Is the Public Rational? Benchmarking Collective Rationality in Economic Evaluations

Gregory E. McAvoy
Department of Political Science
University of North Carolina at Greensboro
PO Box 26170
Greensboro, NC 27402
email: gemcavoy@uncg.edu

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Abstract

In order to better understand information processing at the aggregate level, I a) describe a model of information processing of aggregate opinion that is consistent with the individual-level models, b) show how this information processing model works in the context of the public’s evaluation of the economy and c) compare aggregate opinion about the economy to a benchmark of strict “rational” decision-makers represented by the opinions of professional forecasters compiled in the Survey of Professional Forecasts.

Introduction

An enduring question in the study of public opinion is the extent to which collective opinion measures up to standards of rationality. Walter Lippmann’s (1922) early treatise on public opinion paints a grim portrait of the electorate, one in which citizens possess little information about the political system and only provide weak signals about the direction that the country should take. Starting with The American Voter (1960), political scientists have documented that certain segments of the American public lack the knowledge or ideological framework for effective political decision-making. Such studies have long been a source of discouragement for those concerned about a healthy, democratic polity.

But, when researchers have looked at the public as whole, the outlook has been more optimistic. In The Rational Public, Page and Shapiro (1992) argue that public opinion follows reasonable and predictable patterns over time, despite the fact that individual citizens may lack the requisite knowledge to make good decisions. They argue that the public includes many citizens who fit the unflattering image of the electorate described by Lippmann and others, but that there are enough people who are attentive and informed to bring order and stability to aggregate public opinion (for a more recent argument along these lines, see Stimson (2004), especially p. 14-17). This occurs through the "magic of aggregation"—meaning that the unstable opinions of those with limited information about politics introduce random noise into the system, while the informed public produces a consistent signal that brings order and meaning to aggregate public opinion.

A key assumption among those studying collective political rationality is that individuals, particularly informed individuals, will use all information at their disposal (Erikson, MacKuen & Stimson 2002, Krause 2000). These researchers are not arguing for a strict form of rational expectations in which individuals possess all available information—rather they are only claiming that people will use all information that they possess. However, this simple characterization of information processing does not square with individual-level processing models (Taber & Lodge 2006, Lodge, Steenbergen & Brau 1995). These studies show that citizens often rely on motivated reasoning, that is, they seek out information that is consistent with their preconceptions (or priors) and ignore, discount, or counter-argue information that is inconsistent with their predispositions. In addition, given the complexity of political decision-making (i.e., a wide range of shifting issues) and the fact that many people’s attention to politics is limited (by choice or necessity), citizens rely on short-cuts and predispositions to process information relevant to politics. Thus, it is likely that at the aggregate level these same forces are at work, (i.e., the need for rules of thumb, shifting attention, and information channels). In order to better understand information processing at the aggregate level, I a) describe a model of information processing of aggregate opinion that is consistent with the individual-level models, b) show how this information processing model works in the context of the public’s evaluation of the economy and c) compare aggregate opinion about the economy to a benchmark of strict “rational” decision-makers represented by the opinions compiled in the Survey of Professional Forecasters.
Information Processing

For a variety of reasons, aggregate models of behavior are generally grounded on assumptions of perfect or near-perfect information processing. Often these assumptions are justified as necessary simplifications, but at times, they reflect researchers’ convictions that at least some individuals are able to perform such demanding tasks. However, individual-level studies suggest that rather than systematic information processors, citizens try to interpret facts to fit their existing viewpoints and those who are more informed tend to be better at incorporating new information into their existing interpretation of political affairs. (Gaines et al. 2007, Duch, Palmer & Anderson 2000).

With new and complex issues making their way to the top of the political agenda, it is not surprising that citizens, even well-intentioned ones, rely on party cues and other information short cuts to sift through the wealth of information in the modern political environment.

The response of the public to new information may not be as clear and straightforward as rational actors models would suggest. Studies of the economic news and its impact on the public’s perceptions of economic conditions show the relationship between news and information can be asymmetric. Soroka (2006) and others suggest that the public reacts more to bad news about the economy than good news. This might arise in part from unmet expectations as people hope for the best and are disappointed when their optimistic expectations are not met, or through loss aversion, a phenomenon identified by Kahneman and Tversky (1979) in which individuals feel the impact of a loss more profoundly than they do a gain.1

In his generative study of individual-level opinion, Zaller (Zaller 1992) proposes a model of information processing that runs directly counter to the conventional notions of aggregate rationality. In his model, Zaller identifies information reception as a key component of the process by which individuals update in response to new information in the environment. Individuals’ willingness to receive new information is contingent on their awareness and predispositions. In addition, Zaller and others who recognize that individual citizens are occupied with a variety of tasks, like family and work, and these preclude them from giving their full attention to events in political and economic environment. Because of this shifting attention on and away from politics, we would expect certain amount of randomness in the aggregate public opinion as the idiosyncrasies of daily life bring events to the attention of some people while diverting the attention of others. Because of these issues, Zaller argues that a component of public opinion is the result of top of the head evaluations in which people’s responses are influenced by salient information.

Even those investigating economic rationality have become sensitive to the role that limits to information processing might play in aggregate behavior. For example, Christopher Sims’ (2003, 2006) work on the role of “rational inattention” takes seriously the limits of the public as whole to process the wealth of information flowing to citizens. In the face of this plethora of information, inattention is a rational strategy. What this means, however, is that the response of economic agents to new information will be slower and smoother than would occur with attentive and hyper-rational individuals.

1See Soroka (2006) for a fuller description of these possible explanations
Ironically, this limited capacity to process information is currently paired with what appears to be a limitless supply of information, as the billions of web pages currently indexed by Google attest.

**Information and Reception**

Within political science, the impact of economic conditions on public opinion like presidential approval has been studied extensively. But, far less attention has been given to the role of information processing that underpins these type of analyses. Although much research has been devoted studying the components of consumer sentiment collected in the Survey of Consumers, the survey also contains questions about respondent’s perceptions of news reports about economic conditions provide, and these provide insight into the way that people use or ignore relevant information in their assessments of economic conditions.

Although there are a variety of questions asked about the public’s awareness of news reports, the focus of the analysis conducted here is on questions about general news about the economy. The question about general news asked in the survey is: “During the last few months, have you heard of any favorable or unfavorable changes in business conditions?” The survey then branches to questions about the type of news heard, focusing on issues like unemployment, inflation, interest rates and a variety of other economic factors. As Soroka and others have shown, there is a negativity bias in news about the economy, since negative information seems to be much more related to people’s assessment of the economy than favorable news. The correlations in Table 1 show the relationship about the public’s rating of the economy (as measured by consumer sentiment), economic conditions, and the news questions. As the table indicates, unfavorable news is much more closely related to economic conditions and the public’s overall rating of the economy. Thus, the focus of the analysis here is on the role of unfavorable news in the public’s updating of opinions about economic conditions.

It is important to note that these simple correlations facilitate our understanding of the public’s use of information. The relatively low correlation between favorable news and consumer sentiment indicates that even when the respondents say that they received positive information about the economy, they did not use it systematically in making an overall evaluation of the economy. In addition, the weak correlation between economic conditions and consumer sentiment indicates that the public is not consistently using information about these conditions in assessing the economy. These weak correlations give support to the idea that the public ignores or is inattentive to political news, focusing its attention on other matters at times. (This is explored further below).

A times series for this question about news reception is reported in Figure 1. As is clear from the figure, there is considerable variation in the public’s perception of unfa-
vorable news. The high points correspond with recessions in the early 1990s and 2000s and continue to be high in the wake of the 2008 financial crisis. Low reports of unfavorable news occurred during the second Clinton administration, when the economy was particularly robust.

By looking at relationships between economic conditions and news over time, it is possible to pinpoint more exactly when the public indicates that unfavorable information has gotten through. Using the Kalman filter and state space modeling, we can see the time-varying impact that economic conditions have on the public’s reception of economic news. Time-varying parameters simply allow the slopes in a regression model to change over time and therefore show the shifting weight in the impact that a variable has on the dependent variable. As Figure 2 shows, a time-varying parameter model indicates that sharp increases in reception of unfavorable news correspond with recessions and periods of high unemployment. Thus, during recessions the public is more receptive to unfavorable political news. At first blush this seems an obvious point, but the key is that there is really an interaction between economic conditions and people’s perception of economic conditions. During the second Clinton administration, the impact of changes in unemployment is quite limited, to the point that changes in unemployment have virtually no impact on people’s perceptions of economic news.

The results for the time-varying relationship between unfavorable news and inflation reveals a relationship that is not significant. In part, this is a byproduct of the time period of the analysis. Inflation was much more volatile in the 70s and early 80s than it was after 1989—thus the fact that inflation was relatively stable would likely lead to a limited connection to news reception which varied a lot over time.

Although it is useful to uncover the patterns between reception of the news and economic conditions, the key question at hand is the role of economic news in the public’s rating of the economy. Based on the analysis above, we would expect to see the impact of information in the economic environment ebb and flow in concert with the amount of news that makes its way to the public, as measured the news report data.

Using an updating model, it is possible to incorporate the shifting influence of information through a time-varying parameter updating model. We can take the model described above and modify it to account of the time-varying influence of economic conditions. We would expect this time variation to work in concert with reports about the public’s perceptions of economic news.

\[
y_t = x_t + \beta_{1t}Unem_{t-1} + \beta_{2t}Infl_{t-1} + \nu_t \\
x_t = x_{t-1} + \omega_{10} \\
\beta_{1t} = \beta_{1t-1} + \omega_{11} \\
\beta_{2t} = \beta_{2t-1} + \omega_{22}
\]

Like the more general model described above, the assumption is that updating behavior will be captured by changes in \(x_t\). But, in this model, the updating behavior is supplemented by information measures in the economic environment. Thus, in this

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3 Models of time-varying parameters have been used in a variety of studies in political science. See for example, Beck (1983), McAvoy (2006).
model of updating, it is possible for the impact of unemployment and inflation to change over time and this effect is captured through the time-varying parameters \((\beta_{1t}, \beta_{2t})\). We would expect this variation to be closely linked to changes in the public’s receptivity to news reports.\(^4\)

The estimated parameters for this model are reported in Table 2. The time varying parameters for unemployment and inflation are reported in Figures 3 and 4. It is evident from the figures that there is time variation in the impact of unemployment and inflation on the public’s evaluation of the economy as measured by consumer sentiment. The role of unemployment in the updating behavior of the public is particularly fluid, and the significance of this variation is captured in the error variance parameter, \(\omega_{1t}\), and in this case it is significantly different from zero. The time variation for inflation exhibits a similar pattern, with the impact of inflation on the public’s evaluation of the economy ebbing and flowing, and it becomes especially pronounced in concert with the onset of recessions, as shown in 4.

The plot of the time-varying parameter for unemployment sheds some additional insight into the selective way that the public uses information from the environment. First, the plot shows that the effect of unemployment is nearly always negative, that is updating is always pulled down by unemployment, no matter what the rate. It is pulled down less during periods of low unemployment (the mid-1990s), but pulled down severely during the recession of the early 1990s and again in the recession at the end of 2001. This type of effect has been referred to as a plucking model, since unemployment always pulls evaluations down (see, Kim and Nelson (1998)). This asymmetric effect is consistent with studies of the loss aversion model described by Soroka and Kahneman and Tversky (1979). But, perhaps the most significant finding from this analysis is the correspondence between this time-varying effect for unemployment and the reports about unfavorable news. The plots of unfavorable news (Figure 1) and the time-varying effect of unemployment on consumer sentiment (Figure 3) look similar and a correlation of the unfavorable news variable and the time-varying parameter for unemployment is a surprisingly high, 0.72. Thus, we can see the effect of receptivity working its way into the public’s evaluation of economic conditions through the time varying effect of unemployment. But, the key finding is that the public varies over time in its ability to process information, depending on the news, the uncertainty in the environment, and the public’s willingness to update.

Partisan Information Processing

Much of the evidence for the partisan-nature of political decision-making has emerged from experimental studies of decision-making where researchers have more control over the information to which respondents are exposed and can more readily detect when partisan differences arise. Taber and Lodge (Taber & Lodge 2006) design an experiment in which individuals are allowed to search for information as they make decisions about political issues. They find that individuals simply the decision-making envi-

\(^4\)It is possible to incorporate the impact of news directly in the model through by specifying news as an explanatory factor in the \(\beta_t\)’s, but the results of this more complex specification are nearly identical to the one described here.
ronment through biased-information processing. In studying the issues of affirmative action and gun control, they find that individuals rely (to varying degrees) on prior attitudes and incorporate these priors when seeking out and evaluating information. In general, respondents exhibit an “disconfirmation bias,” which leads them to heavily discount information that is inconsistent with their current position and to readily accept information that is consistent with their existing views. Likewise, when seeking out information, they tend to latch onto information that is supportive of their current position, suggesting a “confirmation bias” as well. Finally, those with higher levels of political knowledge are more strongly influenced by these biases since their added sophistication makes them better able to resist or “counterargue” information that is contrary to their current position.

Extending the analysis of partisan economic evaluations to the aggregate level requires construction of new measures that disaggregate economic evaluations by party. The standard measures of the public’s views of the economy are derived from the Survey of Consumers conducted by the University of Michigan. However, the Survey of Consumer does not include questions the respondents’ partisan identification, so in order to assess the impact of partisanship on aggregate economic evaluations requires using other data sources, and in this analysis I use opinion data come from Gallup, ABC, and CBS surveys. Since 1985, these survey organizations have regularly asked respondents about their evaluation of economic conditions. In previous work with Peter Enns and Paul Kellstedty, we analyze the percent of the population giving a positive assessment of the economy (Enns, Kellstedt & McAvoy 2012, Enns & McAvoy 2011). However, it turns out that calculation of the percent giving a positive or negative approval works well at capturing partisan evaluations and differences when the economy is in “ordinary” times, but during the extraordinary times, like those that seen since 2008, some of the partisan differences are hidden. For example, at the start of the Obama administration the Gallup survey revealed similarly small percentages of Democrats and Republicans reporting that the economy was excellent or good, but there were important differences in how many respondents rated the economy as only fair or poor. To capture these differences, I recalculated the partisan evaluations for the Gallup, CBS, and ABC surveys using the average, rather than the percentage. This makes it feasible to identify some of the subtle changes in assessment that can better capture partisan differences in respondents’ evaluations of the economy. I combine the three surveys into a single index of economic evaluations, with 1 indicating that respondents

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5 The Gallup question asks, “How would you rate economic conditions in this country today–as excellent, good, only fair, or poor?” CBS asks, “How would you rate the condition of the national economy these days? Is it very good, fairly good, fairly bad, or very bad?” The ABC surveys ask, “Do you think the nation’s economy is getting better, worse, or staying about the same?” In the questions used to identify partisanship, respondents were asked whether “you usually consider yourself a Republican, Democrat or Independent.”

6 For the Gallup series, the percent rating the economy as excellent or good was tabulated, and for the CBS series, the percent rating the economy as very good or fairly good was calculated. For ABC, the percent saying the economy was getting better is tabulated.

7 Because all three survey organizations ordered their questions with low scores as a positive evaluation, I reversed the ordering of the measure so that high scores are associated with a positive evaluation. Researchers typically want to know whether good economic conditions correspond to positive economic evaluations and this change makes that feasible.
collectively concluding that the economy was performing badly and 4 indicating that it was performing well. Because each of the surveys skipped some months, using data from all the surveys helps overcome the missing data problem that would occur if we relied on a single survey. But equally important, combining surveys in the months where they overlap (a majority of time points), decreases the sampling error because the total sample size increases. Thus, we can disaggregate by partisanship and still obtain an accurate estimate of the subgroup’s rating of the economy.

Figure 5 shows this series plotted by partisan group. A partisan pattern emerges from the disaggregated data, with those from the president’s party showing a more positive evaluation of the economy than Independents or those who identify with the opposition party. The pattern emerges more clearly in more recent years, with Republicans viewing the economy much more positively during the administration of GW Bush than Democrats or Independents, and Democrats reporting a better evaluation of the economy during the first term of President Obama than the other two groups. The only exception to this pattern is during the economic expansion that occurred during much of the Clinton administration. Despite anecdotal assessments of the Clinton administration as an intensely partisan period, evaluations of the economy by Democrats, Republicans, and Independents were remarkably similar, suggesting that steady reports of good economic news can help overcome partisan predispositions. The changes in partisan evaluation of the economy at transition points are especially noteworthy. This suggests partisan thinking produces an immediate effect not just a gradual change in trend. Thus, political institutions, like national elections, can have important consequences for the dynamics of public opinion, from seemingly “easy” cases like job approval of the president to “harder” or potentially more objective cases, like assessments of national economic conditions.

The role of partisanship in aggregate economic evaluations is demonstrated in (Enns, Kellstedt & McAvoy 2012, Enns & McAvoy 2011). This works shows key differences in the way that partisans update their evaluations in light of changes in objective economic indicators, like unemployment and inflation. Overall, this analysis supports the idea that even aggregate behavior is guided by “motivated reasoning” since those supportive of the incumbent president are view the economy more positively that those aligned with the out party even when controlling for changes economic conditions. Likewise, those in the out-party seem to seek out information that will allow them to make a negative evaluation of the economy, confirming their predisposition that the incumbent president is not an effective steward of the economy.

Deviations from Strict Rationality

As the analysis above shows, the analysis of aggregate economic evaluations by the public implies a much more complex relationship between information, news, and opinion.

8 I combine the series using a technique for merging time series described in Shumway and Stoffer (2006). This procedure is similar to Stimson’s (1999) Dyad Ratios Algorithm but Stimson’s procedure is built to handle survey percentages, rather than the mean score evaluation used here. Both algorithm scales the series to a common metric and then use a factor analytic approach to extract the common variance of the series.
than models of strict rationality suggest. The public does in fact ignore information that comes its way, based on the severity of the problem as well as other factors that might divert people's attention from economic conditions. But, it is useful to know how far these deviations from strict rationality push the public away from an evaluation that would occur based on the calculations of a “rational” individual.

Fortunately, in the area of economic evaluations, data for making this comparison is available. The Survey of Professional Forecasters has been conducted quarterly since 1968, first by the American Statistical Association and then by National Bureau of Economic Research. In 1990, the Federal Reserve Bank of Philadelphia took over administration of the survey. The survey asks professional forecasters a series of questions about future economic conditions. The results of this survey have been used extensively in studies of inflation expectations (Carroll 2003), but have not been fully utilized as a benchmark in other studies of rationality. However, if what we want to know is how the public deviates from strict rationality, it is hard to imagine a better basis for comparison. Professional forecasters do exactly what many assume rational individuals should do, make systematic and thorough analyses of economic conditions and form opinions based on these assessments.

The question asked in the survey that best serves as a comparison to the public’s assessment of current economic conditions is the one in which forecasters are asked to predict mean economic growth for the quarter in which the survey is being administered. Thus, they are being asked to evaluate the current state of the economy using information from previous quarters. The comparison between the forecasts of professionals and the assessments of the public is not without its limitations, principally the public is being asked to rate the economy (a very general question) and the forecasters are being asked about a specific aspect of the economy (growth in GDP). Still, economic growth is a broad measure of the state of the economy and thus there is reason to believe that the over time change in these two variables make for a reasonable comparison between “rational” decision-making and the public.

Both time series are plotted in Figure 6 with the right axis representing the scale for the Survey of Professional Forecasters and the left representing the scale for Consumer Sentiment. The graph does show some clear similarities in the two series as they trend over time ($\gamma=0.41$). Both the public’s and the forecasters’ evaluations were deeply pessimistic at time of the recession of 1990-91 and began to rise after that. The forecasters turned optimistic more quickly than the public, but both evaluations reached a high point during the robust economic conditions of the late 1990s. In the early 2000s, forecasters appeared to be more optimistic than the public, but both trended steadily downward from 2003 until the economy hit rock bottom in 2008 and remained there through 2009. Overall, there are clear similarities in the evaluation made by the public and economic forecasters, despite the fact that the public is at times inattentive and consistently subject to partisan influence.

When comparing the perceptions of the economy by the public and forecasters to actual economic conditions as measured by real GDP, these same similarities appear. Table 3 reports a regression of expert and the public’s evaluation of the economy on real GDP. In both cases, economic evaluations are significantly related to real economic conditions (it would be quite surprising if they were not!), but there is a strong simi-
larity in the relationships. There is a slightly smaller standard error for the residuals of experts (1.38) when compared to the public (1.48), but this difference does not alter the overall sense that experts don’t have an enormous advantage in accurately evaluating overall economic conditions.

To get a sense of the impact of partisanship on the accuracy of evaluations of the economy, regressions were run in which partisans evaluations are regressed on real GDP. These are reported in Table 4. There are some differences in the strength of the relationship among the partisan groups, and this is consistent with the findings of (Enns, Kellstedt & McAvoy 2012, Enns & McAvoy 2011) where these partisan differences are described in more detail. The standard errors of the residuals are larger for Democrats (1.54) and Republicans (1.62) than the public as a whole (1.48). Thus, there does seem to be some averaging between the evaluations of the two parties that leads the overall evaluation to be somewhat closer to experts than the each of them are alone.

Further insight into the similarities and differences between the public and forecasters is evident by looking at the forecast errors of each of the groups described above. These forecast errors are obtained from estimating an updating model to obtain period by period forecasts of economic conditions based on each groups assessment of the economy. Formally, this model is:

\[ y_t = x_t + \beta_{1t} \text{Econ.Evaluation}_{t-1} + \nu_t \]

\[ x_t = x_{t-1} + \omega_{0t} \]

\[ \beta_{1t} = \beta_{1t-1} + \omega_{1t} \]

where \( y_t \) is real GDP. Thus, the forecast error is \( y_t - x_t \) and is calculated iteratively from the model. The errors for partisans, the public and forecasters are shown in Figure 7 and help explain some of the similarities that observed between the public and forecasters. As the figure shows, the patterns of errors is quite similar across groups. Much of this has to do with the fact that many of the big errors (or the turning points if looking at the data in levels) are similar across groups. Thus, big changes in in economic conditions occur with some frequency and the public and experts seem to be similar at missing or noticing these changes. For example, the biggest error in the series occurred in the third quarter of 2009 when forecasters and the public thought that economic conditions would turn positive (but they in fact remain negative as they had been in the previous four quarters).

These errors can be analyzed in more depth by characterizing the nature of the error structure using the language of ARIMA analysis. If the errors are “white noise,” this indicates that errors do not extend beyond a single time period and that experts or the public do not repeat their errors. On the other hand, if there are correlated errors across time periods, errors can extend beyond a single time period, violating one standard of rationality. The analysis of the residuals shows that both partisans, the public overall, and forecasters have a moving average structure to their errors. The MA component, \( \theta \), is approximately 0.35 for all the series. In other words, errors in one time period extend to the following time period, but do not cascade across all subsequent time periods (as would be true of an autogressive error). Thus, one reason that the public and forecasters make similar errors is that forecasters themselves have difficulty meeting strict standards of rationality.
Conclusion

For a long time, political observers and researchers have been frustrated by the public’s inability to measure up to the ideals of democratic citizenship. Among the public’s many documented failings are an inability to form coherent preferences, limited factual knowledge about current events and political leaders, and low participation rates. However, aggregate studies of political behavior have tried to restore legitimacy to political decision-making by arguing that individuals may fail to meet the standards of good democratic citizenship, but that in the aggregate, through the miracle of aggregation and the subset of the public that is attentive, meaning and legitimacy of political decision-making are possible. The difficulty, of course, is that in making this leap from individual irrationality to collective rationality, researchers have side-stepped or ignored some of the key findings from individual-level studies about how the public processes information and the extent to which its ability to process information is compatible with collective rationality.

The focus of this research is on the role of information reception in the formation of opinions about economic conditions in order to better understand the information processing system that guides opinion formation. As Zaller notes, the availability of information does not necessarily mean that it is received and just because it is received does not mean that it will be used in opinion updating. So unlike theories of rational aggregate behavior which assume that all information that is received will be used, the evidence from this studies shows that public is more selective in its use of information. During economic downturns (marked by recessions), there is heightened awareness and use of economic information. During periods of economic prosperity and when other issues are ahead of the economy on the political agenda, the public routinely ignores information that could be useful in updating its assessment of economic conditions. Interestingly, the role of information about economic conditions like unemployment is primarily to drag down the public’s assessment of the economy but almost never to increase it. Thus, the public’s assessment of economic conditions does not noticeably improve with good news about unemployment.

Finally, as the comparison of economic evaluations between the public and economic forecasters shows, there is reason to believe that despite its selective use of information, the public does not go wildly astray in its evaluations of the economy. For much of the time period studied, assessment of the public and professional forecasters maintained a reasonably tight correspondence. (This finding is similar to studies that compare inflation expectations of the public to those of forecasters (Carroll 2003, Mankiw, Reis & Wolfers 2004). This can occur either because the public relies on information short cuts and selective use of information in making judgments that allow them to act as if the public where more rational than it appears; or, that forecasters themselves fail to live up to the standard of economic rationality.\(^9\) In the former case, the similarity between the two does provide some reason to believe there is some clear coherence to aggregate evaluations and that a merging of individual-level findings about informa-

\(^9\)For example, they, too, might be subject to contagion, since over time, forecasters might be reluctant to make forecasts that are too far from the group mean.
tion processing with aggregate outcomes should lead to a better model of aggregate behavior.
References


Figure 1: Hearing Unfavorable News Reports, 1989 to 2011
Figure 2: Time Varying Effects of Unemployment on News Reception, 1989 to 2011 (Gray areas denoted recessions)
Figure 3: Time Varying Effects of Unemployment on Consumer Sentiment, 1989 to 2011 (Gray areas denoted recessions)
Figure 4: Time Varying Effects of Inflation on Consumer Sentiment, 1989 to 2011 (Gray areas denoted recessions)
Figure 5: The Public’s Rating of the National Economy, Feb. 1989 to April 2012
Figure 6: Consumer Sentiment and Survey of Economic Forecasters, 1989 to 2011
Figure 7: Comparison of Errors for Party and Forecasters, 1989 to 2011
Table 1: Correlations among Economic Ratings, News Reception, and Economic Conditions, 1989 to 2011

<table>
<thead>
<tr>
<th></th>
<th>Consumer Sentiment</th>
<th>Unfavor News</th>
<th>Unem.</th>
<th>Infl.</th>
<th>Favor News</th>
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<td>Unem.</td>
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<td>1.000</td>
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<td>1.000</td>
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<td>-0.490</td>
<td>0.359</td>
<td>-0.302</td>
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Table 2: Time-Varying Updating model for Consumer Sentiment, 1989 to 2011

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<td>( x_t )</td>
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<tr>
<td>Unemployment(_t-1)</td>
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<td>Inflation(_t-1)</td>
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<td>( \sigma^2_{\omega1} )</td>
<td>0.355*</td>
</tr>
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<td>( \sigma^2_{\omega2} )</td>
<td>0.649*</td>
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<td>( \sigma^2_{\nu} )</td>
<td>2.789*</td>
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</table>

* p<0.05
† Parameter estimates are the final values from the Kalman filter
Table 3: Relationship between Growth in Real GDP and Expert and Public Evaluations of the Economy, 1989 to 2011

<table>
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<th>Variable</th>
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<td>-5.05***</td>
</tr>
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<td></td>
<td>(0.244)</td>
<td>(0.94)</td>
</tr>
<tr>
<td>Economic Evaluation</td>
<td>0.850***</td>
<td>0.094***</td>
</tr>
<tr>
<td></td>
<td>(0.089)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Observations</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.496</td>
<td>0.421</td>
</tr>
<tr>
<td>Residual SE</td>
<td>1.38</td>
<td>1.48</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Relationship between Growth in Real GDP and Expert and Public Evaluations of the Economy, 1989 to 2011

<table>
<thead>
<tr>
<th>Variable</th>
<th>Democrat</th>
<th>Republican</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.589***</td>
<td>-3.73***</td>
<td>-4.926***</td>
</tr>
<tr>
<td></td>
<td>(0.853)</td>
<td>(0.996)</td>
<td>(0.947)</td>
</tr>
<tr>
<td>Economic Evaluation</td>
<td>2.561***</td>
<td>2.32***</td>
<td>3.00***</td>
</tr>
<tr>
<td></td>
<td>(0.354)</td>
<td>(0.369)</td>
<td>(0.380)</td>
</tr>
<tr>
<td>Observations</td>
<td>91</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.365</td>
<td>0.306</td>
<td>0.407</td>
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<tr>
<td>Residual SE</td>
<td>1.54</td>
<td>1.622</td>
<td>1.496</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1