effect of the current nomination process. While in the past, doubts about Dukakis's viability would likely have been sufficient for party leaders to consider other candidates who had not entered the race, Dukakis won, perhaps only, because the nomination process demands that a candidate go through the primaries. It also shows how Dukakis was probably able to get through the primaries because he did not face very formidable competition (remember the description of the field as the "seven dwarfs") or, the less likely possibility, that winnowing eliminated some candidates that might have been become more attractive on a second look.

The results show how campaign events make a difference to how people view candidates' viability. Following primaries and caucuses, people who are aware of the outcome of the race tend to update their beliefs for both the winners and losers based upon the outcomes. This is not particularly surprising, but the new feature of these results is they show how the outcomes lead to greater or lesser agreement about candidates' viability. When people's perceptions of candidates' viability is lower following a race *and* people are in greater agreement about the decline, those candidates are that much closer to being eliminated from the race. By contrast, if the results do not provide any basis for greater agreement, such candidates have not suffered as great a loss, even if the predicted value of their viability declines significantly. Of course, a loss is still a loss, but one that does not narrow the distribution of beliefs still leaves the candidate in a position to fight another day, if other resources are available to that candidate. Most importantly, the results *after* the primaries have begun provide more support for the value of using the variance of the public's perceptions of viability as a means of interpreting outcomes of the nomination race and as a measure of estimating potential momentum *before* the beginning of the primary season.

Using Heterogeneity to Evaluate Potential Momentum

The results in the previous section speak to the role of the variance in our interpretation of candidates' viability during the primary season. But showing that our interpretation can be improved by knowing not just the expected value, but the dispersion around that value does not necessarily tell us about candidates' potential to generate momentum. To show how these components can combine to give us a better view of candidates' chances of gaining momentum, recognize that using information about a probability distribution allows us to create confidence intervals. Given information about an estimated prior distribution and some cutoff point, we can determine the probability that a candidate's chances of winning the nomination fall above or below a cutoff point, below which we may decide that devoting resources to a candidate is not worthwhile. In Table 4, I have listed the 95% confidence intervals for candidates' viability, based upon the mean estimate of the α and β parameters from maximum likelihood estimation of the model in equation 8 for respondents interviewed prior to the Iowa caucuses.

These intervals show that Bush is a clear favorite among the candidates in the Republican race; we can safely say that Bush has a better chance of winning the nomination than DuPont, for example, who had the least chance of being a major party nominee in 1988. If our point is to eliminate candidates who have very little chance of being nominated, we would certainly presume that Bush and Dole have a good chance of being "winnowed in," but that we probably wouldn't make too much of a mistake by ignoring DuPont's candidacy. For Haig, Kemp, and Robertson, however, we might have to rely upon some cut-point to determine how much, if any, resources they would receive. The results do show, however, that we would most likely have to treat one of these candidates similar to the others.

On the Democratic side, the race is considerably more wide-open. Even the least viable candidate, Babbitt, has a confidence interval that reaches up to the .28 mark, higher than all but two of the Republican candidates. Based upon these results, behavior by the media,

financial contributors, and party elites to winnow out any of the candidates in advance of the Iowa caucus indicates that they apply a harsher standard than do voters in estimating candidates chances of winning.

Obviously, using the 95% interval is an arbitrary decision. Alternatively, we might consider some other measure of a candidate's potential momentum in deciding whether or not to devote resources to that candidate. Someone could decide, for instance, that devoting resources to a candidate is worthwhile only if that candidate has a 50% probability of having a viability greater than .10, or whatever. The point is that the construction of confidence intervals provides a better measure of assessing candidates' ability to become viable candidates. Again, we can see that Babbitt was perceived as having at least as good a chance of getting the Democratic nomination as most of the Republican field of winning their party's nomination. On this basis, we could also argue about the arbitrariness of the media's and financial contributors' decisions about allocating their resources.

Another way of using the information from estimates about pre-primary perceptions of candidates' viability is to make projections of candidates' viability given different outcomes in the early contests. One way that we can theorize how voters' update their beliefs about candidates' viability is according to Bayesian updating. The basic intuition behind a Bayesian approach to probability is that people combine sample information with their prior beliefs to generate a posterior probability distribution for some matter of interest (Leamer 1978).

For this particular problem, it seems reasonable that people have some beliefs about candidates' viability that they update after observing the outcome of each contest. Given the use of a beta distribution to estimate a prior probability function (equation 8), we can use a binomial distribution as the likelihood function (the sample information) that people use to update their prior beliefs and form a posterior distribution that is also a beta distribution. Taking a beta distribution, as specified in equation 1, and combining it with a

binomial likelihood, with parameters, in the upcoming example, $n, r \in 0, 1$, where n equals the number of events observed, and r indicates whether each event was a "success" or a "failure," produces a posterior beta distribution, only with parameters $\alpha + r$, $\beta + n - r$.[20] In short,

$$f_2(y|\alpha + r, \beta + n - r) \propto l(y|n, r) f_1(y|\alpha, \beta) \tag{9}$$

where f_1 and f_2 represent the prior and posterior distributions and $l(y|n, r)$ is the likelihood function. With a series of contests providing new "sample" information, the posterior after each contest becomes a prior distribution of belief about the subsequent race. Alternatively, we can use this approach to produce posterior distributions after the outcomes of both the Iowa and New Hampshire races.

Given the data from the Super Tuesday study, it would not make much sense to presume that people update their beliefs in accordance with the Bayesian model that I have suggested. But we do not always have such data available. In fact, if we were trying to evaluate a candidate's potential to generate momentum, we would not have any data from after the contests. So an important question is whether or not we could gather data prior to the first contest to generate prior beliefs, from which we can then generate posterior distributions based upon different scenarios to predict a candidate's chances of generating momentum. In other words, we could evaluate what a less viable candidate would have to do to attain a position where we would consider that candidate to have a reasonable chance of winning the nomination.

In Figures 2 and 3, we compare the predicted posterior distributions given what actually happened in the 1988 Iowa caucuses and New Hampshire primaries with the distributions based upon the parameters estimated from the results in Tables 2 and 3 among people who could correctly identify the winners in the respective party's Iowa and New Hampshire race. That is, I took the estimated α and β values from the maximum likelihood estimates

[20] If, as in this case, we examine only one piece of sample information at a time, the binomial reduces to a Bernoulli distribution.

of people interviewed prior to Iowa, giving a prior distribution of $\hat{\alpha}$ and $\hat{\beta}$, holding all independent variables at their means for these respondents. Then, assuming we did not have any information about how people actually updated their beliefs for each candidate based upon the outcomes of those contests based upon the Bayesian approach in equation 9. These distributions are represented by the dotted lines in Figures 2 and 3. We compare these distributions with the estimated distribution, with parameters $\hat{\hat{\alpha}}$ and $\hat{\hat{\beta}}$, for people who knew the correct winners of the early races.[21]

For most of the 10 candidates, the Bayesian estimates are pretty close in line with the actual estimates. In many instances, the changes in the estimated values α and β from the maximum likelihood approach are exactly what we get from the Bayesian approach. This provides some evidence that the way that people were actually updating their beliefs in the 1988 nomination season was consistent with the hypothesis that people update their beliefs as Bayesians. A value of this approach is that, with only information collected prior to the primary season, we can estimate how candidates' viability would change given certain outcomes of the early contests. From here, we could then generate confidence intervals on the probability of each candidate's chances of winning the nomination to determine which candidates really have a chance of winning the nomination, even assuming a better-than-expected result.

With both of these methods, there are some problems where our estimated results may not perfectly match updated beliefs. For one, the Bayesian approach treats only winning and losing. But how do we project the effect of a better-than-expected second-place result? In Figure 2, for example, we can see that the Bayesian posterior distributions are narrower and centered closer toward 0 than the distributions based upon the maximum likelihood estimates. This is almost surely the result of the Bayesian approach treating Robertson's second-place finish as a loss, while the actual respondents observing the Iowa results, did

[21] The values in parentheses are the respective α and β parameters for each distribution.

not punish Robertson as sharply. Furthermore, the two estimated distributions were not as close in the Republican race when simulated a Bayesian updating from the 16 outcomes on Super Tuesday. Specifically, the Bayesian approach predicted a much greater increase in viability for Bush, given his sweep that day, than was true for voters who actually knew about Bush's win. Finally, we see that the actual voters take into consideration the vigor with which candidates contest certain states. For Gore, knowledge about the outcome of the New Hampshire race had almost no effect upon the estimated shape parameters of the distribution, compared with the parameters given knowledge about the Iowa race.

In using these methods, one could reduce some of these problems by considering examining the effects of different assumptions. It may be the case that many candidates start with such low expectations that a win will not produce a posterior distribution much different from that given a loss. At a minimum, we can get some sense of how different scenarios produce different effects and use that information in consideration with our willingness to endure the costs of being wrong. But taking the variance into consideration and constructing confidence intervals provides a much better basis for estimating candidates' prospects than relying simply on a point estimate.

Discussion

This paper set out to show how considering the variance of the distribution of people's perceptions about candidates' viability can help us better understand the nomination process and devise means for estimating candidates' potential for generating momentum in the early races. To this end, the paper shows that people use the results from the early nomination contests to update their beliefs about candidates' viability in reasonable ways. Given this understanding of how voters update their beliefs, I have proposed two ways in which we might be able to better predict candidates' chances for generating momentum once the primary season begins, with only data from the pre-primary period.

In addition to these technical elements of examining momentum in the nomination process, the results in this paper also have some normative implications for our understanding of the nomination process. In short, while people do winnow candidates out of the race based upon results from the contests, they do so much more slowly than other political elites, such as the news media and financial contributors. The results from the Democratic race indicate that one could make an argument for all of the candidates being seen as having some reasonable chance of winning the nomination. We know, however, that this was not the case. Given that Richard Gephardt appears to have been restricted in his ability to follow up on any momentum he received from Iowa or New Hampshire because of limitations on his campaign resources, we can be pretty sure that Bruce Babbitt, Paul Simon, and perhaps Gary Hart, would have been in no better position had they been able to win the Iowa caucuses.

This suggests that parties may actually be hurt in trying to narrow the race too quickly. Is it reasonable to effectively determine the nominee from a list of "seven dwarves" within a few weeks of most people's attending to the nomination campaign? By the time the Michigan caucuses raised some questions, strongly confirmed later in the summer and fall, about the Dukakis organization's ability to run an effective campaign, the nomination was more or less decided. By that time, only an unelectable Jesse Jackson or even less effective Al Gore could have taken the nomination away from Dukakis. The problem occurred for the Republicans in 1996. By the end of January, many people were convinced that Robert Dole could not effectively campaign against Bill Clinton, but short of Dole's quitting the race, there was not much chance that anyone else would be given the nomination.

In trying to reduce the destabilizing effects of momentum from the nomination process, by front-loading and actively narrowing the field during the pre-primary period, the parties may have put themselves in positions where relatively untested candidates are given the nomination, but are unable to run effective general election campaigns. While one could

argue that the candidates produced by momentum in 1972 and 1976 were no better and had other deficiencies in governing (Polsby 1983), it seems clear that the current system places such a greater emphasis on the pre-primary period that voters have less opportunity to choose from a set of candidates they believe to be viable. In short, by 1988 and certainly today, the process appears to have changed back to something much more similar to the system in 1968 than that of 1972.

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Table 2: Effects of Campaign Outcomes — Republican Candidates

A. Expected Value				
	Bush	Dole	Kemp	Robertson
Knows Iowa Winner				
$\mathcal{D}$	-.072*	.071*	-.015	-.007
Wald	19.15	26.48	2.14	0.52
Knows New Hampshire Winner				
$\mathcal{D}$	.056*	-.039*	-.030*	-.050*
Wald	12.06	8.22	9.55	33.77
Knows Super Tuesday Winner				
$\mathcal{D}$	.113*	-.076*	.001	-.046*
Wald	42.75	18.97	0.09	18.80
B. Variance				
	Bush	Dole	Kemp	Robertson
Knows Iowa Winner				
$\mathcal{D}$	-.007	-.007	-.001	-.002
Wald	1.92	2.28	1.79	0.80
Knows New Hampshire Winner				
$\mathcal{D}$	-.004	-.011	-.004*	-.007*
Wald	0.87	5.71	8.76	16.22
Knows Super Tuesday Winner				
$\mathcal{D}$	-.014*	-.011	.000	-.007*
Wald	6.60	3.37	0.26	10.78

Source: 1988 NES Super Tuesday Survey. $\mathcal{D}$ is the first difference in the predicted expectations. For knowledge of winning candidates, the first difference is between knowing the winner and not knowing the winner, holding all other variables at their means. Otherwise, the first difference is between the variable valued one standard deviation above and below its mean.

Table 3: Effects of Campaign Outcomes — Democratic Candidates

A. Expected Value						
	Dukakis	Gephardt	Gore	Hart	Jackson	Simon
Knows Iowa Winner						
$\mathcal{D}$	-.052*	.121*	-.047*	-.024	-.048*	.014
Wald	6.46	45.04	9.06	4.56	9.69	1.50
Knows New Hampshire Winner						
$\mathcal{D}$	.141*	-.066*	-.042*	-.050*	-.050*	-.067*
Wald	54.00	17.12	8.07	22.39	9.38	40.36
Knows Super Tuesday Winner						
$\mathcal{D}$	.054*	-.003*	.003	NA	-.014	-.053*
Wald	7.55	8.38	0.02		1.15	13.69
B. Variance						
	Dukakis	Gephardt	Gore	Hart	Jackson	Simon
Knows Iowa Winner						
$\mathcal{D}$	-.001	-.004	-.007	-.004	-.010	.005
Wald	0.04	0.61	4.36	1.68	4.10	4.56
Knows New Hampshire Winner						
$\mathcal{D}$	.003	0.001	-.006	-.008*	-.012*	-.009*
Wald	0.19	0.04	5.18	15.47	6.24	23.64
Knows Super Tuesday Winner						
$\mathcal{D}$	-.003	-.009*	-.001	NA	-.004	-.011*
Wald	0.26	9.30	0.01		0.84	6.32

Source: 1988 NES Super Tuesday Survey. $\mathcal{D}$ is the first difference in the predicted expectations. The first difference is between knowing the winner and not knowing the winner, holding all other variables at their means.

Table 4: 95% Confidence Intervals for Prior Beliefs about Viability

Republicans			Democrats		
Candidate	Lower Limit	Upper Limit	Candidate	Lower Limit	Upper Limit
Bush	.15	.87	Babbitt	0	.28
Dole	.04	.60	Dukakis	0	.69
DuPont	0	.14	Gephardt	0	.59
Haig	0	.23	Gore	0	.53
Kemp	0	.27	Hart	0	.63
Robertson	0	.26	Jackson	0	.58
			Simon	0	.50

Source: 1988 NES Super Tuesday Survey.

Figure 2: Estimated and Predicted Distributions — Republican Candidates

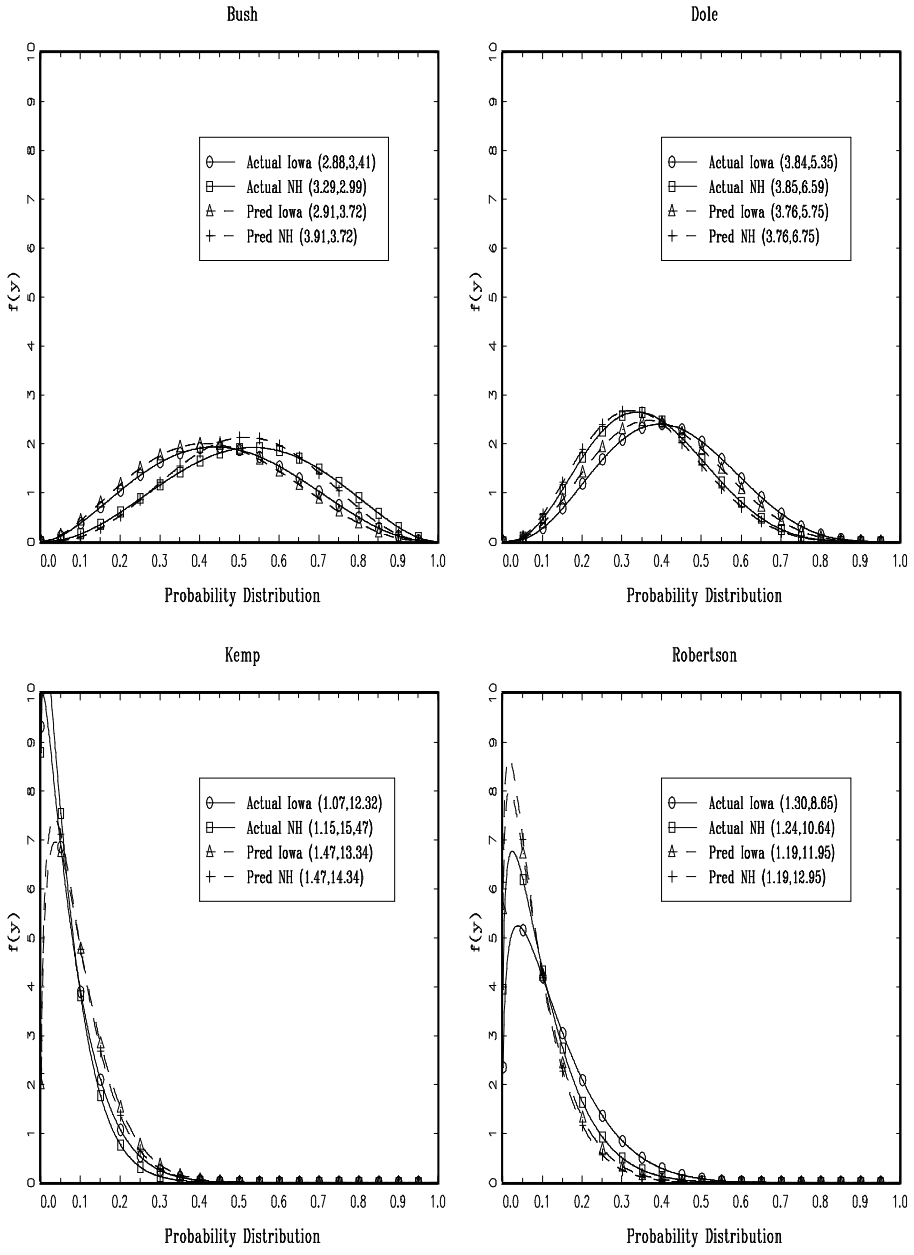

Figure 3: Estimated and Predicted Distributions — Democratic Candidates