

# War President: The Approval Ratings of George W. Bush

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The authors estimate a model of the job approval ratings of President George W. Bush that includes five sets of variables: a “honeymoon” effect, an autoregressive function that tracks a decline in approval, measures of economic performance, measures of important “rally events,” and a measure of the costs of war—in this case, the U.S. death toll in the Iraq War. Several significant effects are found, including the rally that followed the attacks of September 11, 2001; the commencement of the war in Iraq; and the capture of Baghdad in April 2003. Since the beginning of the war in Iraq, however, the casualties of war have had a significant negative impact on Bush’s approval ratings. Although the effects of additional battle deaths in Iraq will decrease approval only marginally, results suggest that there is also little prospect for sustained improvement so long as casualties continue to accumulate.

**Keywords:** George W. Bush; approval ratings; Iraq War

The impact of the Iraq War on the political fortunes of President George W. Bush remains something of a puzzle. Although past models of presidential election outcomes demonstrated that war casualties significantly lowered the vote share of the incumbent during the Korean and Vietnam Wars (Hibbs 2000; Bartels and Zaller 2001), we know of no forecasting model of the 2004 election that tested for such an

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effect of the Iraq War. Nonetheless, the accuracy of the forecasts in comparison to previous elections was quite high, presumably because economic fundamentals largely governed the outcome (Campbell 2005a, 2005b; Wlezien and Erikson 2005; Lewis-Beck and Tien 2005).

On the other hand, there is some evidence from state-level, popular vote totals to suggest that war casualties did depress Bush's vote: state-by-state casualties were correlated with a lower vote for Bush than he had received in the 2000 election. According to this analysis, had there been no war—or had casualties in Iraq been lower—Bush would have won reelection with an electoral college landslide (Karol and Miguel 2005). A second study found that the casualty toll in Iraq had driven Bush's job approval down by about 10 percentage points by late summer 2004. Again, had there been no war or had casualties been significantly lower, Bush's approval rating would have approached 60 percent—sufficient by historical standards to guarantee a comfortable margin of victory rather than a very close election (Eichenberg and Stoll 2004). Finally, initial studies of the election outcome in 2004 converge on the conclusion that the Iraq War was a net negative for candidate Bush. It was nonetheless offset by a net advantage on the terrorism issue and by higher Republican turnout and voter loyalty (Jacobson 2006; Abramson et al. 2006; Campbell 2005a, 2005b).

Whether the economy or the war has most affected the political fortunes of President Bush thus remains an open question. In this article, we analyze the effect of economic performance, war casualties, and other variables in a model of Bush's weekly job approval ratings from February 1, 2001, through January 30, 2006. In the following section, we review what is now a fairly uniform literature on presidential job approval, as well as several recent studies of Bush's approval rating specifically. Following this review, we briefly describe the weekly job approval data that we gathered for this study and specify a model that evaluates the effect of war casualties, economic performance, a "honeymoon" variable, and several important rally events. Our major conclusion is that Bush has, to a large extent, been a "war president"—his approval rating was not affected by economic performance after the war in Iraq began, but it has been substantially affected by several key rally events and by the casualties suffered in the Iraq War.

## **THE LITERATURE ON PRESIDENTIAL JOB APPROVAL**

The behavior of presidential job approval is now well understood. Beginning with Mueller (1973) and progressing most recently in the work of Erikson, MacKuen, and Stimson (2002), an increasingly cumulative body of research demonstrates that job approval can be accurately modeled as a function of five sets of factors: some version of an early term "honeymoon" variable to account for a president's initially high approval ratings, an autoregressive function of approval itself (which is normally less than zero and thus tracks a subsequent decline in every president's rating), some indicator of economic performance, a set of "rally" events that moves approval

above (or below) its path toward equilibrium, and—where relevant—the fact of involvement in costly wars or the cumulative level of casualties in wars (Korea and Vietnam in past research).

These variables figured prominently in Mueller's (1973) landmark study. Mueller hypothesized that the tendency of presidential approval to decline from the first months in office was a result of "a coalition of minorities" turning against the president "as he is forced on a variety of issues to act and thus to create intense, unforgiving opponents of former supporters" (Mueller 1973, 205). As for economic performance, Mueller included an "economic slump" variable that identified months in which the economy was performing worse (in terms of employment) than it had been during the president's first month in office. Rally events had to meet three criteria: they had to be (1) international, (2) involve the United States and particularly the president directly, and (3) be specific, dramatic, and sharply focused. Operationally, Mueller specified rallies as a simple counter variable between rally events (Mueller 1973, 209-12). As for war, Mueller specified the effects of the Korean and Vietnam Wars as simple dummy variables in models of presidential approval. Perhaps more frequently cited are Mueller's separate models of approval of the wars themselves. In these estimates, Mueller specified the cumulative total of battle deaths or their logarithm to the base 10 (Mueller 1973, 61, 224).

Mueller's (1973) results set the agenda for more than three decades of research on presidential approval. Job approval does indeed exhibit decline over time, and it is significantly affected by economic downturns. Approval does rally after dramatic international events, but it then resumes its downward slide. The Korean conflict—but not the Vietnam War—had a negative impact on approval. Finally, in separate models of war approval, Mueller finds that it is the logarithm of war casualties rather than its absolute cumulative value that most strongly drives down public support for war. He reasons that as casualties increase, it takes greater and greater accumulated casualties to have a further downward impact on public opinion:

One assumes that the public is sensitive to relatively small losses at the start of the war but only to rather large ones toward its end. Specifically, one does not expect casualties to affect attitudes in a linear manner with a rise from 100 to 1000 being the same as one from 10,000 to 10,900. Rather, a rise from 100 to 1000 is taken as the same as one from 10,000 to 100,000. Thus the distance between the numbers, 10, 100, 1000, 10,000, 100,000 and 1,000,000 is made equal. (Mueller 1973, 60)

Kernell (1978) criticized several aspects of Mueller's (1973) specification but focused most critically on the use of time as an explanatory variable. In particular, he lamented the use of the "coalition of minorities" variable to "explain" the downward trend of presidential approval: "Since whatever trend is present in the president's public standing is obviously captured by time, there is little variance left to be explained by more substantive variables" (Kernell 1978, 507-8). Moreover, the use of a time trend variable has the effect of ruling out a more substantive measure of war costs—the cumulative number of battle deaths or its logarithm—since these

tend to be correlated with time and are particularly troublesome given the strong negative effect of war casualties in Mueller's war approval models described immediately above. In Kernell's view, this substantive effect should be directly specified in the presidential approval models (Kernell 1978, 510).

Similarly, Kernell (1978) argues that rally variables, economic performance, and the costs of war should be measured substantively rather than handled by dummy variables. The costs of war are measured by Kernell in several ways, including the cumulative death tolls in Korea and Vietnam and the number of bombing missions in Vietnam (Kernell 1978, 512-5). Finally, Kernell makes a theoretical argument that has become a staple of the literature on presidential popularity: the presence of a trend in presidential approval results from the fact that approval is autoregressive—that is, that “current popularity reflects the level of approval during the preceding month.” Although approval does respond to short-term environmental shocks (such as rallies) and policy assessments (such as the state of the economy or the costs of war), there is nonetheless an inertial quality to aggregate approval—it is, in a word, autoregressive (Kernell 1978, 515).

Kernell's (1978) results confirm his expectations. Presidential approval is indeed autoregressive, with each month's rating equal to an average of about half the previous month's rating (slightly higher if President Nixon is excluded). Economic performance, rallies, and an early term honeymoon are all significant impacts on approval. Finally, Kernell finds a negative effect of the logarithm of war casualties for the Korean and Vietnam Wars, although the impact of the latter is much stronger (Kernell 1978, 517). In Kernell's words, “conditions which intuitively seem to be important determinants of a president's popularity are in fact the primary explanatory variables” (p. 519).

Although Kernell's (1978) study is now almost thirty years old, the form of the model that he tested has not changed substantially in subsequent research on presidential approval.<sup>1</sup> Perhaps most important has been the theoretical contributions of Richard Brody (1991), who argued forcefully for a theory of approval that is rooted in citizen evaluations of the success and failure of presidential policies and the extent to which citizen judgments are influenced by the presence of debate or criticism of presidential policies among opinion leaders. When opinion leaders—in and out of government—are supportive of the president (as is generally true during the first months in office or during international crises), public approval tends also to be high. Nonetheless, as policy debates unfold and leaders begin to diverge in policy approaches, public approval tends to slip. All of this unfolds in a process not unlike the one modeled by Mueller (1973) and Kernell: major events, policy failures (Korea, Vietnam), and economic performance are the forces that move approval (Brody 1991).

The centrality of citizen judgments of presidential performance also animates the most recent and comprehensive study of presidential approval by Erikson,

1. There are literally hundreds of studies of presidential approval over this time period. Here we review only signpost studies that draw together new theory and measures. For detailed reviews and evaluations of job approval studies, see Brody (1991) and Gronke (2000).

MacKuen, and Stimson (2002), who argue that *presidential competence* is the key issue for citizens:

When the president scores success or failure in foreign policy or the economic realm, citizens observe a common phenomenon and usually respond the same way. People prefer success to failure and often agree on the evidence of success or failure in achieving common goals. For these reasons, the competency response is easily observed at the macro level. (p. 31)

Of course, policy competence—or evidence of it in policy outcomes—must be measured and modeled, and the specification of Erikson, MacKuen, and Stimson (2002) closely resembles that of Kernell (1978). They find that economic performance and political events together account for about three-fourths of the variance in presidential approval over the period from 1953 to 1996 (45 percent and 33 percent, respectively), with the honeymoon accounting for about 12 percent and deaths in Vietnam 13 percent (Erikson, MacKuen, and Stimson 2002, 57-60). Across the entire time period, then, economic performance and short-term political events clearly dominate citizen assessments of presidential competence, although the effect of Vietnam war deaths is significant (Erikson, MacKuen, and Stimson 2002, 59). These findings largely confirm the findings of Mueller (1973), Kernell (1978), and Brody (1991). There has, in short, been a great deal of cumulation in the study of presidential approval.

There is one exception. Feaver and Gelpi (2004) focus on the human cost and the success and failure of military missions on presidential approval over the period from 1949 to 1994, but without any controls for economic performance and political events other than the use of military force.<sup>2</sup> Feaver and Gelpi classify each use of military force by the United States as having been “successful” or “not successful,” and casualties during these interventions are interacted with the success variable.<sup>3</sup> Using the log of casualties as in Mueller’s (1973) study, they find that casualties actually have a positive influence when the military intervention was successful—a finding they attribute to the well-known rally effect—but the effect is negative and significant when the operation was unsuccessful. There have been several studies of presidential approval during the terms of President George W. Bush. Hetherington and Nelson (2003) focused exclusively on the prodigious surge in presidential approval that followed the attacks of September 11, 2001. The rally was unique for three reasons: it was the largest single jump in approval ratings in the history of polling, Bush’s approval rating reached the highest level ever for any president (90 percent on September 22), and it lasted longer than any previous rally. Following Brody’s (1991) logic, Hetherington and Nelson attribute the magnitude of this rally to the extraordinary degree of leadership consensus that followed the September 11

2. The analysis is part of a broader study of public opinion and military casualties in individual level, cross-sectional surveys, but here we focus on the analysis of aggregate presidential approval in the time-series case.

3. See Feaver and Gelpi (2004) for the list of operations coded “successful” and “unsuccessful.”

attack. The sheer magnitude and duration of the post–September 11 rally might suggest that Bush’s approval ratings will prove to be an exception to the findings of past research. After all, his (average) subsequent ratings were higher—not lower—than during his honeymoon period, and as we will see below, his ratings often appeared unrelated to the state of the economy.

Later studies that might resolve the matter are somewhat contradictory on this point. Eichenberg and Stoll (2004) modeled Bush’s job approval rating from the beginning of his term in 2001 through June 2004. In a first phase ending *before* the war in Iraq, they found that their measure of economic performance—disposable income per capita—had no significant impact. Nor did most of the rally events related to the war in Afghanistan and the looming war in Iraq have any impact. Rather, as suggested in the study by Hetherington and Nelson (2003), the period prior to the war in Iraq was dominated by the substantial rally in support that followed the attacks of September 11 (Eichenberg and Stoll 2004, 18). However, for the period from the beginning of the Iraq War on March 19, 2003, through the end of June 2004, presidential approval was substantially affected by war casualties in Iraq—approval dropped by about 1 percentage point for every 100 deaths of American personnel in Iraq. Some rally events (such as the rally at the beginning of the Iraq War and for the period after the fall of Baghdad) are substantial and significant, but once again, the authors find no significant impact of economic factors or other rally events on Bush’s approval (Eichenberg and Stoll 2004, 19).

Similar results are reported by Gelpi, Feaver, and Reifler (2006) for Bush’s job approval ratings for the period from March 19, 2003, through November 30, 2004. For the “combat phase” of the Iraq War, the log of combat deaths actually shows a positive and significant impact on approval because “the public rallied to support the president despite the casualties because it was confident that the United States would succeed” (Gelpi, Feaver, and Reifler 2006, 19). Once the postwar insurgency began, however, the impact turns substantially negative, and it turns wholly insignificant in what the authors label the “sovereignty” phase after the transfer of governmental authority to Iraq in June 2004. As in other research, some rally events (such as the capture of Saddam Hussein), as well as media coverage of the insurgency, also influence approval. Gelpi, Feaver, and Reifler also find a mildly significant influence of one economic indicator on Bush’s approval—in this case, the weekly change in the Dow Jones Industrial Average.

Finally, Voeten and Brewer (2006 [this issue]) construct three indicators of support for the war in Iraq and analyze Bush’s presidential approval as well. Their results suggest that Iraq War casualties negatively influence citizen estimates of how well the war in Iraq is progressing, but they have a lesser impact on other measures of war support. In turn, Bush presidential approval is most strongly associated with estimates of whether the war had been “worth it” and by approval of the president’s handling of Iraq, but casualties themselves are not a direct significant influence in this equation. A measure of “consumer comfort” is a statistically significant but substantively minor influence (Voeten and Brewer 2006).

In the end, however, it is difficult to reach a final assessment of the relative influence of economic factors, casualties, and other variables during the Bush presidency,

for the studies mentioned above cover different time spans and employ different measures of rally events and economic performance. The studies also employ different estimation strategies, and only one analyzes the approval series from the beginning of the Bush presidency in 2001. It is therefore difficult to compare the varying dynamics of approval during wartime and peacetime and to assess with any precision the specific impact of war costs on the president's decision to go to war. We turn to that task in the next section of this article.

## MODEL DESIGN AND MEASUREMENT

We analyze the average weekly job approval rating for President George W. Bush. Our model specifies the classic five factors of presidential approval: the early term honeymoon, economic performance, political events (rallies), the costs of war involvement, and the autoregressive nature of approval. The autoregressive nature of approval is handled through the use of error correction models (discussed below). The remaining four factors are specified directly as variables in the model. We first examine Bush's approval for the entire time period of his presidency. We then conduct two separate analyses: one for his approval prior to the start of the Iraq War and a second for his approval rating once the war started on March 19, 2003, through January 30, 2006.

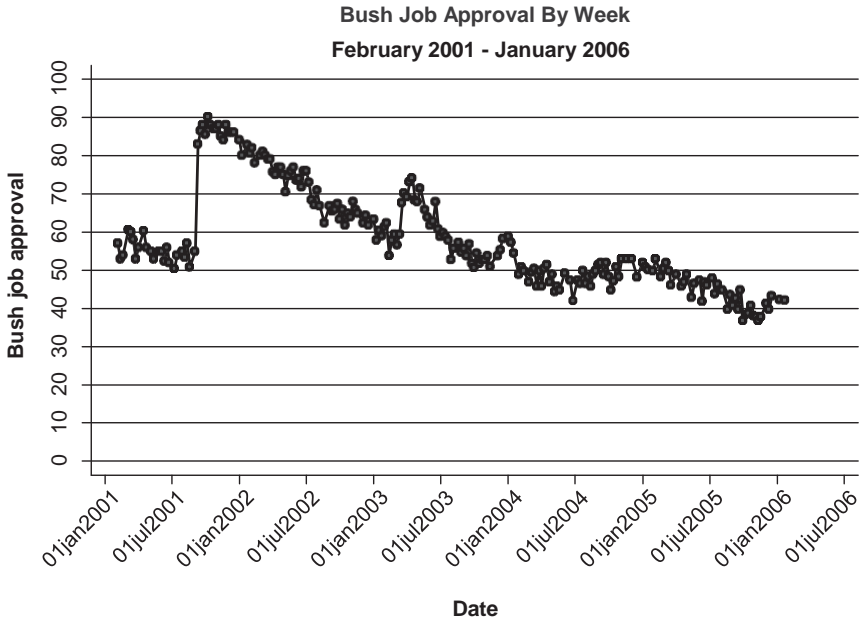
### PRESIDENTIAL APPROVAL

We measure presidential job approval using the following question: "Do you approve or disapprove of the way George W. Bush is handling his job as president?" We specify the percentage of respondents who approve as the dependent variable. We use all polls from the following organizations: Gallup/CNN/*USA Today*, ABC/*Washington Post*, CBS/*New York Times*, and the Pew Research Center.<sup>4</sup> We take the average weekly approval score, beginning the week on Monday. We date the poll from the final day of sampling.

Figure 1 displays the dependent variable since the first administration of the approval question during the Bush presidency on February 1, 2001. Three features of the Bush presidency stand out immediately. The first is the dramatic impact of war-related rallies: after both the attacks of September 11, 2001, and the commencement of the war in Iraq, presidential approval surged dramatically (by almost 40 percentage points in the first instance and 15 percentage points in the second). A lesser but noticeable rally occurred when Saddam Hussein was captured on December 13, 2003. Second, Bush's job approval does decline after these rallies, but it is not apparent from the graph if the decline was due to the inherent tendency of approval to erode; to economic conditions, as suggested in past research; or—in the case of the Iraq War—due to the accumulating casualties that occurred after March 19, 2003. Third,

4. We chose these four polling organizations because the wording of the presidential job approval question is identical in their surveys. Other organizations vary wording slightly and appear much less regularly. The approval data for the four polling organizations are taken from [Pollingreport.com](http://www.pollingreport.com) (<http://www.pollingreport.com>).






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**Figure 1: Bush Job Approval by Week, February 2001 to January 2006**

it nonetheless appears that factors other than the economy are at work. We know that the economy took a downward plunge after September 11, but Bush’s approval was soaring during this period. The economy later recovered—especially during 2004—but during this period, Bush’s approval was falling from the rally peak at the beginning of the Iraq War. Finally, there is some evidence that to the extent that approval was affected by war casualties, it is the logarithmic function rather than the absolute level of cumulative casualties that best describes the relationship. Between March 20, 2003, and August 28, 2004, one thousand casualties were suffered in Iraq, and the president’s approval rating dropped by 17 percentage points (from 67 percent to 50 percent). From the end of August 2004 to the end of our data (end of January 2006), however, battle deaths more than doubled, but the approval rating oscillated around an average of 46 percent—a decline of only 4 additional percentage points. In effect, the rate of decline in Bush’s job approval in response to casualties appears to have slowed according to this visual inspection. Of course, the eye can deceive. In subsequent sections of this article, we provide statistical estimates of these and other variables.

**THE HONEYMOON**

To assess the argument that a president comes into office with an initial spurt of good will that produces a high level of approval (a honeymoon), we follow the lead



of work on presidential approval (Kernell 1978; Erikson, MacKuen, and Stimson 2002) as well as the recent work of Lai and Reiter (2005) on the popularity of the British prime minister. All of these studies assume that the honeymoon can last for the first six months the leader is in office. The honeymoon is at its peak in the first month of the leader's term in office and declines over the next five months. We adopt the same operationalization: we create a variable that has the value of six for the first month in office, five for the second month, reaching zero in the seventh month in office, and remaining there for the rest of the president's term in office. We create another honeymoon variable for the start of Bush's second term.

## **ECONOMIC PERFORMANCE**

We employ two alternative measures of economic performance. One represents the true condition of the economy and the other the status of the economy as perceived by the electorate. We measure the change in the economy by tracking the change in real disposable income per capita using data from the St. Louis Federal Reserve Bank (2005a, 2005b).<sup>5</sup> As the name suggests, this variable tracks the change in the amount of income that is in the hands of individuals. We measure the electorate's assessment of economic conditions through the University of Michigan's index of consumer sentiment (University of Michigan 2005a). The index is calculated from five questions that assess how people feel about their economic condition now and in the future (University of Michigan 2005b). We calculate the change in consumer confidence as the percentage change in consumer confidence over the past twelve months.

A variety of potential measures of the status of the economy could be used in an analysis of presidential approval. Our choice of real disposable income per capita was influenced by the work of Bartels and Zaller (2001). They explored a variety of models predicting presidential vote in elections. While this is not the same as predicting presidential approval, the two are related. In their analysis, real disposable income per capita consistently outperformed the change in gross domestic product (GDP) per capita when predicting presidential vote. Consequently, the specific indicators we use also follow the logic of Bartels and Zaller. In particular, they measure disposable income per capita in terms of the percentage change over the past twelve months; we do the same.

## **RALLY EVENTS**

Mueller's (1973) definition of rally events has guided subsequent research using this concept: rallies are international events, they involve the United States and particularly the president directly, and they are specific, dramatic, and sharply focused (Mueller 1973, 209). Nevertheless, there has always been some ambiguity in the selection of rally events and the determination of their duration. Some scholars (Mueller) identify important rally events and specify a downward countervariable until the next event.

5. We tried using the change in real disposable income per capita (RDIPc) over the past year, over the past half-year, and over the past quarter. Very consistently, the strongest impacts we observed were for the change over the past year.

TABLE 1  
List of Rally Events Included in the Analysis

<i>Date</i>	<i>Rally Event</i>
9/11/2001	Attacks on World Trade Center and Pentagon
10/7/2001	Initial air attacks in Afghanistan; Bush addresses the nation
10/19/2001	First special forces ground raids in Afghanistan
11/13/2001	Northern Alliance captures Kabul
12/22/2001	Hamid Karzai sworn in as president of Afghanistan
9/12/2002	Bush speech to the United Nations (UN)
10/11/2002	Congress approves use of force against Iraq
11/8/2002	UN Security Council resolution: serious consequences if Iraq doesn't fully cooperate
2/5/2003	Powell speech at UN about Iraq
3/19/2003	War against Iraq begins with air strikes
4/9/2003	Baghdad captured
5/1/2003	Bush "Mission accomplished" speech
5/22/2003	UN Security Council approves coalition occupation of Iraq
7/13/2003	Iraqi governing council meets for first time
8/19/2003	UN headquarters in Iraq blown up
11/12/2003	Car bomb kills fourteen Italian personnel
12/13/2003	Saddam Hussein captured
4/28/2004	Iraqi prisoner pictures (Abu Ghraib)
9/2/2004	Republican Convention
11/2/2004	Bush reelection
1/20/2005	Bush inauguration
1/30/2005	Iraq election
8/30/2005	Hurricane Katrina
12/15/2005	Iraq election

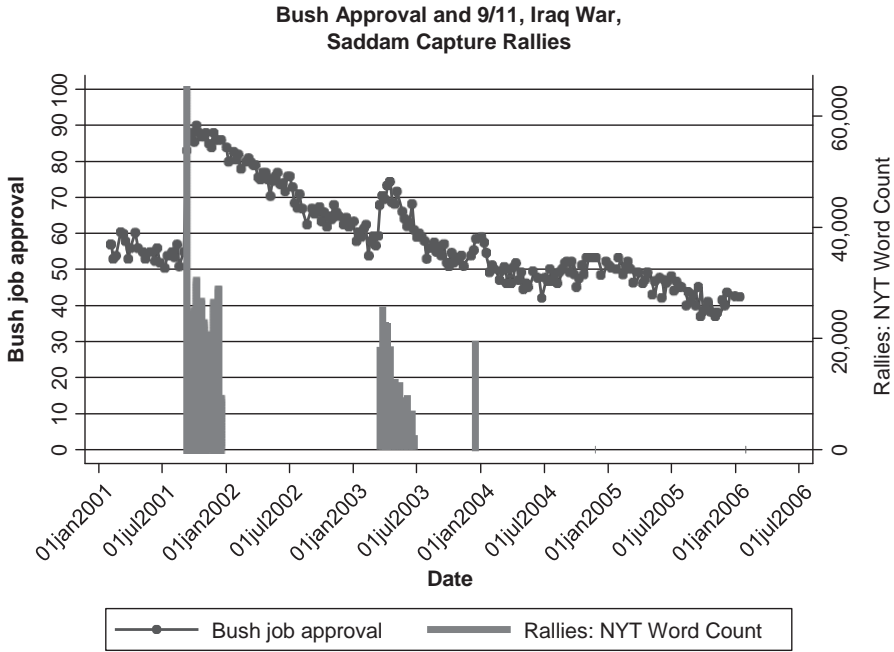
Others (Kernell 1978; Erikson, MacKuen, and Stimson 2002) identify rally events but specify a limit to their duration. Our procedure for measuring rallies is innovative because we employ a systematic procedure for determining the length and intensity of a rally.

As mentioned above, we identified potential rally events based on our judgment as to what occasions are likely to generate rallies in the public (using the three Mueller criteria discussed above).<sup>6</sup> Table 1 contains a list of the events that we consider possible rally events during the presidency of George W. Bush. For these events, we used the following procedure to estimate the length and intensity of a rally:

- On the day after the event, we examined the online index of *The New York Times*. We identified all individual news stories that mentioned the event and computed the total number of words that appeared in these stories.<sup>7</sup>

6. Several of the events we included (the revelation of the Abu Ghraib prison scandal, Hurricane Katrina) are commonly believed to have had a *negative* impact on the president's approval. While in one sense these should not be called rally events (later we refer to them as "antirally" events), it is important to assess their impact.

7. We use a search string to identify the stories. The search strings we used are available at the replication Web site for this article.



**Figure 2: Bush Approval and September 11, Iraq War, and Saddam Capture Rallies**

- We then examined the online index of *The New York Times* seven days later, locating all stories that mentioned the same event. We totaled the words of all these stories.
- We continued to examine the online index every seven days, totaling the words of all relevant stories, until there is a day in which the total number of words drops below 20 percent of the highest word total that had appeared prior to that date. At this point, we assume the rally is over.
- Finally, we divided each weekly word total by the maximum weekly total.

We use this proportion as a measure of the intensity of the rally.<sup>8</sup> Essentially, what we aim to measure is the intensity of a rally event based on the extent to which it was covered in news sources. If news coverage (word count of articles) drops quickly, we measure a short rally. If news coverage persists, we measure a longer rally. In so doing, we improve on arbitrary rally measures (dummy variables or downward counters). Our measure also reflects the sense of the scholarly literature that media reporting

8. We merge the proportion variables into the data set, matching the dates of the weekly proportions to the starting dates of the weeks in the data set (note: we match to the week, but the starting dates for the rally variables may not be identical to the starting dates in the data set). Note that by using the proportion, the coefficient in the estimating equation will indicate the maximum (or minimum) level of approval of the event.

is important to the evolution of public opinion. In essence, we assume that the intensity of a rally event is tracked by the level and duration of coverage in *The New York Times*.

Figure 2 displays the raw weekly word count for three of the larger rallies during the Bush presidency, juxtaposed with his job approval rating. The graph provides some confirmation of the face validity of our rally measure. The two larger rally events—after September 11 and the beginning of the Iraq War—track both the height and duration of a surge in public approval. The third, after the capture of Saddam Hussein, shows both less intensive news coverage and a smaller and briefer rally in public opinion. Whether these rally events track approval in a statistically significant way, controlling for other factors, is the subject of the analysis below.

### **BATTLE DEATHS IN IRAQ**

The final factor in our model of presidential approval is the human cost of the war in Iraq. Following the work of Mueller (1973), we operationalize war costs as the log to the base 10 of American battle deaths in Iraq.<sup>9</sup> The data for this variable come from the Iraq Coalition Casualty Count (2005).

### **ANALYSIS TECHNIQUES**

Certain statistical complications must be overcome to conduct the analysis for this article. The main issue is that both presidential approval and the log of American battle deaths are nonstationary.<sup>10</sup> Consequently, regressing presidential approval on the battle death variable will produce results, but one will be left wondering whether the findings indicate a true relationship between these two variables or whether the results are spurious.

One way to deal with this problem is to use error correction models (see the chapters on this topic in Freeman 1992 or Durr 1993, as well as an application to Iraq and presidential approval in Voeten and Brewer 2006 [this issue]). Error correction models are appropriate when one believes that changes in the dependent variable are a response to changes in one or more of the independent variables, but there is also a stable long-run relationship between the variables. We believe that the relationship between President Bush's approval and lagged total battle deaths in Iraq fits this description. Consequently, in predicting the change in approval, we include the following variables to estimate the error correction process:

- The lag of approval
- The lag of logged total battle deaths
- The change in logged total battle deaths

9. Note that Mueller (1973) used American *casualties*, while we use American battle deaths only.

10. We tested for the presence of a unit root in both approval and the log10 of total battle deaths. For both variables, we cannot reject the null hypothesis of a unit root.

TABLE 2  
Error Correction Model: All Weeks

	<i>Change in RDI Per Capita</i>		<i>Change in Consumer Confidence</i>	
	<i>Regression</i>	<i>Cochrane-Orcutt</i>	<i>Regression</i>	<i>Cochrane-Orcutt</i>
Lagged Bush approval	-0.255*** (-6.95)	-0.159*** (-4.88)	-0.240*** (-6.86)	-0.144*** (-4.71)
First-term honeymoon	-0.823** (-3.07)	-0.685** (-3.22)	-0.543 (-1.97)	-0.526* (-2.43)
Second-term honeymoon	0.269 (1.22)	0.093 (0.48)	0.468* (2.01)	0.190 (0.91)
Change in RDI per capita	76.162*** (3.67)	45.626** (2.65)		
Change in consumer confidence			11.256*** (3.69)	5.876* (2.34)
Lagged log10 total battle deaths	-1.500*** (-5.04)	-0.942*** (-3.83)	-1.767*** (-5.36)	-1.017*** (-3.72)
Change in log10 total battle deaths	2.184 (1.04)	4.184* (2.10)	2.351 (1.12)	4.505* (2.26)
September 11	21.971*** (9.38)	16.667*** (6.42)	24.851*** (9.88)	18.556*** (6.29)
Afghan War start	-0.978 (-0.49)	-2.313 (-1.46)	-2.092 (-1.10)	-3.438* (-2.31)
Iraq War start	6.248** (2.64)	3.470 (1.76)	6.268** (2.65)	3.179 (1.62)
Capture of Baghdad	4.522 (1.50)	3.228 (1.27)	4.004 (1.34)	2.775 (1.10)
Capture of Saddam	1.990 (0.72)	6.727 (1.54)	2.784 (1.00)	7.574 (1.75)
Abu Ghraib revealed	-2.570 (-1.75)	-1.539 (-1.42)	-1.619 (-1.11)	-0.937 (-0.87)
Iraqi elections	5.456 (1.85)	4.680 (1.67)	3.469 (1.22)	2.800 (1.06)
Hurricane Katrina	-1.122 (-0.67)	-1.023 (-0.87)	2.035 (1.02)	0.534 (0.37)
Constant	15.494*** (6.41)	9.634*** (4.59)	16.158*** (6.52)	9.560*** (4.45)
R <sup>2</sup>	0.467	0.365	0.467	0.360
Durbin-Watson	2.209	1.975	2.188	1.973
n	181	150	181	150

NOTE: *t*-ratios in parentheses beneath coefficients. RDI = real disposable income.  
\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

As noted above, because we believe that the sources of presidential approval shift after the start of the war, we examine three different time periods. We conduct an analysis of the period of the Bush presidency (through the end of January 2006) and

separate analyses of the prewar and war periods. We also conduct separate analyses for each of our two indicators of the state of the economy. Finally, we use both ordinary least squares (OLS) and the Cochrane-Orcutt estimator.<sup>11</sup>

## RESULTS: THE WAR PRESIDENT

We begin our discussion with the results for the entire time period (February 2001 to January 2006). We then discuss the prewar period (February 2001 to March 18, 2003). Finally, we turn our attention to the sources of presidential approval from the start of the war in Iraq to the end of our time series (March 19, 2003, to January 2006).

### APPROVAL OVER THE ENTIRE TIME PERIOD

*Lagged approval.* The results for the entire period are displayed in Table 2. They indicate that there is a strong relationship between current changes in approval and recent levels of approval. High levels of recent approval are associated with negative changes in approval. This is consistent with virtually all previous research, which shows that a president's support will tend to decline through his time in office. Through time, as approval reaches lower and lower levels, subsequent downward changes will be smaller and smaller. The nature of this feedback is consistent with the theoretical underpinnings of the error correction approach.

*Honeymoon.* When we look for traces of a honeymoon effect, we see mild evidence of a positive impact at the start of Bush's second term (only one of four coefficients is statistically significant). More interestingly, the analysis suggests that there was an "anti-honeymoon" effect at the beginning of his first term, with all coefficients having negative signs and three being statistically significant. Given the high degree of rancor that accompanied the 2000 election and subsequent court battles, perhaps this is not surprising.<sup>12</sup>

*The economy.* Both economic indicators behave in the manner that is expected from the conventional wisdom. Positive changes in the economy, whether reflected in real changes or changes in consumer confidence, are associated with positive changes in President Bush's approval ratings for his entire period in office. This conclusion will change as we break down the analysis into prewar and war time periods. But when viewed overall, changes in Bush's approval since his first weeks in office appear to be correlated with changes in the economy.

11. In the appendix, we consider an alternative estimation: error correction with fractional integration. The results of this analysis are contained in the appendix that is posted on the replication Web site at <http://jcr.sagepub.com/cgi/content/full/50/6/783/DC1/>.

12. We are grateful to James Stimson for suggesting a plausible additional explanation—namely, that Bush inherited a struggling economy that diluted or vitiated any honeymoon period.

TABLE 3  
Error Correction Model: Prewar Weeks

	<i>Change in RDI Per Capita</i>		<i>Change in Consumer Confidence</i>	
	<i>Regression</i>	<i>Cochrane- Orcutt</i>	<i>Regression</i>	<i>Cochrane- Orcutt</i>
Lagged Bush approval	-0.228*** (-5.14)	-0.140** (-3.17)	-0.229*** (-5.52)	-0.152*** (-3.55)
First-term honeymoon	-0.701* (-2.52)	-0.617* (-2.60)	-0.215 (-0.74)	-0.327 (-1.39)
Change in RDI per capita	96.348** (3.21)	54.851* (2.15)		
Change in consumer confidence			19.883*** (3.89)	12.660* (2.61)
September 11	21.970*** (9.17)	15.572*** (5.13)	27.321*** (9.80)	21.676*** (5.35)
Afghan War start	-1.255 (-0.56)	-2.045 (-1.11)	-1.750 (-0.85)	-3.191* (-2.01)
Constant	13.277*** (4.70)	8.219** (2.97)	15.737*** (5.31)	10.391** (3.40)
$R^2$	0.582	0.327	0.604	0.378
Durbin-Watson	2.148	2.057	2.270	2.053
$n$	82	68	82	68

NOTE:  $t$ -ratios in parentheses beneath coefficients. RDI = real disposable income.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

*Events.* We will discuss the impact of battle deaths below; here we turn to the impact of the putative rally (or in some cases, “antirally”) events. As can be seen, most rally events do not have a significant impact on the changes in presidential approval. Only two truly dramatic events—the attacks of September 11 and the start of the Iraq War—are significant in the error correction models. There are several possible reasons for the weak statistical impact of most rally events. First, although we believe that our method to measure rallies is superior to the more common practice of simply using dummy variables, it may nonetheless be that even further refined measures—based perhaps on the content of news coverage—would produce better results. Second, the event variables have only a limited number of nonzero values. We measure the duration of the September 11 event as fifteen weeks (no event in our data has a duration longer than the September 11 rally). That is a long period of time, but it still means that most of the observations for the September 11 event variable in our data set are zeros.<sup>13</sup> It is therefore possible that few events have significant impacts because of the heavy skew in their values. But there is a third possibility. Despite the conviction of members of the media, pundits, and others, it may be that most political events truly do *not* have a sizable impact on presidential approval.

13. The Cochrane-Orcutt estimations have the smallest  $n$ s in the table: 150. But that means, at best, the September 11 event variable is 90 percent zeros.



Looking back at Figure 1, in fact, we see few events that lift (or drop) approval from what appears to be its fundamental course. If our analysis is correct, that fundamental course has much more to do with factors other than putative rally events.

Turning to specific events, the al-Qaida attacks on September 11 led to a large rally; depending on the particular equation, our results estimate a rally effect between 16 and 25 points. There is also a significant rally at the start of the war in Iraq (detected with regression but not Cochrane-Orcutt). The only other event that has any statistically significant coefficients (and it only has one) is the outbreak of the war in Afghanistan. But the coefficients are negative; the weight of the statistical evidence suggests that there was no significant rally at the start of the U.S. involvement in Afghanistan.<sup>14</sup> Note finally that the two variables that tap “antirally” events (the initial revelations about what happened in Abu Ghraib prison, Hurricane Katrina) both consistently have negative coefficients, but neither reaches statistical significance.

*Battle deaths.* Change in logged battle deaths has a positive impact on changes in approval, although it is only significant when using Cochran-Orcutt. However, we believe that this is an artifact of the statistical estimation. By far, the largest value for the change in log10 battle deaths occurs at the very beginning of the war.<sup>15</sup> We believe that this one observation drives the results for this variable.<sup>16</sup>

As for the lag in logged battle deaths, it is negative and significant. While one should keep in mind the discussion above concerning zero values, we think this finding is reasonably robust; unlike the change in logged battle deaths variable, the start of the war is not associated with an outlier for total battle deaths. Although a final assessment of the impact of total battle deaths will come in the analysis of the time period of the war, these initial estimates indicate that the losses in Iraq have significantly damaged President Bush’s approval ratings.

## APPROVAL IN THE PREWAR PERIOD

When we restrict our attention to changes in approval prior to the war with Iraq, the analysis becomes much simpler because a number of variables that were part of the analysis of the entire time period drop out. For the variables that do remain, the results are consistent with the findings for the entire time period. We can therefore summarize them very briefly.

*Lagged approval.* Bush approval is autoregressive in the prewar period, with lagged approval showing a significant negative coefficient. Thus, even before the war in Iraq, the president’s rating showed a tendency to decline.

14. We suspect that this is due to the fact that (as measured by our data) the September 11 rally is still in progress during the time period we project an Afghan rally.

15. The value for the first week of the war is 1.653. If that one observation is removed, the largest value for the variable is .242.

16. As a quick check, we predicted change in approval for all observations using only the change in log10 of battle deaths (note: we used a Cochrane-Orcutt estimation). The coefficient was 5.852, and the *t*-value was 3.63. We then deleted the value for the first week of the war. The coefficient drops to 3.437, and the *t*-value drops to 0.37. Our conclusion is that the estimated relationship is an artifact.

TABLE 4  
Error Correction Model: War Weeks

	<i>Change in RDI Per Capita</i>		<i>Change in Consumer Confidence</i>	
	<i>Regression</i>	<i>Cochrane- Orcutt</i>	<i>Regression</i>	<i>Cochrane- Orcutt</i>
Lagged Bush approval	-0.594*** (-6.44)	-0.324*** (-3.92)	-0.593*** (-6.49)	-0.325*** (-3.98)
Second-term honeymoon	0.665** (2.82)	0.236 (1.11)	0.722** (3.03)	0.269 (1.24)
Change in RDI per capita	11.528 (0.38)	7.952 (0.29)		
Change in consumer confidence			3.116 (0.86)	1.578 (0.56)
Lagged log10 total battle deaths	-8.714*** (-4.17)	-3.607* (-2.08)	-8.694*** (-4.51)	-3.652* (-2.28)
Change in log10 total battle deaths	-8.861* (-2.45)	-0.461 (-0.08)	-8.683* (-2.51)	-0.287 (-0.05)
Iraq War start	5.516* (2.12)	3.758 (1.30)	5.901* (2.38)	3.800 (1.38)
Capture of Baghdad	6.230* (2.21)	4.535 (1.47)	6.226* (2.23)	4.576 (1.49)
Capture of Saddam	2.889 (1.14)	8.115* (2.08)	3.011 (1.20)	8.261* (2.15)
Abu Ghraib revealed	-3.205* (-2.37)	-1.873 (-1.84)	-3.007* (-2.22)	-1.750 (-1.72)
Iraqi elections	2.413 (0.85)	1.537 (0.52)	2.221 (0.85)	1.265 (0.50)
Hurricane Katrina	-2.572 (-1.54)	-2.594* (-2.09)	-1.638 (-0.81)	-2.134 (-1.38)
Constant	54.233*** (5.29)	26.245** (2.94)	54.195*** (5.59)	26.470** (3.14)
$R^2$	0.412	0.337	0.416	0.339
Durbin-Watson	2.030	1.863	2.005	1.853
$n$	99	81	99	81

NOTE:  $t$ -ratios in parentheses beneath coefficients. RDI = real disposable income.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

*Honeymoon.* Once again, we see no evidence of a positive honeymoon for the first Bush term. As we noted above, the partisan rancor of the 2000 election and recount, together with a fading economy, presumably account for the low level of approval at the beginning of the first Bush term.

*The economy.* As was true for the entire time period of the presidency, both economic variables are highly significant, positive influences on Bush approval. In fact,

they are more significant (and steep) in this analysis of the prewar period than for the presidency taken as a whole. This suggests that any gains that the president enjoyed from positive economic performance came prior to the war in Iraq, a point we pursue further below.

*Events.* Not surprising given the data reviewed above, the September 11 rally event produces a very large, significant upward surge in Bush approval. However, the commencement of the war in Afghanistan does not produce a further rally, presumably because it came so soon after September 11 and is thus subsumed—overwhelmed—by the huge surge associated with the attacks on the United States.

#### APPROVAL IN THE WAR PERIOD

Finally, we turn to changes in approval from the outbreak of the war in Iraq to the end of our data (January 2006). To some extent, these results are in accord with the conventional wisdom on presidential approval. But there are also some interesting findings that run against the grain.

*Lagged approval.* As with the previous results, lagged approval has a significant negative impact on the subsequent change in approval. Notice, however, that the coefficients are larger in magnitude than in the analysis of the entire time period. The drop-off in weekly approval scores is therefore more severe after the war starts, suggesting that the erosion of support for the president—already evident—accelerated after the beginning of the war.

As with the previous results, the lagged approval variable serves as the error correction term and has a significant impact on approval. Here, the coefficient is noticeably stronger, indicating quite a strong equilibrating relationship. This makes sense given that the long prewar period included in Table 1 would mute this time-bounded effect. Thus, during the period of the Iraq War, President Bush's approval rating has been tied very closely to the log of battle deaths, so that movements away from where battle deaths would predict approval to be are quickly reversed as the series returns to equilibrium.

*Honeymoon.* The results suggest that Bush may have received a small bounce from his reelection. As with the results for the entire time period, all coefficients are positive. But the coefficients for the second-term honeymoon are larger, and the *t*-ratios are also bigger and significant at the .01 level. Although the honeymoon measure does not directly speak to the issue, we would speculate that the reason lies in the fact that Bush's second term did not start with the extreme level of partisan acrimony that marked his first-term victory over Al Gore. Bush did enjoy a honeymoon—but it came after the second marriage.

*The economy.* When we turn to the results for the economic variables, we see something very different from the previous analysis: none are significant after the war began. In fact, the *t*-ratios show that all of the coefficients are smaller (and sometimes

dramatically smaller) than their associated standard errors. This finding is consistent with our assertion that Bush is essentially a war president. Once the U.S. involvement in Iraq began, public assessments of the president became oblivious to the status of the economy. Citizen assessments of the president centered on reactions to international events and the war in Iraq.

*Events.* As with the analysis of the entire time period, the results for many rally events do not produce consistently strong findings. Coefficient signs are the same across all four analyses. But no event included in the analysis is consistently significant. Coefficients for the Iraqi elections of December 2005 are never significant, and there is only one significant, negative coefficient for Hurricane Katrina.

For each of the remaining events, two of the four coefficients reach standard levels of statistical significance. Two of these are dramatic events associated with the war and have a positive impact on Bush's approval: the start of the Iraq War and the capture of Baghdad. The variable representing revelations about Abu Ghraib prison also has two significant negative coefficients. The magnitude of the coefficients for the "capture Saddam" rally is larger than for the other events—it clearly caught the public's attention. Nonetheless, overall we are struck by the fact that, outside of the large post-September 11 rally, we do not find strong and consistent evidence for the impact of a number of plausible rally events on the change in Bush's approval. As we noted above in the discussion of Figure 1, Bush approval ratings have been a function of a core set of fundamentals (autoregressive decline and erosion due to Iraq War casualties) that is pushed from its core path by only the most dramatic and intense rallies.

*Battle deaths.* Finally, we turn to the impact of logged battle deaths. There is some variability across the analyses. For the change variable, only two of the four coefficients are significant. For the lagged variable, all four are statistically significant, but the levels of significance and the sizes of the coefficients vary with the estimation technique. Nevertheless, we are quite confident in asserting that American deaths in Iraq have had a negative impact on changes in President Bush's approval. This finding will not surprise many people, but it is important and worth emphasizing.

## CONCLUSIONS

Our results contribute to further cumulation in studies of presidential approval, although the Bush presidency does show some uniqueness in terms of the relative influence of the standard variables normally specified in models of approval. Bush approval does show a negative autoregressive dynamic similar to that found in other administrations, but the dynamic appears to have accelerated after the start of the Iraq War, an indirect indication that the war was costing Bush support. As in past research, our findings show that rally events can positively (and sometimes negatively) influence support, and we have demonstrated that impact using a new and arguably superior measure of rallies based on news coverage of rally events.

Importantly, our analysis consistently finds that only truly dramatic events significantly move approval from the course determined by more fundamental factors. We find that the fundamental dynamic of Bush approval has been an erosion caused by the continuing accumulation of casualties. Therefore, if casualties continue to accumulate in Iraq, and barring a truly dramatic positive rally event, there is little reason to expect Bush approval to recover in any sustained way.<sup>17</sup>

Our results are also consistent with other studies of presidential approval during the Bush presidency. For example, although Voeten and Brewer (2006 [this issue]) conceptualize and estimate Bush approval as a two-step process in which casualties (in particular) negatively affect perceptions of “war success,” this perception is in turn a significant negative effect on job approval more generally. As is true both in our results and those of Gelpi, Feaver, and Reifler (2006), casualties ultimately drag down job approval. What is striking about this body of research is the robustness of this core finding on the negative impact of casualties. Although each set of authors uses different measures of rallies, “success,” and economic performance, and each estimates the results over different time swathes of the Bush presidency, the core finding holds in each study. Particularly striking is the fact that no study has found that economic performance has been a major influence on Bush approval, findings that are in stark contrast to the existing literature.

Our results, together with those of Voeten and Brewer (2006 [this issue]) and Gelpi, Feaver, and Reifler (2006) also speak to the issue of citizen perceptions of success and failure as determinants of support for ongoing combat operations and the accumulation of casualties. Although the measures in each study are different, each shows a positive rally during the combat phase in Iraq and a significant negative effect of casualties after that point.<sup>18</sup>

Of course, this issue became a topic of substantial public commentary because one of the scholars became an adviser to President Bush, with the apparent explicit mandate to convince the public of the president’s “strategy for victory” in Iraq (Shane 2005). Our results, together with those of the studies cited above, provide obvious counsel to any such attempt to move public opinion in this way: *the military strategy itself has to work*. As Voeten and Brewer (2006 [this issue]) demonstrate, the public’s perception of likely success in Iraq reached its lowest level ever in February 2006 after a slight improvement during the president’s intensive “strategy for victory” campaign during the prior two months. Based on our results and that of Voeten and Brewer, as well as Gelpi, Feaver, and Reifler (2006), this dynamic was not unexpected. Because casualties continued to accumulate in Iraq and because the newly elected Iraqi government took a very long time (and a good deal of wrangling)

17. As of this writing, it is too early to say if the death of Abu Musab al-Zarqawi in June 2006 had any significant upward effect on Bush approval. Although his ratings did improve from mid-May through July 2006, the improvement was minor and may have been due to other factors (such as the president’s initiatives on immigration). For analysis of these points, see Franklin (2006).

18. Gelpi, Feaver, and Reifler (2006) argue that sensitivity to casualties declined in what they call the “sovereignty phase” after the handover of authority to the Iraqis in June 2004, but we would attribute this shift to the public’s declining marginal sensitivity to casualties (as in our discussion of Mueller’s [1973] results above). Thus, approval will continue to decline with continuing casualties, but at a lower rate than in early phases of the conflict.

before assuming office, public opinion saw no dramatic positive rally, and fundamental factors reasserted themselves. To this we might add a recurrent finding of other research on public opinion on military intervention: involvement in civil wars is by far the least popular with the American public (Jentleson 1992; Eichenberg 2005; see also Mueller 2005). Indeed, although not directly modeled in any of the research discussed here, it may be that the public's aversion to involvement in civil conflicts stems from the particularly intractable, zero-sum nature of those conflicts—an intractability that lowers the public's expectation of succeeding. Thus, so long as casualties continue to accumulate and Iraq continues to experience civil violence, we see little prospect for a sustained recovery in the approval ratings of George W. Bush.

## APPENDIX

### Analyzing Approval Using Fractional Integration<sup>19</sup>

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As noted by Lebo and Clarke (2000),

Until recently researchers interested in modeling political phenomena over time confined themselves to the “knife-edged” decision whether their data were generated by an  $I = 0$  (stationary) or  $I = 1$  (nonstationary, i.e., unit-root) process. (pp. 1-2)

They go on to point out that there are serious consequences to this choice. In the analyses presented in this article, the results of the unit roots test that we conducted led us to conclude that the two variables of most interest to us, President Bush's approval ratings and the log10 of battle deaths, were nonstationary. Consequently, we included first differences of both variables in an error correction framework.

But there are other possibilities. In particular, the series may not be  $I(0)$  or  $I(1)$ ; it may be somewhere in between. If this is the case, then the series is fractionally integrated (Box-Steffensmeier and Smith 1996, 1998). Over an infinite time horizon, a fractionally integrated series “will be mean reverting, but over finite periods such as those characterizing the data available to political scientists a fractionally integrated series will mimic the properties of a unit-root series” (Lebo and Clarke 2000, 2).

Testing for the presence of fractional integration, we concluded that the value for  $d$  (the degree of fractional integration) for approval was .88.<sup>20</sup> We also determined that the two economic variables had values of  $d$  close to 1, suggesting that they

19. Matthew Lebo advised us on fractional integration. He also conducted the tests for the presence of fractional integration, supplied the fractionally integrated series for approval, and suggested using the first difference for the economic variables.

20. The tests were conducted using Robinson's (1995) procedure in RATS 6.1. To test for fractional integration, the series must contain no missing data. There are missing data in the approval series. To estimate the degree of fractional integration, we interpolated the missing data using the average of the adjacent nonmissing data points.

should be differenced.<sup>21</sup> We then repeated the analyses presented above using the fractionally differenced version of approval and using first differences for the two economic variables.<sup>22</sup>

The results from these models are presented in Tables A1 through A3. The results are not identical to those presented above, but we judge them to be very similar. In particular, the negative effect of casualties for the war period remains in evidence. There is one major difference, however. In the original analyses, both economic variables were positive and statistically significant for the analyses of the entire time period and for the pre-Iraq War period but were not significant for the Iraq War period. In these analyses, the economic variables are never significant. In fact, in only one case is the coefficient larger than its standard error.

One could view the lack of a relationship as a statistical issue. The economic variables are specified as changes. Both change in real disposable income per capita and change in consumer confidence are measured as the percentage change in these indicators over the past twelve months. And in the analyses reported in this appendix, we difference both these variables. It is not completely accurate to say that both economic variables are second differences, but that captures the essence of what has been done. And second differences are likely to “squash” a great deal of the variance out of variables. Therefore, one interpretation is that there is very little variation in the differenced economic variables, which explains why the economic variables have no impact. The result is due to overdifferencing.

It is tempting to treat the lack of impact of the economic variables as a statistical artifact and to believe that with the “correct” set of variables, the economy would have a significant impact on approval, as is the case in the prewar error correction models. The previous research reviewed in our article found weak results at best as concerns the impact of the economy on Bush approval for the period after the war began. Thus, although it is discomforting that the impact of the economy seems to change with the specific indicators, time periods, and analysis techniques used by different researchers, it is important to note that this uncertainty applies only to the period prior to the war in Iraq. Once the war began, both our results and research by others are unanimous in finding at best a weak impact of economic performance, and the substance of our “war president” conclusions is unaffected.

21. The fact that the value of  $d$  is very close to 1 is due in some measure to the fact that the economic data are only available monthly, while the time period of the approval series is weekly. Consequently, there are blocks of adjacent observations on the economic variables that are identical.

22. Fractional differencing was performed using the FIF.SRC procedure in RATS, available at Estima.com.



TABLE A1  
 Fractional Integration: All Weeks

	<i>Change in RDI Per Capita</i>		<i>Change in Consumer Confidence</i>	
	<i>Regression</i>	<i>Cochrane-Orcutt</i>	<i>Regression</i>	<i>Cochrane-Orcutt</i>
Lagged Bush approval	-0.147*** (-5.24)	-0.085** (-3.32)	-0.148*** (-5.29)	-0.086** (-3.35)
First-term honeymoon	-0.485* (-2.16)	-0.318 (-1.62)	-0.483* (-2.16)	-0.315 (-1.60)
Second-term honeymoon	0.108 (0.62)	0.012 (0.07)	0.091 (0.53)	0.008 (0.05)
Second difference: RDI per capita	-27.345 (-0.60)	-32.781 (-0.80)		
Second difference: consumer confidence			10.244 (1.41)	2.450 (0.33)
Lagged log10 total battle deaths	-0.867*** (-3.72)	-0.475* (-2.33)	-0.871*** (-3.75)	-0.479* (-2.34)
Change in log10 total battle deaths	3.076 (1.57)	4.445* (2.29)	3.289 (1.68)	4.527* (2.31)
September 11	22.124*** (10.14)	16.105*** (5.92)	22.241*** (10.30)	16.470*** (6.14)
Afghan War start	-4.099* (-2.41)	-3.471* (-2.22)	-4.329* (-2.57)	-3.686* (-2.38)
Iraq War start	3.662 (1.76)	2.478 (1.33)	3.063 (1.45)	2.288 (1.19)
Capture of Baghdad	2.705 (0.96)	1.692 (0.66)	3.193 (1.13)	1.786 (0.69)
Capture of Saddam	3.012 (1.15)	10.748 (1.93)	2.989 (1.15)	10.697 (1.92)
Abu Ghraib revealed	-1.141 (-0.99)	-0.703 (-0.70)	-0.913 (-0.79)	-0.588 (-0.58)
Iraqi elections	2.378 (0.96)	2.388 (1.13)	2.347 (0.95)	2.358 (1.12)
Hurricane Katrina	-1.475 (-0.94)	-1.130 (-0.92)	-1.432 (-0.92)	-1.210 (-0.99)
Constant	5.281** (4.84)	9.421*** (2.96)	5.214** (4.90)	9.493*** (2.99)
R <sup>2</sup>	0.422	0.299	0.427	0.297
Durbin-Watson	2.193	1.969	2.160	1.961
N	218	181	218	181

NOTE: *t*-ratios in parentheses beneath coefficients. RDI = real disposable income.  
 \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

TABLE A2  
Fractional Integration: Prewar Weeks

	<i>Change in RDI Per Capita</i>		<i>Change in Consumer Confidence</i>	
	<i>Regression</i>	<i>Cochrane-Orcutt</i>	<i>Regression</i>	<i>Cochrane-Orcutt</i>
Lagged Bush approval	-0.106** (-3.12)	-0.054 (-1.62)	-0.106** (-3.15)	-0.052 (-1.56)
First-term honeymoon	-0.358 (-1.47)	-0.221 (-0.94)	-0.353 (-1.46)	-0.206 (-0.88)
Second difference: RDI per capita	-35.556 (-0.51)	-57.911 (-0.89)		
Second difference: consumer confidence			12.569 (0.87)	6.206 (0.42)
September 11	21.987*** (9.44)	12.738*** (3.78)	22.128*** (9.63)	13.528*** (4.15)
Afghan War start	-5.156** (-2.73)	-2.655 (-1.40)	-5.490** (-2.97)	-3.287 (-1.80)
Constant	6.634** (2.84)	3.189 (1.39)	6.636** (2.87)	3.056 (1.34)
$R^2$	0.531	0.208	0.534	0.210
Durbin-Watson	2.084	2.078	2.061	2.061
$n$	96	81	96	81

NOTE:  $t$ -ratios in parentheses beneath coefficients. RDI = real disposable income.  
\*\* $p < .01$ . \*\*\* $p < .001$ .

TABLE A3  
Fractional Integration: War Weeks

	<i>Change in RDI Per Capita</i>		<i>Change in Consumer Confidence</i>	
	<i>Regression</i>	<i>Cochrane-Orcutt</i>	<i>Regression</i>	<i>Cochrane-Orcutt</i>
Lagged Bush approval	-0.435*** (-6.10)	-0.275*** (-3.79)	-0.430*** (-6.04)	-0.274*** (-3.74)
Second-term honeymoon	0.385* (2.17)	0.142 (0.83)	0.369* (2.07)	0.148 (0.87)
Second difference: RDI per capita	9.691 (0.17)	17.492 (0.33)		
Second difference: consumer confidence			6.344 (0.83)	0.185 (0.02)
Lagged log10 total battle deaths	-5.729*** (-3.94)	-2.620 (-1.84)	-5.616*** (-3.86)	-2.695 (-1.86)
Change in log10 total battle deaths	-4.659 (-1.67)	1.888 (0.25)	-4.360 (-1.56)	1.815 (0.23)
Iraq War start	5.547** (2.70)	4.166 (1.39)	5.198* (2.49)	4.102 (1.29)

Capture of Baghdad	4.589 (1.81)	4.133 (1.27)	4.860 (1.90)	4.136 (1.22)
Capture of Saddam	3.177 (1.36)	11.785* (2.54)	3.168 (1.36)	11.832* (2.52)
Abu Ghraib revealed	-2.129* (-2.02)	-1.463 (-1.59)	-2.011 (-1.90)	-1.482 (-1.56)
Iraqi elections	1.833 (0.82)	1.311 (0.67)	1.821 (0.82)	1.380 (0.71)
Hurricane Katrina	-2.849 (-1.85)	-2.850* (-2.25)	-2.733 (-1.82)	-2.733* (-2.24)
Constant	37.927*** (5.14)	20.926** (2.82)	37.334*** (5.06)	21.124** (2.79)
R <sup>2</sup>	0.354	0.309	0.358	0.308
Durbin-Watson	2.057	1.91	2.024	1.906
n	122	99	122	99

NOTE: *t*-ratios in parentheses beneath coefficients. RDI = real disposable income.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

## REFERENCES

- Abramson, Paul, Paul Aldrich, Jill Rickerhauser, and David Rohde. 2006. Fear in the voting booth: The 2004 presidential election. Paper delivered at the Wartime Election of 2004 conference, January 12-15, Ohio State University.
- Bartels, Larry, and John Zaller. 2001. Presidential vote models: A recount. *PS: Political Science and Politics* 34 (1): 9-20.
- Box-Steffensmeier, Janet M., and Renee M. Smith. 1996. The dynamic of aggregate partisanship. *American Political Science Review* 90 (3): 567-80.
- . 1998. Investigating political dynamics using fractional integration methods. *American Journal of Political Science* 42 (2): 661-89.
- Brody, Richard A. 1991. *Assessing the president: The media, elite opinion, and public support*. Stanford, CA: Stanford University Press.
- Campbell, James E. 2005a. Introduction: Assessments of the 2004 presidential vote forecasts. *PS: Political Science and Politics* 38 (1): 23-4.
- . 2005b. Why Bush won the presidential election of 2004: Incumbency, ideology, terrorism, and turnout. *Political Science Quarterly* 120 (2): 219-41.
- Durr, Robert. 1993. What moves policy sentiment? *American Political Science Review* 87 (1): 158-70.
- Eichenberg, Richard. 2005. Victory has many friends: U.S. public opinion and the use of military force, 1981-2005. *International Security* 30 (1): 140-77.
- Eichenberg, Richard C., and Richard J. Stoll. 2004. *The political fortunes of war: Iraq and the political standing of President George W. Bush*. London: The Foreign Policy Centre.
- Erikson, Robert S., Michael B. MacKuen, and James A. Stimson. 2002. *The macro polity*. Cambridge, UK: Cambridge University Press.
- Feaver, Peter D., and Christopher Gelpi. 2004. *Choosing your battles: American civil-military relations and the use of force*. Princeton, NJ: Princeton University Press.
- Franklin, Charles. 2006. Political Arithmetic: Bush approval. Accessed July 7, 2006, from <http://politicalarithmetic.blogspot.com/2006/06/bush-approval-gallup-37-abcwp-38.html>.
- Freeman, John. 1992. *Political analysis*. Ann Arbor: University of Michigan Press.
- Gelpi, Christopher, Peter D. Feaver, and Jason Reifler. 2006. Success matters: Casualty sensitivity and the war in Iraq. *International Security* 30 (3): 7-46.

- Gronke, Paul. 2000. FDR to Clinton, Mueller to ?? A “state of the discipline” review of presidential approval. Paper presented at the annual meeting of the American Political Science Association, August 31 to September 3, Washington, D.C.
- Hetherington, Marc J., and Michael Nelson. 2003. Anatomy of a rally effect: George Bush and the war on terrorism. *PS: Political Science and Politics* 36:37-42.
- Hibbs, Douglas. 2000. Bread and peace voting in U.S. presidential elections. *Public Choice* 104:149-80.
- Iraq Coalition Casualty Count. 2005. Accessed July 7, 2006, from <http://icasualties.org/oif/>.
- Jacobson, Gary C. 2006. The Iraq War and the 2004 presidential election. Paper delivered at the Wartime Election of 2004 conference, January 12-15, Ohio State University.
- Jentleson, Bruce. 1992. The pretty prudent public: Post-Vietnam American opinion on the use of military force. *International Studies Quarterly* 36 (1): 417-37.
- Karol, David, and Edward Miguel. 2005. *Iraq War casualties and the 2004 U.S. presidential election*. Berkeley: Departments of Economics and Political Science, University of California, Berkeley.
- Kernell, Samuel. 1978. Explaining presidential popularity: How ad hoc theorizing, misplaced emphasis, and insufficient care in measuring one’s variables refuted common sense and led conventional wisdom down the path of anomalies. *American Political Science Review* 72 (2): 506-22.
- Lai, Brian, and Dan Reiter. 2005. Rally ‘round the Union Jack? Public opinion and the use of force in the United Kingdom, 1948-2001. *International Studies Quarterly* 49 (2): 255-72.
- Lebo, Matthew, and Harold Clarke. 2000. Modeling memory and volatility: Recent advances in the analysis of political time series. *Electoral Studies* 19 (1): 1-7.
- Lewis-Beck, Michael S., and Charles Tien. 2005. The jobs model forecast: Well done in 2004. *PS: Political Science and Politics* 38 (1): 27-9.
- Mueller, John. 1973. *War, presidents and public opinion*. New York: John Wiley.
- . 2005. The Iraq syndrome. *Foreign Affairs* 86 (4): 44-54.
- Robinson, P. M. 1995. Gaussian semiparametric estimation of long range dependence. *Annals of Statistics* 23:1630-61.
- Shane, Scott. 2005. Bush’s speech on Iraq echoes analyst’s voice. *The New York Times*, December 4, 1.
- St. Louis Federal Reserve Bank. 2005a. Population: Mid-month. Accessed July 7, 2006, from <http://research.stlouisfed.org/fred2/series/POPTHM/>.
- . 2005b. Real disposable personal income. Accessed July 7, 2006, from <http://research.stlouisfed.org/fred2/series/DSPIC96/>.
- University of Michigan. 2005a. Surveys of consumers. Accessed July 7, 2006, from <http://www.sca.isr.umich.edu/>.
- . 2005b. Surveys of consumers: Index calculations. Accessed July 7, 2006, from <http://www.sca.isr.umich.edu/documents.php?c=i>.
- Voeten, Erik, and Paul R. Brewer. 2006. Public opinion, the war in Iraq, and presidential accountability. *Journal of Conflict Resolution* 50:809-30.
- Wlezien, Christopher, and Robert S. Erikson. 2005. Post-election reflections on our pre-election predictions. *PS: Political Science and Politics* 38 (1): 25-6.