The Political Economy:

Political Determinants of the Macroeconomy

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Ellen Meredith Key

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Abstract of the Dissertation

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Although political scientists have devoted thousands of pages to the role economic conditions play in political evaluations, less attention has been devoted to the role politics plays in explaining changes in economic behavior and the macroeconomy. Similarly, economists have spent decades studying the factors that lead to changes in macroeconomic conditions but have ignored most political variables. Linking the two literatures, I argue that in order to fully understand the economy one needs to incorporate politics—specifically presidential approval—and the media in addition to variables typically employed in macroeconomic models.

This dissertation addresses three overlapping research questions. I first introduce a new measure of media sentiment and test its usefulness in a model of presidential approval. In the second empirical chapter, I examine the relationship between consumer confidence and presidential approval during two very different presidencies. Finally, I explore the effect of politics not just on economic behavior but also on volatility in that behavior. I find that consumer expenditures respond not only to the level of approval but also to volatility in approval. This provides evidence of the importance of political stability to economic growth in the United States, something long acknowledged in the comparative literature but largely absent from studies of the U.S. economy and politics.

For my parents, Bruce and Judy.

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Chapter 1: Introduction

The collapse of the subprime mortgage market beginning in 2007 ushered in the most recent U.S. economic crisis. In response, Congress passed and President Bush signed into law the Economic Stimulus Act of 2008 that gave each taxpayer a rebate of at least $600. It was hoped that the extra income would lead to increased consumer expenditures, thus jumpstarting the flagging economy and avoiding a prolonged recession. Legislators' concern with boosting consumer spending was not misplaced. Consumer expenditures comprise the lion's share of domestic spending, driving economic growth and ultimately affecting other objective indicators of macroeconomic health (Vuchelen 2004, 494; NIPA 2009). But legislators were not sure what makes consumers choose to spend money and stimulate the economy rather than save it to help them weather the rough economic times ahead. I argue that in order to fully explain the relationship between politics and economics, one needs to consider a variety of interrelated factors including media coverage, consumer sentiment, and presidential approval.

Linking the economy with politics is not new and scholars have spent decades studying economic voting, or the way economic conditions and perceptions affect presidential approval and vote choice. Presidents are punished for poor economic times and rewarded for economic prosperity. The importance of the economy in determining presidential approval may vary, however, if non-economic events transform the evaluative criteria used to judge presidential performance. In other words, economic perceptions may be less predictive in presidencies dominated by foreign crises or political scandals than in presidencies defined by peace and economic prosperity.

The news media may also alter the relationship between politics and the economy. Not only do the media set the agenda by focusing the public's attention on one issue over another, but also primes citizens to associate the president with a particular issue. This coverage can help alter the criteria used to evaluate the president and highlight or divert attention away from the economy. Likewise, the tone of coverage, or how positively or negatively the president is discussed by the media, can affect not just political and economic evaluations but also directly influence macroeconomic behavior.

Politics and the economy have also been linked through studies of the political business cycle, or periodic fluctuations in the macroeconomy and politics. Other research has focused on the way economic conditions—and perceived economic conditions—affect presidential approval and voice choice. While much attention has been paid to the role economic conditions play in political decision making, less attention has been devoted to the study of what role politics plays in influencing macroeconomic conditions. Although scholars have searched for evidence of political manipulation of the economy around elections in order to create favorable conditions, the empirical evidence for regular changes in the aggregate economy around elections in the American context is mixed (e.g. Nordhaus 1975; Hibbs 1977; Drazen 2000). Even though evidence of political maneuverings to influence economic conditions prior to Election Day may be equivocal, there are other, more indirect ways politics can influence economic outcomes.

Personal Consumption Expenditures

Although citizens may have incorrect estimates of objective economic conditions (Conover, Feldman, and Knight 1987), it has been well established that the objective economy affects many aspects of politics, from election outcomes (Fiorina 1978; Kinder

and Kiewiet 1981) to approval (Kernell 1978; MES 1989; Mueller 1970, 1973) to macropartisanship (MES 1989; Lockerbie 1989). The state of the economy also affects policy support, with citizens being more supportive of liberal policies when the economy is improving and more supportive of conservative policies when the economy is in a state of decline (Durr 1993). The connection between macroeconomic conditions and consumer spending is just as well established in the economics literature. The connection between other factors and personal consumption expenditures (PCE), however, is less well known.

In addition to objective economic indictors, economists include measures of consumer sentiment in models of economic behavior. Specifically, they have compared the predictive power of the Index of Consumer Sentiment (ICS) and the Consumer Confidence Index (CCI) relative to other objective economic indicators, such as gross domestic product and the New York Stock Exchange (Howrey 2001). Comparing the explanatory power of the ICS to other indicators, Howrey finds "the ICS, either alone or in conjunction with other indicator variables, helps to sharpen predictions of the probability of recession" (2001, 184), but that this relationship is very noisy. Ludvisgon (2004) further elaborates on the predictive power of consumer sentiment indices and finds both the ICS and CCI to provide only marginal improvements over traditional financial indicators (see also Carroll, Fuhrer, and Wilcox 1994; Fan and Wong 1998). The predictive power of consumer sentiment may also be limited to times of economic hardship (Garner 1981; 1991; Haugh 2005) and be most important in short-term analyses (Gelper et al. 2007). This non-constant effect of consumer sentiment on consumer behavior motivates the use of time-varying methods, but while the question "Does

consumer sentiment matter?" has been asked, "When does consumer sentiment matter?" has not been fully explored.

Presidential Approval

All of the aforementioned analyses, however, fail to include any political variables and thus missing a crucial piece of the consumer spending puzzle. I argue that the inclusion of more substantive political variables will refine estimates and improve economic forecasts. One such factor which might improve consumer spending predictions is presidential approval. Mueller (1970) was the first to use presidential approval as a dependent variable. Before his groundbreaking article, approval had been relegated to the right-hand side of regression equations as an explanatory variable for vote choice studies. As Gronke and Newman (2003) explain, presidential approval research has transitioned through three phases: time, model specification, and outside factors and individual heterogeneity.

The first phase, beginning with Mueller (1970; 1973) focused on the decay of job approval across the president's term. Mueller modeled a linear decline in popularity due to the fragmentation of a "coalition of minorities" created during the presidential term. Additionally, Mueller notes the asymmetric effect of economic prosperity and decline in presidential approval, with approval declining during tough economic times. However he found no significant effect for periods of economic prosperity, noting "an economy in slump harms a president's popularity, but an economy that is improving does not seem to help his rating" (Mueller 1973, 215).

Research immediately following Mueller's seminal works focused on the appropriate way to model presidential approval over time. Stimson (1976) argued the

effect was quadratic, rather than linear, with approval declining after the start of the term but then experiencing an uptick near the end of the term. He attributed the initial decline to the disillusionment of uninformed citizens after the build-up of expectations surrounding the election. Similarly, the subsequent increase in approval at the end of the term is a result of increasing expectations leading in to the next election. Kernell (1978) argued approval does not decline solely due to time, but rather the ebb and flow of approval can be attributed to political and economic events properly specified. Likewise, Monroe (1978) criticized Stimson for misspecifying the effects of the economy by using a time counter rather than objective economic indicators and actual expenditures.

These articles paved the way for the second wave in approval research that focused on proper model specification. Debate centered on proper lag structures and the appropriate political and economic variables to include. These arguments within the literature spurred methodological advancements in political science as more advanced time series techniques were imported from economics. For example, differences in the degree to which individuals' attitudes persist led to the adoption of autoregressive fractionally integrated moving average (ARFIMA) techniques to avoid threats to inference associated with assuming perfect memory.[1] More attention was also devoted to the modeling of events. Differing results for comparable theories may be a function of lag structure, time period chosen, multicollinearity, and choice of economic variables (Lewis-Beck and Stegmaier 2000). Eventually this line of inquiry was set aside in favor of subjective measures of the economy.

[1] The motivation for ARFIMA models is discussed in more detail in the methodology section of this chapter.

At the same time, research into presidential approval also switched from the macro level to studying the determinants of individual approval, beginning acknowledgement of the heterogeneity of the citizenry in terms of presidential approval. The differing responses individuals have to common shocks and events sparked debate, however, about the most appropriate level of analysis. This research also paved way for the third wave in presidential approval research.

Building upon the research conducted during the second wave, the third wave expanded the study of manipulation of opinion by the media and political elites as well as further exploring heterogeneity among individuals and groups. At this point, the media was included as an intervening factor (e.g., Nadeau et al. 1999). Brody (1991) found honeymoon periods to be a result of increased positive attention and an absence of criticism by the media at the beginning of the term. The subsequent decline in approval was then a result of the president's inability to meet the unrealistically high expectations created by elites and the media in addition to an increase in criticism.

Since researchers were unable to agree on which macroeconomic indicators were driving the change in approval, research shifted to the use of subjective economic indicators. That is, research shifted from studying the effect of the objective economy on approval to the study of effects of *perceptions* of the economy on presidential job performance ratings. Debate in this branch of the literature has focused on the nature of citizens' economic evaluations, namely whether they are prospective or retrospective, and whether they are concerned with the state of their own pocketbooks or national economic conditions. As Lewis-Beck and colleagues (2008) state in their revision of the classic *The American Voter*,

> An individual's economic outlook can be divided conceptually into views toward two distinct sets of objects: one's personal economic circumstance, and the economic conditions of the country….[E]conomic attitudes tend to track key macroeconmic indicators. That being said, it is important to recognize that the link is not perfect, and that the fortunes of an individual can be quite different from the fortunes of a nation. Given these things, we would expect personal and national economic conditions to relate differently to political behavior (370).

Rewards and punishments are at the heart of theories of economics-based president approval: the president is punished for recessions and rewarded for times of economic prosperity (Lewis-Beck et al 2008; Kiewiet 1983).

Consumer Sentiment

Consumer confidence contains other information not found in objective economic variables (Keynes 1936; Katona 1975). For instance, Katona (1964; 1975) found the Index of Consumer Sentiment (ICS) responds to national economic conditions. MacKuen, Erikson, and Stimson (1992) find that real economic conditions Granger-cause economic evaluations (see also Otoo 1999; Jansen and Nahuis 2003), although this may be only true in the short term (Christ and Bremmer 2003). Beyond being affected by the objective economy, consumer sentiment has also been found to Granger-cause changes in GDP (Matsusaka and Sbordone 1995).

There is disagreement in the literature, however, regarding the relationship between consumer sentiment and politics. Consumer sentiment has been found to affect many aspects of political life including macropartisanship (Erikson, MacKuen, and Stimson 2002) as well as presidential and congressional approval (MacKuen, Erikson, and Stimson 1992; Durr, Glimour, and Wolbrecht 1997; Box-Steffensmeier and Tomlinson 2000). Politics has also been shown to affect consumer sentiment at the aggregate (De Beof and Kellstedt 2004; Norpoth 1996; Evans and Pickup 2010) and

individual levels (Conover, Feldman, and Knight 1986; 1987). This debate leads to the conclusion that the relationship between the ICS and presidential approval is one of reciprocal causality.

Although often assumed that economics drives politics, it is possible that politics drives economic evaluations, as well. Indeed, De Boef and Kellstedt (2004) argue that the political business cycle affects consumer sentiment. Consumer sentiment increases in the period leading up to elections and subsequently declines post-election because of the political environment rather than objective economic conditions (Hardouvelis and Thomakos 2007). The effect of political events may also be asymmetric, with consumer sentiment containing information not readily available in some indicators for extreme cases, such as September 11th, but failing to capture more quotidian events (Garner 2002). In the long-term, at least, consumer confidence and government competence evaluations are cointegrated and the level of cointegration varying across administrations (Easaw and Ghoshray 2007). With such a close relationship between consumer confidence and governmental evaluations, it is plausible that consumer behavior is also closely tied to perceptions about governmental performance.

The Media

The effect of politics on economic outcomes hinges, however, on the ability to assign blame or reward the government for economic conditions. Research has explored the ways the media uses particular frames when acting as an agenda setter, linking government with economic conditions. In their study of television news, for example, Iyengar and Kinder (1987) find the issues the media chooses to cover become the ones considered most important by the public. "Problems given steady news coverage grow

more important, at least in the minds of the viewers" (21). Using time series data, they show that as the media changes its focus, so, too, do voters. The effects of media agenda setting, however, are not especially long-lived. Rather, "effects appear to be neither momentary…nor permanent…All [the] evidence implies an American public with a limited memory for last month's news and a recurrent vulnerability to today's" (33).

Krosnick and Kinder (1990) note that individuals use decision-making short-cuts and the most accessible information to determine their positions on various issues. By focusing on specific events or policy areas (e.g. the economy, the 9/11 attacks, the Iran-Contra scandal) media are able to affect the accessibility of specific information and facilitate information retrieval. By focusing on the economy, the media create an environment in which the president is judged based on economic performance. A focus on Iran-Contra, however, will lead the public to judge the president based on his handling of foreign affairs.

The importance of various factors may also be time-varying (Lebo and Box-Steffensmeier 2008). The salience of economic conditions may lead subjective economic evaluations to be more closely correlated with approval than in other periods. By highlighting different aspects of presidential performance depending on the political circumstances, the media may contribute to these time-varying relationships. Changing media coverage may also explain a large portion of the variance in presidential job performance.

If voters do not have long-standing positions on most issues, they will instead base their stated issue positions on the most salient considerations (Zaller 1992). The more recently an individual has encountered a message regarding an issue, the easier it is

for an individual to access information regarding that issue. This leaves a large role for the media to not only tell voters what issues to think about, but how to think about them. It is ambivalence—competing considerations (Zaller and Feldman 1992)—and the lack of long-standing positions that makes priming and framing effective. It is important to note the endogenous relationship between the media and approval, however: media coverage affects what the public views as important, but media outlets also try to appease the public by selecting stories which are most interesting to the public.[2]

Citizens get much of their economic information from media outlets, allowing the media to affect perceptions of economic performance (MES 1992; Mutz 1992). Moreover, media coverage responds to changes in economic conditions (Behr and Iyengar 1985; Wu et al. 2002; Nadeau, Fan, and Amato 1999). These changes, however, are asymmetric; the media responds more to negative economic news than positive and tends to highlight the negative (Goidel and Langley 1995; Harrington 1989; Fogarty 2005). Findings regarding the effect of the political calendar on the tone of economic news coverage, though, are mixed, with Harrington (1989) finding coverage more balanced during election years and Goidel and Langley (1995) finding it to be more negative around elections.

In addition to affecting political evaluations and responding to economic conditions, the media also affects consumer sentiment (Blood and Philips 1997; Goidel and Langley 1995; Starr 2008), with changes in media coverage Granger-causing changes in consumer sentiment (Hollanders and Vliegenthart 2009). The media affects consumers by conveying expert opinions about the economy to the public, signaling the state of the

[2] Some scholars have found no reciprocal relationship between the media and approval (see Blood and Philips 1997; Nadeau, Fan, and Amato 1999).

economy to the public via tone and volume of economic news (although this information may not correspond to the actual state of the economy), and influencing the probability that consumers will update their economic evaluations (Doms and Morin 2004). Increased coverage of negative economic events decreases consumer sentiment (van Veldhoven and Keder 1988), but the effect is short-lived (Doms and Morin 2004). There is also more updating of economic expectations when the volume of economic news is high because the frequency of mentions serves as a signal that reduces the costs associated with updating economic perceptions (Doms and Morin 2004; Dolan, Frandreis, and Tatalvich 2009). Given the power of the media to affect public opinion, it is remarkable that more studies have not included measures of media coverage in their analyses.

Theory

The economic voting literature has been built upon the thesis that voters attribute responsibility for economic performance to the government, what Lewis-Beck and Paldam (2000) call the "responsibility hypothesis." Given the importance of the economy in shaping political opinions and outcomes, it is important to understand the factors that affect economic performance. Figure 1.1 outlines the theory and important variables for this dissertation. I argue that consumer behavior is affected not only by the objective and subjective indicators included in economic models but also by presidential job performance and media coverage of both the president and the economy. Although scholars have had mixed success finding overt evidence of a political business cycle, I show that politics does, in fact, affect the economy through more indirect means.

< Figure 1.1 about here >

Moreover, economic performance does not simply affect assessments of government competence, these same political assessments also affect the trajectory of the economy (Lewis-Beck and Paldam 2000; Bloom and Price 1975; Mueller 1973; Campbell et al. 1960; Katona 1975). If political evaluations also affect consumer behavior, this results in a self-fulfilling prophecy where poor objective economic conditions lead to more negative consumer and media sentiment, and ultimately decreasing presidential approval. All of these factors decrease consumer spending, which in turn creates worsening economic conditions. Incorporating political variables into economic models will not only sharpen economic forecasts but also enhance understanding of the interrelated nature of economics and politics.

Volatility in the political system also affects consumer behavior and vice versa. Volatility clustering, first studied in financial markets, refers to the phenomenon that "[w]hen volatility is high, it is likely to remain high, and when it is low it is likely to remain low" (Engle 2003, 330). But what are the political conditions under which consumers see economic conditions as certain or unstable? What causes these periods of volatility is a subject worthy of study because it can lead to substantively interesting conclusions about the sensitivity of certain factors to instability in the system. Political volatility indicates uncertainty that may not only affect political calculations but also spill over into the economic system by affecting consumers' spending decisions. With economics playing such a large role in political evaluations and decisions, understanding the way instability in the political system translates into economic instability is an important, and hereto unexplored, piece of the puzzle.

Methods

The methods used in this dissertation follow the evolution of time series methodology, from ARIMA models to models of volatility. Most of the development of time series methods in political science has occurred in the context of economic voting. However, as methods have become more sophisticated, the types of questions scholars are asking have changed in response. An example of the ability of methods to change the questions asked can be seen in the presidential approval literature. A majority of the time series research into presidential approval has sought solely to model mean levels of approval; Gronke and Brehm (2002) have conducted one of the few studies that build upon this existing research by also modeling volatility in the approval series. Using a modified ARCH approach, they are able to model both the mean and variance of the approval series and find volatility to have increased over time. They also find that not all events are created equal, with some events increasing volatility and others having a stabilizing effect. Currently, there has been little political science research using multivariate GARCH (MV-GARCH) models and I make extensive use of these models in order to further explore the dynamics of the series.

Modeling the Mean

It is important to note from the outset that time series data are not comprised of independent observations and this autocorrelation must be taken into account. While the series can be analyzed in level form, if a series is not mean-reverting (as stationary series are assumed to be), failure to account for this may result in spurious regressions in which there appears to be a relationship between two factors when none exists. One way to correct for this is to first difference the data; however, this, too, may be insufficient. While differencing the data provides significant improvement over the level form

analysis of non-stationary series, it may over-correct by over-differencing the data. Thus, the best way to avoid over-differencing while still making a series stationary is to fractionally difference the data (Clarke and Lebo 2003; Box-Steffensmeier and Smith 1996).

Fractional integration is theoretically motivated by heterogeneity at the individual level (Granger 1980). Individuals' attitudes vary in their degree of persistence, with some individuals having long-memory (or a strong autoregressive process) and others less so. This heterogeneity at the individual level produces aggregate series that are neither stationary nor unit roots, but are instead fractionally integrated. Several variables of interest to political scientists are fractionally integrated, including partisanship (Box-Steffensmeier and Smith1996) and presidential approval (Lebo, Walker, and Clarke 2000). ARFIMA techniques allow for a series to have long, but not perfect-memory. In other words, ARFIMA allows shocks to persist but eventually be discounted over time.

Fractionally differencing the data accounts for the short-term relationship between two or more series while obscuring the long-run relationships. One way to get at these long-run relationships is to test whether the series are cointegrated. Series are cointegrated if there exists a stationary linear combination of the variables (Engle and Granger 1987). That is, each series may be a random walk, but the series together exhibit equilibrium behavior. There are many ways to test for cointegration, including those developed by Engle and Granger (1987), Engle and Yoo (1987), and Johansen (1988). Unfortunately each of these methods make assumptions regarding the stationarity of the data, making them inappropriate for fractionally difference data. The Perason, Shin, and Smith (PSS) bounds method, however, makes no such assumptions.

It the combination of two variables is of a lower order of integration than either of the original variables, the series are cointegrated. The rate at which series re-equilibrate is captured by the fractional error correction mechanism (FECM), or the rate at which a shock driving the two series apart dissipates. ECM coefficients that are close to -1 indicate a quick rate of error correction while coefficients far from -1 indicate a slower rate of error correction. The ECM must also be made stationary by differencing it by its own value of *d*. The model is then run using the fractionally differenced variables and fractionally differenced ECM that results in estimates free from the spurious regression problem.

Many of the equations in this dissertation contain endogenous variables and thus should be modeled using a near-VAR estimated by seemingly unrelated regression (SUR) to avoid simultaneity bias. For many of the dependent variables, the question of determining changes in which variable temporally precede changes in the other (i.e. causality) is interesting. X is said to Granger cause Y if using the past values of X improves the prediction of Y compared to predicted values of Y using only its own past history. The Haugh Pierce test uses Box-Jenkins methodology to test for Granger causality by first filtering each variable using an ARFIMA model. The residuals from this filtering are then used to create the cross-correlation function (CCF), the correlations of which are squared and summed to create the Haugh Pierce test statistic. The null hypothesis for both tests is that X and Y are not causally related.

Modeling Volatility

Although variables are assumed to have a constant error variance across time, many variables exhibit periods of volatility followed by periods of tranquility, rendering

this assumption inappropriate. The methods described above explore the first moment of a series; however, heteroskedastic errors may also be of interest. There are many ways volatility can influence a series. For example, volatility in the independent variables can affect the mean as well as the volatility of the dependent variable. I explore these options as well as the dynamics of the relationship between variables over time. The second stage will be to explore the dynamics of volatility in the series using generalized autoregressive conditional heteroskedatic (GARCH) and Dynamic Conditional Correlations (DCC).

The first step in the volatility analyses is specification of a univariate model of the dependent variable. This is done using a GARCH model, which models the mean and variance of the dependent variable (Enders 2004). GARCH models allow for the variance to have both AR and MA processes and, if there is no MA process, the model simplifies to an ARCH model. After this initial noise model is estimated, additional independent variables will be added to the analysis.

In addition to having heteroskedastic errors, the relationship between variables, in both the mean and variance may change over time due to circumstances such as elections, recessions, and honeymoon periods. There are three common ways to test for dynamic relationships between series: moving windows, Kalman filter, and DCC. The method I employ, DCC, is most useful when we want to estimate the correlation between two series at a given point in time. It also allows for periods of no correlation, as well as positive and negative correlation. Moreover, dynamic correlations are the only method that can simultaneously look at the mean of a series and the volatility. This allows us to look at the direction and strength of the relationship while taking volatility into account.

It also allows a test of whether or not correlations are constant. DCC comes from multivariate GARCH models and estimates a weighted average of correlations in two steps. In the first step, univariate GARCH models are used to estimate the volatility parameters. The residuals from the first stage are then used to estimate the time-varying correlation matrix.

Chapter Outline

Chapter 2 begins the empirical analysis by introducing Lydia, a system for large-scale text analysis. Lydia provides a low-cost way to gather data on references and sentiment toward a variety of entities from a variety of online news sources. In addition to describing how Lydia works, the chapter also includes a practical application of the Lydia data in a MV-GARCH model of presidential approval. My analysis shows that presidential approval responds to the tone of presidential coverage as well as the frequency of mentions of the economy in the *New York Times* and *Time* magazine. In addition, I find there is a reciprocal relationship between approval and media sentiment, but that changes in the frequency of economic coverage Granger-cause changes in consumer sentiment.

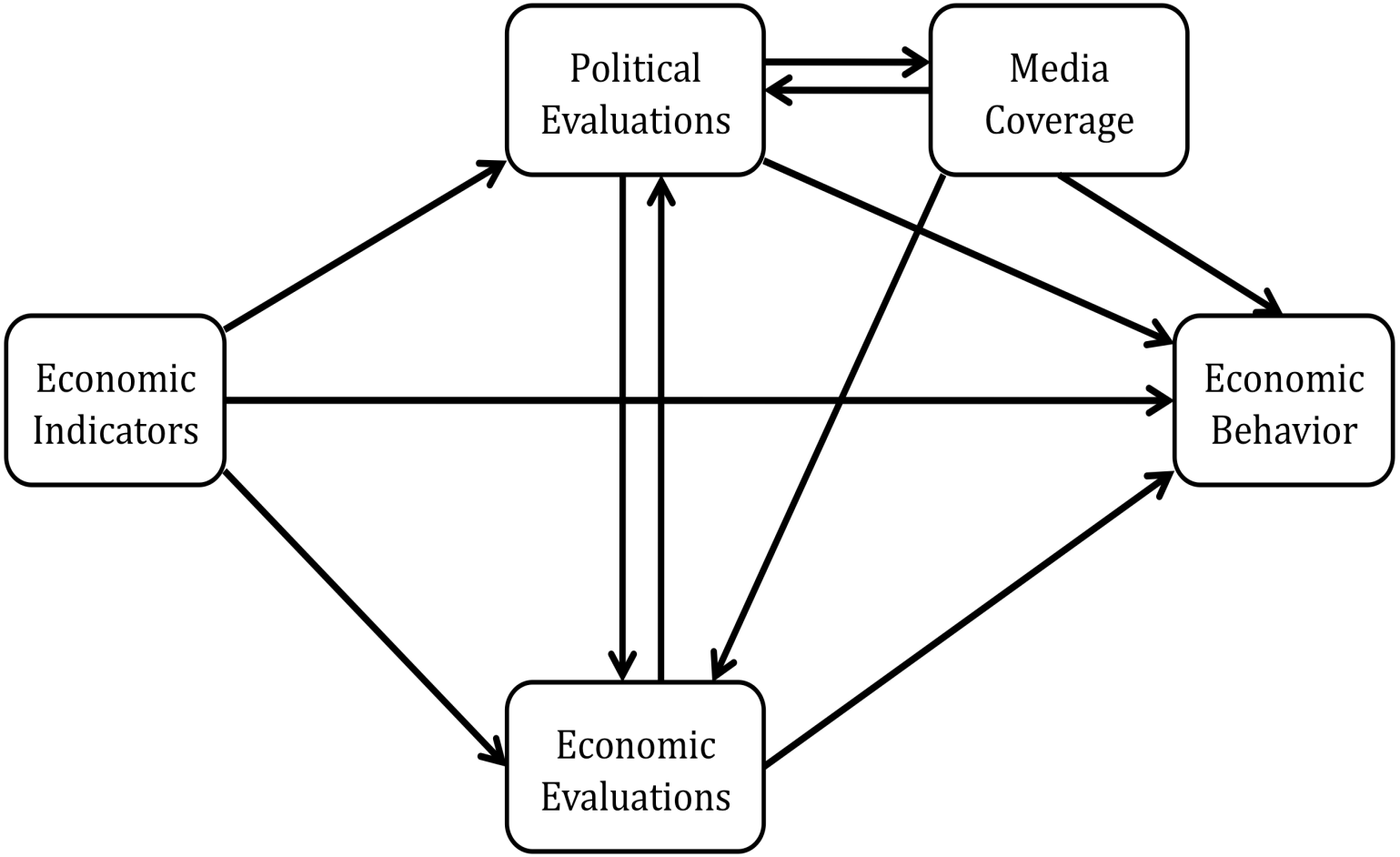
Chapter 3 explores the hegemony of economic explanations of presidential approval during two very different presidencies: the Clinton and Bush the Younger administrations. Traditional theories of economic voting predict that the correlation between economic conditions and presidential approval will be at least as strong, if not stronger, during periods of recession compared to periods of economic growth. Yet these theories ignore the possibility of external political events to transform the criteria used to evaluate a president, turning a presidency that would normally be dominated by

economic evaluations into one where foreign policy concerns dominate. I find the correlation between economics and approval to be stronger during peace and prosperity than during a period of war and recession. Turning to the intra-administration dynamics, I find the correlation between approval and consumer sentiment to be consistently positive during the economic boom of the Clinton years and extremely variable—and often negative—for Bush. Again, this is to be expected given the growing economy during the Clinton administration and the 9/11 terror attacks in addition to two recessions during the Bush years.

Chapter 4 is the capstone empirical chapter, tying together the results from the preceding chapters and extending the analysis to economic behavior. Although scholars have established that political evaluations can affect beliefs about the economy, this chapter shows that presidential approval and political confidence can boost or depress consumer spending. Moreover, political confidence also affects instability in consumer spending, with increased uncertainty leading consumers to settle into a uniformly low level of spending. This in turn leads to lower economic growth and, ultimately, worsening political and economic evaluations.

Finally, Chapter 5 summarizes the results and provides a discussion of avenues for future research.

Figure 1.1: Theoretical Summary of Dissertation



Chapter 2: The Dynamic Relationship Between Media Sentiment and Presidential Approval

"Shifts in news media content alter the political importance that the public attaches to the flow of events…[T]hrough its monopoly over the immediate telling of political history, media possess the power to influence what the public considers and what it ignores." Krosnick and Kinder (1990, 510)

Political scientists have long recognized that the news media serve as an important intervening variable between political issues and public opinion. The media can reinforce existing attitudes (Lazarsfeld, Berelson, and Gaudet 1944), increase the salience of issues (Iyengar and Kinder 1987; Romer, Jamieson, and Aday 2003), and set the agenda for public discourse through the priming and framing of issues (Iyengar 1987; Druckman 2001; Krosnick and Kinder 1990). Media coverage can also aid citizens in the evaluation of political candidates (Aldrich and Alvarez 1994; Ansolabehere and Iyengar 1994; Mendelsohn 1996) and influence voting decisions (Iyengar 1990; Mendelsohn 1996).

The news media and blogs are an incredibly rich and potentially influential source of political information. Their influence extends to the nomination of political candidates, the outcome of election campaigns, the development of public policies, the passage of specific legislation, the success of Supreme Court nominations, the mobilization of issue publics, and so on. To date, it has been both technically and logistically difficult to capture information about media content that is sufficiently detailed with the requisite temporal and geographic nuance to fully understand the news media's and bloggers' myriad influence on public opinion and the shape of political events. To be sure, media content analyses have informed political scientists' understanding of everything from election outcomes (Khan and Kenny 1999) to judicial ideology (Segal and Cover 1989). But these studies typically require enormous manpower to sift through what is usually a relatively small number of news sources.

The Lydia system collects data from blogs and online news media to build spatial and temporal models of entity coverage and co-occurrences using natural language processing (NLP). Lydia is still at a relatively early stage of development, but it has already produced interesting analyses of significant volumes of text. At present, the system codes information from over 1800 daily online U.S. and international news sources dating back to as early as 2004 and generates temporal and spatial graphical summaries (in the form of charts and maps) of the data that can be found at http://www.textmap.com/access.

Moreover, data generated by the Lydia system will be of increasing relevance to political scientists interested in closely examining the relationship between public opinion, campaigns and other political events, and the media. In addition to the daily data available from 2004 to the present, the system also has a historical data set that consists of coded *New York Times* articles from 1851, *Time Magazine* articles from 1923, and an archival selection of fourteen publication from across the country available from 1977 to the present.[3] Beyond using the pre-defined source sets, users can also create their own source sets from the large number of available periodicals. This allows and select the granularity of the data for each series to match the time frame and unit of analysis of existing data sets, from daily all the way to yearly, allowing for easy incorporation. Beginning in the fall of 2007, the 2008 Annenberg National Election Study included daily summary data generated by Lydia to capture information about each presidential candidate and relevant issues, providing a snapshot of the campaign for the day respondents completed the survey.

Lydia is able to track the amount of coverage an entity receives, classify references according to tone, determine which entities are often mentioned together, and identify

[3] See Appendix A for a list of archival and historical data sources and available time periods.

geographical differences in news coverage of an entity. For an overview of the technical aspects of the process, see Bautin et al. (2010). Details about the aggregation process can be found in Bautin, Ward, and Skiena (2009). For a discussion of the sentiment analysis, see Bautin, Vijayarenu, and Skiena (2008) and Godbole, Srinivasaiah, and Skiena (2007). A technical discussion of the spatial analysis can be found in Boutin et al. (2010). Those papers explain the internal validity of the Lydia system; in contrast, here I introduce the system to a general social science audience and provide an example that demonstrates its external validity in predicting the level of presidential approval and sources of instability in approval. Examining presidential approval as a function of presidential media sentiment and controlling for inflation and unemployment, I find media sentiment toward the president has a significant effect on the level of presidential approval. In addition, media coverage of the president and economy also influences approval volatility.

The Role of the Media

The media legitimizes political issues and acts as a crucial linkage institution between the public and political elites by providing the public with information about political events and providing government officials with feedback about policies. The media can act either as a direct filter of information, "passively [transporting] elite views—particularly the views of the most powerful elites—to the public" (Baum and Potter 2008, 40, see also Zaller 1992; Bennett 1990; Bennett, Lawrence, and Livingston 2006) or be active participants in the communication process. If the media take a more active role, news coverage may distort or alter objective information about politics and the economy, going beyond telling the public simply what to think about. This allows the media to have a significant effect on political opinions, knowledge, and

behavior (e.g. Gerber et al. 2007; Jerit et al. 2006; Iyengar 1991; Aldrich and Alvarez 1994; Ansolabehere and Iyengar 1994; Mendelsohn 1996).

There are several, closely related avenues by which the media can influence public opinion: agenda setting, priming, and framing. Through agenda setting, the media increase the salience of an issue by increasing coverage of it (McCombs and Shaw 1972; Iyengar and Kinder 1987; Iyengar and Simon 1993). While this is most effective when an issue is already judged to be important (Behr and Iyengar 1985), simply focusing on an issue leads voters to infer it is of greater national importance (Miller and Krosnick 2000) and news exposure significantly affects information retention and judgments about issue importance (Price and Tewksbury 1997).

Beyond simply telling the public what to think about, the media can tie an issue to a political figure via priming (Iyengar and Kinder 1987; Ansolabehere and Iyengar 1994; Medelsohn 1996). In other words, the media is able to alter the evaluative criteria used to judge politicians "by calling attention to some matters while ignoring others" (Iyengar and Kinder 1987, 63). Calling attention to certain matters, or agenda setting, affects the cognitive accessibility of information, thus increasing the likelihood that information will be used to shape an individual's opinions. Priming can increase the use of those issues in presidential evaluations (Iyengar, Peters, and Kinder 1982) and coverage of both scandals (Krosnick and Kinder 1990) and economic conditions (Mutz 1992) has been shown to have a direct effect on approval ratings of politicians at both the state and national levels. Just as with agenda setting, familiar issues are more easily primed. However, the more frequently an issue is primed, the more the issue will be incorporated into overall evaluations (Kelleher and Wolak 2006; Krosnick and Kinder 1990)

In a similar vein, by framing information in either a positive or negative way, the media are able to influence beliefs about an issue (Iyengar 1987; 1991; Druckman 2001; 2002). The

tone with which presidential candidates are discussed in the press can color the public's perception of the candidates (Graber 1971), leading to public perceptions that are "sharply diluted and somewhat distorted reflections of press images" (Graber 1974, 85). Moreover, the tone of political news coverage has become more negative over time, thus creating a more cynical electorate, reducing overall approval of politicians, and leading to declining trust in government (Cappella and Jamieson 1996). Given the potentially strong effect the media can have on a variety of behaviors of interest to political scientists (and social scientists more broadly), it is important to incorporate media coverage into theoretical models of political outcomes. Doing so has become even easier with the creation of Lydia.

Meet Lydia: Major Phases of Analysis

Lydia is designed to quickly analyze online text collected in a variety of corpuses. It analyzes thousands of sources daily, collecting and analyzing data from the daily *New York Times* and other similar sources in less than a minute per source. The analysis of news undertaken by Lydia is quite different from Google News, the most familiar automated online news analysis system. Google News reads approximately 4,500 news sources that are then grouped by related events, sorted into top-level categories, and ultimately selects a representative article for each group. Lydia, however, tracks the date at which an entity (a person, place, or thing) appears in the news, the geographic location of the news source (for newspapers), and associations with other marked entities. It also monitors the emotional tone (positive or negative) or sentiment of coverage for a given entity. There are six major phases of the Lydia analysis: spidering and article classification, named entry recognition, juxtaposition analysis, synonym set identification, sentiment and subjectivity analysis, and, finally, spatial analysis (Bautin et al. 2010).

Spidering and Article Classification

Each day, Lydia collects articles from over 1800 online newspapers and blogs via spidering and parsing programs that require little customization for different news sources. The first step in the process is to classify entries, both blogs and periodicals, into one of five categories: business, sports, entertainment, news, and other using a Bayesian classification system (Bautin, Vijayarenu, and Skiena 2008; Godbole, Srinivasaiah, and Skina 2007).

< Figure 2.1 about here >

Figure 2.1 presents the classification of monthly periodical stories about Arnold Schwarzenegger, a political figure who has also been an athlete and movie star, from November 2004 to April 2010. During this period, there is an increase in news stories related to Schwarzenegger in November of 2005, when he called for a special election, and November 2006, when he won reelection. Similarly, there was an increase in the number of entertainment references in the summer of 2007 when Schwarzenegger was portrayed as the president of the United States in The Simpsons Movie. News stories about Schwarzenegger also increased in October 2007 with the publication of a British GQ article in which the Governator discussed his drug use during his bodybuilding days. As Figure 2.1 shows, the percentage of stories classified in each of the four categories changes in accordance with that month's events, providing a degree of face validity for Lydia's entry classification system.

Named Entity Recognition

Before information about various entities (people, places, companies, universities, etc.) can be collected, the entities must first be identified. Named entity recognition involves the identification of the proper nouns that denote people, places, and things in a news or blog text so that Lydia can recognize these entities using a variety of NLP techniques. The first step in the

process is to tag each word in the article according to its part of speech. After the role of each word in a sentence is appropriately tagged, proper nouns are extracted either by identifying a string of capitalized nouns or through the use of a dictionary of common names, cities, and other popular proper nouns. Once the entities have been extracted, Lydia classifies the entities into categories such as persons, states, and countries (Bautin, Vijayarenu, and Skiena 2008; Godbole, Srinivasaiah, and Skina 2007).

< Figure 2.2 about here >

As an example, Figure 2.2 shows a count of the number of references to Ronald Reagan in the *New York Times* and *Time Magazine* from 1950 to 2000. This provides another *prima facie* test of Lydia's ability to identify and classify entities, as the reported frequency of mentions meshes well with Reagan's political history. Reagan emerges in the media in 1968, with his first attempt to win the Republican nomination. He then largely drops out of the public eye until his second run at the presidency in 1976. After disappearing yet again, Reagan reemerges with his successful 1980 presidential campaign. There is another surge in references to Reagan in the fall of 1984 during his reelection campaign. As shown in Figure 2.2, Lydia's reference count corresponds predictably with actual political events.

Identification of common proper nouns is relatively easy. However, entries may reference an entity multiple times but only use the entity's name once, relying instead on pronouns in subsequent references. Consider the following excerpt from an article that appeared on the website *Politico* regarding the Blagojevich verdict:

> Former Illinois Gov. Rod Blagojevich was defiant Sunday, vowing to make a political comeback if a new trial clears him of corruption charges.
>
> "I'm not ruling myself out as coming back, because I will be vindicated in this case," he told Chris Wallace on "Fox News Sunday."…Last week, Blagojevich was convicted of one count of lying to the FBI. (Marr 2010)

While there are two persons mentioned in the article (Rod Blagojevich and Chris Wallace), Blagojevich is referred to by both his full name and his surname. There are also two pronouns ("he") and one subject ("I") that only refer to Blagojevich, resulting in five references to the former governor and one to Wallace. Lydia attempts to resolve these pronouns by associating them with the proper noun that is spatially closest to the pronoun in the entry. The system also uses local entity co-reference to associate partial names (such as surnames) with full names mentioned elsewhere in the entry, thus associating "Rod Blagojevich" and "Blagojevich."

Juxtaposition Analysis

Beyond knowing who and what is talked about, scholars may be interested in knowing when entities co-occur. That is, how often are certain entities mentioned together beyond what would be expected by chance? A simple count of the number of times entities co-occur would bias the results in favor of popular entities, so Lydia uses a Chernoff Bound to determine the probability that two entities co-occur randomly given the number of articles in which they co-occur. This is then used to assess the significance of the co-occurrence.[4] Table 2.1 presents the top ten juxtapositions from April 2009 to April 2010 for Arnold Schwarzenegger, Barack Obama, and Sarah Palin.

< Table 2.1 about here >

Schwarzenegger is most associated with California politics and the state's budget crisis. This is contrasted with Obama whose name appears most often in entries about national and international politics. His name also co-occurs with that of his predecessor and his first nominee to the Supreme Court. Finally, during this post-election period, Sarah Palin is more often associated with Alaska than the man who chose her to be his running mate. If the window is

[4] See Lloyd, Kechagias, and Skiena (2005) for a description of the process.

widened to include the pre-election period, McCain becomes the top Palin juxtaposition. David Letterman also ranks highly as a co-occurrence with Sarah Palin, likely due to an unflattering top ten list the TV host compiled about the former governor in June 2009. Beyond simply providing a count of the number of times an entity is mentioned in the news, Lydia's juxtaposition analysis can shed light on how issues or politicians are framed.

Synonym Set Identification

As illustrated in the example with Rod Blagojevich, entities may be referred to by many different names and pronouns within a single entry. The problem of multiple aliases is multiplied when a large number of data sources are analyzed. Barack Obama may be referred to as "Barack Obama," "President Barack Obama," or "Barack Hussein Obama" depending on the periodical or blog. The number of possible aliases grows even further when typographical errors are considered. It is important to consider all permutations of entity names to get a complete picture of the media's coverage of the entity, yet it is also important to exclude irrelevant morphologically-similar names. That is, when searching for references to the 43rd president of the United States, one would want to include references to George W. Bush but exclude references to George H.W. Bush. Lydia accomplishes this by identifying synonym sets. Aliases belong to the same synonym set if the aliases are morpohologically compatible and they are related to similar sets of entities; for example, allowing Lydia to distinguish references to Bush 41 from those relating to Bush 43.[5] Lydia also allows users to create and save their own synonym sets and groups of related entities using the groups feature.

Sentiment and subjectivity analysis

[5] See Appendix B for George H.W. Bush and George W. Bush synonym sets.

Beyond raw counts of entity mentions, Lydia also codes each mention for the sentiment, or tone, with which the entity is discussed in a particular entry. The entity is scored relative to other entities in the same entry category (business, news, sports, entertainment, and other). This sentiment score can be aggregated across categories, creating an overall sentiment score that measures how well-regarded an entity is.

To determine how an entity is portrayed in the news, Lydia tracks the frequency with which positive and negative adjectives co-occur using a variety of lexicons relating to six domains: media, sports, crime, business, health, and politics. The construction of the sentiment lexicon is a multistage process. Beginning with a small set of words designated as seeds, other words are arranged based on their distance from the seed words, forming paths. Each word is assigned a polarity (positive or negative) and this polarity is applied to its synonyms and the inverse applied to its antonyms. As the distance from the seed, or parent, word increases, the significance assigned to that word decreases. Lydia checks the polarity of these word paths and calculates the number of changes in polarity that occur. It is assumed that the higher the number of flips in polarity, the more spurious the association. Those paths that have a number of flips at or below a specified threshold are included in the final sentiment lexicon.

Once created, the lexicon is then applied to each entry. Every word in the lexicon that appears in the entry is tagged with the associated value for that word (e.g., a good word will be given a tag of +1, a very good word a tag of +2 and vice versa for negative words). The polarity tag is also attached to the associated entities that co-occur in the same sentence. Duplicates of articles that are widely reprinted, such as Associated Press articles and syndicated columns, are excluded, preventing a handful of articles from having a disproportionate effect on the sentiment index. The polarity tags for each entity are then summed within and across categories, resulting

in raw counts of positive and negative sentiment references. These counts can be used to assess an entity's polarity, or the difference in the number of positive and negative sentiment references.

Lydia also computes polarity and subjectivity ranks, which assesses how well-regarded an entity is relative to other entities in the news. The polarity rank shows how positive or negative an entity is portrayed relative to its peers, while the subjectivity rank captures the amount of emotional response, or the number of sentiment references, an entity receives relative to other entities in the news. When examined over time, this sentiment analysis provides an interesting picture of the way the media treats an individual as a campaign or scandal unfolds.

< Figure 2.3 about here >

The polarity and subjectivity ranks of Michael Vick, former NFL Quarterback who was infamously convicted for dog fighting, are shown in Figure 2.3. Prior to 2007, Vick's polarity and subjectivity oscillate according to what was happening on the football field. This all changes in 2007 when he was first accused of being involved in dog fighting. Vick's polarity decreases, indicating he is much less favorably regarded, and his subjectivity increases, indicating that he elicits a large emotional response from the media. His subjectivity rank fall sharply in August of 2009, the same month Vick signed on to play for the Philadelphia Eagles. Although machine coding articles for sentiment is a complicated task and Lydia may make mistakes with individual articles, in the aggregate Lydia appears to get it right.

Spatial Analysis

Lydia's ability to track all references to entities within specific types of articles makes it possible to also monitor sentiment trends over time and geographically. The final phase in Lydia's analysis is to establish geographic differences in sentiment and the frequency of

mentions of a particular entity by various news sources. Geographic differences in coverage are determined by examining the circulation, location, and population density of the area surrounding the headquarters of a news source. An initial sphere of influence is created around the periodical's headquarters and the radius of the sphere is expanded until the population within the sphere exceeds the newspaper's circulation. This sphere of influence can then be used to compare the frequencies of mentions and sentiment regarding an entity in different areas of the country (or world) using a heatmap.

A Practical Application

The data generated by Lydia allows researchers to ask questions they had previously been unable—or had limited ability—to answer, and scholars have already started to incorporate data from Lydia into their work. In a new book by Kenski et al. (2010), Lydia's juxtaposition feature was used to study when and to what degree McCain and Obama were associated with certain entities throughout the campaign. Because they could measure co-occurrences, the authors were able to determine that McCain was associated with the word "old" throughout the campaign, whereas Obama's name did not occur with Jeremiah Wright's until the scandal broke in March 2008. The questions of when scandals or issues arise and the characteristics (and characters) associated with candidates are prime examples of the types of questions that can be explored using Lydia.

Lydia can also be used to better understand the relationship between presidential approval and the media. It is well established that presidential approval responds to changes in the objective economy (e.g. Kernell 1978; MES 1989; Mueller 1970, 1973). At its heart, theories of economics-based presidential approval as a function of models of reward and punishment, with

the president being rewarded for presiding over times of economic prosperity and punished for economic downturns (Lewis-Beck et al, 2008; Kiewiet 1983).

The effect of economics on presidential approval hinges, however, on the ability to assign blame or reward to the government for economic conditions. The media has the power to increase the salience of issues (Iyengar and Kinder 1987; Romer, Jamieson, and Aday 2003) and voters receive much of their economic information from media outlets (MacKuen, Erikson, and Stimson 1992; Mutz 1992). The media also plays a role in priming the public because "the more attention the media pay to a particular domain—the more the public is primed with it—the more citizens will incorporate what they know about the domain into their overall judgment of the president" (Krosnick and Kinder 1990, 497). The more often the media covers economic issues, the more likely the economy is to factor them into the public's evaluations of the president. Additionally, it is popularly assumed the media are more likely to report about negative economic conditions rather than economic improvements, which may lead the electorate to assume no economic news is good news. The more references there are to the economy in the media, the worse the economy—and by extension the president—is performing.

Beyond filtering information about the objective state of the economy, which affects presidential approval, the media also transmits information about presidential performance to the public. Media sentiment toward the president filters and hones elite presidential evaluations, increasing the ability of consumers to tie presidential performance to the state of the country as a whole, including domestic and foreign policies. Because of the ability of the media to set the agenda and influence the electorate's opinions of the president, I hypothesize that increased positive media sentiment toward the president will have a positive effect on presidential approval.

Just as we would not be satisfied describing a distribution based solely on the measure of central tendency, we should not limit our discussion of presidential approval to simply the level of approval over time. Moreover, volatility in presidential approval is a substantively interesting question in its own right. High volatility in presidential approval indicates instability in the president's base of support and is likely to create instability in other aspects of the political system. Volatility in approval signals wavering support of the president to potential challengers and to members of the other branches of government who may, as a consequence, be less likely to support the president's policies because they are uncertain where they public stands on these issues.

In addition to affecting the level of approval, media sentiment toward the president and the economy may also affect when volatility in approval expands and contracts. Just as more favorable portrayals of the president in the media should shift approval upwards, they should also shrink volatility in approval by signaling the media's support of the president's policies, thus helping stabilize the electorate's evaluations of the president's performance. Conversely, negative treatment of the president signals a lack of support, creating uncertainty about the president's performance and increasing approval volatility.

The frequency of mentions of the economy in the media may also affect instability in presidential approval. If it is popularly assumed that the economy is only news when conditions are worsening, increased mentions should reduce the magnitude of shifts in approval as the electorate becomes more convinced of the president's mishandling of economic matters. Thus more frequent economic mentions should cause both presidential approval to fall as well as the variance of approval to contract.

Data and Methods

Because the media are able to manipulate, or at least influence, public opinion, it is important to have accurate measures of media coverage. However researchers have used a variety of different measures of media sentiment. For instance, Patterson (2000) coded a random sampling of Lexis-Nexis news stories by tone from 1980 to 1998 to capture media sentiment toward the president (see also Newman 2002; Shah et al. 2002). Examining *New York Times* coverage of the president, Ragsdale (1997) coded every story mentioning the president between 1949 to 1992. To capture media coverage of the economy, a common approach is utilization of *The Economist*'s R-word index, a count of the number of times the word recession appears in the *New York Times* and *Washington Post*.

These methods, however, rely on human coding, a sample of stories, or data drawn from a few sources; they are also time- and resource-intensive to collect and difficult to quantify. Lydia, however, can calculate not only the frequency of mentions of a president in a variety of periodicals but can also calculate sentiment scores for these articles in a matter of seconds. In the following analyses, I will show the usefulness (and limitations) of using data from Lydia as a predictor of presidential approval, measured as the percentage of respondents to the Gallup Poll approving of the president's handling of his job each month, from 1978 to 2008 using the historical source set.

As noted above, Lydia creates raw counts of entity mentions as well as coding these mentions for tone. The presidential sentiment variables are the raw counts of positive and negative references to the president in a particular month. By separating mentions according to valence, I am able to explore the asymmetric effects of positive and negative media coverage on approval. The model also includes the frequency of references to the president to control for

how often the president is talked about in the news. There is, however, no expected effect for this variable.

< Figure 2.4 about here >

Figure 2.4 shows the polarity of media sentiment toward the president over the period studied, with positive values indicating more positive than negative stores. On balance, coverage of the president is more positive than negative, indicating the president is well-regarded in general. Although the variance in sentiment has decreased over time, considerable variability in sentiment remains. During this post-Watergate period, Democratic presidents are slightly better regarded than Republican presidents, although the difference in coverage is not statistically significant.

The model also includes the frequency of mentions of four economic words, "economy," "recession," "unemployment," and "inflation," to measure media coverage of the economy. Due to the way Lydia codes words for sentiment, the system is unable to accurately distinguish positive from negative mentions for economic terms. Because words such as "increase" are read as positively valenced and "decrease" as negatively valenced, articles that discuss an "increase in the inflation rate" are perceived by the system to be positive in tone. Likewise, an article detailing the "declining unemployment rate" is coded as a negative mention, when in fact this is positive economic news. As a result, the sentiment counts for the economic terms cannot be used and I must rely instead on the frequency of economic mentions. Nevertheless, as shown in Figure 2.5, the frequency of mentions of the economy does appear to respond to changes in the objective economy, lending extra credibility to the economic media measure.

< Figure 2.5 about here >

Two measures of macroeconomic performance are also included in the models: the unemployment and inflation rates. Although other studies have used a variety of measures of economic health, such as GDP and the S&P 500, this analysis includes only the Consumer Price Index (CPI) and unemployment. In addition to objective economic indicators, the model also includes a measure of consumer sentiment. Consumer confidence is not merely the result of objective economic conditions but also contains other information not found in economic variables, what Keynes referred to as the "animal spirits" (Keynes 1936; Katona 1975). Inclusion of a subjective measure of economic performance provides additional information about the electorate's perceptions regarding the state of the economy beyond what is available from economic indicators.

To control for external political events, the models include interventions for the first two months of a new administration, the honeymoon period. Additional significant events are also included in the model to account for shocks to the system that are unexplained by the independent variables.

Various stationarity tests provide contradictory results regarding the stationarity of the approval, sentiment, and economic variables, leading to the conclusion that the series are fractionally integrated. Fractionally integrated series exhibit traits of stationary and non-stationary series, including long—but not perfect—memory, and are the result of an aggregation of a heterogenous AR process at the individual level. Differencing the series is necessary to avoid a variety of threats to inference such as autocorrelation and spurious regression results, but first-differencing a fractionally integrated series is improper as it over-corrects for the level of memory present in the series. Rather than assuming the differencing parameter, d, or the number of times a series needs to be differenced to render it stationary, is equal to one, the d values were

estimated using Robinson's procedure and are reported in Appendix C (Box-Steffensmeier and Smith 1996, 1998; Lebo, Walker, and Clarke 2000).[6] The inflation and unemployment variables are very close to unit-roots and have been first differenced.

Although variables are assumed to have a constant error variance over time, many variables exhibit periods of volatility followed by periods of tranquility, rendering this assumption inappropriate. When realizations of an independent variable are not equal, the conditional variance of the dependent variable is dependent on the realized value of *x*. Furthermore, serial correlation in an independent variable leads to serial correlation in the conditional variance of the dependent variable as well, allowing the independent variable to explain part of the volatility in the dependent variable. While, traditional ARFIMA techniques explore only the first movement of a series the heteroskedastic errors are also of interest in this analysis. Because Engle's LM test indicates the presence of an autoregressive conditional heteroskedasticity (ARCH) process, a generalized autoregressive conditional heteroskedastic (GARCH) model should be used to allow the variance to have both an AR and an MA process (Engle 1982; Bollerslev 1986). While there are many varieties of GARCH models, which is itself an extension of the ARCH model, I use multivariate GARCH (MV-GARCH) to also incorporate independent variables in the variance equation.

This results in the following equation for the mean of approval:

$$\Delta^d Approval_t = \beta_0 + \sum_{l=0}^{q} \Gamma \Delta^d media_t + \sum_{l=0}^{3} \Phi \Delta^d ICS_t + \sum_{l=1}^{3} \Lambda \Delta^d econ_t + \sum_{l=0}^{1} \xi honeymoon_t + \epsilon_t$$

where Γ is a vector of coefficients for the media variables at various lags; Φ is a vector of coefficients for the consumer sentiment variable; Λ is a vector of coefficients for *v* economic

[6] A series with a *d* value between 0 and 0.5 is mean reverting with a finite variance. Values of *d* between 0.5 and 1 indicate a mean reverting series with infinite variance.

variables at various lags; ξ measures the effect of honeymoons; Δ^d indicates that a variable has been fractionally differenced; β_0 is a constant; and ε is the error term ~N(0, σ^2).

And volatility:

$$h_t = \alpha_0 + \alpha_i \epsilon_{t-1}^2 + \zeta h_{t-1} + \sum_{l=0}^{1} \Omega \Delta^d media_t + \beta_1 \Delta^d ICS_t + \sum_{l=1}^{2} \Xi \Delta^d econ_t$$

where h_t is the conditional variance; ε^2 is the error variance; Ω is a vector of coefficients for the media variables at various lags; β_1 is the coefficient for the consumer sentiment variable; Ξ is a vector of coefficients for v economic variables at various lags; Δ^d indicates that a variable has been fractionally differenced; and α_0 is a constant.

Findings

The findings of the models are presented in Table 2.2.[7] The explanatory variables for the mean equation are included in both models, however the variance equation for Model 1 omits the objective economic indicators. Similarly, the media variables are omitted from the variance equation in Model 2. None of the objective economic indicator variables reach significance in the variance equation and their inclusion does not change the substantive effect of the independent variables of interest, leading them to be properly excluded from Model 1.

< Table 2.2 about here >

Examining the results of Model 1, there is a significant contemporaneous effect for increases in positive media tone toward the president. A change in positive sentiment of 105 mentions—one standard deviation—results in an increase in presidential approval by 0.7 points

[7] There is no significant autocorrelation in either Models 1 or 2, with the models having Durbin Watson statistics of 1.98 and 2.0 respectively. The Ljung-Box Q statistic for white noise residuals is 21.36 for Model 1 and 22.33 for Model 2, both at a lag of 20.

from one month to the next, or 6.6 times the average monthly change in approval. Conversely, as coverage becomes more negative in tone, presidential evaluations decline. When negative sentiment toward the president increases by a standard deviation—an increase of 86 mentions—approval declines by 1.3 points, almost 12 times the average monthly change. Not only does the tone of media coverage affect presidential approval, but also this effect is asymmetric. All else constant, negative mentions reduce approval by twice as much as positive mentions, indicating that the president is hurt more by negative coverage than he is helped by positive stories. However the effect of these variables is short-lived, with neither sentiment variable having a significant effect the following month.

Although approval suffers when coverage is negative in tone, the more often the president is talked about in the news, the higher his approval rating regardless of tone. An additional 200 stories about the president a month increases his approval by 1.2 points. This increase in performance evaluations may be either amplified or diminished depending on the tone of mentions.

Presidential approval also responds to changes in economic conditions but only to changes in the unemployment rate.[8] Given the small changes in unemployment from month to month, a one standard deviation change of 0.17 reduces approval by 0.46 percent. In addition to responding to one objective indicator of economic performance, presidential approval also responds to changes in subjective economic evaluations, with a standard deviation increase in the ICS increasing presidential approval by just over half a percent. Nevertheless, even when the usual suspects are accounted for, there remains a significant effect of the tone of media coverage on the level of presidential approval.

[8] Block F-tests indicate that the effect of inflation is insignificant.

< Figure 2.6 about here >

Turning now to the volatility equation, there is significant evidence of conditional heteroskedasticity as evidenced by the GARCH parameters and shown in Figure 2.6. In addition to being influenced by its own past history, instability in approval is also affected by media sentiment and subjective economic evaluations, but not by objective economic conditions. Although a more positive tone in media coverage contemporaneously increases presidential approval, the effect of positive coverage only reduces volatility at the first lag. Negative coverage, however, creates uncertainty in presidential evaluations contemporaneously and the effect spilling over into the following month. While an increase of positive mentions from one month to the next decreases approval volatility the following month, the net increase in volatility for a corresponding change in negative mentions is twice as large. As with the mean equation, the effect of media sentiment is asymmetric: negative coverage both decreases the level of and increases volatility in approval, more than positive coverage raises approval and contracts volatility. By altering the tone with which they cover the president, the media are able to shift presidential approval *and* either create certainty or instability in the electorate's evaluations of presidential performance.

While the frequency of economic news had an insignificant effect on the level of presidential approval, economic coverage does significantly affect volatility in approval. The more the media discusses the economy, the more stable presidential approval becomes. The frequency of presidential mentions has a similar stabilizing effect. Increased coverage of both the president and the economy helps reduce the public's uncertainty about the president's handling of his job.

Temporal Ordering and Endogeneity

Lydia is able to provide time series data over long periods, making it possible to get at questions of causality, such as whether approval simply responds to changes in the frames used by the media about the president or if this framing is due in part to changing approval. Moreover, if the relationship is indeed one of reciprocal causality, a single equation model is an improper specification. The model specifications in Table 2 ignore the endogenous relationship between consumer sentiment and approval (De Boef and Kellstedt 2004). Although the frequency of economic mentions does not significantly affect the mean of presidential approval, Granger causality tests in Table 2.3 indicate that changes in economic mentions do temporally precede changes in consumer sentiment. That is, in addition to being affected by objective economic conditions, economic evaluations are also affected by changing media coverage of the economy.

< Table 2.3 about here >

The results of the Granger causality tests are mixed for the media sentiment variables. While changes in approval do not Granger-cause changes in negative media sentiment toward the president, the relationship between approval and positive sentiment is one of reciprocal causality. In other words, changes in media sentiment lead to changes in approval, but the media does not alter its criticism of the president in response to changing approval. The level of positive coverage the president receives, however, is adjusted based on changes in the president's job performance.

To address these endogenous relationships, additional equations were specified for consumer sentiment as well as positive and negative media coverage of the president, and estimated in a four equation near-VAR using seemingly unrelated regression (SUR). The results of the approval equation are presented in Table 4 alongside the results from the mean equation of

Model 1. Both media sentiment variables remain significant across specifications, with the positive sentiment variable doubling in size in the properly specified near-VAR model. The other media findings are robust, with the exception of the frequency of presidential mentions variable, which fails to reach significance when the models are estimated separately. Nevertheless, the consistent results in Table 2.4 provide further evidence of the usefulness of the data provided by Lydia.

< Table 2.4 about here >

Discussion

Media sentiment clearly has significant explanatory power for both the level of presidential approval and uncertainty in approval, but what is Lydia truly measuring? What does the index tell us about public opinion? At the very least, the data collected by Lydia are an aggregation of all the political events that have happened over a particular time period. That is, Lydia works as a micro-event detector, picking up events—political and otherwise—that relate to the president or other entities. If Lydia is able to capture these changes in the political environment, and do so in a more parsimonious fashion than traditional methods, Lydia could reconceptualize the way interventions are modeled—replacing ad hoc choices with a systematic measure of the occurrence and duration of events.

But Lydia has the potential to be more than simply a valuable tool for those interested in time-series analysis. The analyses in this paper demonstrate the external validity of the data collected by the Lydia system and its usefulness in studies of approval. Lydia may also help answer questions about media bias. The evidence presented above indicates that negative coverage has a larger effect on approval than positive coverage. Given that the current role of the media is to focus on events that will sell newspapers, it is likely that negative events live

longer and rise to higher prominence than positive events—a hypothesis that is testable using Lydia. If true, this suggests an additional way for the media to influence political evaluations.

Another interesting research question answerable by Lydia would be to study the effect of changes in media sentiment on presidential approval contingent upon partisanship. In-partisans, out-partisans, and independents may respond differently to changes in media sentiment regarding the president. In-group partisans should, if motivated reasoning is correct, be unaffected by media sentiment toward the president and the economy (see also Lebo and Cassino 2007). As members of the president's party, they are predisposed to favor the president and are likely to discount or counter-argue unfavorable news coverage. Conversely, out-party members should be more likely to respond to changes in media sentiment. In other words, in-party identifiers are expected to be more blindly loyal to the president and thus unaffected by changes in the tone of news coverage, while out-partisan approval should be malleable and subject to media effects. Because independents do not have a dog in the fight, they should behave similarly to out-partisans, updating their approval based on media sentiment.

Beyond having differing effects depending on partisan identification, the relationship between media sentiment and presidential approval may be endogenous. Media coverage affects what the public views as important, however media outlets also try to appease the public by selecting stories which are most important. Just as the electorate adjusts their evaluations of the president according to the tone of presidential media coverage, so too may the media adjust the tone of its presidential reporting in response to changes in presidential popularity.[9] Increased presidential popularity may result in more positive media coverage of the president. Likewise, an unpopular president should receive more negative media attention.

[9] However, some scholars have found no reciprocal relationship between the media and approval (see Blood and Philips 1997; Nadeau, Fan, and Amato 1999).

In addition, it is important to note that the relative importance of various factors may be nonconstant over time (Lebo and Box-Steffensmeier 2008). In some instances, objective economic indicators may be more closely correlated with presidential approval than in others. Additionally, political circumstances may affect the way citizens incorporate economic conditions into their political evaluations. The media may contribute to these time-varying relationships by highlighting different aspects of presidential performance depending on the political circumstances and media coverage may explain much of the across time variance in presidential job performance evaluations. In the same way, presidential approval may have more power to explain media sentiment during some periods than others. Nonetheless, these are but a few avenues for future research using Lydia; the system will allow other scholars easily collect data on the media that can be used to answer a wide variety of questions.

Figure 2.1: Reference Classification by Type of News for Arnold Schwarzenegger, 2004-2010

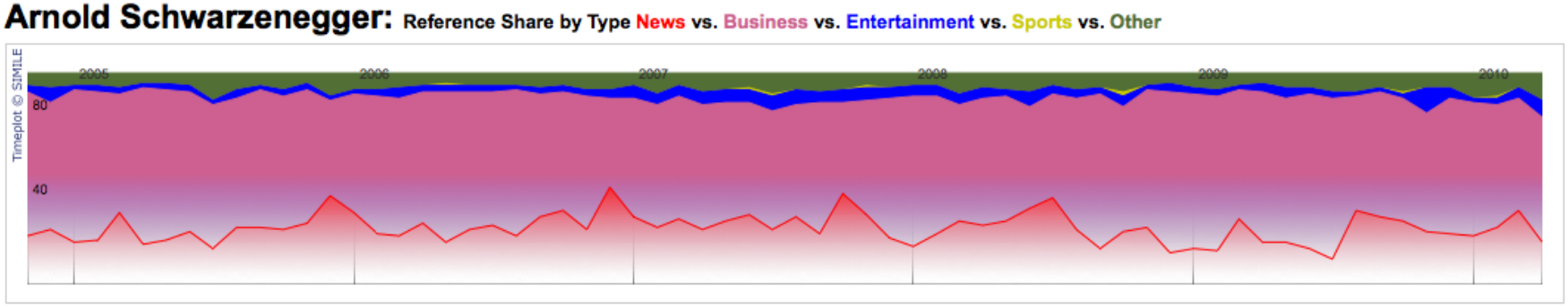


Figure 2.2: Ronald Reagan Reference Frequency, 1950-2000

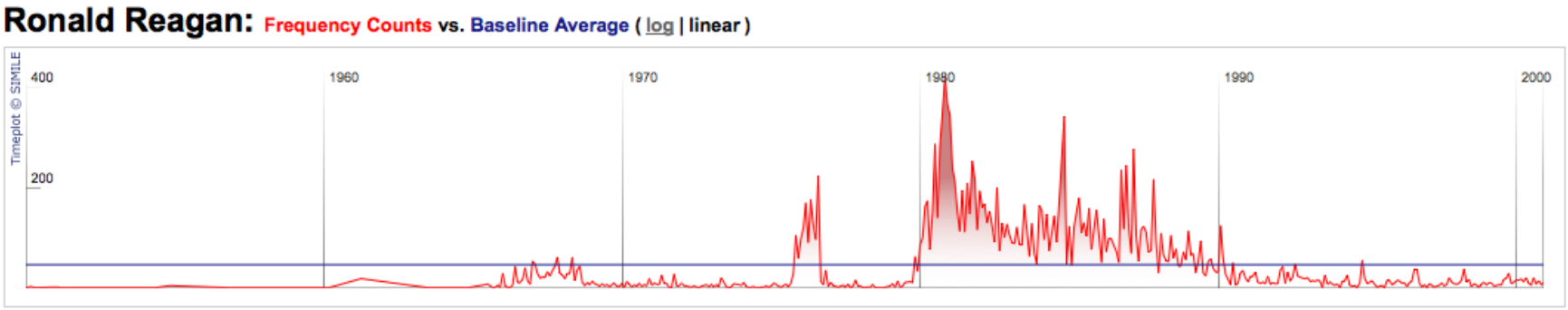


Figure 2.3: Polarity and Subjectivity Ranks for Michael Vick, 2004-2010

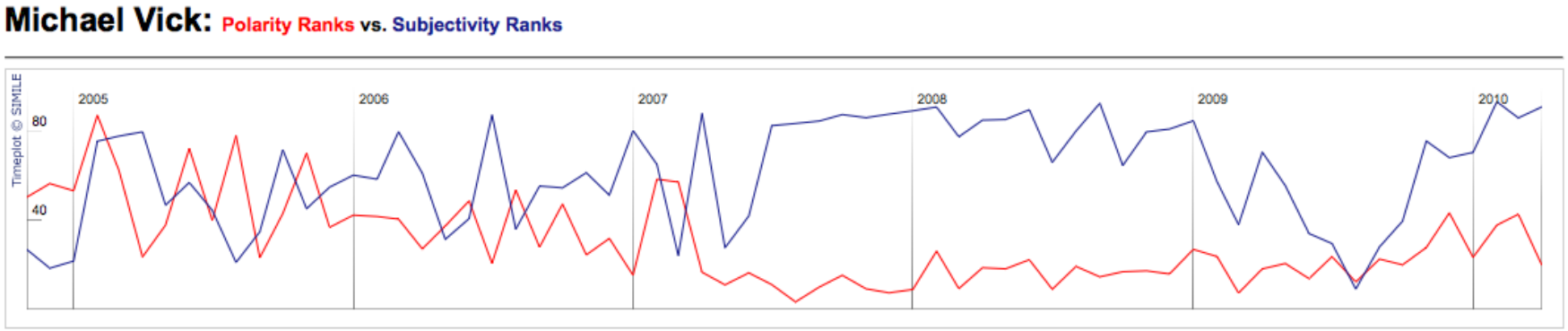


Figure 2.4: Polarity in Presidential Sentiment (Positive – Negative Mentions)

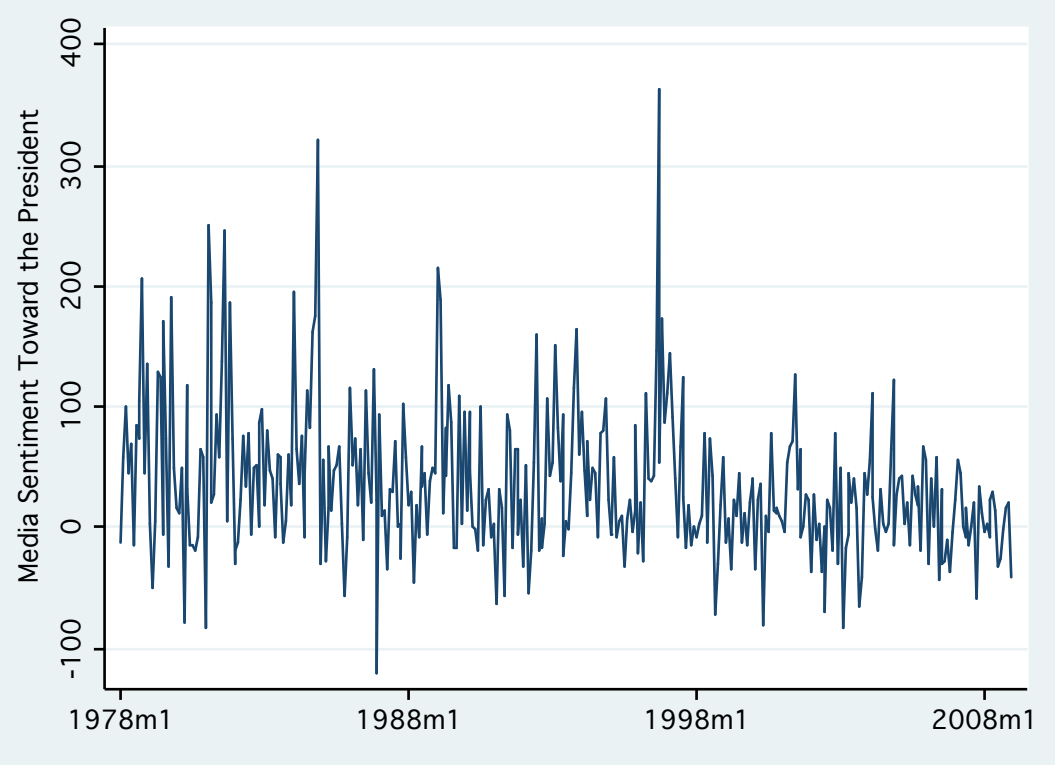


Figure 2.5: Frequency of Economic Mentions, 1978-2008

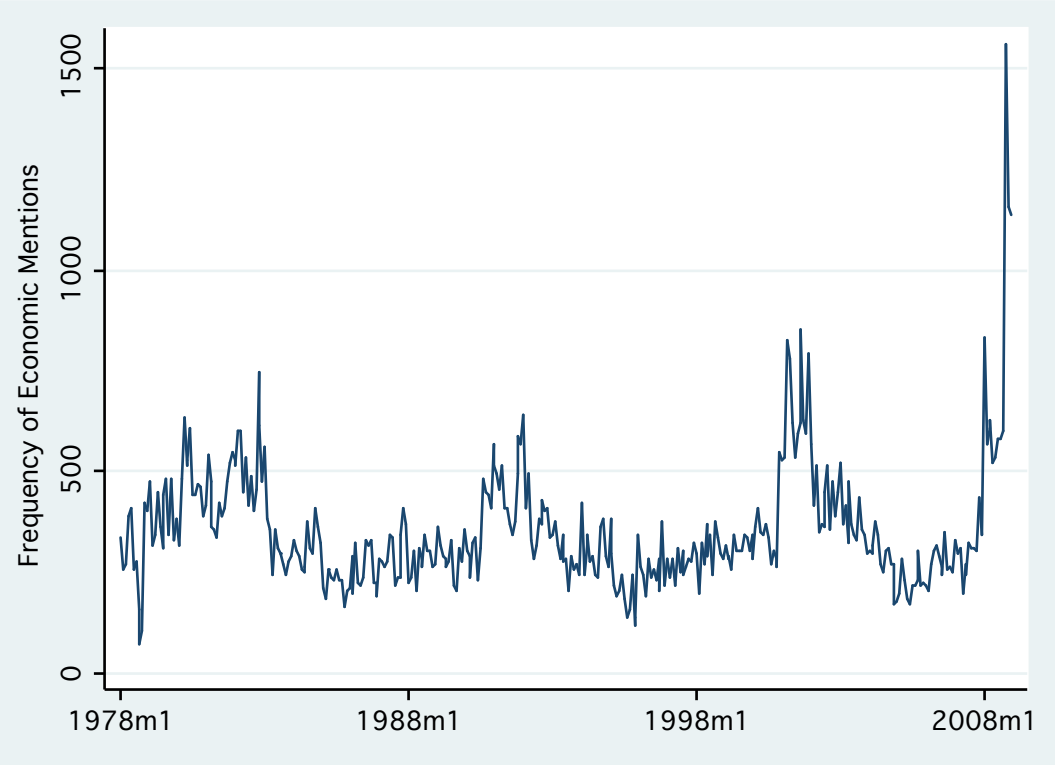


Figure 2.6: Conditional Approval Volatility

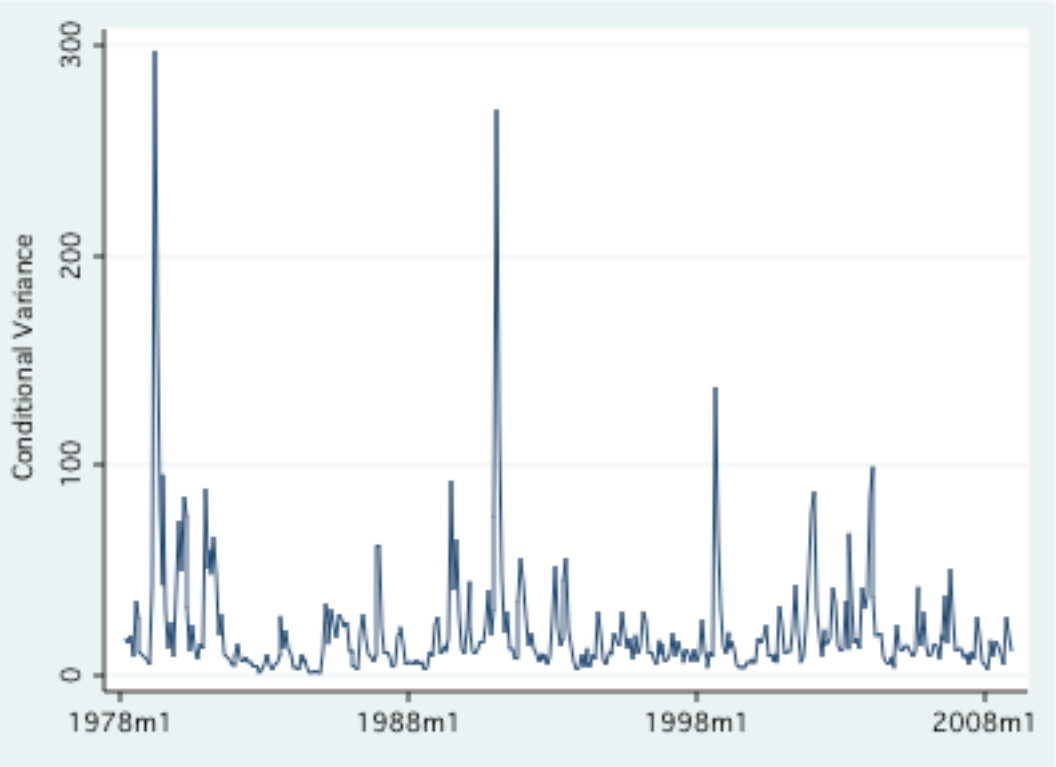


Table 2.1: Entity Juxtapositions, 4/2009-4/2010

	Arnold Schwarzenegger	Barack Obama	Sarah Palin
1.	California	White House	Alaska
2.	Legislature	U.S.	David Letterman
3.	Budget Decifit	Washington, DC	Republican
4.	Democrats	Iran	John McCain
5.	Democratic	United States	GOP
6.	Republican	Afghanistan	Sean Parnell
7.	Sacramento, CA	Americans	Bristol
8.	Aaron McLear	Sonia Sotomayor	Wasilla
9.	IOUs	Democrats	Meghan Stapleton
10.	Southern California	George W. Bush	Republicans

Table 2.2: GARCH Model of Presidential Approval

	Model 1		Model 2	
	Coefficient (S. Err.)	p-value	Coefficient (S. Err.)	p-value
Media				
Pos. Pres. Sentiment	0.007**	0.039	0.006	0.105
	(0.004)		(0.005)	
Pos. Pres. Sentiment $_{t-1}$	0.001	0.348	-0.001	0.381
	(0.003)		(0.004)	
Neg. Pres. Sentiment	-0.015**	0.001	-0.019**	0.000
	(0.004)		(0.005)	
Neg. Pres. Sentiment $_{t-1}$	-0.004	0.220	-0.001	0.427
	(0.005)		(0.005)	
Economic Mentions	0.002	0.194	-0.000	0.472
	(0.002)		(0.003)	
Economic Mentions $_{t-1}$	0.002	0.234	0.001	0.387
	(0.002)		(0.003)	
Presidential Mentions	0.006*	0.068	0.009**	0.038
	(0.004)		(0.005)	
Economic				
Inflation$_{t-1}$	-0.420	0.242	-0.517	0.230
	(0.599)		(0.700)	
Inflation$_{t-2}$	0.132	0.408	0.085	0.453
	(0.568)		(0.722)	
Inflation$_{t-3}$	-0.385	0.264	-0.137	0.427
	(0.610)		(0.744)	
Unemployment $_{t-1}$	-2.726**	0.003	-2.523**	0.037
	(0.967)		(1.409)	
Unemployment$_{t-2}$	-0.339	0.356	-0.985	0.230
	(0.918)		(1.332)	
Unemployment$_{t-3}$	-0.513	0.320	-0.729	0.302
	(1.093)		(1.406)	
ICS	0.144**	0.003	0.142**	0.006
	(0.051)		(0.057)	
ICS $_{t-1}$	-0.006	0.453	-0.040	0.253
	(0.047)		(0.059)	
ICS $_{t-2}$	-0.050	0.145	-0.066	0.115
	(0.047)		(0.055)	
Interventions				
Honeymoon	0.166	0.464	0.687	0.345
	(1.823)		(1.723)	
Honeymoon $_{t-1}$	-1.618	0.151	-1.552	0.182
	(1.564)		(1.711)	
Iran Hostage Crisis	14.806**	0.000	15.865**	0.000

	(2.579)		(1.496)	
Desert Shield	-23.105**	0.001	-24.136**	0.000
	(6.872)		(5.097)	
Desert Shield $_{t-1}$	25.459**	0.000	26.698**	0.000
	(6.652)		(4.628)	
September 11th	22.634**	0.000	23.690**	0.000
	(1.854)		(1.599)	
September 11$^{th}_{t-1}$	16.258**	0.000	16.952**	0.000
	(3.348)		(2.777)	
Constant	-0.011	0.490	-0.095	0.417
	(0.434)		(0.452)	
Volatility				
Media				
Pos. Pres. Sentiment	-0.000	0.472		
	(0.005)			
Pos. Pres. Sentiment $_{t-1}$	-0.011**	0.002		
	(0.004)			
Neg. Pres. Sentiment	0.014**	0.007		
	(0.006)			
Neg. Pres. Sentiment $_{t-1}$	0.012**	0.001		
	(0.004)			
Economic Mentions $_{t-1}$	-0.005**	0.044		
	(0.003)			
Presidential Mentions	-0.009**	0.029		
	(0.005)			
Economic				
ICS	-0.218**	0.001	-0.022	0.289
	(0.070)		(0.039)	
Inflation$_{t-1}$			0.248	0.276
			(0.417)	
Inflation$_{t-2}$			0.300	0.216
			(0.381)	
Unemployment $_{t-1}$			0.132	0.449
			(1.033)	
Unemployment$_{t-2}$			0.488	0.296
			(0.909)	
Constant	0.992**	0.013	1.782**	0.000
	(0.443)		(0.336)	
ARCH	0.419**	0.000	0.349**	0.001
	(0.119)		(0.114)	0.000
GARCH	0.350**	0.000	0.175	0.136
	(0.100)		(0.159)	
N=368				

* p≤0.1, ** p≤0.05 (all tests one-tailed)

Table 2.3: Granger Causality

Granger Causality	F-test	p-value
Approval → Pos. Sentiment	2.33	0.055
Approval → Neg. Sentiment	1.39	0.236
Pos. Sentiment → Approval	3.11	0.015
Neg. Sentiment → Approval	2.22	0.066
Eco. Frequency → ICS	3.89	0.004
ICS → Eco. Frequency	0.28	0.889

Table 2.4: Comparison of Approval Model Specifications

	GARCH		near-VAR	
	Coefficient (Std. Err)	p-value	Coefficient (Std. Err)	p-value
Media				
Pos. Pres. Sentiment	0.007**	0.039	0.014**	0.005
	(0.004)		(0.005)	
Pos. Pres. Sentiment $_{t-1}$	0.001	0.348	-0.002	0.334
	(0.003)		(0.004)	
Neg. Pres. Sentiment	-0.015**	0.001	-0.023**	0.000
	(0.004)		(0.005)	
Neg. Pres. Sentiment $_{t-1}$	-0.004	0.220	-0.002	0.347
	(0.005)		(0.004)	
Economic Mentions	0.002	0.194	0.000	0.468
	(0.002)		(0.002)	
Economic Mentions $_{t-1}$	0.002	0.234	0.001	0.395
	(0.002)		(0.002)	
Presidential Mentions	0.006*	0.068	0.004	0.204
	(0.004)		(0.005)	
Economic				
Inflation$_{t-1}$	-0.420	0.242	-0.347	0.270
	(0.599)		(0.565)	
Inflation$_{t-2}$	0.132	0.408	-0.009	0.495
	(0.568)		(0.696)	
Inflation$_{t-3}$	-0.385	0.264	0.023	0.486
	(0.610)		(0.650)	
Unemployment $_{t-1}$	-2.726**	0.003	-1.507	0.130
	(0.967)		(1.338)	
Unemployment$_{t-2}$	-0.339	0.356	-0.671	0.303
	(0.918)		(1.298)	
Unemployment$_{t-3}$	-0.513	0.320	-0.944	0.236
	(1.093)		(1.312)	
ICS	0.144**	0.003	0.207**	0.000
	(0.051)		(0.059)	
ICS $_{t-1}$	-0.006	0.453	-0.055	0.167
	(0.047)		(0.057)	
ICS $_{t-2}$	-0.050	0.145	-0.078*	0.088
	(0.047)		(0.057)	
Interventions				
Honeymoon	0.166	0.464	1.808	0.160
	(1.823)		(1.817)	

Honeymoon $_{t-1}$	-1.618	0.151	-0.910	0.300
	(1.564)		(1.736)	
Iran Hostage Crisis	14.806**	0.000	13.694**	0.000
	(2.579)		(2.850)	
Desert Shield	-23.105**	0.001	-22.906**	0.000
	(6.872)		(3.205)	
Desert Shield $_{t-1}$	25.459**	0.000	24.025**	0.000
	(6.652)		(3.140)	
September 11th	22.634**	0.000	17.829**	0.000
	(1.854)		(3.346)	
September 11$^{th}_{t-1}$	16.258**	0.000	12.363**	0.000
	(3.348)		(3.370)	
Constant	-0.011	0.490	-0.234	0.275
	(0.434)		(0.391)	
N=368				

* p≤0.1, ** p≤0.05 (all tests one-tailed)

Chapter 3: Political and Economic Evaluations: A Tale of Two Presidencies

The economic voting literature has, unsurprisingly given the name, focused on the effects of economic conditions and perceptions on presidential approval and vote choice. Researchers debate whether current conditions or future expectations are more predictive; and whether individuals place more weight on their own financial circumstances or the state of the country as a whole. Irrespective of the causal mechanism, economic explanations predominate studies of presidential approval. Yet this almost singular focus on economics can lead to an overstatement of the dominance of economic explanations. If theories of economic voting are correct, one would expect the relationship between economics and approval to be at least as strong—if not stronger—during periods of economic crisis regardless of political circumstances. Yet this assumption—that all presidencies are defined by the economy—does not always hold.

Although the pattern of higher approval when the economy is performing well and lower approval during periods of recession is frequently observed, economic conditions and perceptions are not the only determinants of presidential approval. There are periods when economic concerns are primary and others when economics takes a backseat to other salient issues. Moreover, the effect of economics can be substantially reduced in importance for an entire two-term presidency. Non-economic rally events such as the first Gulf War and the 9/11 attacks can dramatically increase approval. Indeed, some studies have found foreign policy approval to have as much influence on overall approval as economics does (Nickelsburg and Norpoth 2000; Coehn 2002). Beyond simply affecting the level of approval in the short-term, I argue that a variety of non-economic events can alter the evaluative criteria used to judge presidential performance throughout a term. In other words, entire presidencies may be defined more by non-economic factors than the economy.

Moreover, it is not simply the case that other issues dominate economic evaluations only during periods of economic tranquility; rather, other concerns can predominate even during periods of economic crisis. That is, it is possible to have a presidency defined by issues such as foreign policy even during periods of recession. Beyond political context affecting the importance of economic concerns between presidencies, political circumstances may also affect the relative importance of economic evaluations *within* an administration.

I address the topic of economy-dominated presidencies and those in which other issues are primary by analyzing the relationship between presidential approval and consumer sentiment during two very different presidential administrations. The Clinton presidency was one of peace and prosperity while the G.W. Bush presidency was defined by crises both foreign and domestic. The stark difference in economic trajectory and the importance of foreign affairs during these two administrations provides an excellent opportunity to explore the fluid relationship between political and economic evaluations both within and between presidencies.

Although existing economic voting models would predict economic perceptions to have a larger effect on approval during the recession-plagued Bush years, I find the opposite to be true. While consumer sentiment is a significant predictor of approval during the Bush administration, under the prototypical "economic presidency" of Clinton the effect of consumer sentiment is twice as large and longer-lived. Likewise, instability in Clinton's approval ratings was driven by economic—rather than foreign policy—concerns, leading volatility in approval to be a significant predictor of consumer sentiment during this period but not during the presidency of Bush the Younger. These findings support the argument that by ignoring different types of presidencies, existing theories of economic voting overstate the effect of economics on approval

during presidencies defined by non-economic issues while at the same time underestimating the effects during economic presidencies.

Economics and Political Evaluations

Scholars have written thousands of pages on the relationship between politics and economics, typically focusing on the way economics affect political appraisals and vote choice. Many studies have explored which objective measures of economic performance matter most for political evaluations (e.g. Goodhart and Bhansali 1970; Kramer 1971; Alesina, Londregan, and Rosenthal 1993; Arcelus and Meltzer 1975; and Mueller 1970). Although the findings differ based on the time period studied and the level of aggregation, most agree that the inflation and unemployment rates are the most important objective economic indicators in American politics.

Still other studies have explored which type of economic evaluations matter. In 1957, Downs wrote that voters should be forward-looking when evaluating various parties and candidates. That is, voters should consider the proposed policies of each party and vote for the party whose policies would maximize the individual voter's utility. Key (1966) empirically tested Downs's model to determine whether voters vote prospectively, as the theory would suggest, or if they actually vote retrospectively. Key and many others since have found that voters behave retrospectively, making their choices based on past economic performance rather than the promise of future economic change (e.g. Nickelsburg and Norpoth 2000; Norpoth 1996a; Alesina, Londregan, and Rosenthal 1993; Fiorina 1978; 1981; Lanoue 1994; Baslevent et al. 2005; Gelpi et al. 2007; Nannestad and Palolam 2000).

Although many have found support for retrospective voting, prospective economic evaluations still have their proponents. Most notable among these are MacKuen, Erikson, and Stimson (1992; 1996; 2000) who argue prospective voters behave like "bankers," making their

decisions based on economic forecasts, while retrospective voters are more akin to "peasants," judging based on past economic performance.[10] Still others have found support for a mixed model with some behaving prospectively and others retrospectively (Clarke and Stewart 1994; Kuklinski and West 1981; Clarke and Stewart 1994; Carey and Lebo 2006).

The studies mentioned above also assume the causal arrow runs from economic evaluations to political evaluations or vote choice. Yet De Boef and Kellsted (2004) show the relationship between political and economic evaluations is actually reciprocal, with the political business cycle affecting consumer sentiment and vice versa. This finding has been echoed in a series of revisionist analyses. Partisanship (Evans and Pickup 2010), vote intention (Wlezien, Franklin, and Twiggs 1997; Van der Eijk et al. 2007), and a party's expected electoral success (Ladner and Wlezien 2007) all affect economic perceptions and expectations. In addition to theoretical issues such as overstating the importance of approval during periods in which other issues are salient, ignoring this reciprocal relationship has statistical consequences, most serious of which are inefficient and biased estimates.

Beyond ignoring reciprocal causality, these studies assume the economy and economic evaluations are consistently (if not the most) important predictors of presidential approval. Likewise, many (implicitly) assume an asymmetric response to negative economic news: while presidents benefit from good economic times, they are punished more severely when conditions worsen. If approval is linked to economic conditions, the bond is even tighter during poor economic times.

While acknowledging the transitory ability of events to affect approval, these theories fail to acknowledge that certain events (e.g. wars and scandals) can be transformative, shifting focus

[10] See also Abramowitz 1985; Clarke and Stewart 1995; Lockerbie 1991; Welch and Hibbing 1992.

from economic circumstances to other domestic or foreign affairs. Moreover, this is not an "either/or" relationship, with focus shifting to other issues only when the economy is performing satisfactorily. Rather, it is possible for issues such as foreign affairs to dominate approval during periods of recession such that economic voting explanations overstate the importance of economic factors during these periods. In addition, averaging these administrations with more traditional ones dilutes the effect of economics in those administrations where economic concerns are primary.

Furthermore, these scholars focus on which parts of the economy affect political evaluations and how, but never ask if the effect changes over time. The question is not asked because the answer is assumed to be that it does not. Yet if the relationship between various factors is not constant, the findings may be time-bound. In reality, it is not simply that "as the economy goes, so goes approval." Instead, the importance of economic perceptions in determining presidential approval is non-constant. Likewise, there are periods during which approval is a stronger or weaker predictor of economic perceptions. What is more, the importance of the economy does not simply vary for short periods but can be substantially reduced for an entire two-term presidency.

According to Key (1966), the electorate punishes or rewardes presidents through an uncomplicated process of retrospective judgments. Further research, however, has shown that for presidents to be punished for poor economic times, presidents need to be seen as responsible for them (Peffley 1984). Attribution of responsibility is affected by individual factors like political sophistication (Gomez and Wilson 2010), economic ideology (Rudolph 2003), and partisanship (Randolph 2003; McAvoy and Enns 2010; Lebo and Cassino 2007). Institutional arrangements including federalism (Arceneaux 2006) and divided government (Lewis-Beck

1988; Lowry, Alt, and Ferree 1988; Paldam 1991; Nicholson, Segura, and Woods 2002) also influence the public's ability to credit or punish the president for economic conditions. If presidents are not thought to be as culpable for poor economic times during periods of divided government, this lack of responsibility dilutes the effect of economic perceptions on presidential approval during these periods.

Beyond attribution of responsibility, the emergence of other salient issues also causes the importance of the economy to wane. New issues become salient as a consequence of control of the governmental agenda and political strategizing by elites (e.g. Baumgartner and Jones 1993; Jones and Baumgartner 2005; Druckman 2001; Lewis-Beck et al. 2008). International crises also diminish the importance of economic evaluations by increasing the salience of foreign policy.

Beginning with Mueller (1973), scholars have noted that public opinion during wartime responds to rally events (see also Kernell 1978; MacKuen 1983; Ostrom and Simon 1985; Brody 1991; Nickelsburg and Norpoth 2000). These events lead the public to change their opinion of presidential performance and rate the president more favorably than they would have otherwise. For Bush, September 11th was most certainly a rally event, with his job performance ratings increasing 40 points from August to September 2001. Yet all rallies eventually decay, and the speed with which they do so has been attributed to the number of casualties (Mueller 1973; Baum and Kernell 2001; Kriner 2006) and the likelihood of success (Feaver and Gelpi 2004; Eichenberg 2005). This effect may also be moderated by the tone of media coverage of foreign policy events (Baum and Groeling 2004).

Role of the Media

The effect of politics on economic opinions—and vice versa—is contingent upon the ability to assign blame or reward for economic conditions. As agenda setters, the media are able to direct the public's attention and help determine the issues that will define a presidency. The tone, either positive or negative, of presidential media coverage influences public opinion and has a corresponding effect on both consumer sentiment and presidential approval.

The issues that the media choose to cover become the ones considered most important by the public (Iyengar and Kinder 1987). The media also affect the accessibility of information by focusing on specific events or policy areas (e.g. the economy, the 9/11 attacks) that, in turn, affects information retrieval and decision-making (Krosnick and Kinder 1990). By focusing on the economy, the media encourage citizens to judge the president based on his handling of the economy. A focus on 9/11 and its aftermath, however, leads the public to view the president in terms of his response to terrorism. The tone of media coverage toward the president, while always an important determinant of presidential approval, should have less impact of economic evaluations during presidencies in which the economy is not the most salient issue.

Presidential Coverage Hypotheses:

1) Increases in consumer sentiment are expected as media sentiment toward the president becomes more positive.
2) Increases in presidential approval are expected as media sentiment toward the president becomes more positive.
3) During presidencies in which the economy is less salient, media coverage of the president should have less of an effect on consumer sentiment.

In conjunction with choosing whether or not to focus on the president's foreign policy, the media also affects citizens' economic perceptions, as the public gets much of its economic information from media outlets (MES 1992; Mutz 1992). Not only do citizens get information about the economy from the media, but media coverage also responds to changes in economic conditions (Behr and Iyengar 1985; Wu et al. 2002; Nadeau et al. 1999). In addition to affecting

political evaluations and responding to economic conditions, the media also affects consumer sentiment (Blood and Philips 1997; Goidel and Langley 1995; Starr 2008). If economic conditions would lead consumers to believe the economy is on the rise but economic improvements are not highlighted by the media, the effect of changes in economic conditions should be lower than one would expect by ignoring the independent effect of media sentiment. Moreover, the effect of economic coverage should be non-constant across presidencies. As with media coverage of the president and consumer sentiment, media coverage of the economy should have a larger effect on presidential approval during periods dominated by economic concerns.

Economic Coverage Hypothesis:

4) Decreases in presidential approval are expected as economic coverage increases.
5) Decreases in consumer sentiment are expected as economic coverage increases.
6) During presidencies in which the economy is less salient, media coverage of the economy should have less of an effect on presidential approval than during times of peace.

In lieu of consistently voting prospectively or retrospectively, the electorate may vote prospectively in one period and retrospectively in another. In addition, rather than the economy always being the most important predictor of approval, political circumstances may increase the salience—and thus importance—of issues such as foreign affairs while diminishing the effect of economic evaluations. Ignoring the political and economic context may overestimate the effects of economic voting and bias the effect of other variables downward. Allowing for a fluid relationship between economic evaluations and approval both within and between presidencies acknowledges the role of context in opinion formation and is less likely to result in findings that are more applicable to certain political eras than others.

Comparing Two Presidencies

The administrations of Bill Clinton and George W. Bush provide excellent case studies in which to explore the ways economic and political events shape political and economic

evaluations. While temporally proximate administrations, the two presidencies varied greatly, both in terms of political and economic conditions. More than any other issue, the economy was Clinton's ticket into office. As the sign in his 1992 campaign headquarters said, "It's the economy, stupid," and Clinton ended up being a popular president during a period of economic growth and stability. Although Clinton was impeached and ultimately acquitted, the stock market surged, Silicon Valley flourished, and consumer sentiment was at an all-time high.

Economically, Clinton's presidency was a foil to the recession-plagued Bush years. After September 11th, the economy went into recession and recovered only to collapse again a few years later. Traditional theories of economic voting predict that Clinton would benefit from consumer optimism while Bush's job approval would suffer due to consumer pessimism. By the same token, many assume consumers respond more to negative economic news than positive, leading Bush's approval to be affected more than Clinton's by a change in sentiment of the same magnitude. Yet these theories fail to take into account other political events that can attenuate the effect of economic evaluations even during periods of recession. Bush's presidency is an excellent example of non-economic events shifting the public's focus away from domestic economic conditions.

Foreign Policy

Although Congress never officially declared war, George W. Bush was very much a wartime president. After the September 11th terrorist attacks in the first year of his presidency, Bush authorized the invasion of Afghanistan in October of 2001. Almost a year and a half later, the president also sent troops into Iraq. In May of 2003, Bush declared the mission in Iraq accomplished, although this was far from the end of the conflict. Overall, the public was much more supportive of the war in Afghanistan compared to the Iraq mission.

While President Bush's approval surged 40 points after the terror attacks, the public eventually grew tired with the mounting casualties and the continuation of the war, years after victory had been declared. Nevertheless, rather than calling into question Bush's foreign policy leadership, the war in Iraq extended the 9/11 effect and Bush won reelection with 51% of the vote (Norpoth and Sidman 2007). More than simply a rally event that affected Bush's approval for over three years, 9/11 fundamentally altered the basis on which Bush's performance would be evaluated. After September 11th, G.W. Bush became a foreign policy president.

Contrast this with Clinton, Bush's predecessor. Clinton was relatively reserved when it came to foreign policy, choosing to engage only when international events became politically non-ignorable (e.g., Bosnia). Whether this was due to a foreign policy that lacked coherence, vision, and/or purpose is beyond the scope of this paper, but the fact remains that Bill Clinton, the first post-Cold War president, was not a foreign policy president. Rather than being focused abroad, Clinton's presidency was much more about the economy.

All else equal, increased economic confidence leads to higher approval ratings. A president's focus on foreign affairs, however, can alter this relationship by shifting the public's attention abroad and away from the economy. Just as economic conditions matter in determining public opinion toward the president (e.g. MES 1989; 1992; 2002; Norpoth 1996; Norpoth and Sidman 2007), so to does foreign policy. Studies comparing the influence of domestic economic conditions and foreign policy on presidential job approval have even found these factors to have roughly equal weight (Nickelsberg and Norpoth 2000; Cohen 2002), although the relationship is non-constant (McAvoy 2006). While each factor had roughly equal weight in determining approval prior to 2001, after September 11th, foreign policy approval far exceeded economic approval in determining Bush's overall presidential job approval (Norpoth and Sidman 2007).

The same pattern should be seen with regards to consumer sentiment, with economic evaluations playing a larger predictive role during the peaceful, prosperous Clinton years than during the foreign affairs focused Bush presidency.

Consumer Sentiment Hypotheses:

1) More positive consumer sentiment leads to higher presidential approval.
2) During presidencies in which the economy is the most important issue, consumer sentiment has a larger effect on presidential approval than during presidencies dominated by other issues.

Due to the reciprocal relationship between economic and political evaluations, higher presidential approval should also lead to more favorable economic evaluations, as it signals confidence in the president's handling of the economy. When economic concerns dominate, the correlation between presidential approval and subjective economic evaluations should be strong. However, when the public is more concerned with other issues, this should lead to a lower correlation between consumer sentiment and job evaluations, since approval will be more reflective of the public's evaluations of performance on these other issues besides economic conditions.

Beyond being affected by how popular a president is, economic evaluations may also be affected by stability in presidential popularity. Yet the degree to which approval volatility affects consumer confidence depends on the cause of the volatility. In presidencies where the economy is the focus, instability in the president's basis of support is largely due to changes in the public's approval of the president's handling of the economy. Conversely, instability in approval during presidencies defined by foreign policy is a result of rally events and their subsequent decay. Approval instability during presidencies like Clinton's should have a greater effect on consumer sentiment than instability in presidencies like Bush's precisely because it is economy-based.

Presidential Approval Hypotheses:

1) Increased presidential approval leads to increased consumer sentiment.
2) During presidencies focused on the economy, presidential approval has a greater effect on consumer sentiment than during times when other issues are more salient.
3) Increased approval volatility will negatively affect the mean of consumer sentiment.
4) The correlation between approval volatility and consumer sentiment will be weaker during presidencies where non-economic issues are most salient.

Returning to Clinton and Bush, not only did Clinton have the luxury of avoiding major engagements abroad, but also he presided over a period of growth and economic optimism. In further contrast with Clinton, Bush was president during two recessions, the first a result of the terror attacks. While his approval ratings fluctuated in the wake of 9/11, the economy headed south. This created a situation where public opinion about the economy was cross-pressured between foreign policy approval and objective economic conditions. Traditional theories of economic voting would predict a stronger link between approval and economic evaluations during the recessions of the Bush years while ignoring the transformative power of 9/11 and the subsequent wars.

Data and Methods

This paper focuses on the relationship between presidential approval, media coverage, and consumer sentiment during the Clinton and G.W. Bush presidencies (1993 to 2008). Equations are specified for consumer sentiment and presidential approval during each administration, for a total of four equations. Consumer sentiment is measured using the Index of Consumer Sentiment (ICS) complied by the Michigan Survey of Consumers. Collected monthly, the overall index is a mix of sociotropic and pocketbook questions about current economic conditions and economic expectations. As shown in Figure 3.1, consumer sentiment is quite variable both within and across presidencies. During the Clinton administration, sentiment exhibits an upward, though not monotonic, trajectory. The picture is decidedly less rosy during

the Bush presidency, with a lower level of confidence on average and a (predictably) sharp decline during the 2007 recession. Are these divergent patterns simply a function of objective economic conditions as economic voting models would predict, or are there other political and media-driven explanations?

< Figure 3.1 about here >

As De Boef and Kellsted (2004) show, the relationship between political and economic evaluations is typically reciprocal. To measure political evaluations, the model includes the monthly percentage of respondents reporting "approve" to the Gallup's question "Do you approve or disapprove of the way _____ is handling his job as President?" Beyond including the mean level of approval—or how popular a president is—the model also includes a measure of political confidence, or approval volatility. Figure 3.2 shows the amount of political uncertainty for the period from 1993 to 2008.[11] There is a period of high volatility at the start of the Clinton presidency, but this is dwarfed by the political uncertainty created after September 11th. Uncertainty remained high during most of Bush's first term and increased again around Hurricane Katrina. Comparatively, the Bush presidency was much more politically uncertain than the Clinton presidency.

< Figure 3.2 about here >

Including political volatility in a model of consumer sentiment is necessary because consumers must incorporate uncertainty into their economic evaluations when volatility is high but uncertainty is not a concern when volatility is low. Political volatility also introduces uncertainty into the economic system. Volatility may affect the ability of voters to reward or

[11] The dependent variable in the GARCH model was fractionally differenced to create a series that is mean stationary; however, this does not ensure the series is also variance stationary. As such, the conditional variance predictions have also been fractionally differenced.

punish political leaders for economic conditions by affecting the link between politics and economics and "can be both a cause and a consequence of changing features of the socio-political environment" (Maestas and Preuhs 2000, 95).

When the president has a stable base of support, this support can be incorporated in strategies to achieve the president's desired policy outcomes. Additionally, leaders in other branches of government and public life can adjust their strategies based on the relative support of the president. Volatility in approval, however, creates uncertainty about the president's level of support and future electoral outcomes. This instability can even have policy implications by affecting the strategic calculations and policies pursued by government officials and interest group leaders. The conditional variance predictions from a GARCH model are used to incorporate approval volatility in the analysis.

The relationship between approval and consumer sentiment is likely also modified by media coverage of the president and the economy. In addition to filtering information about the objective state of the economy that, in turn, affects presidential approval, the media also transmits information about presidential performance to the public. Media sentiment toward the president is a function not only of the president's handling of the economy but also elite evaluations of the president's other domestic and foreign policies. The tone or sentiment of presidential media coverage in the *New York Times* and *Time* magazine was collected using Lydia, a system for large-scale text analysis. Lydia uses natural language processing to analyze over 1800 online newspapers and blogs, identifying entities, and coding references for tone (Key 2011). The sentiment measure is the overall percentage of sentiment references to the president that were positive in a particular month. As media sentiment toward the president becomes more positive, approval and consumer sentiment should likewise improve.

Lydia was also used to collect data on the coverage of the economy in the two periodicals. Currently, while the system attempts to code economic terms for tone as it does for other entities, determining the sentiment of an economic reference is problematic since economic terms are valanced in a way other entities are not. As a result, the equations include a count of the number of times the words "economy," "recession," "unemployment," and "inflation" appeared in a given month rather than the tone of these references.

The models are also saturated with economic variables that have been shown to affect both consumer sentiment and presidential approval. These include the monthly inflation and unemployment rates, as well as monthly real disposable income and the closing value of the Dow Jones Industrial Average (DJIA) on the last trading day of the month.[12] In addition to the economic variables, relevant interventions are included to account for political and economic events during each presidency.

The variables have been fractionally differenced to create stationary series and avoid over-differencing (Clarke and Lebo 2003).[13] In the long-term, consumer confidence and government competence evaluations are cointegrated (Easaw and Ghoshray 2007). To account for the long-term equilibrium between consumer sentiment and approval, a fractional error correction mechanism (FECM) is included. The resulting presidential approval equation for each administration is:

[12] Because they are announced at the end of the month, contemporaneous effects for the DJIA, unemployment, and inflation rates are omitted. To remain agonistic about the remaining lag structure, three lags are included for each variable.

[13] The DJIA, inflation, and unemployment rates are close to unit roots and as such have been first-differenced.

$$\Delta^d Approval_t = \beta_0 + \sum_{l=0}^{3} \zeta \Delta^d ICS_t + \sum_{l=0}^{1} \Psi \Delta^d media_t + \sum_{l=1}^{3} \Theta \Delta^d econ_t + \beta_1 FECM_{approval(t-1)} + \epsilon_t$$

where ζ is a vector of coefficients for the ICS variable; Ψ is a vector of coeffcients for the media variables; Θ is a vector of coefficients for the economic variables; β_1 measures the effect of the approval FECM; Δ^d indicates that a variable has been fractionally differenced; β_0 is a constant; and ε is the error term ~N(0, σ^2).

The consumer sentiment equation for each administration is:

$$\Delta^d ICS_t = \beta_0 + \sum_{l=0}^{1} \Gamma \Delta^d approval_t + \sum_{l=0}^{1} \Phi \Delta^d approval\ volatility_t + \sum_{l=1}^{1} \Omega \Delta^d media_t + \sum_{l=1}^{v} \Upsilon \Delta^d econ_t + \beta_1 FECM_{ICS(t-1)} + \epsilon_t$$

where Γ is a vector of coefficients for the approval variable; Φ is a vector of coefficients for the approval volatility variable; Ω is a vector of coefficients for the media variables; Y is a vector of coefficients for *v* economic variables; β_1 measures the effect of the ICS FECM; Δ^d indicates that a variable has been fractionally differenced; β_0 is a constant; and ε is the error term ~N(0, σ^2).

To account for the endogenous relationship between approval and consumer sentiment, a two-equation near-VAR was estimated using Seemingly Unrelated Regression for each administration (Kmenta 1997).

Findings

Table 3.1 presents the results of separate near-VAR models for the Clinton and Bush presidencies. Turning first to the approval equations, objective economic conditions affect approval in both administrations as economic voting models would predict, but interestingly the

only significant economic indicator for either administration is the unemployment rate. More important than objective conditions are subjective economic evaluations. As with the objective economic indicators, the ICS has a statistically significant contemporaneous effect for both administrations.

< Table 3.1 about here >

Traditional theories of economic voting would predict an asymmetric response to changing consumer sentiment during this period, with a stronger correlation expected as the economy struggled during the Bush years. However, the opposite pattern is observed, with the effect of consumer sentiment on approval 1.6 times greater during the Clinton administration than during Bush's presidency. If these two presidencies were grouped together as is typically done, this pattern would not be observed. But by analyzing these two very different administrations separately, it can be seen that in a presidency defined by economic conditions, perceptions of these conditions have a much greater effect on approval than they otherwise would. The results for the Clinton administration, as the prototypical economic presidency, show the full predictive power of economic confidence on presidential approval.

Just as the effect of consumer sentiment during the Clinton years would be diluted if the administrations were analyzed together, the effect for Bush would be exaggerated if a typical modeling strategy were employed. By accounting for political context, these results show the powerful ability of other issues to mute the effect of economic perceptions. Not only are economic perceptions less predictive during the Bush administration, but the effect is also shorter-lived. A standard deviation increase in consumer sentiment of 4.6 points increases approval by 1.2%, yet the effect all but disappears the following month. When non-economic

events dominate politics, economic perceptions are less predictive of presidential approval – even when economic conditions are poor.

Although they fail to reach traditional levels of significance, some interesting patterns also emerge in the media coverage variables. Specifically, positive coverage of Bush improved his performance evaluations. As the media praised Bush for his foreign policy his approval ratings increased, while the tone of media coverage for Clinton is insignificant. The picture for economic coverage, however, is quite different. The pattern during the Bush years is as hypothesized: the more the economy is discussed in the media, the lower his approval ratings. The relationship for Clinton, on the other hand, is reversed: increased media coverage of the economy has a positive effect on his approval ratings. This opposite effect can be attributed to the content of the economic coverage. Typically the economy is mentioned when economic conditions are poor or deteriorating; yet during the Clinton years the economy was news because of how *well* it was performing.

The results from the presidential approval equations show that the hegemony of economic perceptions is overstated during presidencies in which non-economic issues are most salient and understated during economic administrations. In other words, political context can alter the evaluative criteria used to judge presidential performance and, thus, affect the predictive power of economic perceptions over an entire two-term presidency. If presidential approval was based less on economics during the Bush years, it is reasonable to assume the predictive power of approval and stability in approval in determining consumer sentiment would also change according to the type of issues that dominate a presidency.

Turning to the consumer sentiment equations, the objective economy has a significant effect on economic perceptions, echoing the findings of MacKuen et al. and De Boef and

Kellstedt (2004). Although the significant effects occur at different lags for each administration, increased inflation decreases consumer sentiment and higher stock market returns lead to a more optimistic economic outlook. Interestingly, the coefficients for the unemployment rate are jointly insignificant during the Bush years, but increases in disposable income do have a significant effect when the coefficients are taken together. This, however, is far from the most important part of the story.

Just as economic confidence had a significant effect on approval for both Clinton and Bush, there are significant, positive contemporaneous effects for presidential approval on economic confidence for both presidents. When presidents are successfully able to boost approval, either through the passage of popular legislation or an exogenous rally event, the public's perception of the president's handling of his job is not the only thing that improves. An increase in approval of ten percent from one month to the next, consumer sentiment increases by 2.8 points under Clinton and 3.4 points for Bush; however, the effects are statistically indistinguishable. Conversely, when the president's popularity declines, so, too, do consumer perceptions about the health of the economy. This endogenous relationship between approval and consumer sentiment gives politics another way to manipulate the economy, either by keeping the good times rolling or increasing economic pessimism.

Although consumer sentiment was predictive of approval for both presidents, the effect was larger for Clinton since his presidency was defined by economic success. As a result, volatility in approval was due to changing economic perceptions. For Bush, the foreign policy president, instability in approval is more attributable to foreign affairs performance. Given this, it is unsurprising that approval volatility has a significant effect on economic optimism only during the Clinton administration. As political uncertainty increases from one month to the next,

there is a significant contemporaneous decrease in consumer sentiment. This effect is short-lived, however, and is counteracted by a change of approximately the same magnitude the following month. The lack of a significant relationship between political volatility and consumer confidence during the Bush years, either contemporaneously or at a lag, provides further evidence that Bush's changing approval was driven not by economics but by foreign policy. Like the results from the approval equation, variation in the effect of approval stability would be washed out if presidencies were analyzed in the same model. But when the political circumstances that create uncertainty are incorporated into the modeling strategy, it is unsurprising that volatility in presidential approval did not significantly affect consumer sentiment during the Bush presidency.

Turning now to the media variables, a change in media sentiment toward the president has a contemporaneous, negative effect. As media coverage of Bush became more positive, consumer sentiment declined during the same period, with a 10% increase in positive media coverage decreasing sentiment by 1.2 points. That is, as the media's portrayal of Bush became more positive, consumers' economic outlook became more negative. Although counterintuitive at first glance, this finding makes more sense when political circumstances are taken into account. Media sentiment toward Bush became much more positive in the wake of the 9/11 attacks at the same time the economy was going into recession. Although the media is an agenda setter, praising the president for his handling of foreign affairs is not enough to prevent any amount of pessimism as objective economic indicators decline.

This point is further emphasized by the effect of the tone of Clinton's media coverage. A 10% increase in positive sentiment toward Clinton improved consumers' economic outlook by half a point. Although this may seem to be substantively insignificant, it is over three and a half

times the average monthly change in consumer sentiment. This, coupled with the findings from the Bush administration, indicate that the media's coverage of the president can influence public opinion about the economy—as long as the media is focusing on the president's economic agenda.

Unsurprisingly, coverage of the economy is where the media is an opinion leader. As hypothesized, the more frequently the economy is mentioned, the lower consumer sentiment, although media coverage of the economy operates at different lags depending on the administration. During the Clinton presidency, the effect is contemporaneous. The more the economy is mentioned from month to month, the lower consumer sentiment is in the same period. For the Bush presidency, media coverage of the economy operates at a lag, with more frequent mentions decreasing sentiment the following month. Although the media are not able to refocus attention away from the economy when it is doing poorly, they do an excellent job of highlighting poor economic conditions. This in turn drives down consumer sentiment, leading to worsening economic conditions.

Intra-Administration Variation

The preceding analyses have focused on mean differences between two types of presidencies. However, it is also possible to study intra-administration variation in the relationship between the predictors of consumer sentiment using dynamic conditional correlations (DCC).[14] Table 3.2 displays the DCC estimates from models involving the ICS and

[14] DCC comes from multivariate generalized autoregressive conditional heteroskedasticity (GARCH) models and estimates a weighted average of correlations in two steps. In the first step, univariate GARCH models are used to estimate the volatility parameters. The residuals from the first stage are then used to estimate the time-varying correlation matrix (Engle 2002; Lebo and Box-Steffensmeier 2008).

approval, positive media sentiment, and economic mentions for each administration.[15] If the sum of α and β is close to 1, there is strong persistence in the conditional variance. β indicates the strength of the persistence in the correlations, with a value close to 1 indicating a high degree of dependence on past correlations. The average correlation between the two series is given by $\bar{R}$.

< Table 3.2 about here >

As would be expected from the findings in the preceding tables, there is a stronger persistence in the correlations between approval and consumer sentiment during the Clinton administration. Moreover, the average correlation between approval and the ICS is positive for Clinton and slightly negative for Bush. This is to be expected considering the political circumstances. Clinton was a popular president during a period of economic growth. Bush had the highest recorded approval rating in the modern era, but his period of extreme popularity coincided with the post-9/11 recession. Likewise, the relationship between positive media sentiment and the ICS is close to a unit root for Clinton but much weaker for Bush. Moreover, the average correlation is once again negative for Bush and positive for Clinton. Again, this is due to Bush being praised by the press for his handling of foreign affairs after 9/11 while the economy was rapidly declining. Interestingly, consumer sentiment and media coverage of the economy has a similar degree of persistence in both administrations, even though economic conditions varied greatly between administrations. The average correlation for each administration is negative. However, there is a stronger relationship between economic mentions

[15] The full results including GARCH parameters are available in Appendix D. Rather than the percentage of positive presidential media coverage, the DCC uses the raw count of positive sentiment references to the president. The DCCs for the Clinton administration were estimated omitting the 2000 election and beyond.

and consumer sentiment during the Bush years, as would be expected given the two recessions during that period.

The conditional correlations for each model can be extracted and graphed, allowing for a more in depth examination of intra-administration variation. Figure 3.3 displays the correlations between approval and the ICS for each administration. While there is some variation in the correlations during the Clinton presidency, the relationship between consumer sentiment and approval is consistently positive. Peaking at 0.51 in June of 1993, the relationship weakened over time, reaching a trough in the middle of 1995 after the Oklahoma City bombing and remaining low through 1997. With the breaking of the Lewinsky scandal in January 1998, the relationship strengthened. It dipped again around Clinton's impeachment and then increased throughout the rest of the term. Although Clinton's personal life was a circus, his approval remained high due to the health of the economy and, in turn, his high approval ratings helped create a rosy economic outlook.

< Figure 3.3 about here >

The picture for the Bush presidency is quite different. The correlation between approval and consumer sentiment was at its lowest point after 9/11 and remained strongly negative throughout the subsequent recession. As the economy improved, the correlation became positive preceding the 2002 midterm election and remained positive throughout much of 2003, reaching a peak with the commencement of the Iraq war. During the election period, the economy continued to improve while Bush's approval slid, returning the relationship to negative territory. After Hurricane Katrina and the subsequent economic slump, both approval and sentiment track together until the Democrats took over the House in November 2006. With the recession in 2007

and Bush's approval at an all-time low, the correlation was once again positive by the end of his second term.

Turning to Figure 3.4, we can see the dynamic relationship between the frequency of positive mentions of the president and consumer sentiment.[16] During Clinton's first two and a half years in office, the correlation was generally negative, with the press giving Clinton favorable coverage even as the economy continued to struggle. There was a peak around the 1996 general election that then lead to a trough during the Lewinsky scandal and impeachment. The correlation rebounded strongly when Clinton was acquitted and remained positive as Clinton's popularity and consumer sentiment rose together.

< Figure 3.4 about here >

The second panel of Figure 3.4 presents a very different picture for president Bush. While the correlation between media coverage of Clinton and economic perceptions was generally positive, the correlation for Bush is largely negative. The lowest point came after 9/11, when the economy tumbled but Bush was praised for his handling of the 9/11 tragedy. As the economy struggled and the press focused on Bush's foreign policy, the relationship remained negative until the economy turned around at the same time Bush was campaigning for reelection. While the economy had been performing well and Bush was being praised for his handling of foreign affairs, the relationship flipped after the election. The economy was healthy but Bush was struggling in the press as the media, and the public tired of the Iraq war. Not surprisingly, then, the correlation between media sentiment toward the president and economic optimism remained negative.

[16] Unlike the ARFIMA and near-VAR models, Figure 3.4 presents the relationship between the raw count of the number of times the president is favorably mentioned in the *New York Times* and *Time*.

One of the most interesting stories of intra-administration is presented in Figure 3.5. Recalling the results from Tables 3.1 and 3.2, on average the more frequently the economy is mentioned, the more pessimistic consumers are about the economy. Yet the relationship is much more dynamic and this temporal variation would be missed by focusing solely on the mean. Turning first to the bottom panel, the relationship is negative and largely constant thorough the Bush administration. As expected, the correlation becomes more strongly negative when the Great Recession began in late 2007. This is the prototypical relationship.

< Figure 3.5 about here >

Although the expected relationship is negative, the correlation is positive for a substantial portion of Clinton's presidency, as can been seen in the upper panel of Figure 3.5. This positive correlation is due to the media coverage of the dramatic turnaround in the economy and the subsequent economic prosperity. In other words, the economy was doing well and the media were talking about it. However, the correlation turned sharply negative during the Asian financial crisis beginning in late 1997. Over time, as consumers became more convinced the contagion was not going to spread to the US, the correlation became more positive. The media were still discussing the economy but were mentioning problems abroad that did not affect domestic economic confidence. These periods of positive correlation, where the media referenced the economy in a positive way, would be largely invisible without the use of dynamic models.

Discussion

A critic reviewing these findings may dismiss them as simply an artifact of September 11th, a unique event that, coupled with two recessions, unsurprisingly led to a temporarily perverse relationship between politics and economics. Presidential approval is, after all, a

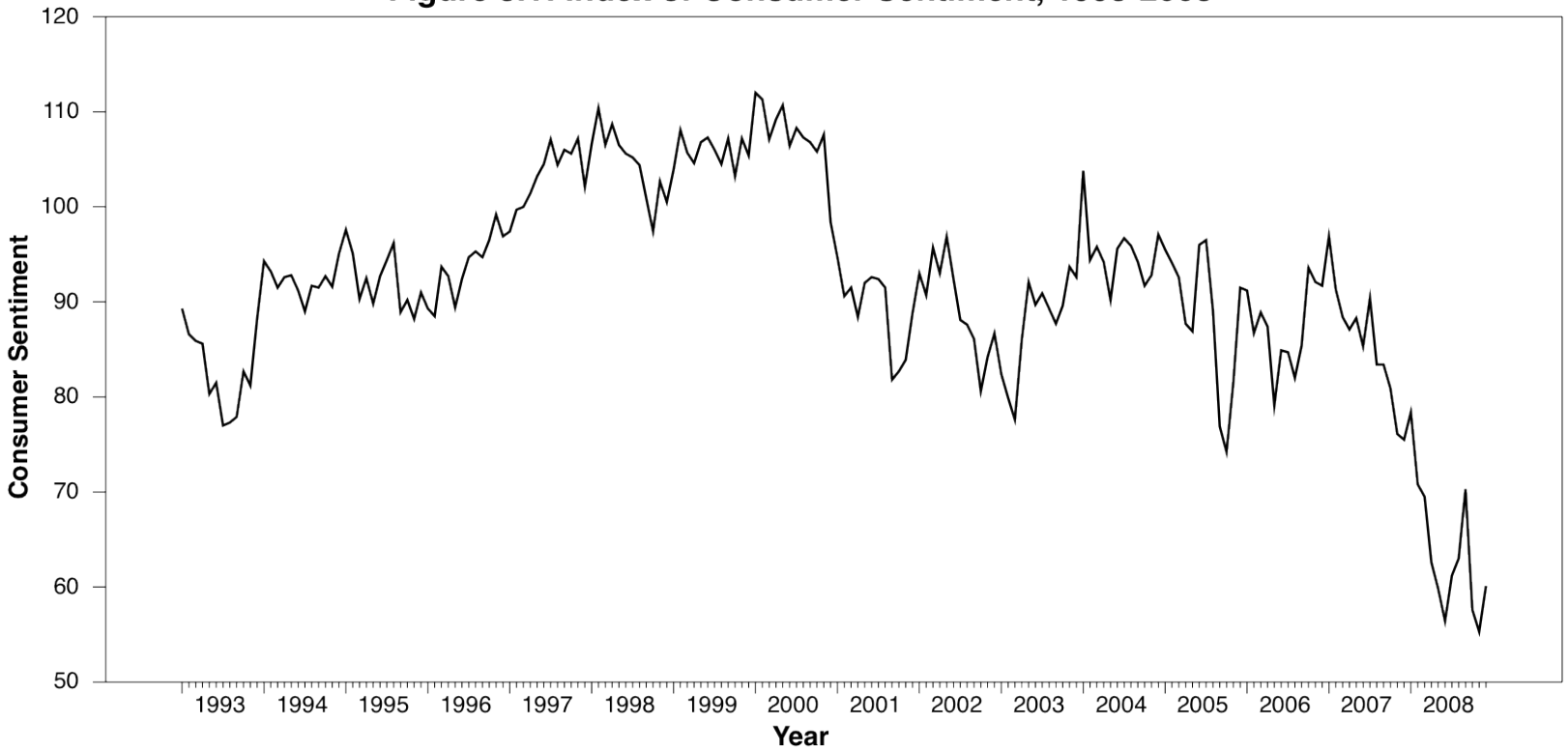
function of peace and prosperity and Bush enjoyed neither. Such criticism, however, is short-sighted. Although 9/11 created a unique situation for the Bush administration, the analyses above paint a more general picture about the ability of salient, non-economic issues to alter the relationship between economic performance and presidential approval.

Often studies of economic voting focus far too much on prosperity while ignoring (or giving short shrift to) the peace dimension of presidential approval. The same can be said of the treatment of political scandals and other issue areas, such as the environment or social issues. Not only do these studies undersell the potency of other issues to overshadow economics, but they simultaneously both under- and overstate the importance of economics as determinants of presidential approval and vice versa. During administrations defined by economic success or failure, economic conditions and perceptions are much more important than existing studies have found. Yet when presidencies are dominated by non-economic concerns, the predictive power of economics is diminished and may remain low for an entire administration.

To fully understand the ability of non-economic events to alter the hegemony of economic evaluations, future work should examine not just overall approval but economic and foreign policy approval separately. While the two dimensions are positively correlated and tend to track together, political or economic events can cause the series to diverge for extended periods. Economic evaluations are likely more predictive of economic approval during presidencies in which the economy is the most important issue, yet may still play a significant role in determining foreign policy approval. Likewise, economic (rather than foreign policy) approval should be more predictive of consumer sentiment in all periods, but the significance of economic approval may wax or wane depending on political conditions.

The relationship between presidential approval and economic perceptions may also vary depending on the type of economic evaluation. During wartime, political approval may be more predictive of prospections than retrospections. During periods dominated by scandal, the public opprobrium may taint economic retrospections. By considering political context and not simply assuming that the relationship between approval and consumer sentiment is static, one is able to paint a much more vivid picture of the political landscape.

Figure 3.1: Index of Consumer Sentiment, 1993-2008



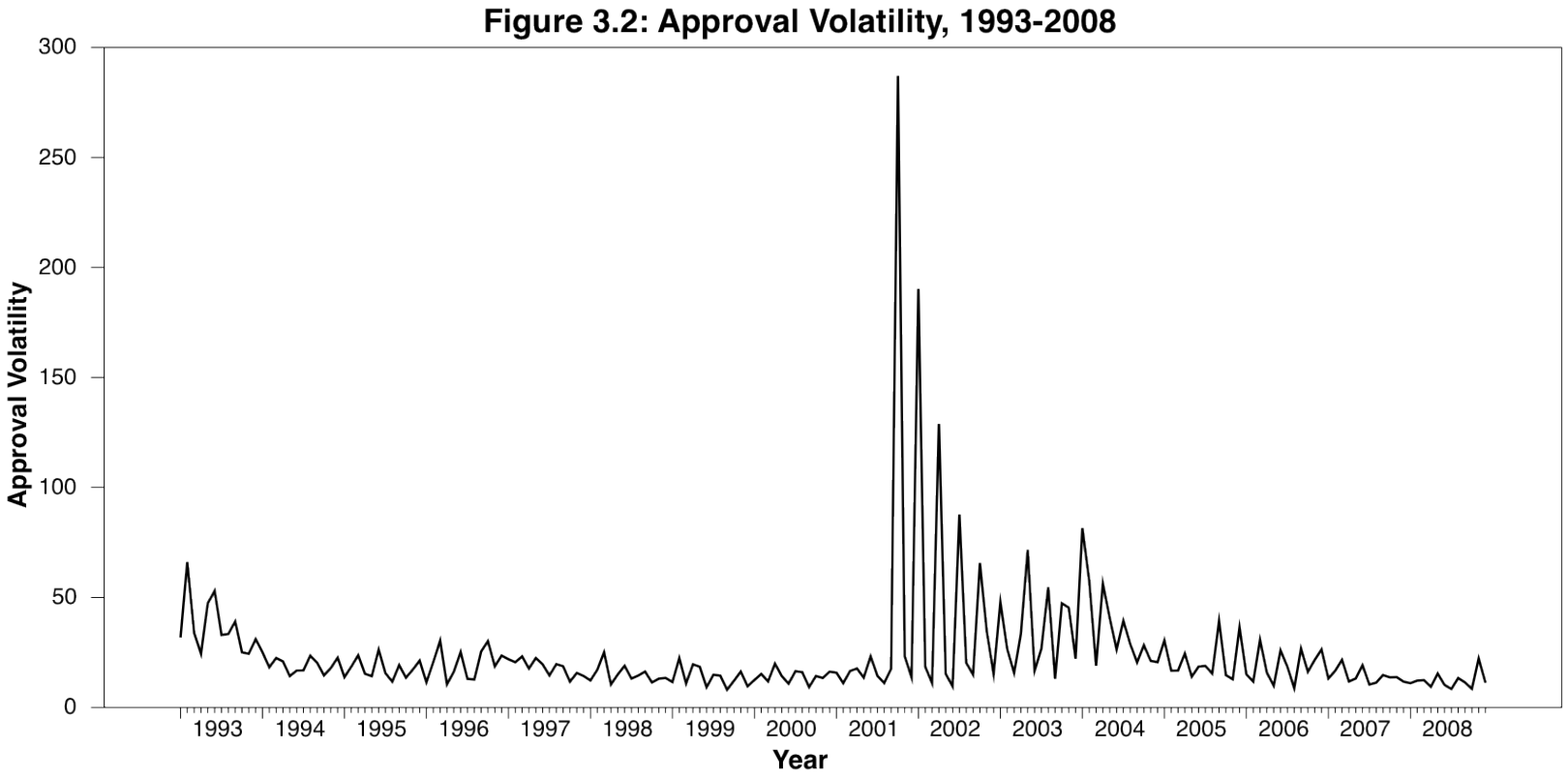


Figure 3.3: Dynamic Correlations

Approval and Index of Consumer Sentiment

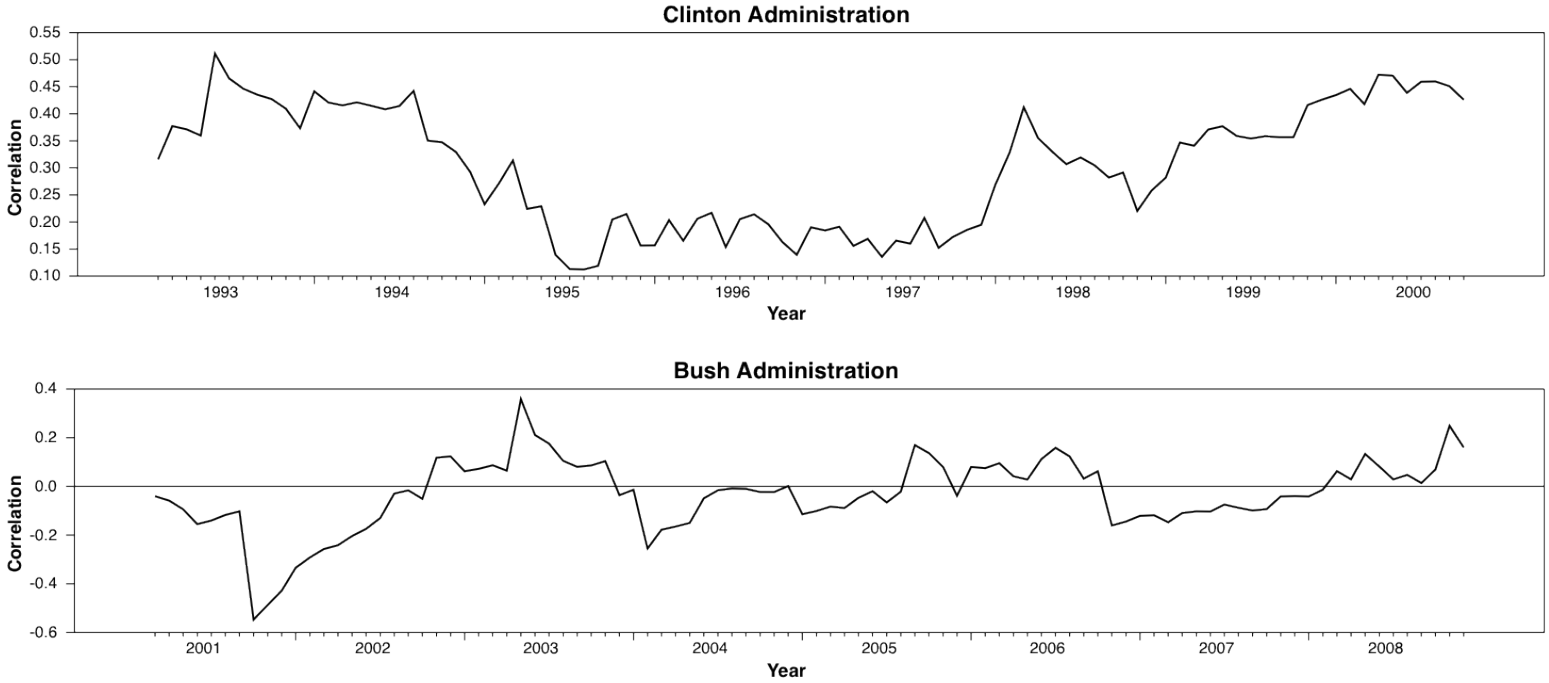


Figure 3.4: Dynamic Correlations

Positive Media Sentiment and Index of Consumer Sentiment

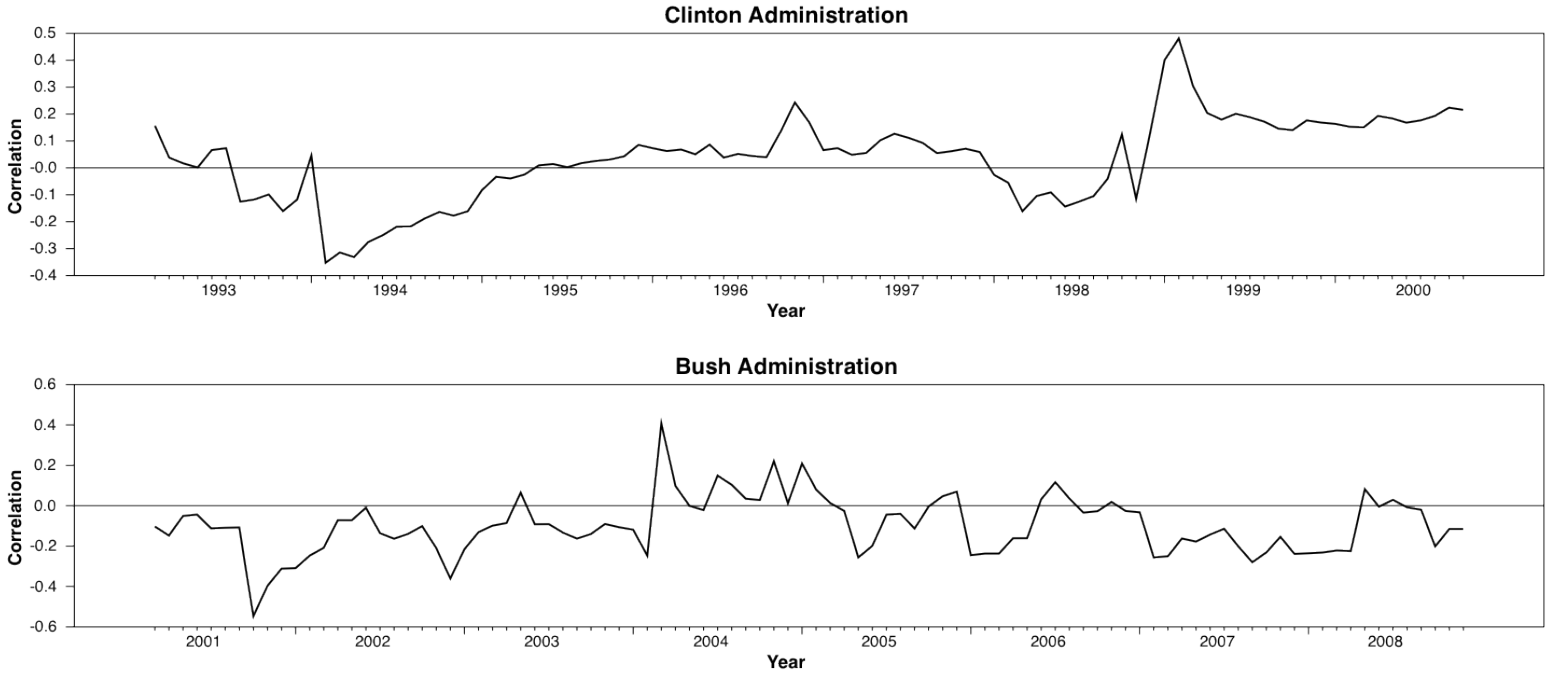


Figure 3.5: Dynamic Correlations

Economic Mentions and Index of Consumer Sentiment

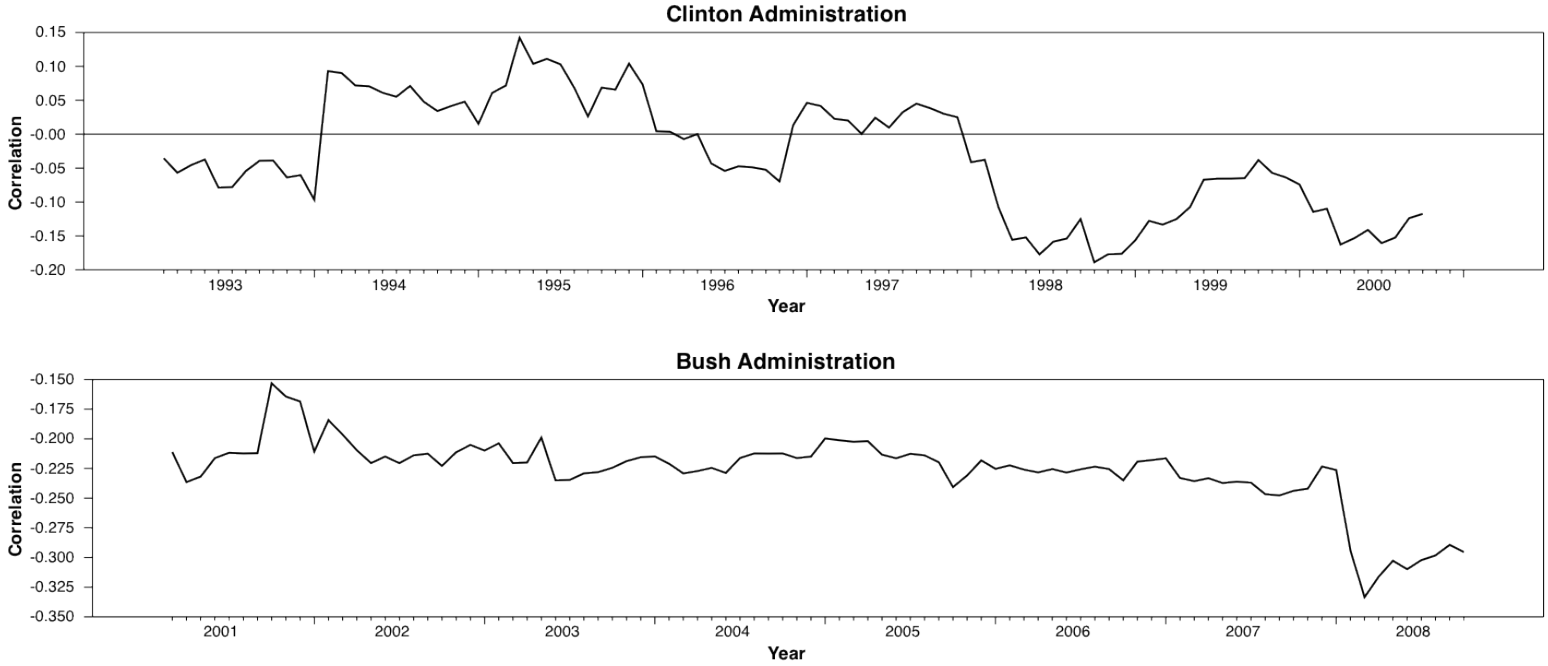


Table 3.1: Near-VAR of Approval and Consumer Sentiment for Clinton and Bush

	Clinton				Bush			
	Approval		ICS		Approval		ICS	
	Coef. (S.E.)	p-value	Coef. (S.E.)	p-value	Coef. (S.E.)	p-value	Coef. (S.E.)	p-value
Political								
Approval			0.278**	0.00			0.340**	0.00
			(0.073)				(0.092)	
$Approval_{t-1}$			0.004	0.97			0.139	0.13
			(0.102)				(0.092)	
Approval Vol.			-0.086*	0.05			0.003	0.82
			(0.045)				(0.012)	
$Approval\ Vol._{t-1}$			0.101**	0.03			-0.002	0.80
			(0.047)				(0.010)	
Media Coverage								
Positive Sent.	0.034	0.39	-0.019	0.52	0.071	0.16	-0.116**	0.01
	(0.039)		(0.029)		(0.051)		(0.047)	
Positive $Sent._{t-1}$	0.017	0.68	0.051*	0.08	0.017	0.75	0.003	0.95
	(0.040)		(0.029)		(0.053)		(0.049)	
Eco. Mentions	0.008	0.12	-0.015**	0.00	-0.005	0.14	-0.005	0.10
	(0.005)		(0.004)		(0.003)		(0.003)	
Eco. $Mentions_{t-1}$	0.003	0.53	-0.002	0.56	0.001	0.65	-0.007**	0.01
	(0.005)		(0.004)		(0.003)		(0.003)	
Economic								
$Inflation_{t-1}$	-0.414	0.79	2.065*	0.07	0.818	0.20	-3.105**	0.00
	(1.548)		(1.139)		(0.636)		(0.584)	
$Inflation_{t-2}$	-0.786	0.61	1.848*	0.09	-1.222	0.13	2.812**	0.00
	(1.527)		(1.082)		(0.800)		(0.729)	
$Inflation_{t-3}$	-0.313	0.84	-2.140*	0.05	0.797	0.29	-1.131	0.14
	(1.552)		(1.111)		(0.754)		(0.772)	
$Unemployment_{t-1}$	0.994	0.74	-5.274**	0.01	5.187*	0.08	2.334	0.38
	(3.035)		(2.164)		(2.925)		(2.662)	
$Unemployment_{t-2}$	7.232**	0.02	-3.924*	0.07	3.770	0.17	-0.575	0.82
	(3.114)		(2.186)		(2.755)		(2.470)	
$Unemployment_{t-3}$	0.313	0.92	-5.593**	0.01	-1.406	0.62	-1.263	0.64
	(2.981)		(2.131)		(2.865)		(2.679)	
ICS	0.402**	0.00			0.251**	0.01		
	(0.121)				(0.096)			
ICS_{t-1}	0.027	0.83			-0.247**	0.02		
	(0.125)				(0.106)			
ICS_{t-2}	-0.072	0.57			-0.057	0.53		
	(0.126)				(0.092)			
Dow $Jones_{t-1}$			0.002**	0.00		0.00	0.003**	0.01
			(0.001)				(0.001)	
Dow $Jones_{t-2}$			0.001	0.21		0.00	0.001	0.26
			(0.001)				(0.001)	
Dow $Jones_{t-3}$			0.000	0.50		0.00	0.001	0.26

			(0.001)				(0.001)	
RDI			0.001	0.91		0.00	0.001	0.79
			(0.006)				(0.004)	
RDI_{t-1}			0.019**	0.00		0.00	-0.008*	0.06
			(0.006)				(0.004)	
RDI_{t-2}			-0.004	0.52		0.00	0.006	0.21
			(0.006)				(0.004)	
ECM	-0.010	0.93	-0.094	0.32	-0.145*	0.07	0.120	0.19
	(0.104)		(0.095)		(0.080)		(0.092)	
Interventions								
Dow Tops 4k			-6.308**	0.01		0.00		
			(2.278)					
Dow Tops 8k			-6.174**	0.01		0.00		
			(2.299)					
September 11th					31.610**	0.00	-15.360**	0.00
					(3.666)		(4.255)	
Sadam Captured							8.576**	0.00
							(2.506)	
Katrina							-5.766**	0.02
							(2.377)	
Troop Drawdown							7.944**	0.03
							(3.626)	
Constant	0.840	0.45	-1.414	0.13	-1.474**	0.01	0.567	0.41
	(1.110)		(0.924)		(0.565)		(0.686)	
	N = 93				N = 91			

* $p \leq 0.10$ ** $p \leq 0.05$ (All tests two-tailed)

Table 3.2: DCC Estimates for ICS, Approval, Media Sentiment, and Economic Mentions

	Approval			Media Sentiment			Economic Mentions		
	Coef.	**(S.E.)**	***p*-value**	**Coef.**	**(S.E.)**	***p*-value**	**Coef.**	**(S.E.)**	***p*-value**
Clinton									
α	0.05	(0.05)	0.28	-0.06	(0.01)	0.00	0.03	(0.06)	0.59
β	0.89	(0.08)	0.00	0.99	(0.01)	0.00	0.89	(0.22)	0.00
$\bar{R}$	0.32			0.16			-0.04		
Bush									
α	0.09	(0.08)	0.29	-0.10	(0.03)	0.00	-0.02	(0.001)	0.00
β	0.76	(0.13)	0.00	0.76	(0.21)	0.00	0.90	(0.30)	0.00
$\bar{R}$	-0.04			-0.10			-0.21		
	N=93			N=93			N=93		

Chapter 4: The Political Economy

Politics and economics are closely intertwined. Scholars have written hundreds of articles about the political consequences of macroeconomic conditions, including studies of election outcomes (Fiorina 1978; Kinder and Kiewiet 1981), approval (Hibbs 1982; 1987; Kernell 1978; MacKuen, Erikson, and Stimson 1989; Mueller 1970, 1973), and macropartisanship (MacKuen, Erikson, and Stimson 1989; Lockerbie 1989). What has been largely ignored, however, are the macroeconomic consequences of presidential popularity. For example, Bill Clinton was a popular president during a period of economic growth and stability. The story that is typically told attributes Clinton's popularity to economic prosperity. One could reason, however, that Clinton's popularity contributed to the economic growth during his presidency. That is, presidential popularity may be a cause of macroeconomic conditions as well as a consequence. After all, "voters and consumers are essentially the same people. Mr. Smith buys and votes; he is the same man in the supermarket and the voting booth" (Tullock 1976, 5).

Changes in macroeconomic conditions have been shown to affect the voting behavior of legislators (e.g. Tufte 1975; Kramer 1971) and, more prominently, the voting behavior of citizens (e.g. Fiorina 1978; Kinder and Kiewiet 1981; Kiewiet 1983; Lewis-Beck and Stegmaier 2000). The debates in the economic voting literature have centered on whether citizens vote prospectively or retrospectively (Key 1966; Downs 1957; Fiorina 1981; Clarke and Stewart 1994; Lewis-Beck 1988; Lockerbie 1992; Norpoth 1996a), and whether they focus on their own pocketbooks or vote sociotropically according to macroeconomic conditions (Kinder and Kiewiet 1981; Markus 1988; Fiorina 1981; Alvarez and Nagler 1995; 1998; Lanoue 1994; Nadeau and Lewis-Beck 2001). One thing most everyone studying voting agrees on, however, is that economic conditions matter to politics. Yet given the importance of the economy in shaping

political opinions and outcomes, it is important to understand the factors that affect economic performance. I argue that in order to fully understand changes in the macroeconomy, one needs to go beyond the typical economists' models and include media effects and presidential approval. I also study the role political confidence plays in economic growth, something long acknowledged in the comparative literature but largely absent from studies of the US economy and politics.

The Determinants of Presidential Approval

Much attention has been devoted to studying the factors that affect presidential evaluations. Among these are economic indicators, which play a chief role in the reward-punishment models of presidential approval (Mueller 1973; Hibbs 1982; 1987; Kernell 1978; Monroe 1978; Kinder 1981; Lewis-Beck 1988; Markus 1988; Tufte 1978; Fiorina 1981; Haller and Norpoth 1994; Kinder and Kiewiet 1979; Bloom and Price 1975). Presidents are rewarded when the economy is doing well and blamed for poor economic performance. Beyond objective economic indicators, subjective economic evaluations also play an important role in determining the level of support a president receives (Norpoth 1996; Clarke and Stewart 1994; MacKuen, Erikson, and Stimson 1992; 2002; DeBoef and Kellsted 2004; Esaw and Ghoshray 2007). The logic is the same as with the objective indicators: presidents are rewarded or punished depending on the electorate's perceptions of how the economy is fairing.

Beyond economic conditions and perceptions, scholars have also studied the way critical events such as wars, scandals, and other domestic and foreign events shape presidential evaluations (Mueller 1973; Kernell 1978; Ostrom and Simon 1985; MacKuen 1983). When

presidential scandals such as Watergate occur, the president's popularity declines.[17] Other events, such as the Desert Shield campaign and the 9/11 terror attacks, boost presidential evaluations as the electorate rallies around the flag.

The media also plays a role in determining the level of support a president receives (Brody and Page 1975; Brody 1991; Nadeau et al 1999; Mutz 1992). News outlets serve as a filter for economic information and the electorate responds. Lewis-Beck and Paldam (2000) have found evidence that voters have asymmetric responses to economic news, punishing the president more for economic decline than rewarding him for economic prosperity (see also Bloom and Price 1975; Mueller 1973; Campbell et al. 1960; Lewis-Beck et al. 2008; Lebo and O'Geen 2011). The same is true for media coverage of the president, with the electorate increasing support for the president when coverage is positive and withdrawing support when the tone of presidential coverage is negative (Nadeau et al. 1999; Key 2011).

The Consequences of Presidential Approval

In addition to studying the factors that affect presidential popularity, scholars have also studied the consequences of presidential approval. Many electoral forecasts include presidential approval as a key predictive factor (Lewis-Beck and Rice 1992; Abramowitz 1988; 1996; Lewis-Beck and Tien 1996; Wlezien and Erikson 1996; Holbrook 1996), with popular presidents receiving a larger vote share than less popular ones. Presidential approval also affects the president's legislative success (Ostrom and Simon 1985; Rivers and Rose 1985; Brace and Hinckley 1992; Canes-Wrone and de Marchi 2002) although some scholars have found

[17] It should be noted that these events are not insurmountable for the president. A prime example is President Clinton. Even in light of the Lewinsky affair and his subsequent impeachment near the end of his presidency, Clinton is the only president in the modern era that left office more popular (66% approval) than when he entered.

popularity merely increases the likelihood of policy consideration, but not roll-call success (Covington and Kinney 1999).

Clearly, while much is known about the consequences of presidential popularity to elections, little is known about the consequences of presidential popularity on the macroeconomy. Long believed to be unidirectional, DeBoef and Kellstedt (2004) show that the relationship between presidential approval and consumer sentiment is actually reciprocal. That is, the electorate's subjective economic evaluations affect the level of presidential approval but economic evaluations are also a function of confidence in presidential leadership. This finding is echoed in Ladner and Wlezien (2007), who find that a party's expected electoral success colors prospective economic evaluations (see also Evans and Pickup 2010).

If political evaluations are able to influence the electorate's *beliefs* about the economy, it is a natural extension to hypothesize that politics may also affect the electorate's economic *behavior*. If this is indeed the case, it provides another mechanism beyond economic policy through which presidents are able to influence the macroeconomy. Furthermore, if presidential approval does affect the macroeconomy, then it is likely that approval and economic conditions are endogenous to one another, creating the possibility of bias in prior studies of presidential evaluations.

The Determinants of the Macroeconomy

When economists study the movement of the macroeconomy, it is often operationalized in terms of consumer spending. Expenditures comprise approximately two-thirds of the country's domestic spending and "are by far the most important single item of aggregate demand" (Vuchelen 2004, 494). As such, personal consumption expenditures (PCE) are the

engine of economic growth and play a large role in affecting both the unemployment and inflation rates among other indictors of economic health.

Work on the consumption function began in earnest with Keynes who argued, "income… is, as a rule, the principal variable upon which the consumption-constituent of the aggregate demand function will depend" (1936, 95). He also hypothesized that increased income would lead to increased saving and thus decrease the average propensity to consume. While borne out in the data at the cross-sectional level, Kuznets (1942) showed the propensity to consume in the aggregate remained constant as income increased, leading to the development of the permanent income and life-cycle hypotheses. The permanent income hypotheses advanced by Friedman (1957) contends that consumption depends not on current income but on the expected value of income over the consumer's lifetime. Similarly, the life-cycle hypothesis does not depend on current income but argues that consumers wish to maintain a constant level of consumption over a lifetime and thus adjust their rates of spending and saving according to where they are in their life cycle (Ando and Modigliani 1966). Determining which theory is correct using macroeconomic models is challenging, as the aggregation process washes out the predicted variation at the individual level. What economists do agree upon, however, is that consumption is shaped by a variety of factors.

< Figure 4.1 about here >

Figure 4.1 provides a summary of the theoretical relationship between the variables scholars have identified as important predictors of economic behavior as well as the unique contribution of the analyses to follow. As with presidential approval, the chief factors in modern time series models of consumer spending are objective economic indicators (Garner 1990; Romer 1990; Poterba and Samick 1995; Bosworth 1975; Carroll 1992; Shirvani and Wilbrattie

2000). These include factors commonly present in models of presidential approval such as inflation and unemployment rates, along with GDP, real disposable income, and the Dow Jones Industrial Average. The effects are similar to those found in approval models, with PCE increasing as the economy improves and declining as economic conditions worsen. This model suggests two hypotheses:

Objective Economy Hypotheses:

A) As objective economic conditions worsen, personal consumer spending will decline.
B) Volatility in expenditures is expected to decrease as objective economic conditions worsen.

As in models of presidential approval, subjective economic evaluations are a significant predictor of consumer spending (Haugh 2005; Carroll et al. 1994; Ludvigson 2004; Acemoglu and Scott 1994; Al-eyd et al. 2008; Gelper et al. 2007; Howrey 2001; Starr 2008). Macroeconomic health is a fundamental factor in determining consumer sentiment, but sentiment is also affected by non-fundamental factors. Rather than capturing the *ability* to consume, consumer confidence measures capture the respondent's *willingness* to spend (Katona 1968). In their 1994 *American Economic Review* article, Carroll, Fuhrer, and Wilcox studied the contemporaneous correlation between the ICS and consumer spending. They find the ICS, operating at a lag, explains roughly 14% of changes in real personal consumption expenditures from 1954 to 1993. Building upon this work, Matsusaka and Sbordone (1995) find changes in the ICS Granger cause changes in Gross Domestic Product (see also Acemoglu and Scott 1994; Al-Eyd, Barrell, and Davis 2008). Political scientists have assumed "[t]he level of consumer confidence augurs consumer spending—and thus the future trajectory of the economy" (De Boef and Kellstedt 2004, 663) but have failed to test this intuition.

With consumption expenditures playing such a large role in economic growth and stability, it is also important to explore the causes of volatility in the macroeconomy. Volatile

periods create uncertainty about the trajectory of the economy. Consumers must incorporate political and economic uncertainty into their spending calculations when volatility is high but uncertainty is less of a concern when volatility is low. Increased uncertainty regarding the state of the economy causes consumers to be more cautious about spending when the economy seems to be doing well out of fear of a quick reversal of fortune, thus settling into a uniformly low level of spending. That is, rather than varying their spending widely when objective economic conditions are worsening, consumers will be hesitant to spend because they are unsure of the trajectory of the economy, and thus volatility in PCE will be reduced. Unfortunately, scholars have an incomplete understanding of the factors that cause consumers to spend and stimulate the economy rather than save their money in case of future economic downturns. In fact there are only two studies of consumer spending by political scientists, both of which have been limited to the effects of partisanship at the county level (Gerber and Huber 2009; 2010).

Changes in aggregate subjective economic evaluations may also affect volatility in consumer behavior. As consumer confidence measures increase, it indicates stability in the economic system and makes consumers more willing to spend, thus reducing volatility. Conversely, a more pessimistic economic outlook creates economic uncertainty that is reflected in increased expenditure volatility. This leads to the following hypotheses:

Subjective Economy Hypotheses:

A) Increases in consumer sentiment will translate into increased consumer spending.
B) Increases in consumer sentiment signal stability in the economic system and thus reduce consumer spending volatility.

Objective economic information is filtered by a variety of sources before it is translated into consumer behavior. Were objective economic information transmitted unchanged through these sources, this filtering would not pose a problem for the assumption of rational expectations. If, however, these filters react asymmetrically to changes in objective economic conditions, the

information consumers ultimately receive about the health of the economy is distorted and this distortion can lead to expenditures which are not in line with what one would expect from only observing macroeconomic indicators. While consumers base their decisions on the economic information presented to them from a variety of sources, this information may not accurately reflect the actual state of the economy (Goidel and Langley 1995; MacKuen, Erikson, and Stimson 1992; Stein 1975; Harrington 1989; Blood and Phillips 1995). This suggests the following hypothesis:

Economic Media Hypothesis:

A) The more frequently the economy is discussed in the media, the higher the volatility in consumer expenditures.

Political Effects on the Macroeconomy

The economics literature almost always fails to include political variables and thus misses a crucial piece of the macroeconomic puzzle. When politics are included in analyses of consumer spending, they are limited to political events such as the Gulf War and the attacks of September 11. These interventions, however, are only included to absorb variance in the series and not as variables of interest in and of themselves. Yet there are valid reasons to expect politics will affect economics.

Political scientists and economists have studied the political business cycle, or the way politicians strive to manipulate economic conditions for electoral gain.[18] These studies have assumed political parties are either opportunistic with no specific goals beyond creating a favorable economic climate to better their chances of reelection (i.e. Nordhaus 1975) or partisan with left-wing parties preferring lower levels of unemployment and right-wing parties preferring to minimize inflation (i.e. Hibbs 1977). Each theory can be further subdivided into traditional

[18] See Alesina, Roubini, and Cohen (1997) for an excellent summary of the business cycle literature.

models and models that incorporate the electorate's rational expectations. In traditional models, politicians manipulate the Phillips curve according to the preferences of the electorate at the time (opportunistic model of Nordhaus 1975; Lindbeck 1976) or the preferences of the politician's political party (partisan model of Hibbs 1977). In contrast, rational expectations models acknowledge that the electorate's expectations limit politicians' ability to manipulate economic conditions. All of these studies, however, focus on policies pursued within an administration and ignore the effect of presidential evaluations on consumer behavior. Yet consumer behavior—a major component of economic health—may be affected not only by fundamental (objective economic conditions) and non-fundamental (consumer and media sentiment) factors but also by the electoral calendar and presidential job performance.

If politics does affect the economy more directly than commonly believed, it would not surprise a comparativist; there is a substantial body of comparative literature that focuses on the relationship between political stability and economic growth. Overall, studies have found political uncertainty or instability leads to lower economic growth by hindering the rate of private investment and other factors associated with economic expansion. Examining almost 100 countries over a 40-year period, Aisen and Veiga (2006) find increased political instability leads to economic instability in the form of higher rates of inflation. Similarly, Alesina et al. (1996) find economic growth is significantly lower in countries with a high likelihood of regime collapse. Conversely, economic growth is positively correlated with political stability (see also Barro 1996; Cukierman, Edwards, and Tabellini 1992; Ozler and Tabellini 1991).

The logic is as follows: political instability reduces certainty regarding the economic policies a regime will pursue. This political uncertainty translates into lower levels of economic growth by discouraging investment by risk-averse agents. These agents may exit the market and

invest elsewhere or wait to invest until the political climate, and by extension the economic outlook, is more stable. Furthermore, Alesina et al. (1996) note that political uncertainty increases the disparity between the economic preferences of political parties, the electorate, and other groups involved in politics, thus increasing political polarization. In many countries, this polarization leads to greater political instability and increases the likelihood of regime change, thus further impeding economic growth.

Although the relationship between political stability and economic expansion is well documented internationally, it has yet to be properly explored in the American context. Moreover, concepts such as "political stability" require modification to apply these theories to the United States. Regimes in advanced democracies are stable, but political confidence within those countries may vary a great deal. That is, rather than concerns about regime change affecting economic growth, consumer spending in the United States may be affected by changing political confidence evident in presidential approval.

When approval is high, this signals citizens' approval of the president's handling of the economy and optimism regarding the president's job performance as a whole. Confidence in the president's handling of the economy does, as noted above, translate into higher consumer confidence but it is important to note that consumer confidence does not fully mediate the effect of presidential approval; rather there is also a direct effect of political confidence on consumer behavior. That is, there is a general optimism about the state of the country as a whole—beyond simply the president's actions regarding the economy—captured by presidential approval to which consumers respond. It is not simply that economic performance affects assessments of government competence; these same political assessments can actually affect the trajectory of the economy.

Seeking to test whether survey responses are merely political "cheerleading" or if political beliefs actually affect consumer spending, Gerber and Huber (2009; 2010) find that politics color not only economic beliefs but also economic activity at the county level. I argue that the same pattern should hold over time in the aggregate. Just as voters are affected by presidential approval come election day, so too are consumers influenced by confidence in leadership when they make consumption decisions. Approval of the president, and by extension the government as a whole, makes the electorate more willing to spend money rather than save because it is confident with the direction the country is heading and do not foresee great changes in the political landscape.

Beyond the ability of political variables to improve predictions of consumer spending, it is important to also understand the way volatility in political confidence affects both the level of and volatility in consumer expenditures. Periods of high volatility in approval signal uncertainty and instability that may affect not only consumer spending decisions but also economic policies pursued by the government. Likewise, high volatility in presidential approval may signal instability in the president's base of support and is likely to create instability in both the political and economic systems.

Volatility in approval signals wavering support of the president to potential challengers and to other branches of government who may in turn be less likely to support the president's policies. This instability may lead to lower consumer spending as consumer save, rather than spend, as a hedge against uncertain political times on the horizon. Political uncertainty may also affect the ability of voters to reward or punish political leaders for economic conditions by affecting the link between politics and economics and "can be both a cause and a consequence of changing features of the socio-political environment" (Maestas and Preuhs 2000, 95). In his

2003 Nobel lecture, Robert Engle acknowledges that political factors such as elections and wars can affect volatility in financial markets, yet these factors are largely absent in the literature explaining consumer spending. This suggests the following hypotheses:

Presidential Approval Hypotheses:

A) Higher presidential approval ratings will have a positive effect on personal consumption expenditures.
B) The uncertainty created by periods of high volatility in presidential approval will lower consumer spending.
C) As presidential approval increases, personal consumption expenditure volatility will decrease.
D) As approval volatility increases, personal consumption expenditure volatility will decrease.

Media sentiment toward the president may also affect consumer behavior, another as of yet unexplored relationship. Although some research has linked economic news with consumer spending, it has been assumed that the effect is mediated by consumer sentiment (Starr 2008). I hypothesize, however, that this effect is not fully mediated by consumer sentiment but that media sentiment toward the economy also has a direct effect on economic behavior. The media interprets economic and political conditions by filtering and honing elite evaluations, increasing the ability of consumers to tie presidential performance to the state of the country as a whole and translate this connection into spending decisions. Increased media scrutiny of the president may also directly increase pessimism in consumers, resulting in higher spending volatility. Although consumers may not have been concerned about the state of the country in a world absent media coverage, negative media sentiment may signal that there is something amiss even if the problems are not readily apparent to individuals who are not otherwise paying attention. This leads to the last two hypotheses:

Presidential Media Hypotheses:

A) Personal consumption expenditure volatility will increase as negative media sentiment toward the president increases.

B) Expenditure volatility will decrease as media coverage of the president becomes more positive.

Data and Methods

The analyses will explore the factors that determine both the mean and volatility of monthly personal consumption expenditures from 1978 through 2008. While PCE are, at their core, the result of individual level decisions, it is the PCE measure in the aggregate which is the barometer of economic health. The data on total personal consumption expenditures were gathered from the Bureau of Economic Analysis's "National Income and Product Accounts" (2009). Measured in billions of dollars and seasonally adjusted, the data have also been adjusted for inflation to constant 2008 dollars. As shown in the first panel of Figure 4.2, expenditures have experienced relatively steady growth during this period; however, the short-term changes in PCE are difficult to see. The second panel presents PCE after it has been first differenced, highlighting the median monthly change of over 13 billion dollars. There is also evidence of volatility clustering, with periods of particularly high volatility not only where typically expected, such as after the 9/11 terror attacks, but also during political events such as the Iran-Contra affair at the end of 1986.

< Figure 4.2 about here >

National presidential approval is expected to increase consumer spending as it signals consumer confidence and optimism regarding the president's job performance. Approval is measured as the percentage of respondents to the Gallup Poll approving of the president's handling of his job each month. Beyond the level of presidential approval, instability in approval can have a spillover effect, creating uncertainty about economic performance and affecting

spending decisions. To incorporate approval volatility the analyses employ the conditional variance predictions from a GARCH model of presidential approval.[19]

Just as presidential approval is expected to increase consumer spending, more positive subjective economic evaluations are also expected to increase spending and are measured using the University of Michigan's Survey of Consumers Index of Consumer Sentiment (ICS). The Michigan survey asks respondents about economic conditions in the country as a whole, as opposed to local conditions, with higher values indicating a more positive economic outlook.

Gronke and Brehm (2002) note that increased media scrutiny of the president may have an effect on the volatility of presidential approval; it may also affect consumer behavior. To wit, a measure of media sentiment toward the president gathered from the Lydia system is included (Key 2011).[20] Lydia reads thousands of online newspapers daily, identifying entities mentioned in the articles and coding them for tone. The resulting time series can be used to track the frequency an entity appears in the news and the tone, either positive or negative, of the coverage. The system provides an easy, low-cost way to conduct content analysis using a variety of sources over a long period and creates a richer picture of presidential media coverage than that obtained from existing data sources. For this paper, the historical series consisting of articles from *Time*

[19] The dependent variable in the GARCH model was fractionally differenced (Box-Steffensmeier and Smith 1996, 1998; Lebo, Walker, and Clarke 2000) to create a series that is mean stationary, although this does not ensure the series is also variance stationary (Lebo and Box-Steffensmeier 2008). As such, the conditional variance predictions have also been fractionally differenced.

20 Lydia uses natural language processing to create relational models of entities based on frequencies and co-occurrence. The system collects articles from over 1800 U.S. and international newspapers and blogs per day. In addition to the large daily corpus dating back to 2004, Lydia has also coded the New York Times back to 1851 and Time Magazine beginning in 1923. There is also an archival series of 14 papers from across the country available from 1977 to the present. The system is accessible at textmap.com/access.

Magazine and the *New York Times* was used to gather the count of both positive and negative media sentiment references toward the president.

The model also includes a measure of economic news coverage. The same strategy used to code the tone of presidential coverage could not be applied to economic coverage, however, due to the way Lydia currently codes economic words.[21] In lieu of separating mentions by tone, the model includes a count of the frequency of mentions of the words "economy," "recession," "unemployment," and "inflation." The frequency of economic mentions increases during poor economic times, as shown in Figure 4.3, providing face validity to the measure. While economic coverage may be positive or negative, it is assumed that any discussion of the economy by the media will create uncertainty regarding the trajectory of the economy and increase volatility in consumer spending, an effect similar to that of negative presidential coverage.

< Figure 4.3 about here >

In addition to the transfer functions described above, various political and economic events are included as interventions to explain shocks to the series not accounted for by the other variables in the model. Similarly, the model includes a variable indicating the first two months of a new presidential administration, the honeymoon period. Honeymoon periods are times of both political and economic optimism and, just as national approval is expected to increase consumer spending because it signals the electorate's confidence and optimism regarding the

[21] Many economic terms are not valenced the way other entities are, resulting in unreliable polarity measures. For example, "increased popularity" is typically a positive whereas "increased unemployment" is negative news. Likewise, a "decline in spending" is generally negative news but a "decline in unemployment" is positive. Unfortunately, Lydia is not able to currently account for these linguistic nuances.

president's job performance, so too are honeymoon periods expected to increase PCE, all else held constant.[22]

The expenditure, approval, media, consumer sentiment, and income variables are all fractionally differenced to create stationary series. The remaining objective economic indicators, however, are close to unit roots and, as such, have been first differenced. Although variables are assumed to have a constant error variance across time, many variables exhibit periods of volatility followed by periods of tranquility, rendering this assumption inappropriate. Traditional autoregressive fractionally integrated moving average techniques explore only the first moment of a series, yet heteroskedastic errors may also be of interest. GARCH models allow for the variance to have both an AR and an MA process. Because Engle's LM test indicates the presence of an ARCH process, a multivariate GARCH model is used to estimate the model.[23] To account for the long-term equilibrium relationship between income and consumption, a fractional error correction mechanism (FECM) is included.[24]

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[22] There is a popular perception amongs stock market analysts that the economy rallies around elections. This is borne out in the literature. Several studies have found that the markets rally after presidential (Huang 1985; Herbst and Slinkman 1984; Riley & Luksetich 1980) and midterm (Forester and Schmitz 1997) elections. These rallies are attributed to the reduction in uncertainty following an election and similar dynamics may affect consumer expenditures. Elections are thought to decrease expenditure volatility by resolving the uncertainty they create in the political system. Despite the literature documenting the market's response to elections, elections do not have a significant effect on consumer expenditures and are thus omitted from the analysis.

[23] Contemporaneous effects of the ICS and approval variables are omitted from the mean equation due to insignificant effects. In addition, all media effects are excluded from the mean equation due to lack of significance, however the findings for the variables of interest are robust across specifications. The model has a Durbin-Watson statistic of 1.97 indicating no significant autocorrelation remaining. The residuals are also white noise with a Ljung-Box Q statistic of 27.23 at a lag of 20.

[24] The results remain substantively unchanged whether wealth (in the form of the Dow Jones average) is included or omitted from the ECM.

This results in the following equation for spending:

$$\Delta^d PCE_t = \beta_0 + \sum_{l=1}^{2} \Gamma \Delta^d approval_t + \sum_{l=1}^{2} \Phi \Delta^d pol.stability_t + \sum_{l=1}^{v} \Lambda \Delta^d econ_t + \beta_1 honeymoon_{t-1} + \beta_2 \Delta^d \hat{\epsilon}_{co(t-1)} + \epsilon_t$$

where Γ is a vector of coefficients for the approval variable at various lags; Φ is a vector of coefficients for political confidence at various lags; Λ is a vector of coefficients for *v* economic variables at various lags; β_1 measures the effect of honeymoons; β_2 measures the effect of the FECM; Δ^d indicates that a variable has been fractionally differenced; β_0 is a constant and ε is the error term ~N(0, σ^2).

For volatility:

$$h_t = \alpha_0 + \alpha_i \epsilon_{t-1}^2 + \zeta h_{t-1} + \sum_{l=0}^{2} \Omega \Delta^d approval_t + \sum_{l=0}^{2} \Theta \Delta^d confidence_t + \rho_1 honeymoon_t + \sum_{l=0}^{2} \Psi \Delta^d media_t + \sum_{l=1}^{v} \Xi \Delta^d econ_t$$

where h_t is the conditional variance; ε^2 is the error variance; Ω is a vector of coefficients for the approval variable at various lags; Θ is a vector of coefficients for the political confidence variable at various lags; Ξ is a vector of coefficients for *v* economic variables at various lags; Ψ is a vector of coefficients for the media variables at various lags; ρ_1 measures the effect of honeymoons; Δ^d indicates that a variable has been fractionally differenced; and α_0 is a constant.

Findings

As shown in Table 4.1, there are significant effects for both the mean and volatility of approval.[25] An increase in presidential approval from one month to the next moves the macroeconomy by increasing consumer expenditures the following month. The effect is short lived, however, with expenditures exhibiting a rebound effect, declining two months after the increase in approval. Although changes in approval only affect consumer expenditures in the short-term, presidential approval significantly moves the macroeconomy and continued increases in approval are needed to keep PCE on an upward trajectory. For example, a standard deviation change in approval—a swing of 4.8 points—results in 26.5% of the mean change in expenditures the following month.

< Table 4.1 about here >

Beyond responding to the level of approval, PCE is also affected by volatility in approval. Swings in the public's perceptions of the president's job performance create an unstable political environment that is then translated into economic instability. Political uncertainty significantly affects PCE two months after a change, with a one unit increase in volatility decreasing PCE by $198 million dollars. A standard deviation increase in approval volatility from one month to the next results in a decrease in spending of over $6.8 billion, or almost 74% of the average monthly change in expenditures. These results, coupled with the level of approval, indicate that consumption expenditures are affected not just by how well consumers think the president is handling his job but also how uncertain they are about presidential performance. An unpopular president leads to more unfavorable economic conditions but, so too does instability in presidential evaluations, following the pattern found in

[25] A near-VAR of spending broken down by type is presented in Appendix E. Spending for each type (durable goods v. non-durable goods and services) is significantly affected by the approval variables.

other countries. Changes in administration do not, however, lead to changes in the macroeconomy.

Moving to the objective economic indicators, unemployment does not have a significant effect on PCE for any of the three lags. In addition, a Wald test shows that the lags of unemployment are not jointly significant. Conversely, the inflation rate does have a significant effect on consumption, reducing expenditures by $21 billion. Three months after an increase in inflation of one percent, expenditures fall again for a net decrease in spending. This decrease in expenditures is to be expected: when goods and services cost more, consumers spend less. When market conditions improve, however, and the Dow Jones increases, PCE increases as well. As the market improves and stocks are worth more, consumers have more money to spend. Likewise, as disposable income increases, contemporaneous consumption also increases. This effect is countered by a larger significant rebound effect the following two months, in line with Keynes's expectations that increased income will lead to increased saving. Similarly, there is significant error correction between income and expenditures, with 33.7% of the distance between the two variables disappearing a month after they are driven apart by an exogenous shock. Also in line with expectations, changes in objective economic indicators account for a larger percentage of the monthly change in PCE than do the political variables. Nevertheless, even when accounting for these traditional variables, presidential popularity plays a significant role in predicting macroeconomic conditions.

Although PCE responds to some objective economic indicators, it also responds to the non-fundamental factors reflected in the ICS. The month following an increase in sentiment, expenditures also increase. In line with prior research, this shows that consumption expenditures depend not just on the availability of money—the ability to spend—but also on consumers'

willingness to spend. When the economy is perceived as improving, expenditures increase. Conversely, when the economy is perceived as performing poorly, even if that perception is not in line with objective economic indicators, consumers will be less willing to spend because they fear conditions may worsen. Given the endogenous relationship between presidential popularity and consumer sentiment, this provides yet another avenue for approval to affect the macroeconomy.

Turning now to the volatility model, the significant GARCH parameters also show evidence of volatility clustering. Beyond being affected by its own past history, volatility in consumption expenditures is also affected by political, media, and economic conditions.[26] Although a significant predictor of changes in the mean of PCE, the level of presidential approval does not significantly affect volatility in PCE. Instability in consumer expenditures, however, is significantly affected by instability in political confidence. That is, the macroeconomy is not affected by changes in how popular a president is but is affected by how stable the electorate's evaluations of the president's performance are. As hypothesized, rather than responding to political uncertainty by varying their levels of spending, when consumers are less able to predict government trajectory they hedge their bets, choosing to save rather than spend.

Beyond being affected by uncertainty regarding presidential evaluations, instability in consumption expenditures is also influenced by the tone of the media's coverage of the president. As a president is portrayed more positively in one month, variance in PCE declines. There is a significant rebound effect the following month, but an increase of a single positive mention of the president in June has the net effect of reducing expenditure volatility in July. The

[26] There is no evidence of a GARCH-in-mean process. That is, changes in PCE volatility do not significantly affect the mean of PCE.

opposite is true of negative mentions. The more negative coverage a president receives, the more economic uncertainty increases. This decrease is corrected by a significant rebound effect of equal magnitude the following month.

Likewise, the more frequently the economy is mentioned by the media, the higher the volatility in consumer spending. Merely mentioning the economy creates economic instability that is reflected in expenditure volatility. While these media effects account for a relatively small percentage of instability in PCE, they are further evidence of politics (as filtered by the media) affecting economic uncertainty.

Consumer sentiment also has a statistically significant effect on expenditure volatility, with increased consumer confidence decreasing expenditure volatility. Interestingly, disposable income, although predictive of the mean of consumption expenditures, does not have a statistically significant effect on volatility in expenditures. By including the heretofore neglected political and media factors, the remaining explanatory power of the income has been reduced. Even though disposable income may affect consumer spending, its effect on spending instability operates through the media's coverage of the president, the economy, and the electorate's subjective economic and political evaluations.

The Problem of Endogeneity

A critic reviewing the preceding findings may dismiss them as suffering from simultaneity bias due to a reciprocal relationship between presidential approval, consumer sentiment, and consumer spending. If the relationship is indeed reciprocal and this is not taken into account when estimating the model, the resulting estimates will be both biased and inefficient. However, if presidential approval and consumer sentiment are weakly exogenous to consumer expenditures, there is no reciprocal causality and no need to estimate the equations

simultaneously (Charemza and Deadman 1997). Tests of weak exogeneity in Table 2 show that this is, in fact, the case and there is no reciprocal causality.[27] This may initially seem surprising given the body of literature referenced above devoted to the effects of the macroeconomy on presidential approval. However, consumer spending, while accounting for a large percentage of GDP, does not account for *all* of GDP and it is GPD in concert with other factors that ultimately affects the objective economic indicators traditionally included in studies of presidential popularity.

< Table 4.2 about here >

Although we can eliminate simultaneity bias as a source of endogeneity, two endogenous explanatory variables, presidential approval and consumer sentiment, remain. To account for these endogenous relationships, equations for the marginal processes were specified and the three equations were estimated in a near-VAR using seemingly unrelated regression. Granger causality tests in Table 4.2 indicate that approval and consumer sentiment Granger cause changes in PCE. These findings, coupled with the weak exogeneity of approval and consumer sentiment to PCE, indicate that PCE is properly excluded from the approval and ICS equations. Table 3 presents the results from a variety of specifications of the PCE equation, including the results of the near-VAR.

< Table 4.3 >

[27] To test for weak exogeneity, models were first specified for consumer sentiment and presidential approval, the marginal processes. These models were then estimated including an error correction mechanism (ECM) from the PCE model. If the marginal process is weakly exogenous to PCE, the ECM should be statistically insignificant. The next step in determining weak exogeneity is to include the residuals from the marginal process equation (estimated without the ECM) into the PCE model. A statistically insignificant coefficient for the residuals fails to reject the null hypothesis of weak exogeneity.

The results of the mean equation from Table 4.1—the properly specified model—are presented in the first column of Table 4.3; the second column is an ARFIMA model of the mean of PCE. Comparing column one to column two, we can see the degree to which the estimates of the mean are affected by also estimating the variance equation. The magnitude and significance of the main variables of interest, presidential approval and its volatility, are similar across specifications. Moving from the ARFIMA model to the third column that contains the PCE results from the near-VAR estimation, we are struck again by the consistency of the findings. Regardless of specification, presidential approval positively affects PCE while increased uncertainty in political evaluations decreases consumer expenditures.

Discussion

While economists have studied spending for decades, political and media factors are important pieces that have been missing for too long from the puzzle of consumer behavior. This project is motivated by a desire to better understand the role politics and the media play in consumers' consumption decisions. If, as Tullock (1976) claims, voters and consumers are essentially the same people, then their behavior in the market place and the political arena should be shaped by similar factors. It is well established that economics plays a large role in shaping public opinion and political behavior. Voters reward the president for presiding over periods of economic prosperity and punish him for economic downturns. Given that economics is so intrinsically related to politics, it is logical that politics also affects economics.

Although scholars have tried—and largely failed—to find evidence of presidential economic manipulation, Gerber and Huber (2009) find that partisanship at the county level does not just color economic perceptions but also affects economic behavior. Building upon this, I find politics affects economic performance by shaping public opinion and media sentiment

toward the president, which in turn affects consumer behavior. Not only do presidential evaluations and uncertainty surrounding these evaluations decrease the level of spending on average, political uncertainty also reduces the variance in spending from month to month. This creates a loop wherein political uncertainty creates poorer economic conditions that then decrease presidential approval. Likewise, negative media coverage of the president also increases economic uncertainty, providing another avenue for politics to affect economic performance.

The results address the question of whether politics affect consumer behavior but leave unanswered questions about when these factors matter. There may be periods of economic hardship when subjective economic evaluations are more predictive of consumer spending (see Garner 1981; 1991; Haugh 2005). Likewise, there may also be periods when instability in political evaluations are more highly correlated with changes in consumer behavior than the traditional predictors used by economists; future studies should use dynamic models to assess the relative importance of these factors over time. Nevertheless, by incorporating political variables into economic models we can not only improve economic forecasts but also gain a greater understanding of the relationship between the economy and politics.

Figure 4.1: Theoretical Summary

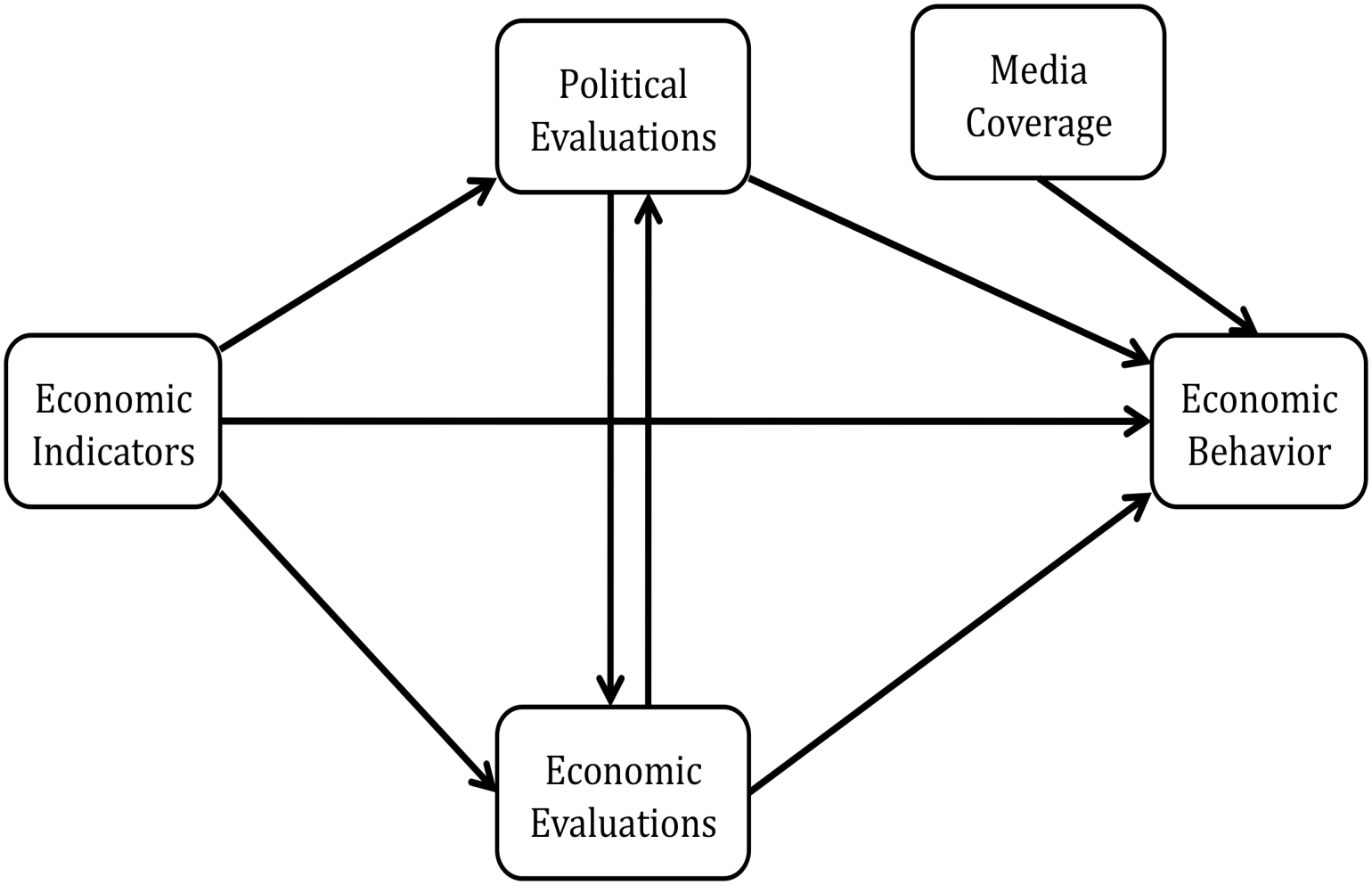

Figure 4.2: Monthly Personal Consumption Expenditures, 1978-2008

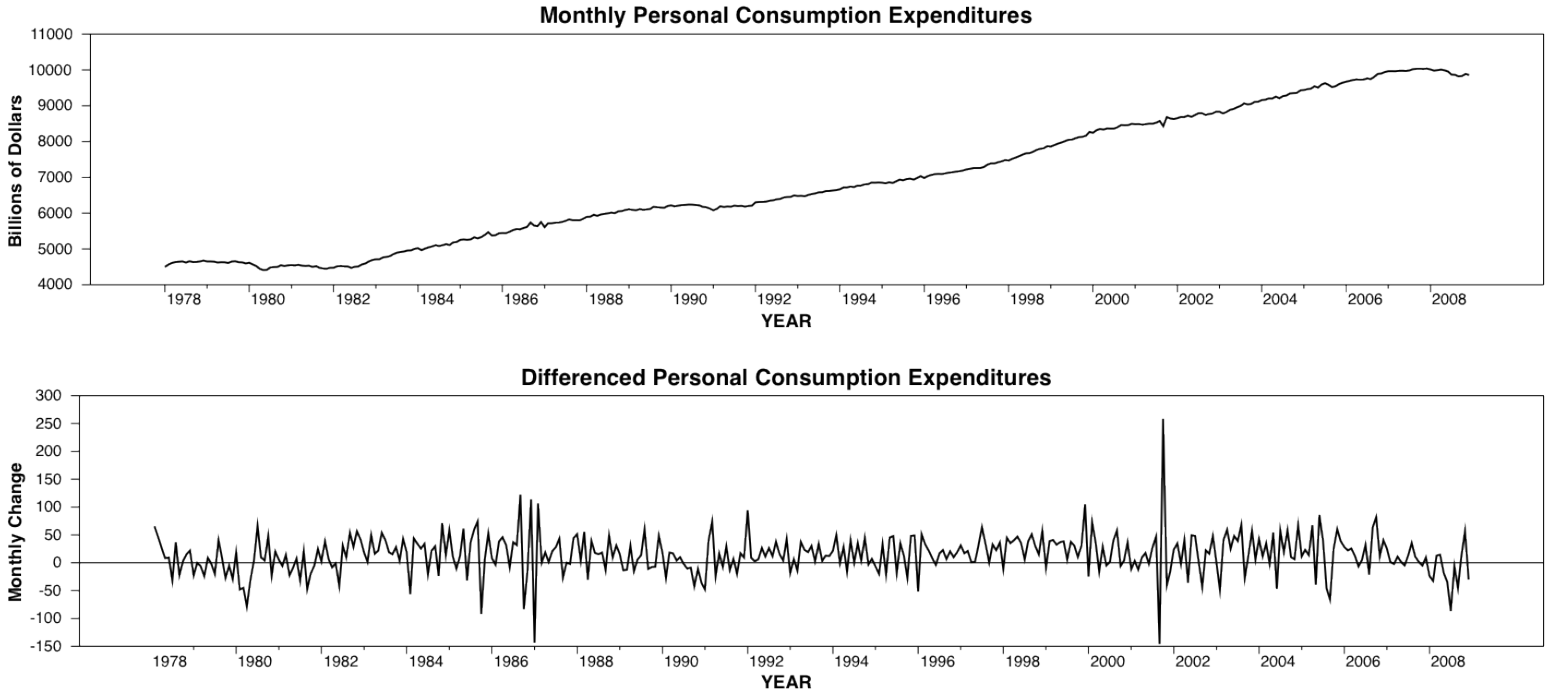

Figure 4.3: Frequency of Economic Mentions

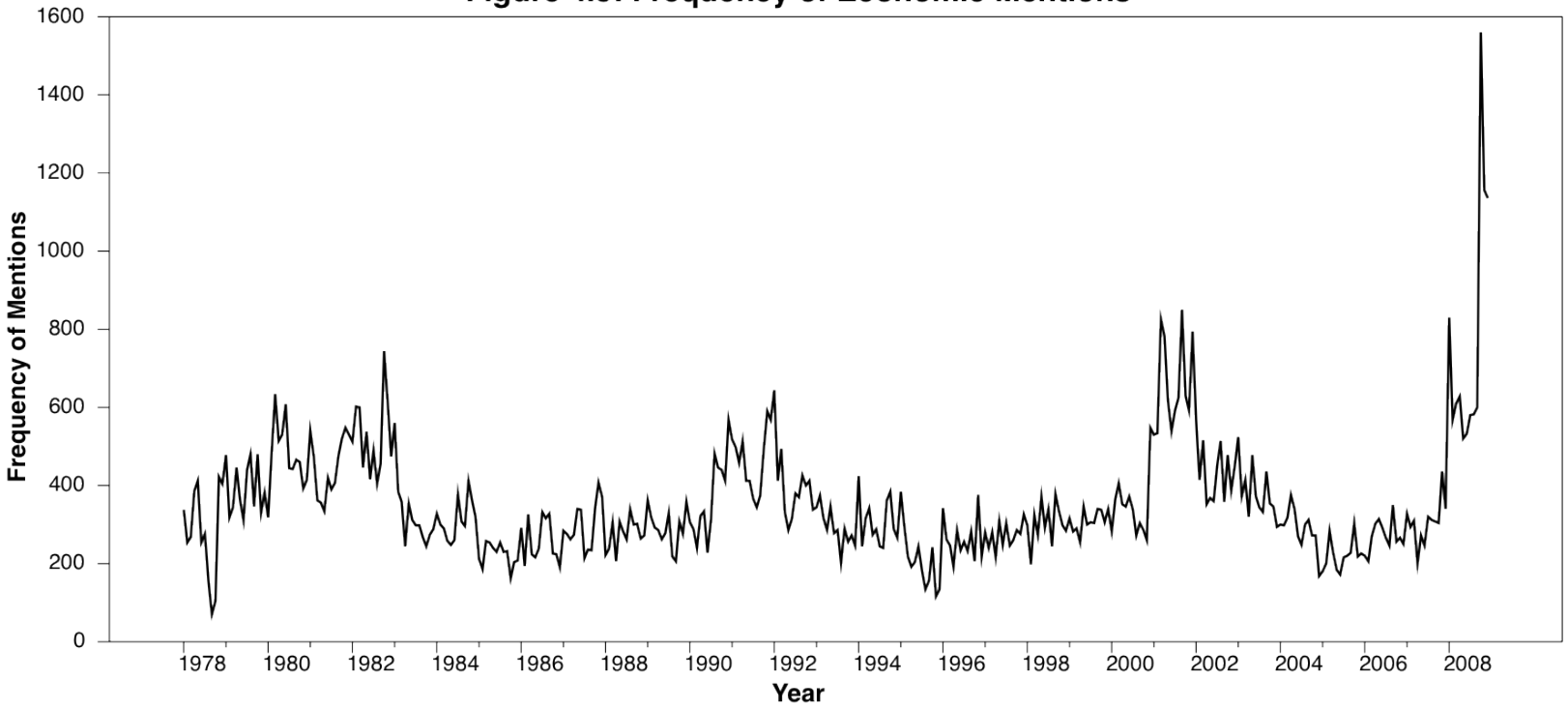

Table 4.1: GARCH Model of Monthly Personal Consumption Expenditures, 1978-2008

	Coefficient	(Std. Error)	p-value
Political			
Approval$_{t-1}$	**0.510***	**(0.28)**	**0.037**
Approval$_{t-2}$	**-0.386**	**(0.34)**	**0.125**
Approval Volatility$_{t-1}$	**-0.087**	**(0.07)**	**0.104**
Approval Volatility$_{t-2}$	**-0.198***	**(0.06)**	**0.001**
Honeymoon $_{t-1}$	**-13.233**	**(10.92)**	**0.113**
Economic			
Inflation$_{t-1}$	-20.952*	(4.16)	0.000
Inflation$_{t-2}$	2.896	(4.76)	0.272
Inflation$_{t-3}$	-7.605	(4.64)	0.051
Unemployment $_{t-1}$	2.773	(9.60)	0.387
Unemployment$_{t-2}$	2.546	(8.68)	0.385
Unemployment$_{t-3}$	6.943	(9.18)	0.225
ICS $_{t-1}$	0.892*	(0.35)	0.006
Dow Jones	0.013*	(0.00)	0.003
Dow Jones $_{t-1}$	0.013*	(0.00)	0.005
Real Disp. Income	0.116*	(0.02)	0.000
Real Disp. Income$_{t-1}$	-0.161*	(0.04)	0.000
Real Disp. Income$_{t-2}$	-0.062*	(0.02)	0.003
ECM	-0.337*	(0.04)	0.000
Interventions			
Shanghai Protests	118.505*	(59.67)	0.024
September 11th	-184.417*	(13.91)	0.000
Constant	18.410*	(2.81)	0.000
Volatility			
Political			
Approval	**-0.011**	**(0.04)**	**0.373**
Approval$_{t-1}$	**0.045**	**(0.05)**	**0.183**
Approval Volatility	**-0.046***	**(0.01)**	**0.001**
Approval Volatility$_{t-1}$	**-0.001**	**(0.01)**	**0.425**
Honeymoon	0.569	(1.70)	0.369
Media			
Positive Sentiment	**-0.006**	**(0.00)**	**0.052**
Positive Sentiment $_{t-1}$	**0.005***	**(0.00)**	**0.021**
Negative Sentiment	**0.005**	**(0.00)**	**0.095**
Negative Sentiment $_{t-1}$	**-0.007***	**(0.00)**	**0.038**
Economic Mentions	**0.001**	**(0.00)**	**0.208**
Economic Mentions $_{t-1}$	**0.005***	**(0.00)**	**0.007**

Economic			
ICS	-0.074	(0.05)	0.071
ICS_{t-1}	-0.038	(0.04)	0.195
Dow $Jones_{t-1}$	0.001	(0.00)	0.168
$Inflation_{t-1}$	-0.775	(0.49)	0.058
$Inflation_{t-2}$	0.201	(0.58)	0.364
$Unemployment_{t-1}$	-1.998*	(1.03)	0.027
$Unemployment_{t-2}$	1.495	(0.96)	0.060
Real Disposable Income	0.002	(0.00)	0.159
Constant	5.361*	(0.36)	0.000
ARCH	0.200*	(0.07)	0.002
GARCH	0.252*	(0.08)	0.001
Durbin Watson = 1.97	N = 368		

* $p \leq 0.05$ (All tests one-tailed)

Table 4.2: Weak Exogeneity and Granger Causality Tests

Granger Causality	F-test	p-value
Approval → PCE	3.14	0.01
Consumer Sentiment → PCE	3.17	0.01
PCE → Approval	0.25	0.91
PCE → Consumer Sentiment	2.09	0.08
Weak Exogeneity*	ECM	Residuals
Approval	-0.53 (0.60)	0.36 (0.72)
Consumer Sentiment	0.01 (0.99)	0.69 (0.49)

*T-test (p-value) two tailed.

Table 4.3: Specifications of the Mean of Personal Consumption Expenditures

	GARCH		ARFIMA		Near-VAR	
	Coeff. (Std. Err.)	p-value	Coeff. (Std. Err.)	p-value	Coeff. (Std. Err.)	p-value
Political						
$Approval_{t-1}$	0.510* (0.28)	0.037	0.600* (0.32)	0.029	0.607* (0.31)	0.024
$Approval_{t-2}$	-0.386 (0.34)	0.125	-0.169 (0.32)	0.298	-0.180 (0.31)	0.280
Approval $Vol._{t-1}$	-0.087 (0.07)	0.104	-0.035 (0.05)	0.232	-0.034 (0.05)	0.229
Approval $Vol._{t-2}$	-0.198* (0.06)	0.001	-0.139* (0.05)	0.002	-0.139* (0.05)	0.001
$Honeymoon_{t-1}$	-13.233 (10.92)	0.113	-13.512 (10.12)	0.092	-13.086 (9.82)	0.092
Economic						
$Inflation_{t-1}$	-20.952* (4.16)	0.000	-17.812* (4.04)	0.000	-17.840* (3.93)	0.000
$Inflation_{t-2}$	2.896 (4.76)	0.272	7.790 (4.80)	0.053	7.832* (4.66)	0.047
$Inflation_{t-3}$	-7.605 (4.64)	0.051	-7.272 (4.45)	0.052	-7.327* (4.33)	0.045
$Unemployment_{t-1}$	2.773 (9.60)	0.387	-4.344 (9.29)	0.321	-4.515 (9.03)	0.309
$Unemployment_{t-2}$	2.546 (8.68)	0.385	4.818 (9.14)	0.299	4.865 (8.87)	0.292
$Unemployment_{t-3}$	6.943 (9.18)	0.225	3.776 (9.12)	0.340	3.637 (8.86)	0.341
ICS_{t-1}	0.892* (0.35)	0.006	1.024* (0.40)	0.005	1.027* (0.38)	0.004
Dow Jones	0.013* (0.00)	0.003	0.010* (0.01)	0.030	0.010* (0.01)	0.028
Dow $Jones_{t-1}$	0.013* (0.00)	0.005	0.009* (0.01)	0.040	0.009* (0.01)	0.044
RDI	0.116* (0.02)	0.000	0.128* (0.02)	0.000	0.127* (0.02)	0.000
RDI_{t-1}	-0.161* (0.04)	0.000	-0.131* (0.04)	0.001	-0.131* (0.04)	0.000
RDI_{t-2}	-0.062* (0.02)	0.003	-0.043* (0.02)	0.037	-0.044* (0.02)	0.031
ECM	-0.337* (0.04)	0.000	-0.325* (0.04)	0.000	-0.325* (0.04)	0.000

Interventions						
Shanghai Protests	118.505*	0.024	115.211*	0.000	116.203*	0.000
	(59.67)		(19.97)		(19.38)	
September 11th	-184.417*	0.000	-179.131*	0.000	-176.881*	0.000
	(13.91)		(21.16)		(20.54)	
Constant	18.410*	0.000	15.484*	0.000	15.515*	0.000
	(2.81)		(2.60)		(2.53)	

* $p \leq 0.05$ (All tests one-tailed)

Chapter 5: Conclusion

It should come as no surprise that unpacking the relationship between presidential approval, consumer sentiment, media coverage, and economic behavior is challenging since all the factors are closely intertwined. Considering not just the mean but also the volatility of the series further complicates the task. In addition, many of the relationships are time-varying, adding yet another layer of complexity. As a result, I have approached the task incrementally.

Chapter 1 introduced social scientists to Lydia, a new tool for collecting data on media coverage from a wide variety of electronic sources. As a test of external validity, I then used the data generated by the Lydia system in a model of presidential approval. Not only does the system appear to be measuring what I would expect it to, but also the data are significant predictors of changes in presidential approval. The tone of presidential coverage, or how positively or negatively the president is regarded by the media, affects how satisfied the public is with his job performance. Beyond affecting the level of approval, presidential media coverage affects volatility in approval, with more positive coverage leading to more stable evaluations. Although typically thought of as agenda setters, media outlets also respond to public opinion about presidential performance.

Having addressed the role of the media in determining presidential approval, I turned my attention to the connection between presidential and economic evaluations. Rather than being seen as an admonishment of the economic voting literature, Chapter 3 should hearten those who have written about the importance of economic perceptions as determinants of presidential approval and vice versa. Consumer sentiment not only remains a significant predictor of presidential approval across administrations, but can also have more explanatory power than previous studies have found. It simply does not have substantial explanatory power in every

administration. In other words, the power of economic confidence to shape political evaluations may be even greater than typically assumed if non-economic issues are not salient. When other issues are salient, as they were during the Bush presidency, economic perceptions play a less important role in determining presidential approval. Similarly, instability in presidential approval significantly affects consumer sentiment, but only when that instability is not the result of a decaying rally event.

Bringing together the preceding empirical chapters and extending the analysis from public *opinion* to political *behavior*, Chapter 4 is the capstone of the dissertation. Previous research has linked economic opinions with political behavior as well as connecting political opinions with economic perceptions. I have shown that political opinions not only affect economic opinions, but also directly affect economic behavior. This is unsurprising when one considers that citizens are the same people in the marketplace and in the voting booth. The level of consumer expenditures responds to how popular a president is and also to stability in presidential approval. A popular president with a stable basis of support can greatly increase consumer spending. In addition, stability in consumer expenditures is also affected by political confidence. A president with a widely variable basis of support leads consumers to settle into a uniformly low level of spending. This depressed level of spending creates poorer economic conditions that, in turn, lower presidential approval and economic confidence.

Avenues for Future Research

Although this dissertation addresses consumer behavior (a topic typically left to economists) as well as examining existing questions in novel ways, many questions remain. If approval responds more to negative stories about the president than to positive ones, what determines the tone of media coverage? Lydia can be used to conduct a systematic study of

media bias across a variety of sources to see not only which outlets are more favorable to the president, but also whether the news media are predisposed to cover negative stories in order to attract readers. If this is the case, the media may be unintentionally decreasing approval while increasing consumer pessimism and causing instability in consumer behavior.

Likewise, non-economic issues have the ability to alter the relationship between presidential approval and consumer sentiment, but they may also be able to affect components of presidential approval and consumer sentiment as well. For example, economic prospections and retrospections may respond differently to changes in economic and foreign policy approval. Foreign crises are likely to increase the importance of foreign policy approval for both prospections and retrospections, but foreign policy approval is likely to be more important for prospections. Similarly, political scandals may increase the importance of overall approval as a predictor of economic retrospections.

Although Chapter 3 addressed time-varying relationships between consumer sentiment and approval, presidential coverage, and economic coverage, many of the relationships discussed in Chapters 2 and 4 may also be non-constant. Economic coverage may be more closely correlated with approval during times of economic hardship. Negative presidential news may also have more of an effect when the president is already relatively unpopular, thus driving his popularity even lower. Likewise, periods of economic hardship may strengthen the connection between economic perceptions and economic behavior. During periods in which non-economic issues are the most salient, presidential approval may be less predictive of economic behavior than in times where public opinion is focused on economic performance.

Although the relationships between political, economic, and media factors are extremely complex, this dissertation has drawn upon literature from a variety of disciplines to paint a

detailed portrait of the way public opinion is translated into behavior. By identifying more efficient systems of data collection, it becomes easier to include important variables like media coverage into political and economic models. Paying attention to political context highlights the time-varying nature of relationships once thought to be static. And incorporating political and media variables can sharpen forecasts of economic behavior.

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Appendix A: Media Data Sources and Available Time Periods

Historical Series	
The New York Times	9/18/1851
Time Magazine	3/3/1923
Archival Series	
Washington Post	1/1/1977
Anchorage Daily News	9/27/1985
The Press Enterprise (CA)	9/28/1992
The Rocky Mountain (CO)	1/1/1990
Boston Globe	1/12/1980
Detroit Free Press	3/5/1982
Star Tribune (MN)	1/1/1986
New York Daily News	1/16/1995
Dayton Daily News	3/27/1990
The Plain Dealer (OH)	8/7/1991
The Oregonian	8/28/1987
The Times Leader (PA)	10/7/1992
The New York Times	9/18/1851
Time Magazine	3/3/1923

Appendix B: Synonym Sets for Presidents George H.W. and George W. Bush

George Bush 41	George Bush 43
George H.W. Bush	George W. Bush
George HW Bush	George Bush
George H.W. Bushs	George W. Bushs
George Bush SR	George Bush
George H.W Bush	GEORGE W. BUSH
George H-W Bush	GEORGE W. Bush
GEORGE H.W. BUSH	GEORGE BUSH
George Bush Sr.s	GEORGE Bushs
George HW Bushs	George W. BUSH
George Bush Srs	GEORGE W. Bushs
George Bush SR.	George BUSH
GEORGE H.W. Bush	George Bush
George Bush Sr.	GeorgE W. Bush
George H.W Bushs	GEorge W. Bush
George Bush Sr	George W Bush
	George W. Bushs
	George W. BUsh

Appendix C: Fractional Integration

Variable	d
Approval	0.88
Media	
Positive Sentiment	0.28
Negative Sentiment	0.30
Presidential References Per Million	0.41
Frequency of Economic Mentions	0.76
Economy	
ICS	0.90

Appendix D: DCC Estimates for ICS, Approval, and Media Coverage

	Approval			Media Sentiment			Economic Mentions		
	Coef.	(S.E.)	*p*-value	Coef.	(S.E.)	*p*-value	Coef.	(S.E.)	*p*-value
Clinton									
C_{ICS}	7.91	(1.45)	0.00	3.07	(0.61)	0.00	3.07	(0.61)	0.00
A_{ICS}	-0.01	(0.11)	0.95						
B_{ICS}				0.61	(0.05)	0.00	0.61	(0.05)	0.00
$C_{Approval}$	9.71	(1.90)	0.00						
$A_{Approval}$	0.14	(0.13)	0.27						
$C_{Sentiment}$				2372.30	(8131.03)	0.77			
$B_{Sentiment}$				0.84	(0.54)	0.12			
$C_{Frequency}$							723.52	(5690.87)	0.90
$B_{Frequency}$							0.78	(1.72)	0.65
α	0.05	(0.05)	0.28	-0.06	(0.01)	0.00	0.03	(0.06)	0.59
β	0.89	(0.08)	0.00	0.99	(0.01)	0.00	0.89	(0.22)	0.00
$\bar{R}$	0.32			0.16			-0.04		
Bush									
C_{ICS}	20.08	(3.65)	0.00	11.07	(132.11)	0.93	20.08	(3.65)	0.00
A_{ICS}	0.04	(0.12)	0.72	0.02	(0.16)	0.90	0.04	(0.12)	0.72
B_{ICS}				0.46	(6.52)	0.94			
$C_{Approval}$	23.10	(3.50)	0.00						
$A_{Approval}$	0.03	(0.05)	0.61						
$C_{Sentiment}$				897.67	(721.06)	0.21			
$A_{Sentiment}$				0.26	(0.14)	0.06			
$B_{Sentiment}$				0.55	(0.21)	0.01			
$C_{Frequency}$							19353.49	(2849.14)	0.00
$A_{Frequency}$							-0.004	(0.02)	0.86
α	0.09	(0.08)	0.29	-0.10	(0.03)	0.00	-0.02	(0.001)	0.00
β	0.76	(0.13)	0.00	0.76	(0.21)	0.00	0.90	(0.30)	0.00
$\bar{R}$	-0.04			-0.10			-0.21		

Appendix E: Near-VAR of PCE Disaggregated by Type of Spending

	Durable Goods		Non-Durable Goods and Services	
	Coeff. (Std. Error)	p-value	Coeff. (Std. Error)	p-value
Political				
$Approval_{t-1}$	0.414*	0.030	-0.025*	0.036
	(0.22)		(0.01)	
$Approval_{t-2}$	-0.107	0.313	-0.006	0.342
	(0.22)		(0.01)	
$Approval\ Vol._{t-1}$	-0.012	0.361	-0.004*	0.017
	(0.03)		(0.00)	
$Approval\ Vol._{t-2}$	-0.128*	0.000	-0.004*	0.015
	(0.03)		(0.00)	
$Honeymoon_{t-1}$	-8.524	0.114	0.629	0.078
	(7.06)		(0.44)	
Economic				
$Inflation_{t-1}$	-8.330*	0.002	-0.625*	0.002
	(2.78)		(0.21)	
$Inflation_{t-2}$	1.510	0.327	-0.551*	0.005
	(3.37)		(0.21)	
$Inflation_{t-3}$	-6.590*	0.017	-0.810*	0.000
	(3.11)		(0.20)	
$Unemployment_{t-1}$	-13.061*	0.023	-1.293*	0.001
	(6.54)		(0.41)	
$Unemployment_{t-2}$	3.827	0.276	-1.484*	0.000
	(6.42)		(0.40)	
$Unemployment_{t-3}$	-5.512	0.195	-1.351*	0.001
	(6.41)		(0.40)	
ICS_{t-1}	0.718*	0.005	-0.000	0.495
	(0.28)		(0.02)	
Dow Jones	0.000	0.482	0.000	0.287
	(0.00)		(0.00)	
$Dow\ Jones_{t-1}$	0.007*	0.026	0.000*	0.024
	(0.00)		(0.00)	
RDI	0.022	0.062	-0.005*	0.000
	(0.01)		(0.00)	
RDI_{t-1}	0.013	0.246	0.013*	0.000
	(0.02)		(0.00)	
RDI_{t-2}	0.004	0.395	0.005*	0.000
	(0.02)		(0.00)	
ECM	-0.091*	0.025	0.024*	0.000
	(0.05)		(0.00)	

* $p \leq 0.05$ (All tests one-tailed)

[+]Model was estimated simultaneously with equations for ICS and presidential approval.